



NATIONAL
ECONOMICS UNIVERSITY



KHON KAEN
UNIVERSITY

17th NEU-KKU INTERNATIONAL CONFERENCE
SOCIO-ECONOMIC AND ENVIRONMENTAL
ISSUES IN DEVELOPMENT

2023
Proceedings



FINANCE PUBLISHING HOUSE



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**SESSION 1:
ECONOMIC DEVELOPMENT
AND INTEGRATION**

ENTREPRENEURIAL FARMERS IN THE CHANGING WORLD: ARE THEY DISAPPEARING? EVIDENCE FROM VIETNAM

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Abstract

Urbanisation, industrialisation and climate change have forced farmers to adapt to the new context. Previous studies have investigated factors correlated with the non-farm income structure of farm households, but very few studies, especially in developing economies, exploring drivers of non-farm business diversification decisions of farm households at the transition point from pure farm households to households having farm and non-farm business income or non-farm households. We know much less about external micro-level community and environmental factors that contribute to the livelihood transition of farmers. Employing a rich dataset of 1,868 repeatedly surveyed farmers extracted from the Viet Nam Access to Resources Household Survey (VARHS) in 2006-2016, this study investigates factors driving the non-farm business diversification decisions of farmers. Probit and ivprobit (probit regression with instrumental variable(s) - IVs) models were employed for estimating. Using data from ten years allows us to identify farmers' non-farm business diversification decisions more precisely and to examine the long-term impact of disasters (i.e., floods) on non-farm business diversification decisions of farmers. The results show that experiencing natural disasters in the previous years, credit utilisation, migration to the commune, extension services, information access, demographic characteristics, and non-farm wage are significant determinants of the non-farm business diversification decisions of farmers. The study provides some suggestions for enhancing farmers' income diversification to suit the new context.

Keywords: *Climate change, entrepreneurship, farmer, floods, diversification, poverty*

1. Introduction

Urbanisation, industrialisation, and climate change have forced farmers to adapt to the new context. However, we believe that the change is not easy because of the demographic challenges of rural regions (Gurría, 2007) and farmers' specific psychological characteristics, such as conservative. Farmer conservatory can be explained by the characteristics of farmer societies as described by Scott (1976), which are characterised by "a constant competing to remain equal" (Tucker, 2010, p.933). "Peasant [farmers] sociality is thus resistant to entrepreneurial innovation and development" (Tucker, 2010, p.933). Due to the characteristics of agriculture that depend on nature, farmers have to rely on each other to cope with natural disasters and support each other, resulting in farmers' timid and passive mentality (Nguyen, 2005). The village's law that regulates the behaviour of individuals is

the value system and standards of the village, creating the identity of individuals in the same village. This identity, in turn, creates a mentality of dependence on the collective and the habit of relying on the majority (Nguyen, 2005). The theory of social learning states that observing and reproducing a person's behaviour may result in imitating that behaviour (Jager et al., 2000). Imitation is an automatic social process related to the theory of social learning and normative conduct (Schmit and Rounsevell, 2006). People use imitation to learn new behaviours to economise their cognitive efforts (Jager et al., 2000).

Similarly, farmers rely on imitation and habits to efficiently use their limited cognitive resources (Jager et al., 2000). They will look for powerful solutions (such as imitation) to put into social processes when faced with uncertainties (Festinger, 1954 in Jager et al. (2000), Schmit and Rounsevell, 2006). Imitation is considered a vital factor in the innovation process in agriculture, such as using new fertiliser (Feder and Umali, 1993) and adopting conservation tillage practices (Warriner and Moul, 1992). Gautam and Anderson (2016) argue that a solid social network positively influences the livelihood diversification of rural households. The research of Cai et al. (2018, p.250) shows a positive correlation between the demographic structure of the village, such as the number of families aged between 16 and 64 and the business operation of households. McNamara and Weiss (2005) and Bhandari (2013) find that the percentage of non-farm household in the village positively affect the non-farm income diversification of households.

Rich production knowledge is accumulated through experience. Farmers have more experience have a better modern technology assessment ability (Adesina and Baidu-Forson, 1995) and risk assessment ability (Mubaya et al., 2012). On the other hand, more farming experience may negatively affect farmers' innovation as they are already familiar with farming. Tucker (2003) states that innovation mainly comes from hybrid villagers who used to live outside of the village or incomers. Surprisingly, to the best of our knowledge, no previous study has examined the influence of migration to the village on the income diversification of farmers. In this study, we consider the number of migrants to the village in the previous years can influence the non-farm business of farmers.

The biggest challenge to supporting rural entrepreneurship processes is the low level of education of the rural population (Gurría, 2007). Low educational attainment has been found to be correlated with cognitive impairment in individuals (Brucki and Nitrini, 2014). Due to limited cognitive resources, people do not continually optimise outcomes, but most of the day-to-day process is habitually repetitive choices to achieve satisfaction (Simon, 1976; Jager et al., 2000). This argument is supported by Banerjee (2003) that "people may not always seek out the best options because they are held back by psychological constraints or social norms" (p.2). Education is commonly used in previous studies regarding factors affecting adoption decisions (Adesina and Baidu-Forson, 1995). The higher the education level, the higher the technology adoption level of farmers (Strauss et al., 1991). Interestingly, Cai et al. (2018) find a negative effect of education on entrepreneurship in rural households. In addition to education, other demographic characteristics are also examined, including gender (Bhandari, 2013; Caldas et al., 2014; Cai et al., 2018), age

(Bonnieux et al., 1998; García-Arias et al., 2015; Weltin et al., 2017), household size (Hennessy and Rehman, 2008), number of working age members of the household (Gautam and Anderson, 2016), and farm size (Arslan et al., 2018).

Other external factors must also be present for the income diversification of farmers. Individuals who lack credit access have little chance of becoming entrepreneurs to lift themselves beyond their current circumstances (Banerjee and Newman, 1993; Beck et al., 2009; Oseni and Winters, 2009; Villasenor and West, 2015). A simple entrepreneurial activity in agricultural production, such as using modern inputs (e.g., fertiliser) of poor farmers in rural areas in some localities in order to improve agricultural productivity, also requires heavy subsidies (Dugger, 2007) or at least free fertiliser delivery support (Duflo et al., 2011). Credit is considered a resource used for investment, transformation and livelihood expansion. Cai et al. (2018)'s regression model revealed a negative and significant association between credit constraints and household entrepreneurship. Folmer et al. (2010) recommend capital market development as an essential driver of farmers' entrepreneurship.

The farming village's access to transportation networks, as a conduit for information flows and networking with key actors in the rural economy's agricultural supply chain, transporting farm inputs onsite and, most importantly, selling perishable farm outputs promptly. Reardon et al. (2001) emphasise the vital role of transportation improvement in promoting non-farm activity growth in Latin America. Regarding the role of information flows in income diversification, Mubaya et al. (2012) state that a lack of knowledge is an obstacle for households to make an investment decision. The research result of Strauss et al. (1991) shows that exposure to media plays an important role in information generation for technology adoption by farmers.

As mentioned above, agricultural production is risky as it heavily depends on the weather conditions. The adverse impacts of climate change put more pressure on agricultural production. Climate change will likely increase more disasters and diseases affecting agricultural productivity (WB and ADB, 2020). Previous studies have investigated the impacts of climate change on rural household livelihood strategies (e.g., Mendelsohn et al., 2006; Seo and Mendelsohn, 2008; Huang et al., 2014; Arslan et al., 2018). In particular, Huang et al. (2014) find that farmers' extreme weather experiences significantly influence crop diversification. Further, Arslan et al. (2018)'s study reveals that rainfall variation in the growing period is more likely correlated with livestock diversification, whereas less likely correlated with income diversification of households.

In this paper, we investigate internal and external factors affecting the non-farm business of farmers with some improvements. Using data in two years allows us to identify farmers' non-farm businesses more precisely. Notably, a household's non-farm business is identified if the household did not have a non-farm business in the income structure in 2014 but in 2016. This definition makes it clear that the decision to diversify non-farm business has only recently been made rather than may have been made before. The temporal data are challenging to resolve. Regarding the impact of climate change on the non-farm business of

farmers, we use the data from 2006 to 2016 to investigate the long-term and short-term impacts of natural disasters on the non-farm business of farmers. We include more external factors that can significantly influence the non-farm business of farmers that have been ignored in previous studies.

2. Method

This paper uses Viet Nam Access to Resources Household Survey (VARHS) from 2006 to 2016 for analysing.

Probit regression was employed to estimate factors correlated with farmers' non-farm business. The model takes the following form:

$$\Pr (Y = 1 | X) = \Phi (\beta X^T) \quad (1)$$

Where Y is the non-farm business of farm households taking the value of 1 if a household had non-farm business in 2016 but not in 2014 and a value of 0 otherwise. Φ is the Cumulative Distribution Function of the standard normal distribution. Parameters β are estimated by the maximum likelihood method. X denotes exploratory variables.

Among exploratory variables, we pay attention to the potential endogenous problem of the credit utilisation status of farmers. In particular, it is hard to determine whether households that want to diversify non-farm businesses are more likely to borrow or credit access influences the probability of diversifying the income of households (Cai et al., 2018). The estimations from probit regression may be biased due to this problem. We employed probit regression with instrumental variable(s) (ivprobit) to solve the problem. The ivprobit model can be written as follows:

$$Y_{1i}^* = \beta Y_{2i} + \gamma X_{1i} + \varepsilon_i \quad (2)$$

$$Y_{2i} = \Pi_1 X_{1i} + \Pi_2 X_{2i} + \delta_i \quad (3)$$

Where Y_{2i} is a $1 \times k$ vector of endogenous variable (credit utilisation), X_{1i} is a $1 \times k_1$ vector of exogenous explanatory variables, X_{2i} is a $1 \times k_2$ vector of the instrumental variable. Assuming $(\varepsilon_i, \delta_i) \sim N(0, \Sigma)$. β and γ are structural parameter vectors. Π_1 and Π_2 are reduced-form parameter matrices. Y_{1i}^* cannot be observed, but the following Y_{1i} is observable:

$$Y_{1i} = \begin{cases} 0, & Y_{1i}^* < 0 \\ 1, & Y_{1i}^* \geq 0 \end{cases} \quad (4)$$

We use the distance to credit provider(s) to instrument credit utilisation for some reasons. First, this variable has been used as an instrumental variable for credit utilisation in previous studies estimating the impact of credit utilisation on poverty (e.g., Churchill and Marisetty, 2020; Bukari et al., 2021). These authors argue that the influence of poverty on the distance to credit institutions is impossible, and the impact of distance to credit institutions on poverty (if any) must be via credit utilisation. Likewise, we argue that the correlation between distance to credit providers and non-farm business (if any) must be via credit utilisation. It is hard for the reverse direction to happen.

3. Results and discussion

We run different models to investigate the impacts of internal and external factors that influence the non-farm business of farmers with an emphasis on the long- and short-term impacts of flooding. We also run the ivprobit models to investigate the endogenous problem of credit utilisation, one of our variables of interest. F statistics values beyond the threshold of ten indicate that our IV is not weak (Stock et al., 2002). The estimating results from ivprobit are consistent with that of the probit models. The Wald test of exogeneity p-value is greater than 0.10, indicating that the estimating results from probit models are appropriate (Table 2). Thus, we only report the estimated results of the probit models (Table 1).

Across all models, we consistently find a positive and significant correlation between experiencing a flood in the previous years and non-farm business, but not the current year. As expected, we also find a positive impact of experiencing floods in the long-term on non-farm business, but it is insignificant. Due to data unavailability, we cannot examine the more prolonged impact of disasters on non-farm businesses like Huang et al. (2014)' study. However, ten years are long enough to test the long-term impact of a flood on the non-farm business of farmers. Our findings show that non-farm business diversification decisions of farmers are less likely to be influenced by both the immediate and long-term impacts of disasters (i.e., floods) but by the impacts of floods in a short period (i.e., two years in our study). Experiencing a flood in two consecutive years has a larger impact on non-farm business than in only one year. A possible explanation for the insignificant correlation between the long-term and immediate impacts of flood and non-farm business can be our argument about the negative side of farmers' agricultural experiences above. In particular, farmers familiar with agricultural production might hesitate to diversify into non-farm businesses requiring new knowledge and skills. On the other hand, experiences in agricultural production make it difficult for farmers to change in a very short-term under the impact of immediate disasters. Farmers who experience floods in the long-term have production strategies to cope with risks is another possible explanation for our findings.

Our models do not show a significant correlation between savings on non-farm business but credit utilisation. The finding is consistent with Cai et al. (2018)' finding regarding the importance of credit access in entrepreneurship of Chinese rural households. A non-farm business requires considerable capital explaining why savings cannot fulfil farmers' demand for a non-farm business project. The finding emphasises the important role of credit market development in rural entrepreneurship. However, the rural credit market is fragmented, characterised by the coexistence of formal and informal credit providers (e.g., Hoff and Stiglitz, 1990; Pham and Lensink, 2007). The asymmetric information in rural credit markets makes it difficult for the rural population to access formal credit institutions, while high-interest informal credit is not always available (Hoff and Stiglitz, 1990). Therefore, rural households primarily rely on friends and relatives to support their entrepreneurial projects (Sohn and Diaz, 2018). In case they, especially the poor, could borrow from formal credit institutions, most loans are small and are not enough to start a new business project. According

to Pham and Lensink (2007)'s statistics, the average loan volume from the formal credit providers is just around 4.8 million VND (equivalent to 406 USD).¹ Further, a large proportion of farmers who might have credit demand but do not borrow because of many influencing internal and external factors (Trinh et al., 2022). Therefore, solving the problem of rural credit market development is a concern for policymakers.

Regarding the impacts of demographic characteristics on non-farm business, young farmers are more likely to involve in non-farm business probably because young farmers are more willing to learn new things and to change (Morris et al., 2017). Agricultural production relies on the internal labour force. Our estimations also reveal this behaviour in farm households which made non-farm business diversification decisions. Household size shows a strong positive impact on the probability of non-farm business of farmers. On the other hand, the high number of members also puts more pressure on the household to diversify income sources. Deviating from previous studies (e.g., Adesina and Baidu-Forson, 1995; Strauss et al., 1991; Cai et al., 2018), we find a positive but insignificant effect of education on non-farm business. Notably, findings from our models show a significant and negative correlation between net monthly wage/salary and non-farm business, which supports our argument about the difference between non-farm income status and the non-farm business diversification decisions, and the passiveness of farmers. Farm households with high monthly wages/salary lack incentive to diversify into non-farm businesses requiring new knowledge and skills.

Deviate from the argument of Tucker (2003), the number of migrants to the commune in the previous 12 months exhibits a significant and negative effect on non-farm business, implying the purpose of migration is simply marriage, and the newcomers come from the same region (e.g., the same district) with not much significant differences in socio-economic conditions. Notably, the frequent visits of extension staff in the last 12 months significantly and positively influence farmers' non-farm business diversification decisions, indicating the importance of support from the government in enhancing farmers' entrepreneurship. Maulu et al. (2021) state that extension services are vital in rural development and poverty alleviation. The extension is an informal education form to help low-educated farmers accumulate scientific and technological knowledge (Kassie et al., 2011; Egziabher et al., 2013; Maulu et al., 2021). Our finding deviates from Diao et al. (2018)' argument that extension services do not significantly contribute to rural transformation. The success of extension service delivery in rural areas depends on many factors including the political environment and other socio-economic characteristics (Maulu et al., 2021).

We find a strong positive impact of access to information through the internet on non-farm business, although only five percent of farmers in our sample use the internet. This finding supports the argument of the World Bank about the importance of internet access, especially in developing countries:

¹ The authors use a dataset from 1998. The exchange rate was 1 USD = 11,800 VND on February 18th, 1998.

It [the internet] is a powerful tool for the delivery of essential services such as education and healthcare ... and contributes to enhanced government transparency and accountability. It also helps foster the social development of communities, including within the broader global context.

Source: <https://www.worldbank.org/en/topic/digitaldevelopment/brief/connecting-for-inclusion-broadband-access-for-all>

As the internet is not common in remote rural, however, we can assume that farmers who can access the internet may have a higher entrepreneurship spirit or live in a more advantaged area compared to their counterparts in other regions. However, the insignificant correlation between the regional category variable and non-farm business suggests another explanation. Diverse and available information from the internet can be the reason why internet access stimulates non-farm business diversification decisions of farmers. Also, according to the World Bank, expanding broadband in rural developing countries is a challenge requiring cooperation between the government and private broadband providers. In contrast, we find a significant negative correlation between electricity access, which is expected to be a significant driver of the non-farm business of farmers, and the non-farm business of farmers, although approximately 100 percent of farmers use electricity.

4. Conclusion

Diversification into non-farm activities is a crucial strategy for farmers to cope with the changes caused by urbanisation, industrialisation and the negative effects of climate change. However, farmers face many challenges when making a non-farm diversification decision, especially non-farm businesses requiring new knowledge and skills. Therefore, understanding factors affecting farmers' non-farm business diversification decisions is essential. Employing a unique dataset collected from 2006 to 2016 in Vietnam, this study examines internal and external factors influencing farmers' non-farm business diversification decisions.

Credit utilisation is an important driver of the non-farm business of farmers. However, the rural credit market in rural areas is fragmented with the coexistence of formal and informal credit providers. Formal credit providers hesitate to lend to farmers, while small-subsidised loans from the government and high-interest loans from informal credit providers cannot meet the farmers' demand. Therefore, the restructuring of the rural credit system and the diversification of rural credit programs are necessary to support farmers in non-farm business diversification. Besides the programs to support farmers in knowledge and production orientation, finding markets through extension services is critical. Programs to assist farmers in changing their livelihoods in the first few years after a disaster can be more effective than implementing them after a long period of farmers suffering a disaster. Promoting internet access for farmers in disadvantaged areas can encourage farmers to involve in the non-farm business. Although we find a negative correlation between the migration to the commune and the non-farm business of farmers, our estimation results indirectly support the view of encouraging young people to return to participate in

agricultural production in rural areas that Chen and Liang (2020) proposed to improve agriculture entrepreneurship because young farmers are more likely to engage in non-farm business. Due to data unavailability, we cannot investigate where the migrants come from. Further studies can re-examine the impact of the migration from other regions (e.g., other provinces) on the non-farm business of farmers.

Table 1. Determinants of non-farm business diversification decisions of farmers (probit)

	(1)	(2)	(3)	(4)	(5)	(6)
Gender	0.213 (0.145)		0.180 (0.163)	0.192 (0.162)	0.177 (0.164)	0.176 (0.165)
Age	0.033 (0.024)		0.046* (0.024)	0.046* (0.024)	0.044* (0.025)	0.039 (0.024)
Age squared	-0.000 (0.000)		-0.000** (0.000)	-0.000** (0.000)	-0.000* (0.000)	-0.000* (0.000)
Education	0.041 (0.065)		0.058 (0.069)	0.067 (0.068)	0.068 (0.070)	0.068 (0.070)
Marital status	0.202 (0.133)		0.222 (0.153)	0.225 (0.153)	0.234 (0.155)	0.237 (0.155)
Ethnicity	-0.217** (0.103)		-0.053 (0.127)	-0.057 (0.128)	0.075 (0.143)	0.065 (0.143)
Household members	0.748*** (0.146)		0.844*** (0.185)	0.824*** (0.185)	0.781*** (0.183)	0.781*** (0.183)
Born in the same village	0.003 (0.096)		-0.082 (0.102)	-0.079 (0.102)	-0.122 (0.110)	-0.122 (0.110)
Have member(s) working in the formal sector	0.095 (0.089)		0.090 (0.092)	0.080 (0.092)	0.108 (0.092)	0.101 (0.092)
Non-farm wage	-0.066*** (0.012)		-0.068*** (0.012)	-0.068*** (0.012)	-0.068*** (0.012)	-0.069*** (0.012)
Farm size	-0.015 (0.041)		-0.006 (0.044)	-0.009 (0.043)	0.011 (0.053)	0.007 (0.054)
Savings 12 months ago	0.000 (0.000)		0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Distance to the main road		0.059 (0.036)	0.069* (0.037)	0.076** (0.037)	0.060 (0.039)	0.059 (0.038)

	(1)	(2)	(3)	(4)	(5)	(6)
Distance to the extension centre		0.024	0.013	0.024	0.017	0.019
		(0.051)	(0.050)	(0.049)	(0.050)	(0.050)
Receive assistance on Agricultural production		0.048**	-0.016	-0.015	-0.009	-0.009
		(0.021)	(0.024)	(0.024)	(0.024)	(0.024)
Migration to the commune		-0.158***	-0.154***	-0.159***	-0.128***	-0.130***
		(0.033)	(0.035)	(0.035)	(0.039)	(0.038)
Households in the commune		-0.071	-0.016	0.010	0.067	0.080
		(0.087)	(0.094)	(0.093)	(0.104)	(0.103)
The average income per capita of the commune		-0.058	-0.048	-0.051	-0.026	-0.029
		(0.036)	(0.038)	(0.039)	(0.038)	(0.038)
Poor households in the commune		0.050	-0.001	-0.006	-0.009	-0.012
		(0.046)	(0.052)	(0.052)	(0.053)	(0.053)
Extension staff visit		0.114*	0.138*	0.141*	0.129*	0.129*
		(0.067)	(0.073)	(0.074)	(0.074)	(0.074)
Information from formal sources		-0.152	-0.274	-0.288	-0.298	-0.298
		(0.287)	(0.292)	(0.291)	(0.296)	(0.299)
Information from informal sources		0.328	0.259	0.270	0.290	0.294
		(0.229)	(0.237)	(0.236)	(0.225)	(0.228)
Information from internet		0.402**	0.479***	0.470***	0.491***	0.501***
		(0.166)	(0.170)	(0.170)	(0.169)	(0.169)
Irrigation		0.171*	0.230**	0.215*	0.203*	0.182
		(0.103)	(0.110)	(0.110)	(0.113)	(0.115)
Electricity		-1.202**	-0.903*	-0.935*	-0.950*	-0.973*
		(0.526)	(0.524)	(0.529)	(0.506)	(0.505)
Non-farm infrastructure		0.103	0.081	0.048	0.064	0.061
		(0.256)	(0.264)	(0.266)	(0.279)	(0.282)

	(1)	(2)	(3)	(4)	(5)	(6)
Credit access		0.326*** (0.103)	0.332*** (0.107)	0.202** (0.091)	0.248*** (0.092)	0.252*** (0.092)
Experienced flood in 2014 and 2015		0.216** (0.087)	0.197** (0.091)			
Experienced flood in 2015				0.362*** (0.097)		
Experienced flood in 2016					-0.062 (0.177)	
Experienced flood in 2006 - 2010						0.136 (0.092)
High Land					-0.361 (0.240)	-0.347 (0.241)
Coastal Central					-0.141 (0.198)	-0.141 (0.200)
Red River Delta					-0.157 (0.209)	-0.170 (0.211)
Northwest Mountainous					0.282 (0.247)	0.303 (0.246)
Constant	-3.454*** (0.912)	0.333 (1.119)	-2.627* (1.475)	-2.637* (1.468)	-3.397** (1.547)	-3.268** (1.548)
Wald chi2	75.7	79.04	132.74	137.15	143.72	148.34
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.0000
Pseudo R2	0.060	0.078	0.118	0.121	0.120	0.121
Observations	1,885	1,868	1,868	1,868	1,868	1,868

Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2. Determinants of non-farm business diversification decisions of farmers (ivprobit)

	(1)	(2)	(3)	(4)	(5)
Gender		0.183 (0.162)	0.195 (0.162)	0.183 (0.164)	0.020 (0.023)
Age		0.045* (0.023)	0.045* (0.023)	0.043* (0.023)	0.005 (0.003)
Age squared		-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000* (0.000)
Education		0.068 (0.071)	0.075 (0.071)	0.075 (0.071)	0.012 (0.011)
Marital status		0.231 (0.149)	0.232 (0.149)	0.244 (0.152)	0.029 (0.022)
Ethnicity		-0.037 (0.143)	-0.043 (0.143)	0.081 (0.159)	0.007 (0.024)
Household members		0.863*** (0.195)	0.840*** (0.195)	0.806*** (0.197)	0.122*** (0.031)
Born in the same village		-0.092 (0.105)	-0.088 (0.105)	-0.127 (0.110)	-0.023 (0.018)
Have member(s) working in the formal sector		0.085 (0.093)	0.076 (0.093)	0.101 (0.093)	0.014 (0.015)
Non-farm wage		-0.069*** (0.012)	-0.069*** (0.012)	-0.069*** (0.013)	-0.012*** (0.002)
Farm size		0.003 (0.047)	-0.002 (0.047)	0.019 (0.054)	-0.000 (0.008)
Savings 12 months ago		0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Distance to the main road	0.059 (0.042)	0.068 (0.043)	0.075* (0.043)	0.060 (0.045)	0.009 (0.008)
Distance to the extension centre	0.031 (0.051)	0.021 (0.052)	0.032 (0.052)	0.024 (0.052)	0.006 (0.008)
Receive assistance on agricultural production	0.050*** (0.019)	-0.016 (0.025)	-0.015 (0.025)	-0.010 (0.025)	-0.001 (0.004)

	(1)	(2)	(3)	(4)	(5)
Migration to the commune	-0.157*** (0.033)	-0.153*** (0.035)	-0.158*** (0.035)	-0.129*** (0.038)	-0.022*** (0.006)
Households in the commune	-0.066 (0.091)	-0.007 (0.104)	0.017 (0.104)	0.063 (0.111)	0.015 (0.017)
The average income per capita of the commune	-0.053 (0.047)	-0.043 (0.048)	-0.047 (0.049)	-0.024 (0.050)	-0.006 (0.009)
Poor households in the commune	0.054 (0.046)	0.002 (0.052)	-0.003 (0.052)	-0.007 (0.054)	0.000 (0.008)
Extension staff visit	0.118* (0.072)	0.146** (0.073)	0.148** (0.073)	0.137* (0.073)	0.024* (0.013)
Information from formal sources	-0.147 (0.276)	-0.277 (0.286)	-0.291 (0.286)	-0.300 (0.293)	-0.048 (0.045)
Information from informal sources	0.342 (0.224)	0.272 (0.229)	0.282 (0.230)	0.303 (0.232)	0.034 (0.030)
Information from internet	0.395** (0.167)	0.470*** (0.171)	0.463*** (0.171)	0.480*** (0.170)	0.093*** (0.032)
Irrigation	0.164* (0.098)	0.223** (0.107)	0.209* (0.107)	0.201* (0.113)	0.029 (0.018)
Electricity	-1.157** (0.499)	-0.848* (0.515)	-0.887* (0.514)	-0.900* (0.524)	-0.344*** (0.114)
Non-farm infrastructure	0.101 (0.254)	0.079 (0.260)	0.047 (0.261)	0.073 (0.269)	0.016 (0.043)
Credit access	0.067 (0.248)	0.010 (0.277)	0.040 (0.277)	0.049 (0.291)	0.022 (0.047)
Experienced floods in 2014 and 2015	0.328*** (0.105)	0.333*** (0.109)			
Experienced flood in 2015			0.361*** (0.100)		
Experienced flood in 2016				-0.067	

	(1)	(2)	(3)	(4)	(5)
				(0.171)	
Experienced flood in 2006 - 2010					0.022 (0.015)
High Land				-0.337 (0.232)	-0.052 (0.036)
Coastal Central				-0.160 (0.202)	-0.026 (0.030)
Red River Delta				-0.149 (0.204)	-0.032 (0.031)
Northwest Mountainous				0.237 (0.260)	0.066 (0.041)
Constant	0.194 (1.156)	-2.851* (1.526)	-2.830* (1.527)	-3.501** (1.619)	0.054 (0.260)
F statistics	20.93	14.27	14.27	15.28	15.29
Prob > F	0.000	0.000	0.000	0.000	0.000
Wald test of exogeneity p-value	0.519	0.474	0.537	0.468	0.463
Observations	1,868	1,868	1,868	1,868	1,868

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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AN ANALYSIS OF IMPACTS OF THE MONETARY POLICY IN VIETNAM

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Abstract

This paper employs Structural Vector Autoregressive (SVAR) model to analyze impacts of the monetary policy on inflation and output growth in Vietnam using quarterly data from 1999Q2 to 2022Q3. The results show that: (i) the inflation responses expectedly to monetary policy shocks; (ii) higher interest rates, exchange rate depreciation has contractionary effects on output growth, while credit growth plays no role in determining output growth; (iii) past inflation and output growth play a key role in determining current inflation and output growth in Vietnam.

Keywords: *Monetary Policy, Inflation, Economic Growth, SVAR*

1. Introduction

Monetary policy which has the functions to regulate the monetary conditions of the economy with the aim to stabilize price, create favorable conditions for economic growth and improve life of the community is one of the most important macroeconomic policies. Monetary policy has increasingly played a crucial role in the planning and implementation of national macroeconomic policies.

Monetary policy has major impacts on the macroeconomic variables of the economy, still might be accompanied by undesirable consequences. In order to achieve the goals of regulating monetary policy and avoid unexpected effects, the the State Bank of Vietnam will need to base on a full or proper assessment of the timing and impacts of the use of monetary policy tools on the economy, namely money supply, credit growth, interest rates and exchange rates.

In Vietnam, there have been a number of studies using VAR and SVAR models to analyze impacts of the monetary policy on inflation and output growth such as Nguyen Viet Hung and Pfau (2008), Pham The Anh (2009), Nguyen Thi Thu Hang and Nguyen Duc Thanh (2010), Bhattacharya, R. (2013), Pham The Anh et al (2015), (The Anh Pham et al, 2022) ... However, previous studies often examined in the context when Vietnam's economy has been achieving great successes in economic growth and macroeconomic stability. The success of the economy has been being challenged by a series of recent adverse international economic events such as the US-China trade war, the Covid-19 pandemic, the Russia-Ukraine war, high inflation and monetary contractions in developed countries. Most of the previous studies used oil prices (and sometimes rice prices) in the international market as a proxy for the world price level. This choice was considered too simple and inappropriate

because oil and rice are major commodities whose prices are much more volatile compared to the overall price level in the world market. Another limitation of many previous studies was that the bilateral exchange rate between VND and USD rather than nominal effective exchange rate was used a proxy for exchange rate, so purchasing power parity (PPP) was not fully reflected. The empirical results on the impacts of the monetary policy shocks on inflation and economic growth in many cases were conflicting. This paper aims to make a contribution in this areas.

The purpose of this paper is to apply the SVAR model to find empirical evidence on the effects of monetary policy shocks on inflation and output growth in Vietnam in the period 1999Q2-2022Q3 and give some suggestions to effectively use monetary policy in controlling inflation and promoting economic growth in Vietnam in the coming years.

The paper is structured as follows. After the introduction, section 2 describes the research methodology and data. Section 3 provides empirical results and discussion. The final section concludes and draws some policy implications.

2. Method

2.1. Research Methods

This paper applies a structural vector autoregressive (SVAR) model to investigate impacts of the monetary policy in a small open economy. The SVAR model is very flexible and has an advantage over traditional large-scale macro-econometric models in that the results are not obscured by a large and sophisticated structure but are readily available and easily interpreted. Sims (1980) argues that SVAR models provide a more systematic approach to imposing restrictions, which may allow researchers to handling various economic issues and problems concerning the identification of the contemporaneous and dynamic relationships between macroeconomic variables and the policy instruments.

The relationship between macroeconomic variables can be modeled using SVAR as follows:

$$A_0 Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + \dots + A_p Y_{t-p} + \varepsilon_t \quad (1)$$

where Y_t is a $(N \times 1)$ vector of endogenous variables at time t , A_i is a $(N \times N)$ matrix of coefficients for $i = 0, 1, 2, \dots, p$; while ε_t is a $(N \times 1)$ multivariate white noise error process.

The SVAR model coefficients are estimated in two stages (Raghavan et al, 2007). The first stage is to obtain the following reduced form equations associated with (1):

$$Y_t = A_0^{-1} A_1 Y_{t-1} + A_0^{-1} A_2 Y_{t-2} + \dots + A_0^{-1} A_p Y_{t-p} + A_0^{-1} \varepsilon_t \quad (2)$$

$$Y_t = B_1 Y_{t-1} + B_2 Y_{t-2} + \dots + B_p Y_{t-p} + v_t \quad (3)$$

where $B_i = A_0^{-1} A_i$, $i=1, 2, \dots, p$ and $v_t = A_0^{-1} \varepsilon_t$. The expression described in (3) is the reduced VAR and v_t is the innovation corresponding to the reduced form and has zero mean and constant variance v_t . N equations in the VAR in (3) are estimated by OLS and the VAR residuals v_t are obtained.

The second stage consists of identifying the contemporaneous matrix A_0 and the variance-covariance matrix Σ through the following equation:

$$\ln L_t = -(1/2) \ln(2\pi) - (1/2) \ln |A_0^{-1}| \sum (A_0^{-1})' / - \frac{1}{2} \hat{v}_t' A_0^{-1} \sum (A_0^{-1})' \hat{v}_t$$

where Σ is restricted to be a diagonal matrix, while v_t is the estimated residuals from the reduced VAR. The residuals from the reduced VAR are transformed into a system of structural equations by imposing restrictions.

2.2. Data and unit-root test

The SVAR model used to analyze the impacts of monetary policy on inflation and output growth in Vietnam will include 10 variables and be divided into 2 sectors: foreign and domestic. The foreign sector is represented by three variables: output, price level, and interest rate. Vietnam is an open, small-scale economy, so the variables representing the foreign sector acting as exogenous variables only have a one-way effect on domestic variables. The domestic sector consists of seven variables: output, price level, money supply, aggregate credit, interest rate, and exchange rate. According to the Law on the State Bank of Vietnam (SBV) in 2010, the tools of monetary policy include: refinancing (Article 11), interest rate (Article 12), exchange rate (Article 13), required reserves (Article 14), and open market operations (Article 15); while the goal of monetary policy is to stabilize the value of money expressed by the inflation target (Article 3) (The National Assembly, 2010). In fact, the interest rates, exchange rates, credit growth and money growth are under the direct control of the SBV. In addition to controlling inflation, Vietnam's monetary policy also aims to stabilize monetary and financial systems and stimulate economic growth. Therefore, in this study, a combination of interest rates, credit growth, money growth and exchange rates is used as tools of the monetary policy while inflation and real GDP growth rate represents the target variable in the execution of monetary policy. The variables and scales are described in detail as follows:

- + Output (Y): The output is measured by the real GDP.
- + Money supply (M2): The monetary aggregate M2 represents the money supply including cash outside banks and deposits at commercial banks.
- + Aggregate credit (DC): The total domestic claims are used for the aggregate credit.
- + Interest rate (R): Lending rate at commercial banks is used to represent the interest rate variable.
- + Price level (CPI): The price level is measured by the CPI.
- + Exchange rate (NEER): Instead of using the bilateral exchange rate between VND and USD, the paper uses the effective nominal exchange rate² which is considered to be a better proxy for the exchange rate. The exchange rate is defined as the amount of VND per

² Calculated basing on exchange rates, from IFS, weighted by shares of total trade value for 1999Q2-2022Q3, from DOTS-IMF

unit of foreign currency, so an increase in the exchange rate means that the VND depreciates against the foreign currencies.

+ Foreign price level (FCPI): Previous studies often used the rice or oil price in the world market to represent the international price. In the author's view, this choice is convenient, but not reasonable because the prices of these commodities fluctuate sharply. This paper uses the weighted average CPI of Vietnam's 22 largest trading partners³ as a proxy for foreign price.

+ Foreign output (FY): Real GDP of OECD countries is used as a proxy for foreign output.

+ Foreign interest rate (FR): The U.S. Federal Funds rate is used as a proxy for the foreign interest rate.

Table 1. Variables included in the SVAR model

Variables	Abbreviation	Definition	Sources
Foreign sector			
Price	FCPI	Consumer Price Index	Own calculations from IFS/DOTS-IMF database
Output	FY	OECD real GDP	OECD
Interest Rate	FR	US Federal Funds Rate	IFS-IMF
Domestic sector			
Output	Y	Real GDP	GSO
Price	CPI	Consumer Price Index	IFS-IMF
Money Supply	M2	Monetary Aggregate M2	IFS-IMF
Aggregate Credit	DC	Total domestic claims	IFS-IMF
Interest rate	R	Lending interest rate	IFS-IMF
Exchange rate	E	Nominal Effective Exchange Rate	Own calculations from IFS/DOTS-IMF database

Note: IFS/DOTS-IMF: International Monetary Fund's database of financial indicators/trade trends

All data (except for the US federal funds rate) are seasonally adjusted using the central moving average (CMA) method. The central moving average is to ensure that shocks reflect changes from the long-term trend of those variables. All data (except for interest rates) are in log form (ln) in order to narrow the range of variables to be measured and to make the series more stable and thus the first difference of these variables (dln) represent their growth rates.

³ 22 Vietnam largest trading partners in the period 1999-2022 include: Belgium, Brazil, Canada, Hong Kong, China, France, Germany, Indonesia, India, Italy, Japan, Korea, Malaysia, The Netherlands, Philippines, Russia, Singapore, Spain, Switzerland, Thailand, United Kingdom and United States.

Unit-root Tests

Our first step is to check the above set of data series (in log form and seasonally adjusted) to see if they are stationary. The Augmented Dickey-Fuller (ADF) test is used to derive the accurate conclusion on unit roots of the variables. The number of lags in ADF test is selected according to Akaike Information Criterion (AIC). The test statistics suggest that both the domestic interest rate and the Federal funds rate are stationary at 1% significance level. All variables in log form and seasonally adjusted including LNY, LNCPI, LNM2, LNDC, LNE, LNFY and LNF CPI are not stationary, but their first differences (DLN) representing their growth rates are stationary at 1% significance level. Therefore, the paper will estimate the SVAR model with the Federal funds rate and the domestic interest rate as the base data while the remaining variables are in the first-difference form. The result of these unit-root tests are reported in Table 2.

Table 2. Unit root-test results

	LNY		LNCPI		RSA		LNDC		LNM2	
	Level	First diff.	Level	First diff.	Level	First diff.	Level	First diff.	Level	First diff.
P_value	0.9532	0.0007	0.8299	0.0001	0.0000		0.1186	0.0000	0.2934	0.0000
	LNE		LNFY		LNF CPI		FR			
	Level	First diff.	Level	First diff.	Level	First diff.	Level	First diff.		
P_value	0.2769	0.0001	0.5820	0.0001	0.9839	0.0000	0.0095			

Source: Own Calculation by EViews 10

3. Results

3.1. SVAR Estimation

We specify the endogenous max lag to eight (equivalent to two years), add an intercept, a time trend, and seasonal dummies to compute information criteria to choose the optimal number of endogenous lags for the VAR model. The result shows that many criteria like Akaike Info Criterion (AIC), Final Prediction Error (FPE), or sequential modified LR test statistic (LR) suggest that the model should be estimated with seven lags.

Table 3. VAR Lag Order Selection

VAR Lag Order Selection Criteria

Endogenous variables: DLNY DLNCPI RSA DLNDC DLNM2 DLNE

Exogenous variables: C DLNFY DLNF CPI FR

Date: 04/25/23 Time: 08:37

Sample: 1999Q2 2022Q3

Included observations: 86

Lag	LogL	LR	FPE	AIC	SC	HQ
0	781.9893	NA	8.91e-16	-17.62766	-16.94272	-17.35200
1	965.7667	324.8158	2.88e-17	-21.06434	-19.35201*	-20.37521*
2	996.1583	49.47484	3.35e-17	-20.93392	-18.19418	-19.83130
3	1047.949	77.08322	2.42e-17	-21.30113	-17.53399	-19.78503
4	1103.197	74.52139	1.67e-17	-21.74877	-16.95423	-19.81919
5	1135.438	38.98861	2.07e-17	-21.66135	-15.83940	-19.31828
6	1188.379	56.63446	1.69e-17	-22.05532	-15.20598	-19.29878
7	1271.364	77.19541*	7.51e-18*	-23.14800*	-15.27125	-19.97797
8	1306.682	27.92617	1.14e-17	-23.13214	-14.22800	-19.54864

Source: Own Calculation by EViews 10

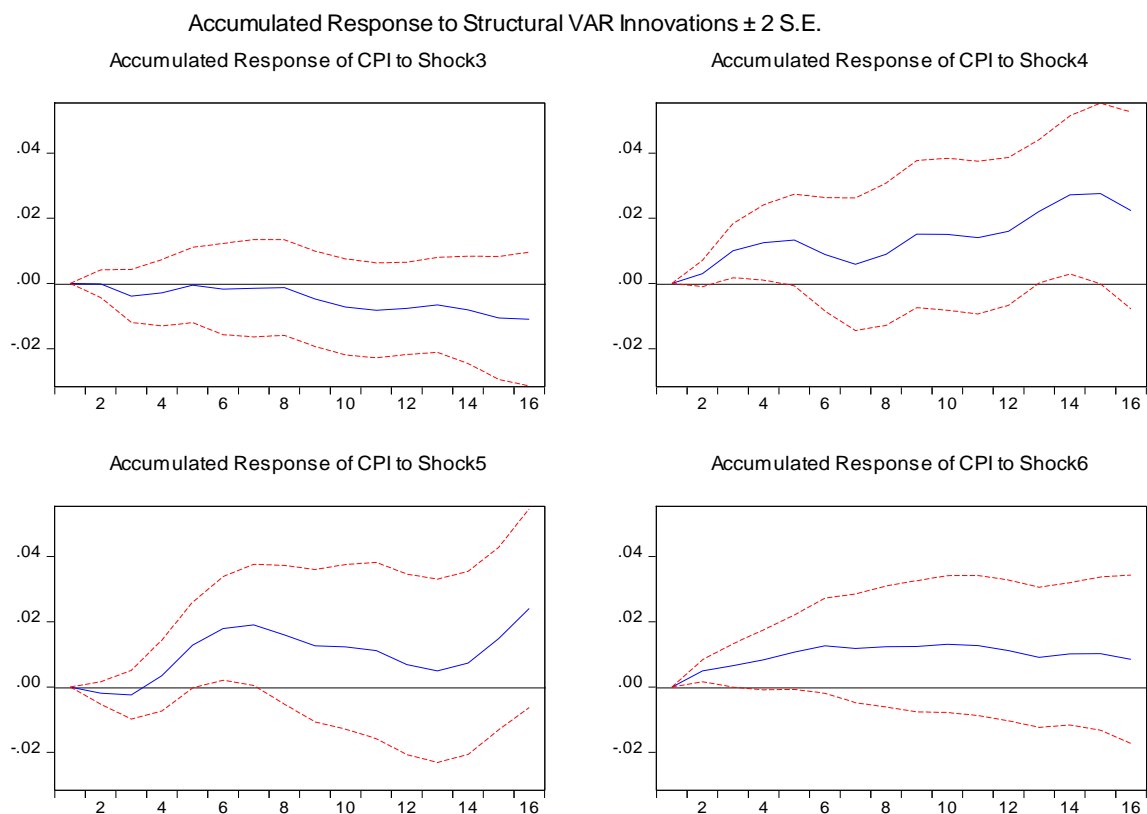
To estimate the structural model and calculate the impulse response function and variance decomposition, we impose restrictions on the matrices A and B. Specifically, for B, the author chooses the diagonal matrix form, implying each structural shock ε_j only directly (immediately) affects the variable Y_j in the VAR system. Meanwhile, matrix A is initially estimated according to Cholesky arrangement with the order of variables as DLNY, DLNCPI, RSA, DLNDC, DLNM2 and DLNE respectively.

After matrix A is estimated, we look for coefficients that are not statistically significant at a conventional level and restrict them to zeros. Then, we follow a similar approach to release restrictions above the diagonal of matrix A one by one to see if any of them is statistically significant or not. Only significant coefficients will be kept in matrix A (The Anh Pham et al, 2022).

3.2. Effects of monetary policy shocks on inflation

Impulse response function

Figure 1 shows the impulse responses of the inflation to monetary shocks from the SVAR for a time horizon of sixteen quarters. The impulse response function from the VAR is presented together with a two standard-error bands. In general, inflation in Vietnam in the period 1999Q2-2022Q3 has responded as expected to monetary policy shocks: credit growth (shock 4), money growth (shock 5) and exchange rate (shock 6) have positive influences on inflation while interest rate (shock 3) has a negative effect on inflation.



Note: Shock 3: RSA; Shock 4: DLNDC; Shock 5: DLNM2; Shock 6: DLNE.

Source: Own calculation and drawing by EViews 10

First of all, interest rate has a negative influence on inflation as expected by macroeconomic theories: Higher interest rate reduces consumption and investment, thereby reducing aggregate demand and helping to reduce inflationary pressure. However, this effect is fairly weak in Vietnam, especially in the first 8 quarters. Since the 9th quarter, higher interest rate actually has a more significant negative effect on inflation. In essence, raising interest rate not only reduces aggregate demand and helps curb inflation, but also affects aggregate supply. Increasing interest rate raises the cost of production, reduces aggregate supply, and leads to cost-push inflation. Its effect on aggregate demand is expected to be weak while its effect on aggregate supply is more direct and often stronger in developing countries (Agénor & Montiel, 2015), as interest expenses account for a significant proportion of firms' production costs.

Second, it can be observed that a positive shock in the credit growth has a strong and statistically significant influence on inflation in Vietnam after 2 quarters. The effect tends to increase over time and reaches its peak at around the 14th-15th quarter.

Third, the money supply shock has a slower effect on inflation compared to credit shock. Money supply shock has only a positive and statistically significant effect on inflation since the fifth quarter after the shock. The effect reaches its peak at around the 5th-6th quarter and then diminishes.

Finally, the exchange rate shock has a fairly rapid and strong effect on inflation in Vietnam. Inflation increased immediately right after the exchange rate depreciation shock and reaches its peak after 6 quarters and then stabilizes at that level in the medium and long term. This result is similar to some studies on the exchange rate pass-through effects into inflation (Pham The Anh et al., 2015).

Variance decomposition

Together with the impulse response function, the forecast error variance decomposition is computed to assess the relative importance of monetary shocks in accounting for variance in inflation in Vietnam. The results of variance decomposition are presented in Table 4. In the first 2 quarters, past inflation (shock 2) plays a key role in determining current inflation. However, since the third quarter, monetary shocks turn out to be the main source of Vietnam's inflation. Particularly, monetary shocks explained 59.1% of the variation in inflation in Vietnam after 1 year; 70.3% after 2 years; and 63.7% after 3 years. Among monetary shocks, the money supply shock and the credit shock play the most important role. These two money shocks explain around 50% of inflation variation since fifth quarter. The other two money shocks (exchange rate and interest rate shocks) have weaker influence on inflation in Vietnam. They explain approximately 15% of the variation in inflation in Vietnam.

Table 4. Variance Decomposition for Inflation (DLNCPI)

Period	S.E.	Shock1	Shock2	Shock3	Shock4	Shock5	Shock6
1	0.056000	10.57425	89.42575	0.000000	0.000000	0.000000	0.000000
2	0.068618	8.866413	56.41017	0.492836	4.915515	8.682207	20.63286
3	0.072214	7.497461	39.09576	5.807056	25.22737	6.780382	15.59197
4	0.076507	6.241841	34.62108	5.486695	23.54630	15.76435	14.33973
5	0.091677	5.298567	25.72210	6.266969	17.71795	32.51231	12.48210
6	0.101668	4.664355	23.42690	5.675639	20.18120	33.86939	12.18252
7	0.102523	4.627007	23.36387	5.461756	21.50909	33.11311	11.92516
8	0.111906	4.257730	25.47656	5.015277	21.56518	32.69956	10.98569
9	0.138269	7.339545	23.20011	6.334896	24.43545	29.56697	9.123026
10	0.162538	13.43863	22.00198	6.715303	22.33996	27.07297	8.431161
11	0.168635	15.88135	21.24569	6.680024	21.73063	26.28555	8.176757
12	0.184239	15.65227	20.67370	6.441263	21.40044	27.53409	8.298251
13	0.206330	15.11207	19.42608	6.021048	25.20075	25.79264	8.447421
14	0.221724	15.22156	18.73239	5.902634	27.21000	24.78737	8.146055
15	0.223673	14.15075	18.90165	6.075590	24.57336	28.95880	7.339857
16	0.232695	13.31244	17.04521	5.196927	23.08984	34.76769	6.587889

Factorization: Structural

Note: Shock 1: DLNY; Shock 2: DLNCPI; Shock 3: RSA; Shock 4: DLNDC; Shock 5: DLNM2; Shock 6: DLNE.

Source: Own Calculation by EViews 10

3.3. The effect of monetary shocks on output growth

Impulse response function

The impulse responses of the real GDP growth rate to monetary shocks are presented in Figure 2. In general, money supply growth has a positive effect on output growth, while increases in interest rates and exchange rate have contracting effects of output growth.

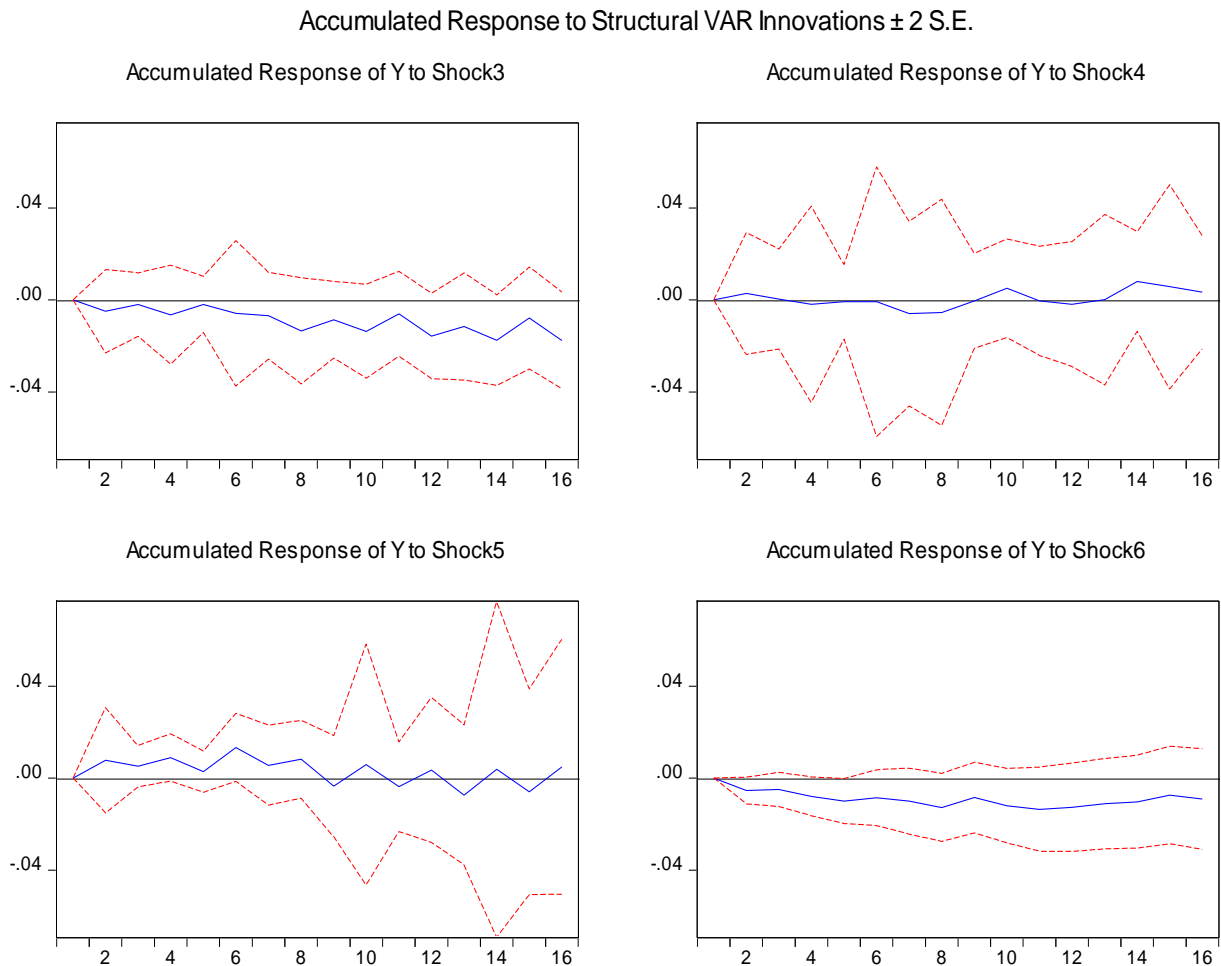


Figure 2. Impulse Responses of the Real GDP Growth to Monetary Shocks

Note: Shock 3: RSA; Shock 4: DLNDC; Shock 5: DLNM2; Shock 6: DLNE.

Source: Own calculation and drawing by EViews 10

First of all, the interest rate shock has a negative effect on output growth immediately in the second quarter. Its effect tends to increase since the seventh quarter.

Second, credit shock has almost no effect on output growth both in the short and long run in Vietnam. This fact contrasts with the picture in most developing countries where the credit channel is expected to be the most important channel in the monetary transmission mechanism (Agénor & Montiel, 2015). Its effect tends to be weak in Vietnam because a significant proportion of credit growth does not flow into production sector but into speculative markets such as the stock market and the real estate market.

Third, money supply shock has a positive influence on output growth since the second quarter. This effect tends to maintain until the eighth quarter and then appears to disappear.

Fourth, the exchange rate depreciation has contractionary effects on output growth in Vietnam. Output growth starts to decline since the second quarter after the shock. This effect tends to increase over time and reaches its peak after 11 quarters and then gradually shrinks. This contractionary effects of devaluation have been evident in developing countries (Agénor & Montiel, 2015). The depreciation of the domestic currency is expected to makes our goods cheaper relative to foreign goods and domestic goods become more competitive in the international markets and thereby increases our exports and decreases our imports. However, this impact might be weak in the short run. The main reason is that the production structure of the economy is rigid in the short run, even if relative prices do change. In that case, an increase in the relative prices of exported goods would not bring about a quick enough rise in the production of exports, in particular in the case of primary products such as crude oil, seafood, rice, coffee, that account for a significant share of Vietnam’s exports. In addition, manufactured products are often considered to be more sensitive to fluctuations in relative prices, but most of them depend heavily on imported intermediate inputs and raw materials such as garments, footwear, electronic goods, computers and their parts, so their benefit from currency depreciation is minor and therefore relatively insensitive to changes in exchange rates. In addition, Vietnamese enterprises rely heavily on imported inputs from abroad, so a decrease in the value of the Vietnamese dong will increase the price of imported inputs, increase production costs and reduce total supply, causing a contraction effect on output. As a result, the economy may experience periods of higher inflation and lower output growth following a shock to the depreciation of the Vietnamese dong.

Variance Decomposition

Table 5. Variance Decomposition for Real GDP Growth (DLNY)

Period	S.E.	Shock1	Shock2	Shock3	Shock4	Shock5	Shock6
1	0.017412	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.021607	73.25966	0.688656	5.136889	1.698455	13.01974	6.196596
3	0.022221	69.69742	1.449844	6.542074	2.746789	13.66138	5.902499
4	0.023689	62.19390	3.759841	9.277675	3.364265	14.57573	6.828592
5	0.027068	62.27244	2.941974	9.904591	2.742903	16.34495	5.793139
6	0.029430	52.75875	2.964020	10.13165	2.320807	26.66518	5.159594
7	0.031775	47.65425	5.310774	8.796748	4.739384	28.84468	4.654159
8	0.033928	48.49448	5.151624	11.53938	4.183426	25.88623	4.744859
9	0.039847	49.90811	3.743561	9.842106	4.626571	27.26595	4.613701
10	0.041870	45.40637	3.794052	10.32543	5.881991	29.69119	4.900976

11	0.044212	40.83760	4.226129	12.20099	6.808081	31.41302	4.514182
12	0.047620	42.44954	3.643005	14.60052	5.956600	29.42847	3.921860
13	0.050392	42.76135	3.479914	13.71528	5.467118	30.97799	3.598347
14	0.052645	39.45035	3.190902	13.85704	7.254623	32.92311	3.323977
15	0.054695	37.05995	3.016297	15.95763	6.890526	33.70890	3.366694
16	0.059036	39.57287	2.626413	16.43854	6.076604	32.30751	2.978062

Factorization: Structural

Note: Shock 1: DLNY; Shock 2: DLNCPI; Shock 3: RSA; Shock 4: DLNDC; Shock 5: DLNM2; Shock 6: DLNE.

Source: Own Calculation by EViews 10

Table 5 shows the decomposition of the variance of output growth (DLNY). It is clearly that most of the output growth is determined mainly by its own past innovation (shock 1) during the first 6 quarters, then this effect diminishes but still explain its variations by 48.5% after 2 years and by 42.4% after 3 years. In addition, monetary shocks play an increasingly important role in determining output growth in Vietnam. Specifically, monetary shocks explain 34% of its variation after 1 year; increasing to 46.3% after 2 years; reaching 53.9% after 3 years. Among monetary shocks, the money supply shock plays the most important role. The money supply shock explains 14.6% of variations in output growth after 1 year, then its contribution increases sharply to 28.8% after 7 quarters and remains high in the following quarters. Next, interest rate shocks also play a significant role to variation in output growth. The interest rate shock explains the variation in output growth by 9.3% after 1 year; 11.5% after 2 years and 14.6% after 3 years. Credit and exchange rate shocks play a modest role to variation in output growth in Vietnam. These two shocks explain about 10% of growth variations in Vietnam over the studied period.

4. Discussion and Conclusion

The paper explores the impacts of monetary policy shocks on inflation and output growth in Vietnam for the period from 1999Q2-2022Q3. The main findings and policy implications of the paper are as follows:

First, increases in growth rates of money supply, aggregate credit, and nominal effective exchange rate increases inflation, while an increase in interest rates reduces inflation. While inflation inertia is the main cause of inflation in the short term, the monetary shocks are the main cause of inflation in the medium and long term. This result reinforces confidence in the role of monetary policy as an important tool to control inflation in Vietnam.

Second, an increase in the money supply and a decrease in interest rates have an expansionary effect on output. This implies that there is a trade-off between inflation and output growth using monetary policy by changes money supply growth and interest rates.

Empirical evidence also suggests that the effect of monetary shocks will be larger on prices and smaller on real output. Therefore, the State Bank of Vietnam should implement a prudent monetary policy in line with the long-term inflation and output growth targets.

Third, exchange rate depreciation tends to increase inflation but decrease output growth. Therefore, the State Bank of Vietnam should be very careful in conduct the exchange rate policy, especially should avoid a sharp devaluation of domestic currency.

Fourth, past inflation is crucial in shaping the current inflation. This implies the significant role of credibility of government's policy toward inflation. The government to be patient in fighting inflation. The government should keep low inflation for at least 2 quarters, in order to rebuild the public's confidence about a more stable environment of the general price level and help reduce expectations about future inflation.

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THE RELATIONSHIP BETWEEN FOREIGN DIRECT INVESTMENT, ECONOMIC GROWTH, TRADE OPENNESS AND ENVIRONMENT IN VIETNAM

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Abstract

The study examines the relationship of foreign direct investment, economic growth, trade openness and environment in Vietnam from 1986 to 2021. Study utilizes time series data and Vector Error Correction Model (VECM), after determining the number of cointegrating relationships using the Johansen (1995) multivariate test, which is adjusted for small sample sizes using the scaling factor suggested by Reimers (1992), Reinsel, and Ahn (1992). The research result does not support the hypothesis "Pollution Heaven" in Vietnam. In long-term, FDI does not make CO₂ emissions increase, trade openness has a positive impact on economic growth and so does CO₂ emissions. In short-term, there is a correlation between trade openness and CO₂ emissions, but economic growth and FDI have a negative impact on CO₂ emissions. Based on the study findings, the article proposes some policies to attract green investment projects and improve the environmental situation in Vietnam in the future.

Keywords: *Environment, FDI, Pollution Heaven, VECM.*

1. Introduction

The world has coped with many challenges related to global warming and climate changes over the past decade. Some reports from the Intergovernmental Panel on Climate Change (IPCC) have acknowledged the link between global warming and greenhouse gas (GHG) emissions. Among different types of greenhouse gases, the amount of carbon dioxide (CO₂) emissions created by humans through the burning of fossil fuels appears to be the primary contributor to global warming (IPCC). CO₂ emissions have become an important issue in international agreements on foreign direct investment (FDI) inflows and environmental quality as developing countries continue to grow. With regard to CO₂ emissions in developing countries, especially in Vietnam, concepts such as "low-carbon city" and "green economy" are becoming increasingly popular. Therefore, the factors that

affecting CO₂ emissions is a priority for Vietnam in addressing greenhouse gas emissions and global warming.

In general, there are still many contradictions regarding the relationship between FDI, economic growth, trade openness and CO₂ emissions in foreign studies. So, the topic “The relationship between FDI, economic growth, trade openness and environment in Vietnam from 1990 to 2021” was selected to research. Not only does this study provide our understandings about the impact of FDI on CO₂ emissions but also allows us to determine the validity of FDI - led growth and the "pollution haven" hypotheses in Vietnam. Therefore, the result of this study is expected to provide useful information for policymakers in introducing effective environmental policies.

Studies on the relationship between foreign direct investment, economic growth, trade openness, and CO₂ emissions have been examined by many researchers using many different methods and data collected from various scopes.

FDI and Environment

Pradhan (2021) collected data in the period from 1992 to 2014 and emphasized the important role of FDI and GDP in reducing CO₂ emissions in these countries. Demena and Afesorgbor (2020) analyzed 65 primary studies generating 1006 elasticity estimates and concluded that the basic impact of FDI on environmental emissions is negligible, and FDI significantly reduces the amount of emissions after accounting for heterogeneity across studies. Qun Bao et al. (2011) used panel data from 29 provinces in China during 1992-2004 and applied simultaneous equation estimation techniques to assess the impact of FDI on the overall and regional pollution emissions in China. They found that FDI generally helps to reduce pollution emissions in China, contributing significantly to the technical efficiency and environmental impact of FDI, which vary considerably across regions and pollutants. Nguyen Duy Phuong and Le Thi Minh Tuyen (2018) used data from 1986-2015 to demonstrate a U-shaped relationship between per capita income and environmental degradation in Vietnam. Vo Thi Thuy Kieu and Le Thong Tien (2019) used data from 50 developing countries during 2011-2017 to show that FDI had a more severe impact on environmental degradation.

GDP and Environment

Mohsin et al. (2022) used data from 1971 to 2016 and found a significant negative long-term relationship and a positive short-term relationship between CO₂ emissions and GDP. Tang and Tan (2015) analyzed data from 1976 to 2009 and concluded that energy consumption and income have a positive impact on CO₂ emissions, while income squared has a negative impact on CO₂ emissions in Vietnam, supporting the EKC hypothesis of an inverted U-shaped relationship between CO₂ emissions and economic growth.

Pham Vu Thang and Bui Tu Anh (2022) used panel data from 10 ASEAN countries from 1990 to 2017 and found that economic growth leads to environmental degradation in some countries such as the Philippines, Vietnam, Laos, Myanmar, and Cambodia, while in

the rest of the ASEAN countries, economic growth improves the environment. Nguyen Thi Hop (2022) used an autoregressive distributed lag (ARDL) model and data from 1980 to 2018, and concluded that GDP has the strongest impact on greenhouse gas emissions.

Trade openness and Environment

Tachie et al. (2020) utilized an econometric method that considers the cross-dependence between research variables to demonstrate that trade openness increases CO2 emissions in the EU-18. Jun et al. (2020) applied a combination of wavelet analysis, phase shift technique, and Breitung and Candelon's (2006) causality test to indicate that trade liberalization has led to pollution in China, particularly after 2001 when China joined the WTO, and that trade openness causes short-term, medium-term, and long-term carbon emissions. Thai Ha Le and A et al. (2016) used particulate matter emissions (PM10) as a basic indicator of environmental quality and concluded that trade liberalization leads to environmental degradation in the global sample, and that trade openness has a positive impact on the environment in high-income countries but a negative impact in middle-income and low-income countries. In 2017, Le Trung Thanh and Nguyen Duc Khuong used an autoregressive distributed lag (ARDL) model to evaluate the impact of the environmental Kuznets curve (EKC) hypothesis and the pollution haven hypothesis (PHH) between 1990 and 2011. Their study concluded that trade openness, economic growth, energy consumption, and financial development have a positive impact on CO2 emissions, supporting the validity of the EKC and PHH hypotheses in Vietnam.

FDI and GDP

Todorov and A et al. (2022) utilized vector autoregression (VAR) method for annual data in the period of 2007 to 2019 to indicate that FDI did not affect the actual GDP growth rate of ten new member states (NMS) from Central and Eastern Europe (CEE), and FDI Granger-causes the economic growth of NMS from CEE neither in the short nor long term. Okon J. Umoh et al. (2012) used single and simultaneous equation systems to test for any type of feedback relationship between FDI and economic growth in Nigeria between 1970 and 2008, concluding that there is positive impact from FDI to GDP growth and from GDP growth to FDI. Huyen Dinh et al. (2019) employed various econometric methods in the period of 2000-2014 to indicate that FDI helps to stimulate long-term economic growth, despite its negative impact in the short term for the countries in their study. Le Trong Nghia (2022) used data from 2006 to 2010 to indicate that FDI has an impact on the economic growth of Vietnam and vice versa.

Trade openness and GDP

According to Ozturk and Radouai (2020), who utilized data on trade openness index, GDP, and human capital index obtained from the Federal Reserve Bank of St. Louis during the period of 1960 to 2018, the level of trade openness had a significant statistical impact but an insignificant effect on economic growth both in the short and long term. Focusing on 15 ECOWAS member countries during the period of 1990-2016, Kore M. Guei and Pierre

le Roux (2019) found that trade openness had a negative impact on per capita GDP in the long term. Hoang Xuan Binh (2011) examined the relationship between trade openness and economic growth in Vietnam from the time of its economic liberalization in 1986 to its WTO accession in 2007. He concluded that there was a positive relationship between trade openness and economic growth, although there were varying impacts during different periods and a two-way relationship between the speed of trade openness and economic growth.

Finally, foreign studies have been clear and specific in demonstrating the relationships between FDI, economic growth, trade openness, and the environment. However, there have been few domestic studies on this topic, with previous studies often conducted across multiple countries. Pham Vu Thang and Bui Tu Anh (2022) utilized data from 10 ASEAN countries between 1990-2017 to investigate the relationship between economic growth and environmental pollution. Nguyen Ngoc Dat and A et al. (2017) selected nine Asian countries to study the impact of FDI and environmental issues on economic growth from 1990 to 2014. Furthermore, there are many studies that indicate FDI has a negative impact on the environment and increases pollution in developing countries, but there are few studies that address the opposite, namely that FDI can reduce environmental pollution, particularly in Vietnam. Through a review of these studies and their arguments, this research project recognizes the importance of investigating the relationship between FDI, economic growth, trade openness, and CO2 emissions in Vietnam from both theoretical and practical perspectives.

2. Method

2.1. Research method

To examine the short and long-term relationship between Foreign Direct Investment (FDI), carbon dioxide emissions (CO2), gross national income (GDP) and trade openness (TO) in Vietnam from 1986 to 2021, the study uses the Vector Error Correction Model (VECM), estimated by the Maximum Likelihood Estimation method developed by Johansen (1995). The study conducted: (i) Testing the stationarity of time series and choosing the optimal lag for the model; (ii) Testing for cointegration; (iii) Estimating the VECM model; (iv) Diagnostic test for the VECM model.

According to Engle and Granger (1987), any VAR(p) model can be rewritten as a VECM model. With the VAR(p) model presented as follows:

$$Y_t = v + A_1 Y_{t-1} + A_2 Y_{t-2} + \dots + A_p Y_{t-p} + \epsilon_t$$

From the VAR(p) model, the VECM model is rewritten as follows:

$$\Delta Y_t = v + \Pi Y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta Y_{t-1} + \epsilon_t$$

Where: Δ is the first difference operation; Y_t is a $(K \times 1)$ matrix of variables; $p - 1$ is the optimal lag; $\Gamma_i = -\sum_{j=i+1}^p A_j$; ϵ_t is a $(K \times 1)$ matrix of errors in the model.

2.2. Data

Table 1. Data source and description

Variables	Description	Source
CO2	Carbon dioxide emissions (tons per capita)	Global Carbon Project (GCP)
FDI	Foreign direct investment in Vietnam (millions USD per capita)	United Nations Conference on Trade and Development (UNCTAD)
GDP	Gross Domestic Product (USD per capita)	World Bank Indicator
TO	Trade openness, measured by the total value of exports and imports (billion USD)	World Bank Indicator

Source: Research team's synthesis.

The study used data from the World Bank, UNCTAD and the Global Carbon Project from 1986 to 2021. The sample of observations was collected by year, from 1986 to 2021 (36 observations). CO2 is the volume of carbon dioxide emissions per capita (tons) from the use of coal, oil and gas, FDI is the flow of foreign direct investment into Vietnam per capita (million USD), GDP is the gross domestic product per capita (USD 2015), TO is the trade openness calculated by the total value of exports and imports (USD billion). Data were collected from 1986 onwards because at this time Vietnam had just implemented economic reform, opened up for integration and from 1986 onward, FDI data was only available for collection. The variables are converted to natural logarithms to smooth the time series data before the estimation is performed.

3. Results

3.1. ADF test for unit root

Table 2. Augmented Dickey-Fuller unit root tests results

Variables	ADF test	t-statistics	Probability	Difference
lnCO2	-4.552	-3.702	0.0002	1
		-2.980		
		-2.622		
lnFDI	-5.311	-3.709	0.0000	1
		-2.983		
		-2.623		
lnGDP	-3.787	-3.709	0.0030	1
		-2.983		
		-2.623		
lnTO	-5.188	-3.702	0.0000	1
		-2.980		
		-2.622		

Source: Data processing results using Stata17.

Augmented Dickey-Fuller (ADF) (1981) tests results suggest that all series, including lnCO2, lnFDI, lnGDP and lnTO are stationary after taking first difference at the 1% level of significance. Knowing all series are integrated of order one (stationary after first difference), the next steps are to determine the optimal lag order and examine the number of cointegrating relationships among these series following Johansen (1995) framework.

Determine optimal lag order

Table 3. Selection order criteria

Lag	LL	LR	FPE	AIC	HQIC	SBIC
0	28.4552		2.5e-06	-1.52845	-1.46772	-1.34523
1	235.497	414.08	1.7e-11	-13.4685	-13.1649	-12.5525
2	270.12	69.248	5.5e-12*	-14.6325	-14.0859*	-12.9836*
3	286.388	32.534	6.2e-12	-14.6492*	-13.8597	-12.2674
4	301.511	30.247*	8.8e-12	-14.5945	-13.562	-11.4798

Note: * indicates the smallest criteria.

Source: Data processing results using Stata17.

To test for cointegration, first we have to specify how many lags to include. According to a research by Lutkepohl (2005, 148-152), choosing a lag order to minimize the SBIC or HQIC criteria provides consistent estimates of the true lag. However, minimizing AIC or FPE will overestimate the true lag order, even for large sample sizes. In addition, using too many lags for year-to-year data does not make much economic sense, so most empirical studies use lags of 1 to 2 for yearly data. Therefore, based on the results from (Table 3), indicated by “*” in the output, researchers decided to choose a lag of 2 for Johansen test and VECM model.

3.2. Testing for cointegration

The results from the stationarity test show the possibility that the I(1) time series may have (at least) one cointegration relationship. The next step is to verify the number of cointegrating equations that exist among the variables with the selected lag of 2.

H_0 : cointegrating equations $\leq r$

H_1 : cointegrating equations $\geq r + 1$

However, in the case of small sample sizes, Johansen statistics can be biased because the Johansen test is often used with a minimum sample size of 100 observations or more (Cheung and Lai, 1993). Therefore, based on the suggestion of Reimers (1992) and Reinsel and Ahn (1992), the Johansen statistic will be multiplied by a correction factor $\left(1 - \frac{mp}{T}\right)$. Where: m is the number of endogenous variables; p is the lag length; T is the number of observations used in the model. This method will help to correct for the small sample bias, so that statistical inferences can be made from the estimation results.

Johansen cointegration test results - Adjusted for small sample

Table 4. Johansen tests for cointegration

Maximum rank	Adjusted Trace statistics	5% Critical Value	1% Critical Value	Adjusted Max-Eigen statistics	5% Critical Value	1% Critical Value
r = 0	92.4656	47.21	54.46	46.1922	27.07	32.24
r ≤ 1	46.2733	29.68	35.65	33.6778	20.97	25.52
r ≤ 2	12.5955**	15.41	20.04	10.9018**	14.07	18.63
r ≤ 3	1.6937	3.76	6.65	1.6937	3.76	6.65

*Note: ***, **, * represents null rejection at 1%, 5% and 10% level of significance, respectively.*

*Correction factor is 0.7714 (= 1 - 4 * 2/34).*

Source: Data processing results using Stata17.

Trace and Max-Eigen statistics were adjusted by multiplying by the correction factor to accommodate for small sample sizes. The results (Table 4) show that, both statistics do not reject the null hypothesis H_0 at $r \leq 2$, suggesting that there exist at most 2 cointegrating relationships between time series at 5% significance level.

From the above tests and analyses, the research team estimates the short-term and long-term relationships between CO₂, FDI, GDP and TO using the VECM model.

3.3. Estimating the VECM model

The VECM model, given $r = 2$ equations and $K = 4$ variables, is specified as follows:

$$\Delta Y_t = v + \Pi Y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta Y_{t-1} + \epsilon_t$$

Where:

- Δ is the first difference operation.
- Y_t is a (4×1) matrix of variables: $\ln CO_{2t}$, $\ln FDI_t$, $\ln GDP_t$, $\ln TO_t$.
- $p - 1$ is the optimal lag order, one less than VAR(p) model because of first difference operation.
- $\Gamma_i = -\sum_{j=i+1}^p A_j$.
- ϵ_t is a (4×1) matrix of errors.

In particular, ΠY_{t-1} represents Error Correction Mechanism (ECM)

$$\begin{aligned} \Pi Y_{t-1} &= \alpha \beta' Y_{t-1} = \begin{bmatrix} \alpha_{11} & \alpha_{12} \\ \alpha_{21} & \alpha_{22} \\ \alpha_{31} & \alpha_{32} \\ \alpha_{41} & \alpha_{42} \end{bmatrix} \times \begin{bmatrix} \beta_{11} & \beta_{21} & \beta_{31} & \beta_{41} \\ \beta_{12} & \beta_{22} & \beta_{32} & \beta_{42} \end{bmatrix} \times \begin{bmatrix} Y_{1,t-1} \\ Y_{2,t-1} \\ Y_{3,t-1} \\ Y_{4,t-1} \end{bmatrix} \\ &= \begin{bmatrix} \alpha_{11} \text{ECT}_{1,t-1} + \alpha_{12} \text{ECT}_{2,t-1} \\ \alpha_{21} \text{ECT}_{1,t-1} + \alpha_{22} \text{ECT}_{2,t-1} \\ \alpha_{31} \text{ECT}_{1,t-1} + \alpha_{32} \text{ECT}_{2,t-1} \\ \alpha_{41} \text{ECT}_{1,t-1} + \alpha_{42} \text{ECT}_{2,t-1} \end{bmatrix} \end{aligned}$$

- α is a (4×2) matrix of the adjustment coefficients
- β' is a (2×4) matrix of the co-integrated vectors

$$\text{ECT}_{1,t-1} = \beta_{11} Y_{1,t-1} + \beta_{21} Y_{2,t-1} + \beta_{31} Y_{3,t-1} + \beta_{41} Y_{4,t-1} + \mu_1$$

$$\text{ECT}_{2,t-1} = \beta_{12} Y_{1,t-1} + \beta_{22} Y_{2,t-1} + \beta_{32} Y_{3,t-1} + \beta_{42} Y_{4,t-1} + \mu_2$$

$Y_{i,t-1}$ ($i = \overline{1,4}$) are $\ln\text{CO2}_{t-1}$, $\ln\text{FDI}_{t-1}$, $\ln\text{GDP}_{t-1}$, $\ln\text{TO}_{t-1}$, respectively.

As discussed by Johansen (1995), if there are r cointegrating equations, then at least r^2 restrictions are required to identify the free parameters in β' . This study specifies four alternating combinations for the β' matrix with different set of restrictions, corresponding to four VECM models, each has two cointegrating equations:

Table 5. Structure of VECM models

Model	lnCO2	lnFDI	lnGDP	lnTO
1	0	β_{21}	β_{31}	1
	1	β_{22}	β_{32}	0
2	β_{11}	1	0	β_{41}
	β_{12}	0	1	β_{42}
3	1	0	β_{31}	β_{41}
	0	1	β_{32}	β_{42}
4	β_{11}	β_{21}	1	0
	β_{12}	β_{22}	0	1

Source: Research team's calculations and synthesis.

Long-run equilibrium relationships

Table 6. Cointegrating equation estimated results

Model	lnCO2	lnFDI	lnGDP	lnTO
1	0	-0.4648*** (0.0567)	-1.7883*** (0.2126)	1
	1	0.2124*** (0.0164)	-2.0164*** (0.0615)	0
2	1.3576* (0.7130)	1	0	-1.5308*** (0.3646)
	-0.3529*** (0.0389)	0	1	-0.1612*** (0.0199)
3	1	0	-2.8335*** (0.2749)	0.4569*** (0.0969)
	0	1	3.8466* (2.0548)	-2.151*** (0.7248)
4	-0.4959*** (0.01756)	-0.1053*** (0.0068)	1	0
	-0.8868*** (0.1486)	-0.6532*** (0.0575)	0	1

*Note: ***, **, * represents null rejection at 1%, 5% and 10% level of significance, respectively.*

Source: Data processing results using Stata17.

The results (Table 6) are β' matrices, containing estimates for the coefficients in the cointegrating equations in all four models. The signs of the coefficients are read in reverse, and the magnitude of the coefficients is interpreted as the elasticity as in log-log model.

In the long-run, FDI inflows have a negative impact on CO2, as FDI increases by 1%, CO2 decreases by 0.21%. Additionally, GDP has a positive impact on CO2 at 1% significance level, while FDI has a negative impact on CO2 also at 1% significance level. Therefore, GDP and FDI create asymmetric effect on CO2 in the long-run, with other factors remain constant. Specifically, in the long run, when GDP increases by 1%, CO2 increases by 2.02%, when FDI increases by 1%, CO2 decreases by 0.21%, provided other factors remain unchanged. CO2 has a negative effect on FDI at the 10% significance level, in the long run, when CO2 increases by 1%, FDI decreases by 1.36%, other factors being held constant. FDI has a positive effect on GDP at 5% significance level, in the long run, when FDI increases by 1%, GDP increases by 0.11%, other factors being held constant.

Test for short-run relationships

Table 7. Wald test for the short-run estimated coefficients of the VECM model

Equation	Excluded	chi2	Prob > chi2	Decision
lnCO2	lnFDI	32.77	0.0000	FDI causes CO2
lnCO2	lnGDP	4.20	0.0404	GDP causes CO2
lnCO2	lnTO	28.56	0.0000	TO causes CO2
lnFDI	lnCO2	0.62	0.4326	CO2 does not cause FDI
lnFDI	lnGDP	0.09	0.7662	GDP does not cause FDI
lnFDI	lnTO	1.14	0.2849	TO does not cause FDI
lnGDP	lnCO2	1.31	0.2533	CO2 does not cause GDP
lnGDP	lnFDI	2.24	0.1345	FDI does not cause GDP
lnGDP	lnTO	0.01	0.9412	GDP does not cause TO
lnTO	lnCO2	2.92	0.0872	CO2 causes TO
lnTO	lnFDI	0.56	0.4561	FDI does not cause TO
lnTO	lnGDP	1.25	0.2627	GDP does not cause TO

Source: Data processing results using Stata17.

The research team conducted Wald test on the short-term estimation results of the VECM model. In the short run, GDP has an impact on CO2 at 5% significance level, while FDI and TO have an impact on CO2 at 1% significance level. In addition, FDI has no effect on GDP in the short run, so it cannot be concluded that there is an indirect effect of FDI on CO2 through GDP. In particular, the two-way effect between TO and CO2 is also observed when TO has an impact on CO2 at 1% significance level, but CO2 affects on TO only open at 10% significance level.

3.4. Diagnostic tests for the VECM model

Lagrange-Multiplier Test

Table 8. Lagrange-Multiplier test results

lag	chi2	df	Prob > chi2
1	15.9892	16	0.45371
2	20.3797	16	0.20360

Source: Data processing results using Stata17.

Lagrange-Multiplier (LM) test is used to test for the autocorrelation of errors in the VECM model with two hypotheses as follows:

H_0 : there is no autocorrelation at the lag order

H_1 : there is autocorrelation at the lag order

The results (Table 8) show that the VECM model at both lags (1 and 2) does not have autocorrelation. Where p-values are all greater than 10%, so the null hypothesis H_0 in both VECM models cannot be rejected. From there, it can be seen that the specified VECM model is suitable for the selected data series and variables.

Testing for normally distributed errors

Table 9. Jarque-Bera test results

Equation	chi2	df	Prob > chi2
D_InCO2	2.087	2	0.35230
D_InFDI	0.147	2	0.92929
D_InGDP	1.150	2	0.56266
D_InTO	1.743	2	0.41829
ALL	5.126	8	0.74397

Source: Data processing results using Stata17.

Table 9 presents the test statistic values for each equation in the VECM model. The null hypothesis H_0 is errors are normally distributed. The results indicate that the null hypothesis H_0 cannot be rejected in all the individual equations and the overall equation since the p-values are all greater than 5%. Therefore, the estimates from the model will be efficient and consistent.

Testing the robustness of the VECM model

Table 10. The results Eigenvalue stability condition for the VECM model

Eigenvalue	Modulus
1	1
1	1
0.7141496 + 0.04767722i	0.715739
0.7141496 - 0.04767722i	0.715739
-0.1820609 + 0.6772661i	0.70131
-0.1820609 - 0.6772661i	0.70131
0.4689562	0.468956
0.3766546	0.376655

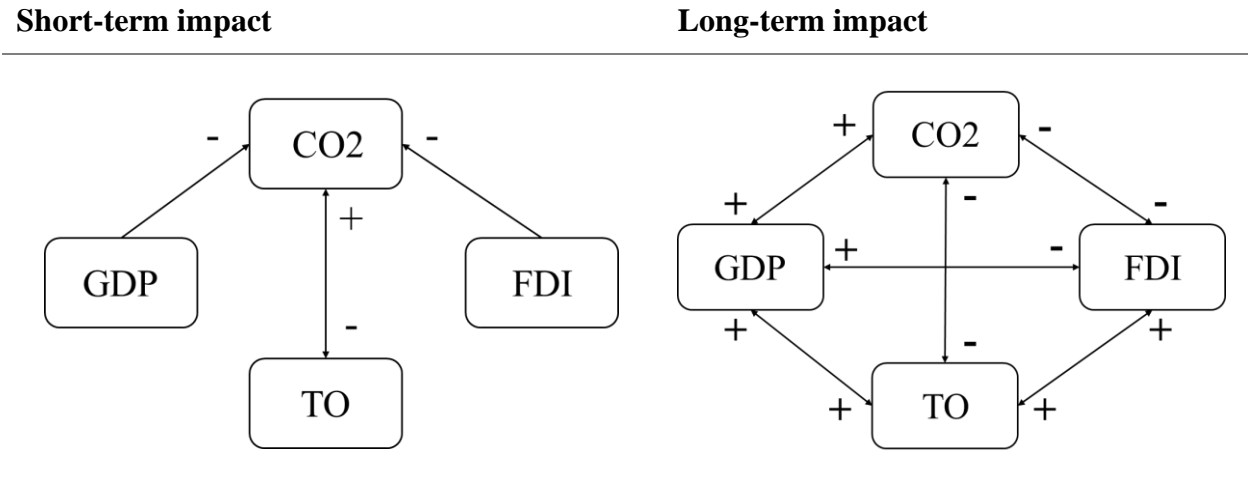
Source: Data processing results using Stata17.

The stability condition for VECM states that the model will have $(K - r)$ unit moduli. The VECM model in the study uses 4 endogenous variables and 2 cointegrating equations. Testing the robustness of the VECM model gives the results (Table 10) of exactly 2 unit moduli ($K - r = 4 - 2 = 2$), satisfy the condition of robustness of the VECM model. The

next moduli unit values are all at 0.72 or less. Therefore, research team can conclude that the cointegrating equations in the model are correctly specified and that the VECM model satisfies the condition of stability.

4. Discussion and Conclusion

4.1. Discussion



Note: (+) indicates a positive correlation, (-) indicates a negative correlation.

Source: Data processing results using Stata17.

Figure 1. Synthesis of the impact direction among variables in the short and long term

Firstly, regarding the relationship between foreign direct investment (FDI) and environmental pollution, experimental study results have shown that in the short term, the FDI inflow has a positive impact on environmental pollution (as reflected by the reduction in CO2 emissions) with a significance level of 1%. Conversely, no observable impact from CO2 to FDI has been detected. In the short term, the FDI inflow can contribute to reducing environmental pollution when Vietnam receives FDI from developed countries such as Korea, Singapore, Japan, and gains access to new energy-saving and environmentally friendly technologies. In the long term, observations have shown a two-way impact between FDI and CO2 emissions, with a 1% increase in FDI leading to a 0.21% decrease in CO2 emissions. However, environmental pollution also has a negative impact on FDI, with a 1% increase in CO2 emissions resulting in a 1.36% decrease in FDI. Solving the problem of environmental pollution is essential to maintain and enhance Vietnam's attractiveness to FDI, especially in selecting "green" FDI inflows to increase the positive impact on the environment through technology transfer and application.

Secondly, regarding the relationship between GDP growth and environmental pollution, in the short term, GDP growth has a positive impact on the environment with a significance level of 5%. This indicates that economic growth can lead to improvements in environmental quality in the short term in Vietnam, possibly due to increased investment in pollution control technology and improved environmental regulations. In the long term, GDP growth has a positive impact on the environment by increasing CO2 emissions. When GDP

increases by 1%, CO₂ emissions increase by 2.02% with a significance level of 1%. Economic growth often accompanies increasing consumption, and demand for goods and services, leading to an increasing number of large forest areas being cut down to serve agriculture, industry, logging, and mining, meeting the needs of human beings in a timely manner. To address this issue, the Vietnamese government has implemented many policies and programs to reduce deforestation. However, the effectiveness of these measures still needs to be considered as deforestation remains a serious issue in Vietnam.

Thirdly, regarding the relationship between trade openness and environmental pollution, the short-term results of experimental study show that there is a negative impact of trade openness on environmental pollution in Vietnam. The industrialization and economic growth of Vietnam in recent years have been due to trade liberalization policies. However, this has led to increased production, especially in the export sector, putting pressure on the environment due to the demand for energy and industrial emissions. This finding indicates the negative impact of trade liberalization on the environment, and Vietnam needs to balance trade policies in the short term to ensure the sustainability of economic growth. In the long run, trade openness has a positive impact on the environment by reducing CO₂ emissions. Specifically, the results show that when trade openness increases by 1%, CO₂ emissions decrease by 0.46%. From there, it is suggested that Vietnam needs to continue to implement and meet environmental and social standards to comply with international practices and take advantage of favourable conditions when participating in trade agreements.

Fourthly, experimental results showed that GDP has a positive impact when stimulating trade openness, which indirectly reduces environmental pollution. While long-term GDP growth may have a negative impact on the environment by increasing CO₂ emissions, if Vietnam's GDP growth contributes to promoting trade openness, it can reduce the negative impact of GDP growth on the environment. This suggests that economic growth needs to be balanced with environmental protection, ensuring the pursuit of sustainable economic development through the implementation of commitments and trade agreements that do not harm the environment.

4.2. Conclusion

Firstly, for foreign direct investment (FDI) enterprises: (1) continue to apply and effectively implement sustainable development practices to minimize environmental impact; (2) enhance cooperation with local suppliers and domestic enterprises to create conditions for FDI enterprises to develop both in scale and depth; (3) invest in research and development (R&D) to develop new environmentally-friendly products and technologies; (4) make good use of preferential policies from the government to focus on areas that generate high value-added, contributing to improving Vietnam's competitiveness.

Secondly, for management agencies: (1) continue to attract clean FDI sources while paying attention to limiting negative impacts of FDI flows on the environment; (2) implement green economic policies such as carbon taxes, pollution fees, and payments for

environmental protection projects; (3) manage and closely monitor import and export activities that have the potential to negatively affect the environment; (4) ensure consistency in incentive policies to avoid excessive competition among localities to attract FDI, with tight control over decision-making authority and intense competition; (5) prioritize investment in clean energy while conditionally supporting significant reductions in emissions and waste by businesses, with measures that support ecosystem recovery seen as essential green infrastructure, and investment in adaptive measures through investment in a combination of grey and green protection strategies.

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THE IMPACT OF INFORMATION SHARING, INTERNATIONAL SUPPLY CHAIN COOPERATION AND SUPPLY CHAIN PERFORMANCE ON EXPORT PERFORMANCE IN DIGITAL TRANSFORMATION: A CASE STUDY OF VIETNAMESE SEAFOOD ENTERPRISES

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Abstract

The main purpose of this paper is to evaluate the impact of information sharing, international supply chain cooperation and supply chain performance on export performance in the age of digital transformation. Based on the data collected from a sample of 303 enterprises operating in the seafood export sector, the study examines the impact by testing structural equation modeling through software SmartPLS and SPSS. As a result, supply chain performance, along with information sharing and international supply chain cooperation, has a direct positive impact on export performance while also acting as a mediator variable in the relationship between information sharing, international supply chain cooperation and firms' export performance. The study findings assist policymakers, organizations and seafood businesses in addressing export barriers and devising cooperative solutions to accelerate export performance in digital transformation era.

Keywords: *Export performance, information sharing, international supply chain cooperation, supply chain performance*

1. Introduction

With the continuous development of global integration, as one of the indicators reflecting the ability to successfully utilize resources in the international context, export performance is amongst the most extensively researched topics today. Vietnam is undergoing a vigorous process of international economic integration, particularly in the field of international trade through participation in free trade agreements. Therefore, it is more urgent than ever to study issues related to export performance and propose solutions to support enterprises' participation in the global market.

Approaching from a perspective based on supply chain cooperation, most studies show that supply chain cooperation improves export performance, especially in product quality and ability to develop new products (Stank et al., 1999; Carr et al., 2008). In particular, in supply chain operations, information sharing is known to play an important role in improving operational performance and profitability (Yeoh and Jeong, 1995; Katsikeas et al., 2000). Previous studies on supply chain cooperation and supply chain flexibility have both emphasized the importance of sharing supply chain information (Zhao, 2002). However, there are few analytical studies on what information should be given and with whom specific information should be shared (Lee et al., 1997). In the context of digital transformation, with the strong parallelism of technology, the world is witnessing a remarkable development in the use of data in every functional activity of the enterprise (Napoleone, 2020). The high-speed growth of digital data, on the one hand, is a valuable resource that helps businesses increase understanding not only about their customers and markets, but also becomes a common asset to help improve the performance of the whole company (Li et al., 2019). However, the prior publications have only conducted research on the direct relationship between one of the three factors of information sharing, international supply chain cooperation and supply chain performance to export performance instead of the relationships with the presence of mediator variables. Therefore, a research model to explain the connection between the aforementioned aspects and their impact in promoting export performance of enterprises, especially in the context of digital transformation is essential.

In the light of research direction, this study applies Self Selection Theory, Learning By Exporting Theory, Game Theory, Resource Dependency Theory, Social Exchange Theory, Collaborative Network Theory and takes Vietnam seafood enterprises as a case study.

This paper is structured into five parts: (1) Introduction; (2) Theoretical basis; (3) Research Methods; (4) Results; (5) Discussion, Conclusion and Recommendations.

2. Theoretical basis

International supply chain cooperation is now gradually becoming a mainstream trend in connecting sustainable development and core values in business activities in order to produce value for both the business and the entire supply chain (Tan et al., 1999; Carr et al., 2008; Huynh, 2012). There is no doubt that the supply chain's participants cannot function independently, in other words, internal and external cooperation is necessary for all business activities (Racela, 2007; Melander et al., 2019). In parallel with the development

of supply chain cooperation concept, information sharing is one of the foundational activities between businesses to invest mutual resources, common knowledge and make joint decisions in the process of cooperation (Lee et al., 1997). Under competitive pressure and unpredictable market fluctuations, establishing relationships and exchanging necessary knowledge has become an important issue in strategic planning of enterprises (Zhao, 2002; Ipek, 2011). Cooperation and information sharing will impact the overall performance of the entire supply chain through metrics that measure process performance, from raw materials to semi-finished products and into final products delivered to customers through a systematic distribution channel or other measures including cost, customer responsiveness, and uptime (Bottani and Montanari, 2010; Gordon Stewart, 1995). In recent decades, under the pressure of a volatile business environment, researchers and enterprises have shifted their focus from improving quality and reducing supply chain costs to improving supply chain adaptability and flexibility to meet elusive customer demands (Stank et al., 1999; Tiwari et al., 2015). Therefore, the issue of how to improve supply chain flexibility and the impact of supply chain performance on businesses has attracted a lot of attention from both domestic and international experts.

Due to the urgency of the topic, the authors propose a research model on the impact of information sharing, international supply chain cooperation and supply chain performance on export performance in digital transformation: a case study in Vietnamese seafood enterprises based on the following hypotheses:

Data generated, transmitted, stored and analyzed in the digital ecosystem needs to be communicated seamlessly on the same backbone, information is refined by supply chain stakeholder organizations to achieve the same goal of maximizing benefits, and managers make the best decisions by weighing up key information (Ajay and Maharaj, 2010). Digital technology is the basis for supporting the identification, collection and processing of large amounts of information and is a prerequisite for information interaction across the system (Napoleone, 2020).

H1: Digital transformation positively affects partner information sharing.

When companies share accurate and qualified information with supply chain partners, they will realize the advantages of cooperating to achieve a common objective (Davenport and Beers, 1995; Lee et al., 1997). Positive experiences with the quality of information shared (i.e., the dependability of their chain partners) are the fundamental basis for the degree of willingness to share more knowledge (Lee et al., 1997).

H2: Information quality positively affects partner information sharing.

The bullwhip effect is a distortion of demand information as this information is transmitted in the form of orders along the supply chain all the way to the most upstream suppliers. Bottani and Montanari (2010) indicated that the total supply chain inventory cost and Bullwhip effect would increase significantly as the number of stages in the supply chain increased, which in turn affects information sharing decisions.

H3: Complex supply chain structure negatively affects information sharing.

Export performance, according to Katsikeas et al. (2000), is a multidimensional concept that can be measured using both financial and non-financial measures. Previous research suggested that sharing information promotes export efforts and can actually assist export performance (Julien and Ramangalahy, 2003; Yeoh and Jeong, 1995). However, empirical research on the relationship between information sharing and export performance is required

H4: Information sharing positively affects export performance.

Sharing information regarding key performance indicators and operational metrics enhances supply chain insight, thus facilitating wise decision-making. Sharing information has a significant impact on the overall costs of running a successful supply chain as well as improving overall supply chain management (Ajay and Maharaj, 2010; Zhao, 2002). Rashed, Azeem, and Halim (2010) discovered that sharing information is necessary for improving supplier performance due to the connectivity and availability.

H5: Information sharing positively affects supply chain performance.

Bottani and Montanari (2010) observed that the inventory cost of the entire supply chain and the Bullwhip effect will increase significantly as the number of stages in the supply chain increases. However, in an integrated supply chain, businesses can reduce non-value-added activities and associated costs such as investment costs, operating costs and time costs of supply chain. This greatly increases the customer responsiveness and flexibility of the supply chain, while improving the efficiency and competitiveness of the entire chain (Gordon Stewart, 1995).

H6: Complex supply chain structure negatively affects supply chain performance.

Logistics side risks include cargo damage, supply-side constraints, warehouse issues, delivery delays, improper packaging, labor disputes, natural disasters, terrorist activities and transport infrastructure failures, wrong choice of mode of transport, transport complexity (Thun and Hoenig, 2011; Wagner and Neshat, 2012). Therefore, logistics side risks will disrupt business operations and the ability to deliver products on time of businesses in the supply chain.

H7: Logistics side risks negatively affect supply chain performance.

Finance side risks include exchange rate risk, price and cost risk, financial strength of supply chain partners, payment delays and financial processing (Musa, 2012). Several studies have shown that finance side risks not only have a negative impact on the company's financial performance, but also on overall supply chain performance (Mody, 2012; Musa, 2012).

H8: Finance side risks negatively affect supply chain performance.

Customer relationship management (CRM) refers to building long-term relationships with customers, managing their complaints, and improving overall customer satisfaction (Tan et al., 1999). CRM adds value to the business through customer loyalty, while enhancing supply chain's ability to meet requirements (Gawankar et al., 2013a).

H9. Customer relationship management (CRM) positively affects supply chain performance.

Improved supply chain performance entails better resource management, the accomplishment of operational goals, greater quality standards, increased product flexibility, and performance improvements. competitive execution (Nimeh et al., 2018). Ayoub and Abdallah (2019) indicated that sales, business efficiency, and export performance of enterprises increase as supply chain performance improves.

H10. Supply chain performance positively affects export performance.

Successful relationships are characterized by mutual trust, and partners trust each other to consistently deliver better customer service, easier adaptation, and improved profitability (Huynh, 2012). When an organization has identified the aspects from the partner as mentioned, it is easier for firms to cooperate and set mutual goals with each other (Smith, 1997).

H11. Trust among partners positively affects international supply chain cooperation.

Power is at the heart of all commercial partnerships (Hingley, 2005). The degree to which an organization or business depends on particular resources and other resources determines its advantage over a partner (Inkpen et al., 1997). If one partner in a relationship has more power than the other, they can exert pressure on the weaker partner to make decisions that will benefit the stronger partner (Kumar, 1996).

H12. Partners' power positively affects international supply chain cooperation.

The ability of firms in the supply chain to collaborate is affected by regulations set forth by the government of the organization or the partner. Policies are not permanent but will evolve over time (Huynh, 2012). During the operation of the supply chain, it is necessary to improve the cooperation of enterprises with the Government, domestic and international, to control and manage risks in the international supply chain.

H13. Government policies positively affect international supply chain cooperation.

According to Kim (2006) supply chain cooperation is positively correlated with supply chain performance. By lowering costs and gaining market share, business practices add value for shareholders. Lee et al. (1997) argued that supply chain cooperation increases the supply chain's ability to respond to sudden changes in the volatile supply and demand environment.

H14. International supply chain cooperation positively affects supply chain performance.

International supply chain cooperation, according to RBV theory, is a means for companies to grow with the support of partners' resources (Stank et al., 1999). In the export context, an exporter may have limited market and/or financial resources, while an overseas distributor may lack in-house production resources. Therefore, by sharing their resources including inventory, market, financial and resource knowledge, enterprises benefit from enhancing productivity and export performance (Racela et al., 2007).

H15. International supply chain cooperation positively affects export performance.

Through the synthesis and analysis of the above theoretical basis, the authors proposed the research model as shown in Figure 1.

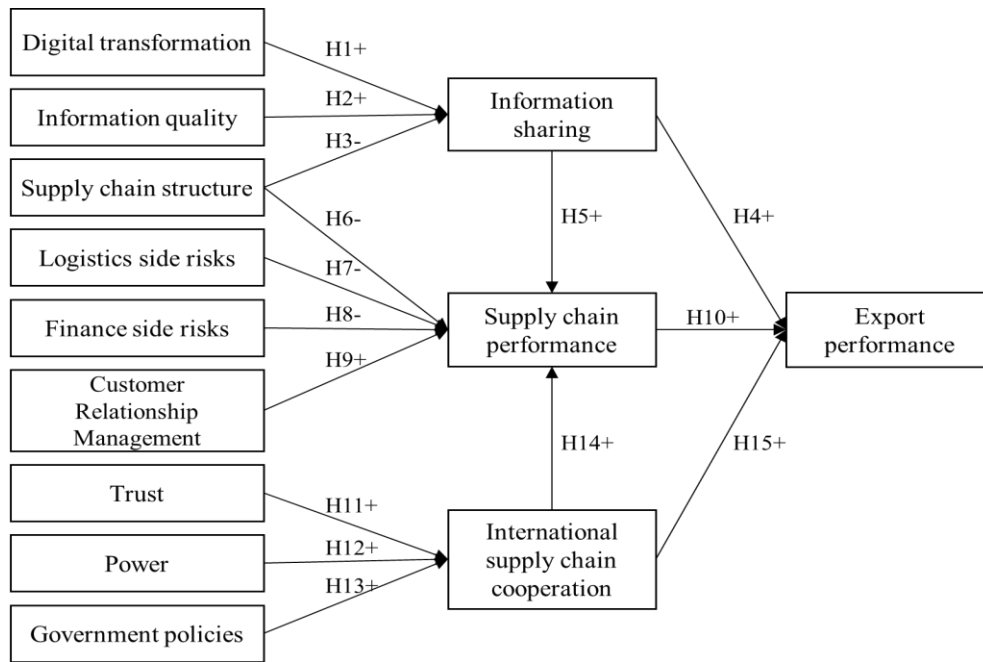


Figure 1. Proposed research model

Source: Authors' compilation

3. Method

In terms of qualitative research, the authors conducted in-depth interviews with experts and senior leaders such as directors, deputy directors, heads of departments, deputy departments, and officials in charge of supply chain cooperation. The interviewees came from government agencies, economic experts, businesses, and seafood-related organizations in Vietnam such as the Vietnam Association for Seafood Processing and Export (VASEP). The subjects interviewed with different characteristics will provide multidimensional and complete information for the study content, ensuring the achievement of the goal. Open-ended questions are included in the interview to facilitate participants' opinions under the author's guidance.

Qualitative research results show that the impact of information sharing, supply chain cooperation, and supply chain performance on export performance are accepted and no new factors are proposed. The list of factors included in the quantitative research is: (1) Digital Transformation (5 variables); (2) Information Quality (5 variables); (3) Supply Chain Structure (5 variables); (4) Logistics Side Risks (5 variables); (5) Finance Side Risks (4 variables); (6) Customer Relationship Management - CRM (5 variables); (7) Trust (5 variables); (8) Power (4 variables); (9) Government Policies (6 variables); (10) Information Sharing (2 variables); (11) Supply Chain Performance (3 variables); (12) International Supply Chain Cooperation (2 variables).

In terms of the quantitative research, the study employs a direct survey form with a small sample (20 enterprises). The majority of participants assented to the survey instrument, albeit necessitating lexical modifications and rationalized question construction. The team of authors built the originally planned sample of 300 survey votes. This number of observations both met the sample size requirements of Hair et al. (2014) with 270 observations. The anticipated quantity of observation records surpassing the minimum sample size confers greater value upon the study.

Of the 303 enterprises surveyed, the majority were small and medium-sized enterprises, of which up to 32% were enterprises [300;600] employees. The results of the survey of operating time of enterprises showed that the majority of enterprises operating in [5;10] years, which accounts for 27%. It is followed by the percentage of enterprises operating in [10;15] years with 24%. Seafood enterprises are mainly concentrated in the Mekong Delta region, accounting for 40% of the total seafood enterprises in the country. The main seafood items of enterprises are shrimp and fish, especially pangasius and tuna. Of which, shrimp accounted for 44%, pangasius 29%, tuna 5%, other fish 5%. In terms of processing type, up to 81% of enterprises producing frozen seafood, 10% of enterprises producing dry goods, 7% of enterprises producing fish sauce, and only 2% of enterprises producing canned products.

The data is processed using SPSS 20 and SmartPLS 4 software. Data from independent variables are analyzed through steps: Cronbach Alpha scale reliability testing, PLS-SEM model measurement evaluation, and SEM Analysis.

4. Results

4.1. Reliability of the scale by Cronbach's alpha coefficient

In the step of testing the reliability of the scale, the authors used Cronbach Alpha coefficients. The analysis results of Cronbach's Alpha coefficient of the scales used in the study are all greater than 0.7 and the total correlation coefficients are all greater than 0.4, so no observed variables are excluded. Thus, the scale of all factors has the required reliability to proceed with further testing.

Table 1. Cronbach's Alpha Reliability Test Results

Factors	Cronbach's alpha	The smallest Corrected Item-Total Correlation
Digital Transformation	0.744	0.656
Information Quality	0.841	0.791
Supply Chain Structure	0.834	0.785
Logistics Side Risks	0.712	0.608
Finance Side Risks	0.779	0.712
Customer Relationship Management	0.822	0.775
Trust	0.818	0.764
Power	0.796	0.723
Government Policies	0.832	0.786
Information Sharing	0.816	
International Supply Chain Cooperation	0.824	0.708
Supply Chain Performance	0.825	
Export Performance	0.864	0.829

Source: Authors' compilation

4.2. Exploratory Factor Analysis (EFA)

After analyzing the Cronbach's Alpha coefficient, the scales are next evaluated by the Exploratory Factor Analysis (EFA) to reduce and group the variables into factors, considering the degree of convergence of the variables by each component and the discriminant value between the factors.

The scales will be evaluated by exploratory factor analysis (EFA - Exploring Factor Analysis) as follows: Using Principal Component extraction method with Varimax rotation.

The scale of variables includes: Digital Transformation (DT); Information Quality (IQ); Supply Chain Structure (SS); Logistics Side Risks (LR); Finance Side Risks (FR); Customer Relationship Management (CM); Trust (TS); Power (PW); Government Policies (GP); Information Sharing (IS); International Supply Chain Cooperation (SC); Supply Chain Performance (SP); Export Performance (EP). After testing the scale with Cronbach's Alpha, scales with 54 observed variables are retained and divided into groups to be included in Exploratory Factor Analysis (EFA).

Group 1: Digital Transformation (DT); Information Quality (IQ); Supply Chain Structure (SS); Logistics Side Risks (LR); Finance Side Risks (FR); Customer Relationship Management (CM); Trust (TS); Power (PW); Government Policies (GP).

Group 2: Information Sharing (IS); International Supply Chain Cooperation (SC); Supply Chain Performance (SP).

Group 3: Export Performance (EP).

Table 2. Results of EFA

	Factors	KMO	p-value	Eigenvalues	Total Variance Explained	The smallest Factor loading
Group 1	Digital Transformation	0.817	0.000	6.580	62.188%	0.671
	Information Quality			3.506		0.674
	Supply Chain Structure			2.988		0.654
	Logistics Side Risks			2.693		0.708
	Finance Side Risks			2.387		0.749
	Customer Relationship Management			2.043		0.698
	Trust			1.849		0.659
	Power			1.574		0.639
	Government Policies			1.256		
Group 2	Information Sharing	0.622	0.000	2.501	80.329%	0.907
	International Supply Chain Cooperation			1.830		0.815
	Supply Chain Performance			1.292		0.912
Group 3	Export Performance	0.895	0.000	3.575	59.581%	0.751

Source: Authors' compilation

The results of EFA show that the KMO indexes are all greater than 0.5, so the EFA is consistent with the data. In addition, Factor Loading > 0.5, so the observed variables are important in the research factors and have practical significance. The significance level Sig (Bartlett's Test) = 0.000 < 0.05 indicates that observed variables are correlated with each other.

The factors DT, IQ, SS, LR, FR, CM, PW, CM, TS, GP, IS, SC, SP, EP all have Eigenvalues coefficient values greater than 1, so these factors are kept in the analytical model. The total value of the extracted variance is greater than 50%, meeting the requirements. The research model is well evaluated.

4.3. Quality of observed variables (indicators)

The Outer Loading coefficient of the observed variables is an indicator showing the degree of association between the observed variable and the latent variable.

Table 3 shows that the Outer Loadings coefficients of the first-order variables are all greater than 0.7, so the first-order variables are significant in the model (Hair et al., 2016).

Table 3. Results of Outer loadings

Factors	The smallest Outer loadings
Digital Transformation	0.783
Information Quality	0.760
Supply Chain Structure	0.755
Logistics Side Risks	0.745
Finance Side Risks	0.740
Customer Relationship Management	0.736
Trust	0.703
Power	0.751
Government Policies	0.746
Information Sharing	0.913
International Supply Chain Cooperation	0.839
Supply Chain Performance	0.921
Export Performance	0.738

Source: Authors' compilation

4.4. Discriminant validity

Fornell and Larcker (1981) recommended that discriminability is guaranteed when the square root of the AVE for each latent variable is higher than all correlations between the latent variables.

Table 4. Discriminant validity - Heterotrait-monotrait ratio (HTMT)

	CM	DT	EP	FR	GP	IQ	IS	LR	PW	SC	SP	SS	TS
CM													
DT	0.249												
EP	0.200	0.424											
FR	0.129	0.100	0.161										
GP	0.268	0.200	0.208	0.102									
IQ	0.219	0.633	0.360	0.254	0.130								
IS	0.084	0.545	0.690	0.160	0.178	0.463							
LR	0.185	0.241	0.179	0.180	0.136	0.232	0.053						
PW	0.310	0.236	0.235	0.076	0.511	0.214	0.112	0.253					
SC	0.210	0.119	0.442	0.078	0.438	0.121	0.079	0.108	0.504				
SP	0.315	0.235	0.603	0.306	0.152	0.214	0.271	0.387	0.300	0.211			
SS	0.329	0.143	0.244	0.111	0.157	0.075	0.248	0.152	0.203	0.059	0.351		
TS	0.418	0.162	0.149	0.091	0.235	0.202	0.115	0.161	0.247	0.318	0.235	0.143	

Source: Authors' compilation

According to the results in Table 4, all HTMT values are less than 0.85, so the discriminant validity is guaranteed.

4.5. Evaluation of collinearity/multicollinearity

To evaluate multicollinearity, the authors use the results of the PLS Algorithm analysis. The authors use Inner Collinearity Statistics (VIF) to test the VIF results and evaluate multicollinearity among latent variables. This is the most important item, because multicollinearity between the independent latent variables is a critical issue.

Table 5. Collinearity statistics (VIF) - Inner model

	CM	DT	EP	FR	GP	IQ	IS	LR	PW	SC	SP	SS	TS
CM											1.134		
DT							1.382						
EP													
FR											1.040		
GP										1.228			
IQ							1.363						
IS			1.054								1.067		
LR											1.055		
PW										1.232			
SC			1.032								1.041		
SP			1.082										
SS							1.016				1.139		
TS										1.061			

Source: Authors' compilation

The VIF table is represented as a matrix. There are 4 variables including EP, IS, SC, SP being evaluated in the SEM model as dependent variables and need considering multicollinearity between the independent variables affecting each of these dependent variables.

Dependent variable EP: being affected by 3 independent variables including IS, SC and SP, so the EP column has 3 values.

Dependent variable IS: being affected by 3 independent variables including DT, IQ, SS, so IS column has 3 values.

Dependent variable SC: being affected by 3 independent variables including GP, PW, TS, so the SC column has 3 values.

Dependent variable SP: being affected by 6 independent variables including CM, FR, IS, LR, SC, SS, so SP column has 6 values.

According to table 5, all VIF coefficients are less than 3, so there is no multicollinearity in the model (Hair et al., 2011). The structures in the SEM model above are all reflective.

4.6. Evaluation of relationships

To evaluate impact relationships, the authors will use the results of the Bootstrap analysis.

Table 6. Path coefficients - Mean, STDEV, T values, p values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
CM -> SP	0.130	0.135	0.050	2.592	0.010
DT -> IS	0.327	0.326	0.055	5.966	0.000
FR -> SP	-0.183	-0.188	0.048	3.815	0.000
GP -> SC	0.218	0.221	0.049	4.432	0.000
IQ -> IS	0.202	0.204	0.055	3.694	0.000
IS -> EP	0.485	0.484	0.033	14.491	0.000
IS -> SP	0.132	0.131	0.050	2.666	0.008
LR -> SP	-0.228	-0.230	0.054	4.225	0.000
PW -> SC	0.291	0.292	0.064	4.567	0.000
SC -> EP	0.281	0.283	0.044	6.438	0.000
SC -> SP	0.119	0.117	0.052	2.286	0.022
SP -> EP	0.354	0.355	0.036	9.942	0.000
SS -> IS	-0.165	-0.167	0.048	3.413	0.001
SS -> SP	-0.192	-0.193	0.044	4.404	0.000
TS -> SC	0.160	0.168	0.052	3.077	0.002

Source: Authors' compilation

The above results show that all the P Values of the effects are < 0.05, so these effects are statistically significant.

There are 3 variables affecting IS: DT, IQ, SS. The standardized impact coefficients of these 3 variables are 0.327, 0.202, -0.165, respectively. In which, there are 2 variables positively impacting IS, with the level of impact ranging from strong to weak: DT, IQ. SS is the only variable that has a negative effect.

There are 4 variables affecting SP: CM, FR, IS, SS. The standardized impact coefficients of these 4 variables are 0.130, -0.183, 0.132, -0.192, respectively. In which, there are 2 variables positively impacting SP, with the level of impact ranging from strong to weak: IS, CM. There are 2 variables negatively impacting SP, with the level of impact ranging from strong to weak: SS, FR.

There are 3 variables affecting SC: GP, PW, TS. The standardized impact coefficients of these 3 variables are 0.218, 0.291, and 0.160, respectively. In which, there are 3 variables positively impacting SC, with the level of impact ranging from strong to weak: PW, GP, TS.

There are 3 variables affecting EP: IS, SC, SP. The standardized impact coefficients of these three variables are 0.485, 0.281, and 0.354, respectively. Thus, the level of impact of these 3 variables on EP in order from strong to weak is IS, SP, SC.

4.7. The results of testing the research hypotheses

Therefore, from the above quantitative results, it can be concluded that all research hypotheses are accepted.

5. Discussion and Conclusion

5.1. Discussion of study findings

The study focuses on analyzing the relationships between information sharing, international supply chain cooperation and supply chain performance, thereby finding out their impact on export performance in the context of digital transformation. Sustainable and superior export performance requires reasonable levels of supply chain cooperation and information shared among enterprises which simultaneously augment overall performance of supply chain. In recent years, the rise of digital transformation era has exposed firms to the edge of innovation. With the help of blockchain technology and IoT, real-time data and insights about market trends, customer demands, logistics costs,... are shared in a unified system more traceably and precisely, which enables companies to anticipate and mitigate supply chain disruptions. Greater cooperation, communication, and transparency among supply chain partners allows enterprises to respond quickly to unexpected events and reduce the impact of disruptions on their operations.

Under the pressure of fierce competition in the market, the introduction of new products with shorter cycle times, along with the increasing level of customer expectations have pushed businesses to show attentive interest to supply chain cooperation. However, how to cooperate in the supply chain, exploit cost advantages, improve added value for products and increase competitive strength remains an open question. Particularly, in this study, the authors found that the impact of information sharing, international supply chain cooperation and supply chain performance of enterprises in Vietnam has not received meticulous attention.

First, information sharing is a critical factor for seafood export performance of Vietnamese businesses. While digital transformation and information quality facilitate information sharing, the complex supply chain structure may distort information quality and thereby hinder information sharing. These factors significantly impact business prediction and strategy planning and have the potential to enable businesses to quickly address potential supply chain disruptions. *Second*, improving supply chain efficiency can positively affect a company's export performance. However, in order for the supply chain to function properly, businesses need to be aware of the BullWhip effect which probably stems from the complex supply chain structure. Additionally, the risks related to logistics and finance are directly correlated with the operational performance of both enterprises and their partners. Due to the market complexity, businesses need to pay more attention to customer relationship management (CRM) in order to better meet the constantly changing needs and feedback of consumers about goods and services. *Thirdly*, international supply chain cooperation can significantly impact export activities, with trust and power dynamics influencing businesses and government policies encouraging similar operations. On the other hand, through cooperation, companies can leverage resources from partners to access new markets, enhance supply chain performance, and elevate product standards.

5.2. Recommendations

Based on the findings the authors suggest some implications as following:

First, the State needs to promulgate policies to support and create conditions for enterprises to cooperate with other enterprises, facilitate trade, and foster business growth through production and export against foreign barriers.

Second, Vietnam Association of Seafood Exporters and Producers (VASEP) needs to take an active role in developing information channels on seafood supply chains including and implementing digital transformation technology in both production and business, which eventually raises firms' awareness of exchanging information and cooperating in international supply chain.

Third, in order to improve their operations, Vietnamese seafood businesses must alter their cooperative culture and raise understanding of supply chain performance, export performance, and variables impacting export performance.

Fourth, businesses need to harness information technology systems to facilitate the flow of information, increase supply chain performance, and enable them to make more accurate decisions in export activities.

5.3. Limitations and future research directions

However, this research is not without limitations. First, this paper is primarily country-specific integrative insights of seafood firms while excluding other industries in other regions. Second, a framework that could comprehensively explain the influencing factors from both macro and micro perspectives still remains absent. Therefore, in order to resolve such inconsistencies, further research undertaken for multinational approaches to set

sustainable development goals is required. Additionally, future studies may substitute subjective survey methods with secondary data based on annual reports and actual business parameters to reduce risks and increase result reliability.

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IMPACT OF MACROECONOMIC VOLATILITY ON SHORT- AND LONG-TERM VOLATILITY OF THE DEVELOPING STOCK MARKET: A STUDY AT THE VIETNAM STOCK MARKET

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Abstract

The paper investigates the impact of macroeconomic volatility on the volatility of the Vietnamese stock market in the short and long term, during stable and unstable periods due to the Covid19 pandemic. We propose extended GARCH-MIDAS and EGARCH models with positive and negative macroeconomic volatility. The results show that the roles of positive and negative macroeconomic volatility are different in the context of stable and unstable markets, both in the short and long term. In a stable market, growth has a positive impact on the volatility of the stock market, while interest rate volatility has a negative impact. Particularly, their roles are also different in the short and long term. Growth has a more significant impact in the long term, while negative growth only has a short-term impact. When the market is unstable due to Covid 19, while growth is still important, the impact of interest rates is insignificant. Based on these findings, we propose some recommendations for policymakers and investors in the Vietnamese stock market.

Keywords: *Macroeconomic volatility, stock market volatility, GARCH-MIDAS*

1. Introduction

Stock market volatility is an important measure used in the field of financial asset pricing and risk management. Some theories indicate the influence of macroeconomic factors on stock market volatility. Among them, some classic theories include the theory of price discrepancy in business (Ross, 1976), the efficient market hypothesis (Fama, 1970), and the dividend discount model (Gordon and Shapiro, 1956). Because the value of production is closely related to the income of a business, when this value changes, it directly affects the dividend income of the stock. Interest rates also affect stock prices as they are the discount factor for future income streams and the opportunity cost of investing capital in stocks. This explains why macroeconomic factors can impact stock prices and cause stock market volatility to change over time.

Many studies have developed suitable models for measuring volatility in the stock market. These studies also separate volatility into short-term and long-term volatility. Short-term volatility measures the daily volatility of bond yields, while long-term volatility measures volatility over longer periods, such as months or quarters. The GARCH model

(Engle and Bollerslev, 1986) is a popular model used to measure short-term volatility on a daily basis because it has been tested in many different markets. This model is developed from the ARCH (Autoregressive Conditional Heteroskedastic) model, introduced by Engle (1982). Subsequently, some scholars have developed more advanced models to improve the effectiveness of the GARCH model in practice, such as the EGARCH (Nelson, 1991) and TGARCH (Zakoian, 1994) models, which are used to measure asymmetric effects in the stock market. Because the GARCH model has difficulty in analyzing the relationship with macro factors due to different frequency data, Engle and colleagues (2013) developed the GARCH-MIDAS model to separate conditional variance into short-term high-frequency volatility, estimated by the GARCH model, and long-term low-frequency volatility, estimated by the MIDAS regression (Ghysels & colleagues, 2007).

The relationship between stock market volatility and macroeconomic factors has been examined in various contexts in the short term. In developed countries' stock markets, some analyses have focused on the short-term impact of macroeconomic factors (Schwert, 1989; Diebold and Yilmaz, 2008; Thampanya et al., 2020). Specifically, Schwert (1989) described the relationship between stock market volatility and macroeconomic volatility using monthly data from 1827-1986 in the US. The results showed that interest rate volatility, inflation volatility, and monetary growth volatility almost always increased stock market volatility. The impact of industrial production growth was relatively weak. In many other markets, Diebold and Yilmaz (2008) found a connection between stock volatility and fundamental macroeconomic volatility. Data from 40 countries showed a positive correlation between the volatility of real GDP and stock volatility. The correlation was even stronger for low-income developing countries. This means that fundamental macroeconomic volatility can increase stock market volatility, which was not shown in Schwert's study in the pre-crisis period in the US stock market. Abbas and colleagues (2018) added that industrial production growth and oil prices were the two most important macroeconomic factors that could influence the direction of the stock market. Research on the role of macroeconomic factors in the short term in developing country markets is still limited. A typical study by Thampanya and colleagues (2020) in the ASEAN market of five countries from January 1995 to December 2018 showed that interest rates were the most important factor affecting stock market volatility, being an important financial tool in the ASEAN region. Additionally, the estimated coefficients showed differences between pre-, during-, and post-global financial crisis periods.

Other studies have focused on the influence of macroeconomic factors on long-term volatility in the stock market (Engle & colleagues, 2013; Conrad and Kleen, 2020; Fang & colleagues, 2020). Engle and colleagues (2013) analyzed daily data on the S&P 500 index from February 16, 1885 to December 31, 2004, with industrial production and inflation as the macroeconomic variables. The study showed that industrial production had a counter-directional effect, but its volatility had the same direction of impact on long-term volatility. Subsequently, Conrad and Loch (2015) used more macroeconomic variables to study the long-term relationship. The authors also believed that there was a relationship between

macroeconomic variables and stock market volatility. The GARCH-MIDAS model with two variables performed significantly better than all other models for long-term forecasts of the next 2 to 3 months (Conrad and Kleen, 2020). Fang and colleagues (2020) analyzed more macroeconomic variables for quarterly frequency, from the first quarter of 1969 to the fourth quarter of 2018. The authors found that the GARCH-MIDAS model was successful in selecting the most important variables to predict long-term volatility in the stock market. However, the authors suggested that real GDP and industrial production growth, which were not selected in previous studies, could have been exaggerated in their role in predicting long-term volatility in the stock market.

Later, Amendola and colleagues (2019) further extended the asymmetric effect with the GJR-Asymmetric-GARCH MIDAS model. Analysis of macroeconomic variables including the IP index and NAI (National Activity index) monthly showed the relative impact of macroeconomic fluctuations on the volatility at different horizons. In out-of-sample analysis, the GJR-Asymmetric-GARCH MIDAS model not only showed statistical superiority compared to other technical parameters such as GARCH, GJR-GARCH and GARCH-MIDAS models, but also demonstrated significant utility benefits for an investor with different risk aversion parameters. The strong efficiency was shown by selecting different samples and estimating the model in different contexts. This is supported by Wang and colleagues (2020), who further extended the short- and long-term volatility forecasting of stock indices with asymmetric effects and extreme volatility (10% and 90% quantiles) in both short- and long-term with the asymmetric GARCH-MIDAS model. The study of the Dow Jones Industrial Average (DJIA) from 2/10/1928 to 24/9/2018 showed that the asymmetric effect and extreme volatility effect are two important long-term effects in the volatility of stock indices. Asymmetric effect contributes more than the extreme effect. The threshold asymmetric model performs better than the traditional GARCH-MIDAS model in many different markets. However, this study does not clarify the origin of good and bad news, as well as the asymmetric impact of macro factors. At the same time, research on the role of macro variables in the long term in developing countries is still limited. Some studies have confirmed the good efficiency of the GARCH-MIDAS model in analyzing the volatility of high-frequency data, but mainly in other fields such as exchange rates (Zhou and colleagues, 2020) or oil prices by Pan and colleagues (2017).

This gap provides motivation for us to develop a model to evaluate the reaction of short-term and long-term stock market volatility to positive and negative macroeconomic fluctuations. This research is conducted in the context of a rapidly developing and deeply integrating economy in Vietnam, as it is a macroeconomic environment with strong fluctuations in recent years, especially during the economic crisis of 2008-2009 and the COVID-19 pandemic. The research results aim to indicate the nature of the relationship, including the degree of influence of positive and negative fluctuations, their differences in both short and long terms, and between different stages of the market. From there, it highlights the role of macroeconomic policies in short-term and long-term volatility in stock markets in developing and emerging countries.

This study focuses on specific points, including: (i) the impact of positive and negative macroeconomic fluctuations on stock market volatility, including symmetric or asymmetric effects on market volatility; (ii) the relationship in both short and long terms in a transitioning economy in Vietnam; (iii) the research context is stable market periods and unstable periods due to the COVID-19 pandemic to better understand the role of macroeconomic policy changes in different economic contexts; and (iv) using EGARCH and GARCH-MIDAS models extended with positive and negative macroeconomic fluctuations to evaluate asymmetric effects on the Vietnam stock market as well as other similar markets. From there, implications for policies contribute to the significance of risk analysis and regulatory policies in developing and emerging stock markets.

2. Method

We analyze the impact of positive and negative macroeconomic fluctuations by extending the variables in the model to estimate short-term volatility and long-term volatility of stock market. The study estimates the short-term impact from the exponential GARCH (EGARCH) model (Nelson, 1991) with additional explanatory variables. Among the asymmetric GARCH models, the EGARCH model is evaluated as the most appropriate for the Vietnamese stock market (Tien & colleagues, 2017). The model is written in the form of a mean equation and a variance equation as follows:

$$r_{i,t} = \mu + \sigma_{i,t} \varepsilon_{i,t} \quad \forall i = 1, 2, \dots, N_t \quad (1)$$

$$\log(\sigma_{i,t}^2) = \omega + \beta \log(\sigma_{i-1,t}^2) + \alpha \frac{|r_{i-1,t} - \mu|}{\sqrt{\sigma_{i-1,t}^2}} + \gamma \frac{r_{i-1,t} - \mu}{\sqrt{\sigma_{i-1,t}^2}} \quad (2)$$

Where $r_{i,t}$ is the return of the market index, measured by the log return of day i in month t , including N_t trading days; $\varepsilon_{i,t} | \psi_{i-1,t}$ is the random error component, under the condition of information $\psi_{i-1,t}$ occurred up to day $(i-1)$ in month t and: $\varepsilon_{i,t} | \psi_{i-1,t} \sim N(0,1)$.

In which $\sigma_{i,t}^2$: conditional variance measurement of day i in month t . This quantity can be rewritten as: $\sigma_{i,t}^2 = \tau_t \cdot g_{i,t}$; and short-term component $g_{i,t}$ is the short-term volatility on day i of month t , the long-term component τ_t called the long-term volatility in month t . In any month t , the long-term volatility τ_t remains constant, then formulas (1) and (2) can be rewritten as (3) and (4):

$$r_{i,t} = \mu + \sqrt{\tau_t g_{i,t}} \varepsilon_{i,t} \quad \forall i = 1, 2, \dots, N_t \quad (3)$$

$$\log(g_{i,t}) = \omega + \beta \log(g_{i-1,t}) + \alpha \frac{|r_{i-1,t} - \mu|}{\sqrt{\tau_t g_{i-1,t}}} + \gamma \frac{r_{i-1,t} - \mu}{\sqrt{\tau_t g_{i-1,t}}} \quad (4)$$

The EGARCH model measures the asymmetric impact of macroeconomic volatility on short-term volatility on the stock market.

The macroeconomic volatility at time t of the macro variable X_t can be estimated based on a 12th-order autoregression and dummy variables D_{jt} ($j = 1 \div 12$) to eliminate the autocorrelation and seasonal factors of the macro variable. According to Schwert (1989), macroeconomic volatility can be measured by the estimated error value $\hat{\varepsilon}_t$ obtained from model (6):

$$X_t = \sum_{j=1}^{12} \alpha_j D_{jt} + \sum_{k=1}^{12} \beta_k X_{t-k} + \varepsilon_t \quad (6)$$

In this study, we separate the volatility component of the macro variable X_t , denoted as VOL_X_t , into two parts, including positive macroeconomic volatility, denoted as $VOL_X_t^+$, representing negative volatility; and negative macroeconomic volatility, denoted as $VOL_X_t^-$, representing positive volatility. Then, the volatility at any time t can be expressed as:

$$VOL_X_t = VOL_X_t^+ + VOL_X_t^-$$

2.1. Model for assessing the asymmetric impact of macroeconomic volatility on short-term volatility of stock market.

We developed an EGARCH (1,1) model by adding macroeconomic volatilities to measure short-term volatility of the stock market index. The specific model is as follows:

$$\log(g_{i,t}) = \omega + \beta \log(g_{i-1,t}) + \alpha \frac{|r_{i,t} - \mu|}{\sqrt{\tau_t g_{i-1,t}}} + \gamma \frac{r_{i,t} - \mu}{\sqrt{\tau_t g_{i-1,t}}} + s^+ VOL_X_{t-1}^+ + s^- VOL_X_{t-1}^- \quad (7)$$

The coefficients s^+ and s^- indicate the impact of positive and negative macroeconomic volatility on the volatility of the stock index. If $s^+ > 0$, it means that positive macroeconomic volatility will increase the volatility of the stock index. If $s^+ < 0$, it means that positive macroeconomic volatility will stabilize the stock index. For negative macroeconomic volatility, if $s^- > 0$, it means that they will help stabilize the stock index. If $s^- < 0$, it means that negative macroeconomic volatility will increase the volatility of the stock index.

2.2. Model for assessing the asymmetric impact of macroeconomic volatility on long-term volatility of stock market.

This study develops a GARCH-MIDAS model by further expanding the macroeconomic volatility variables to measure monthly market volatility using the formula (8).

$$\log \tau_t = m + l^+ \sum_{k=1}^{K^+} \varphi_k(\omega_1) VOL_X_{t-1}^+ + l^- \sum_{k=1}^{K^-} \varphi_k(\omega_2) VOL_X_{t-1}^- \quad (8)$$

The coefficients l^+ and l^- indicate the impact of positive and negative macroeconomic volatility on the volatility of the stock market. If $l^+ > 0$, a positive macroeconomic shock will increase volatility on the stock market, and vice versa. If $l^+ < 0$, it means that a positive macroeconomic shock will stabilize the stock market. For negative volatility, if $l^- > 0$, a negative macroeconomic shock will help stabilize the stock market. If $l^- < 0$, it means that a negative macroeconomic shock will increase volatility on the stock market. The $\varphi_k(\omega_1)$ and $\varphi_k(\omega_2)$ diagrams are the weight of the MIDAS filter, which can be estimated in the form of finite polynomials or infinite polynomials (Ghysels & colleagues, 2007) and are determined by formula (9).

$$\varphi_k(\omega_i) = \frac{(1-k/K)^{\omega_i-1}}{\sum_{j=1}^K (j/K)^{\omega_i-1}}, \quad i=1,2 \quad (9)$$

The Relative Marginal Effect (RME) of long-term volatility on TTCK due to macroeconomic volatility with coefficients l^+ and l^- are as follows:

$$RME_{\tau}^+ = e^{l^+ \cdot \varphi_k(\omega_1) \Delta VOL_X_t^+} - 1 \quad \text{and} \quad RME_{\tau}^- = e^{l^- \cdot \varphi_k(\omega_2) \Delta VOL_X_t^-} - 1 \quad (10)$$

3. Results

3.1. Data

The research data consists of the stock market index and macroeconomic variables in the Vietnamese market from 2013 to 2021. The analysis data includes two periods: (1) a stable market period and (2) a period affected by the COVID-19 pandemic to evaluate the specific role of macroeconomic variables in each market context. Specifically, the stock market index used in the analysis is the VN-Index, which is listed daily on the HOSE exchange from June 30, 2013, to June 30, 2021.

The macroeconomic variables used in the study are the interbank interest rate (IRATE) and the industrial production index (IP) from August 2008 to November 2019. According to Engle et al. (2013), the interest rate represents the discount rate of expected future cash flows. Furthermore, other interest rates in the Vietnamese economy are often linked to the interbank interest rate published by the central bank. This is why this study uses the interbank interest rate to represent the overall interest rate in the economy. The second macroeconomic variable is the industrial production index of Vietnam. This index is published monthly by the GSO and reflects purely the real output and monthly economic growth (Girardin & Joyeux, 2013).

3.2. The impact of macroeconomic volatility on the short-term volatility of stock market

Table 1 summarizes the impact assessment of positive and negative fluctuations of the IP index and IRATE interest rate on the daily volatility of the VN-Index. The results show that the impact of macroeconomic volatility factors is different in conditions of positive and negative fluctuations. At the same time, the role of macroeconomic variables also differs between two periods of stable and volatile markets. Interest rates play a more important role in the context of a stable market, but growth plays a more important role in the context of an unstable market due to Covid19.

Table 1. The extended EGARCH model with positive and negative macroeconomic volatility

Coefficients	IP		IRATE	
	06/2013- 06/2019	06/2019- 06/2021	06/2013- 06/2019	06/2019- 06/2021
μ	0.050***	0.051	0.051**	0.028
ω	-0.004	0.016	0.003	0.059***
α	-0.098***	-0.053*	-0.098***	-0.065*
β	0.934***	0.965***	0.931***	0.958***
γ	0.221***	0.244***	0.222***	0.270***
s^+	0.003	0.003***	-0.036*	-0.035
s^-	0.003**	0.0042**	0.011	0.039**
LLF	-1959.306	-741.630	-1960.258	-750.488

Note: *, **, and *** indicate statistically significant coefficients at the 10%, 5%, and 1% levels, respectively. Source: Author's calculations.

The impact of positive and negative volatility of the IP in the short-run volatility of the stock market

In more detail, the extended EGARCH model shows that positive and negative volatility of the IP index will have a significant impact on the daily volatility of the VN-Index. In the period from 06/2013-06/2019, the effect of positive growth shock is not clear because the estimated coefficients of VOL_IP^+ in this period are not statistically significant. On the other hand, the negative growth shock has a significant impact on the estimated coefficient of VOL_IP^+ of 0.003, which is statistically significant at 5%. This means that the more the growth volatility decreases, the lower the volatility on the stock market. The study also shows that there is no evidence of the impact of growth volatility on the daily volatility of the VN-Index in the context of a stable market.

In the context of the Covid19 pandemic and the market volatility, it seems that the role of the IP index has become more important. However, the impact coefficients remain the same as in the previous period. Specifically, the estimated coefficients for the positive and negative growth volatility are 0.003 and 0.0042, respectively, both statistically significant at the 5% level. This means that an increase in production growth volatility will create a cumulative effect that increases the daily volatility on the stock market, and vice versa, if the negative growth volatility decreases more sharply, it will reduce the daily volatility on the stock market.

The impact of positive and negative interest rate volatility in the short-run volatility of the stock market

Table 1 also shows that the role of volatility from interest rate increases and decreases differs in each period. Specifically, the shock of interest rate increases will have a significant impact in the stable economic period from June 2013 to June 2019. The estimated coefficient of the variable VOL_IRATE^+ during this period is -0.036, which is negative and statistically significant at the 10% level, meaning that an increase in interest rate volatility in the financial market will help stabilize the stock market. On the other hand, the role of the shock of interest rate decreases during this period is unclear because the estimated coefficient of the impact of VOL_IRATE^+ from June 2013 to June 2019 is 0.011 and is not statistically significant.

During the unstable market period from June 2019 to June 2021 due to COVID-19, the impact of the shock of interest rate decreases was more apparent. The estimated coefficient of the impact of VOL_IRATE^- is 0.039 and statistically significant at the 5% level. This indicates that the more significant the decrease in interest rate volatility in the financial market, the more stable the stock market will be. In contrast, the consequence of the shock of interest rate increases, which affect the daily fluctuation of the stock market index, is not clear during this period. This is because the coefficient of the positive volatility of interest rates (VOL_IRATE^-) is -0.035 and is not statistically significant. This shows that a policy to stabilize interest rates will have a significant impact on the stock market during a period of strong economic fluctuations due to COVID-19.

3.3. The impact of macroeconomic volatility on the long-run volatility of the stock market

Table 2 shows the impact of positive and negative macroeconomic volatility of IP and IRATE on the monthly volatility of the stock market index based on model (8). The results show that the role of macroeconomic volatility in the long run differs from the short term in different contexts of the stock market index.

Table 2. GARCH-MIDAS Model with positive and negative macroeconomic volatility

Coefficients	IP		IRATE	
	06/2013-06/2019	06/2019-06/2021	06/2013-06/2019	06/2019-06/2021
μ	0.057**	2.273**	0.054**	0.198**
α	0.000	1.086	0.000	0.000
β	0.747***	1.985	0.728***	0.251
γ	0.231***	5.190	0.228***	0.505
m	-1.048*	3.274***	1.043**	-0.841
l^+	0.961**	-1.211	-12.043***	-2.088
$w1$	1.284**	3.129	1.430**	8.339
l^-	0.172***	6.495**	-5.433***	-3.956
$w2$	4.896***	1.950***	1.170***	3.743***
LLF	-1296.092	-195.8678	-1292.783	-197.8079

Note: *, **, and *** indicate statistically significant coefficients at the 10%, 5%, and 1% levels, respectively. Source: Author's calculations.

The impact of positive and negative volatility of the IP index in long-run volatility of the stock market

In a stable market context, the role of positive and negative growth volatility is different. When the volatility of the IP index changes by the same amount, for example 1 point, if the previous growth volatility increases, it will increase the volatility of the VN-Index in the next period by $e^{0.961 \times 0.052 \times 1} - 1 = 0.051\%$, or 5.1 points because of the estimated coefficient of l_{IP}^+ of 0.961, which is statistically significant. Conversely, if the growth volatility decreases by 1 point, it will reduce the volatility of the stock market in the next period by $e^{0.172 \times 0.185 \times (-1)} - 1 = -0.031\%$ due to the estimated coefficient l_{IP}^- of 0.172, which is statistically significant at the 1% level. The weight chart in Figure 1 also shows that the impact of negative volatility decreases rapidly (IP.Neg.2013-2019 line). The magnitude of the impact will decrease rapidly after about 8 months. At the same time, the impact of positive volatility is longer-term

(IP.Pos.2013-2019 line). This shows that the effect of growth volatility has a longer-term impact compared to negative growth volatility.

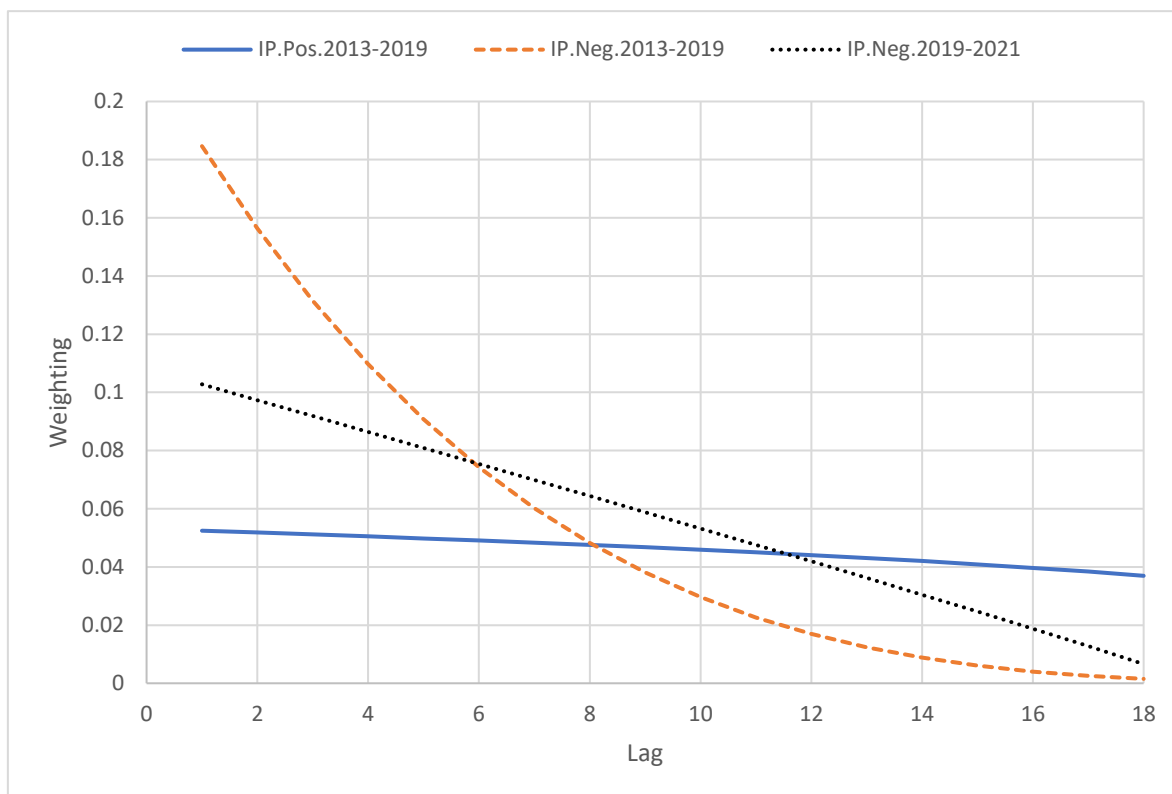


Figure 1. Lag weight diagram of negative and positive volatility of IP index

Source: Author's calculations

Starting from the end of 2019, the negative impact of IP growth is quite strong, while evidence of the positive effect is unclear in the context of economic volatility due to the impact of COVID19. The weight chart in Figure 1 (IP.Neg.2019-2021 line) shows the prolonged effect of negative volatility in an unstable market. Specifically, the estimated coefficient of l_{IP}^- in the period from 06/2019-06/2021 is 6.495, statistically significant at the 1% level. This means that the more stable the growth, the more stable the stock market. This also means that the signal from the decline in production growth does not help the stock market become more active. Table 2 also shows that the role of positive growth volatility is unclear in the context of an unstable market because the coefficient of l_{IP}^+ of the IP variable in the period from 06/2019-06/2021 is not statistically significant.

The impact of positive and negative volatility of Interest rate in long-run volatility of the stock market

Table 2 shows the important role of long-term interest rate fluctuations, especially in the context of a stable economy. An increase in interest rate fluctuations will reduce the volatility of the stock market index, while a decrease in interest rate fluctuations will increase the volatility of the index. Specifically, if the previous period's interest rate fluctuation increases by 1 point, it will reduce the volatility of the VN-Index in the next period by

$e^{-12.043 \times 0.052 \times (0.01)} - 1 = -0.007\%$, or 0.7 points, because the estimated coefficient l_{IRATE}^+ is -12.043 and the first lag weight is 0.052. Conversely, a 1-point decrease in interest rate fluctuations will increase the volatility of the stock market index in the next period to $e^{-5.433 \times 0.048 \times (-0.01)} - 1 = 0.0026\%$ or 0.26 points, because the estimated coefficient l_{IRATE}^- is -5.433 and the first lag weight is 0.048. The weighting chart in Figure 2 shows that the impact of interest rate volatility, both positive and negative, will decrease slowly over time (through the lines IRATE.Pos.2013-2019 and IRATE.Neg.2013-2019).

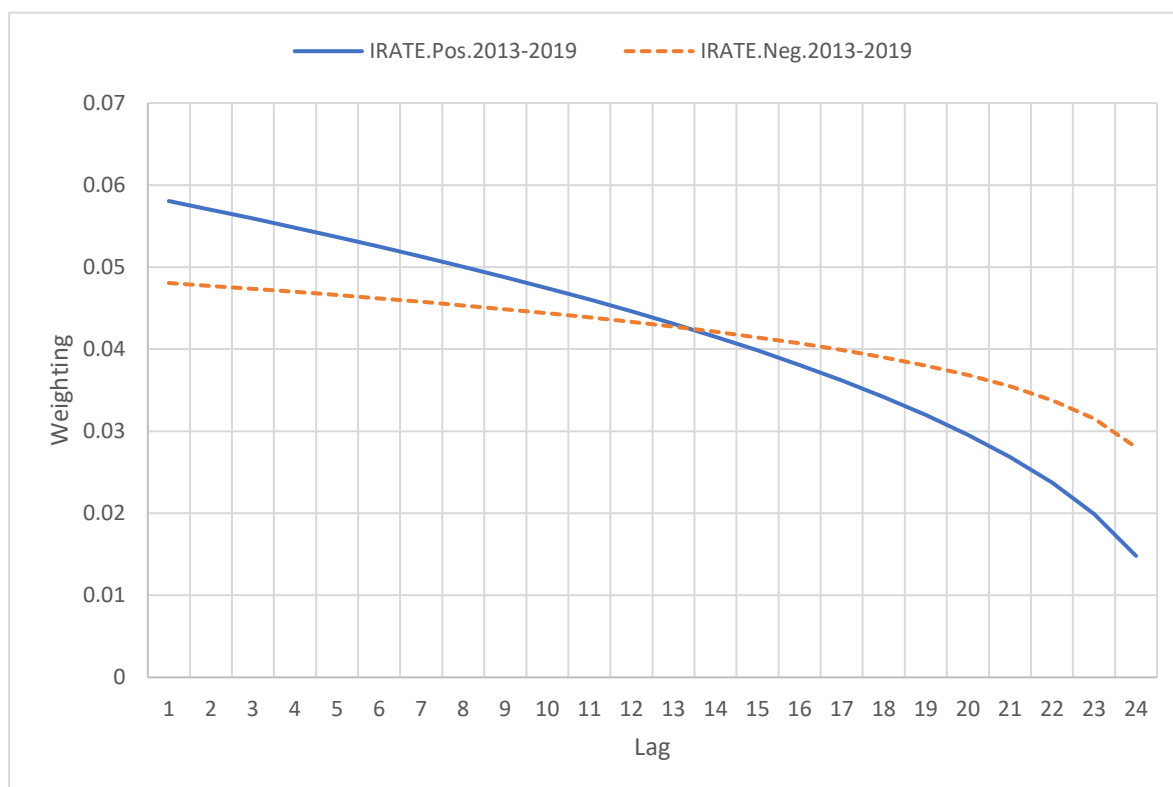


Figure 2. Lag weight diagram of negative and positive volatility of interest rate

Source: Author's calculations

Table 2 also shows that the impact of interest rates on the long-term volatility of the stock market in an unstable market is unclear. The estimates of the coefficients l_{IRATE}^+ and l_{IRATE}^- for the volatility of interest rate are not statistically significant. This result suggests that the increase and decrease in interest rates have not had a clear impact on the long-term volatility of the Vietnamese stock market during the period from 06/2019 to 06/2021. This means that the effectiveness of interest rate policy changes in an unstable market is unclear in the Vietnamese stock market in the long term.

5. Discussion and Conclusion

This paper investigates the role of macroeconomic variables in the context of the developing and emerging market of Vietnam. This is a highly volatile market and is heavily affected by the Covid19 pandemic on both the supply and demand sides of commodities due to sanctions. We study from both short-term and long-term perspectives as well as during the stabilization period and the period of Covid19 impact. GARCH-MIDAS and EGARCH

are used to test the degree of influence of positive and negative macroeconomic fluctuations. We use interest rates and industrial production index as two characteristic factors for the money market and the commodity production market. The results have some notable points as follows:

Firstly, the role of macroeconomic fluctuations is crucial in a stable market, where the impact of positive and negative macroeconomic volatility is significantly different. While growth fluctuations have a positive impact on the volatility of the stock market, interest rate fluctuations have a negative impact. This means that stronger growth fluctuations will increase the volatility of the stock market, while a decrease in growth fluctuations will decrease the volatility of the stock market. At the same time, an increase in interest rate fluctuations will decrease the volatility of the stock market, while a decrease in interest rate fluctuations will increase the volatility of the stock market. This shows the different effects of the State Bank of Vietnam's monetary policy and the Vietnamese Government's fiscal policy. Fiscal expansion policies aimed at stimulating higher growth will have a strong impact on the volatility of the stock market and make the market livelier. Overall, companies with good efficiency will attract long-term investors in this context. On the other hand, stable growth policies aimed at reducing fluctuations in actual growth will help stabilize the stock market. In the financial market, the instability of monetary policies also reduces the volatility of interest rates, which makes the stock market less volatile. When the financial market is unstable, a stable stock market shows that it is a stable investment channel. Stable monetary policies can also help attract long-term investors to participate in the stock market.

Secondly, in the context of a stable economy, the role of positive and negative macroeconomic fluctuations differs in the short and long term. Specifically, positive growth has a clearer impact in the long term, while negative growth affects fluctuations in the stock market in both the short and long term. Conversely, increasing interest rate fluctuations have a clearer impact in both the short and long term, while reducing interest rates only has an impact in the long term. This shows that expanding fiscal policies to achieve higher growth will have a stronger impact on stock market volatility in the long term. This means that policies aimed at stimulating higher growth will not have a significant effect on the stability of the stock market in the short term. Stable growth policies aimed at reducing real growth fluctuations help stabilize the stock market in the long term more than in the short term. Stable businesses also attract short-term investors, but dynamic businesses truly attract long-term investors. In the currency market, unstable monetary policy can cause interest rate fluctuations that may reduce stock market volatility in both the short and long term. Alternatively, when the financial market is unstable, a stable stock market indicates that it is a stable investment channel in the context of financial market fluctuations in both the short and long term. Stable monetary policies can help make the stock market more active, especially in the long term. An economy with a stable financial market also shows that the stock market is attractive to long-term investors, making it more active. This shows that the

central bank's stable interest rate policy is also a way to attract long-term investors to participate in the stock market.

Another point is that the role of macroeconomic fluctuations differs from that of the Covid19 market volatility period. During this time, the IP index seems to play a more important role, especially in the short term. Conversely, interest rate policies have little significant impact in the context of an unstable market. The impact of this factor is not clear, except in the case of a shock where interest rate fluctuations decrease in the short term. This shows that expansionary fiscal policy has a strong impact during crises, and growth-promoting policies help to invigorate the stock market. Businesses with good operational efficiency and high growth truly attract investors in this context, especially short-term investors. A stable fiscal policy aimed at reducing growth volatility truly helps to stabilize the stock market in this context. The effectiveness of tightening policies helps to stabilize the stock market. This is also evidence of the consequences of Covid19 containment policies causing a decrease in commodity supply and making the stock market less active. In the financial market, the effectiveness of interest rate stabilization policies is also very low in times of crisis. Evidence shows that reducing interest rates is effective in the short term during the Covid19 crisis period. Stable interest rates can help to invigorate the stock market.

Finally, results show the different lag effects of macro policies. Specifically, in a stable period, the impact of negative volatility decreases rapidly, while the impact of positive volatility is long-lasting. This also means that the positive impact of government growth-promoting policies is longer-lasting than growth stabilization policies. In times of market instability, the effectiveness of interest rate policies in the financial market will be quite long-lasting. This shows the special importance of growth-promoting and interest rate policies in the context of economic crisis in Vietnam. Therefore, investors, market managers, and risk managers are encouraged to apply appropriate methods of forecasting volatility and risk management in each context to continuously adjust in a timely manner to the State Bank's interest rate policies and growth-promoting policies in the context of Vietnam's developing economy.

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MEASURING PERFORMANCE WITH DATA ENVELOPMENT ANALYSIS (DEA) INTEGRATED UNDESIRABLE VARIABLES - SOME POTENTIAL RESEARCH DIRECTIONS

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Abstract

Data envelopment analysis (DEA) is one of the most popular approaches to measuring the performance of operations. The nature of the approach is based on two ideas: maximizing output (output-oriented) or minimizing input (input-oriented). In real situations, there exist, however, many output variables that need to be minimized, and the input variables needed to be maximized to improve efficiency. This study will discuss and derive a performance measurement model that integrates these types of variables in mathematical programming. The results of the research can be applied to many professions and fields in practice.

Keywords: *Data Envelopment Analysis (DEA); technical efficiency; undesirable variables.*

1. Introduction

In a Data envelopment Analysis (DEA) model, the operation of decision-making units (DMUs) under measuring framework may exist both desirable and undesirable input and output variables. For example, the number of defective products is an unexpected output variable. We always aim to reduce the number of defective products to improve efficiency. On the other hand, in every production cycle, outputs such as waste or pollution are also considered as undesirable output variables. Apparently, minimizing these outputs will definitely improve the efficiency of the system.

The traditional DEA models (such as the variable efficiency to scale (VRS) model) assume that output variables need to be increased while input variables need to be reduced in order to improve efficiency or reach the best-practise (efficiency) frontier. Some researches consider the undesirable output variable as an input to minimize, the calculated results of the DEA model, nonetheless, may not accurately reflect the reality of the production process.

Conversely, in some other situations, the input variables may need to be increased to improve efficiency. For example, to improve the efficiency of a waste treatment process, the amount of waste (undesired input variable) handled should be increased rather than reduced as assumed in the traditional DEA model.

Seiford and Zhu (2002) have developed a research direction to handle undesirable input/output variables in the DEA - VRS model. The key to this approach is the use of invariant DEA classes. Accordingly, the efficient and inefficient classes are considered to be invariant to the metric of data transformation.

2. Efficiency Invariance

Assume that the input and output variables can be transformed in the form as $\bar{x}_{ij} = x_{ij} + u_i$ and $\bar{y}_{ij} = y_{ij} + v_i$ where u_i and v_i are non-negative random variables. Then the input-oriented and output-oriented DEA-VRS model can be written as follows

$$\min \theta - \varepsilon \left(\sum_{i=1}^m s_i^- + \sum_{r=1}^s s_r^+ \right) \quad (1)$$

subject to

$$\sum_{j=1}^n \lambda_j \bar{x}_{ij} + s_i^- = \theta \bar{x}_{i0} \quad i = 1, 2, \dots, m;$$

$$\sum_{j=1}^n \lambda_j \bar{y}_{rj} - s_r^+ = \bar{y}_{r0} \quad r = 1, 2, \dots, s;$$

$$\sum_{j=1}^n \lambda_j = 1$$

$$\lambda_j \geq 0 \quad j = 1, 2, \dots, n.$$

and

$$\max \phi - \varepsilon \left(\sum_{i=1}^m s_i^- + \sum_{r=1}^s s_r^+ \right) \quad (2)$$

subject to

$$\sum_{j=1}^n \lambda_j \bar{x}_{ij} + s_i^- = \bar{x}_{i0} \quad i = 1, 2, \dots, m;$$

$$\sum_{j=1}^n \lambda_j \bar{y}_{rj} - s_r^+ = \phi \bar{y}_{r0} \quad r = 1, 2, \dots, s;$$

$$\sum_{j=1}^n \lambda_j = 1$$

$$\lambda_j \geq 0 \quad j = 1, 2, \dots, n.$$

Ali and Seiford (1990) shows that any decision-making unit (DMU) is considered efficient in terms of a traditional DEA model if and only if that DMU satisfies the mathematical program (1) or (2). This conclusion is drawn from the occurrence of the constraint

$$\sum_{j=1}^n \lambda_j = 1$$

This property allows us to process negative input and output variables before applying the VRS model.

In general, there are three types of invariant when transforming data in the DEA. The first case is limited to “classification invariance”, where efficient and inefficient classifiers are invariant to the data transformation. The second case is the “order invariance” of inefficient DMUs. The last case is “solution invariance”, where the new DEA model (after

data transformation) must be absolutely equivalent to the original one, for example, both programming models must have in common results.

The method used in this study only deals with the first case of invariant. Readers can see the study of Pastor (1996) or Lovell and Pastor (1995) for a more detailed understanding of the invariance in the DEA model.

3. Undesirable Outputs

Desirable (good) and undesirable (bad) output variables are denoted by y_{rj}^g and y_{rj}^b , respectively. Here we want to increase y_{rj}^g and decrease y_{rj}^b to improve efficiency. However, in the output - oriented VRS model, both outputs are augmented to improve efficiency. To increase the desirable output variables and decrease the undesirable output variables, we can proceed as follows.

We first multiply the undesirable output variables by “-1” then find a suitable value of v_r that makes all the unexpected output variables positive, then $\bar{y}_{rj}^b = -y_{rj}^b + v_r > 0$. This

can be done by $v_r = \max_j \{y_{rj}^b\} + 1$.

Then, the model (2) can be re-written as:

$$\max h \quad (3)$$

subject to

$$\sum_{j=1}^n \lambda_j y_{rj}^g \geq h y_{r0}^g$$

$$\sum_{j=1}^n \lambda_j \bar{y}_{rj}^b \geq h \bar{y}_{r0}^b$$

$$\sum_{j=1}^n \lambda_j x_{ij} \leq x_{i0}$$

$$\sum_{j=1}^n \lambda_j = 1$$

$$\lambda_j \geq 0 \quad j = 1, 2, \dots, n.$$

Theoretically, we can treat undesirable outputs as inputs. However, this does not reflect the real production process. Another approach is to simply transform the undesirable outputs (for example $1/y_{rj}^b$) and then use the transformed variables as the outputs. In fact, the method used in this study applies a linear monotonous reduction transformation. Since the use of linear transformation preserves convexity, it is a good choice for the DEA model.

Figure 1 illustrates the proposal method. The five DMUs A, B, C, D and E use the same inputs to produce one desirable output (g) and one undesirable output (b). GCDEF is the frontier (output). If we consider the undesired output as input, then ABCD becomes the limit of the VRS model. Model (2) rotates the output frontier around EF and obtains a symmetric frontier. In this case, the DMUs A', B' and C', of A, B and C, respectively, are efficient.

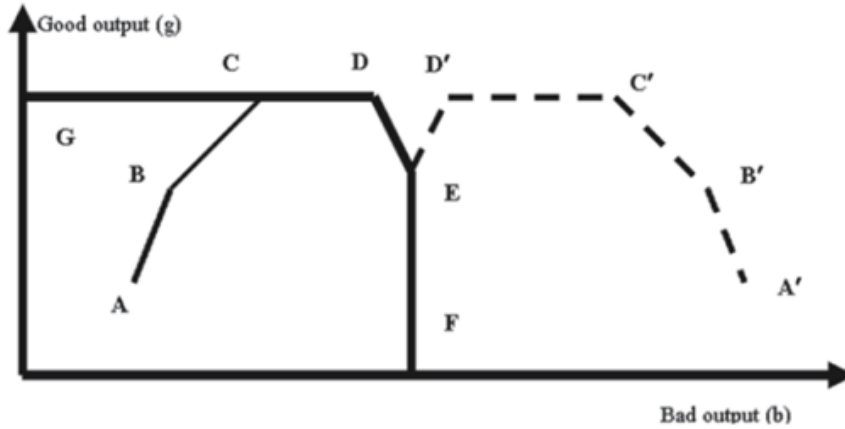


Figure 1. The treatment of undesirable outputs

The target efficiency which a DMU can reach to is

$$\begin{cases} \hat{x}_{i0} = x_{i0} - s_i^- \\ \hat{y}_{r0}^g = h^* y_{r0}^g + s_i^+ \\ \hat{y}_{r0}^b = v_r - (h^* \bar{y}_{r0}^g + s_r^+) \end{cases}$$

4. Undesirable Inputs

The idea of undesirable output variables can also be applied to cases where input variables need to be increased instead of decreased in order to enhance efficiency (undesirable input variables). In this case, we use x_{ij}^I to denote the inputs to increase and x_{ij}^D to denote the inputs to decrease, respectively.

Next, we can multiply x_{ij}^I by “-1” and find the value of u_i that makes $\bar{x}_{ij}^I = -x_{ij}^I + u_i > 0$. Based on model (1), we can transform to the model with undesirable inputs as follows

$$\max \tau \quad (4)$$

subject to

$$\sum_{j=1}^n \lambda_j x_{ij}^D \leq \tau x_{i0}^D$$

$$\sum_{j=1}^n \lambda_j \bar{x}_{ij}^I \leq \tau \bar{x}_{i0}^I$$

$$\sum_{j=1}^n \lambda_j y_{rj} \leq y_{r0}$$

$$\sum_{j=1}^n \lambda_j = 1$$

$$\lambda_j \geq 0 \quad j = 1, 2, \dots, n.$$

In this case, the target efficiency of a DMU can be written as

$$\begin{cases} \widehat{x}_{i0}^D = \tau^* x_{i0}^D - s_i^- \\ \widehat{y}_{r0}^g = u_i - (\tau^* x_{i0}^I - s_i^-) \\ \widehat{y}_{r0} = y_{r0} + s_r^+ \end{cases}$$

5. Illustrative Example

5.1. Undesirable outputs in supply chain

We can consider an example consisting of 6 suppliers as shown in Table 1. This data is from the study of Weber and Desai (1996) where the input variable is the unit price of the product, the two output variables are the late delivery rate and the rejection rate. Obviously, these outputs are undesirable. We can use Supplier 3 as the rotation point, then the original vector of this DMU will be shifted to (3.3%, 8%). (Another treatment is the use of vector (100%, 100%)). The last three columns in Table 1 shows transformed data.

Table 1. Illustration example of supply chain operation with two undesirable outputs.

DMU	Price (per unit)	Original Outputs		Eff. Score	Tranformed Outputs		Eff. Score
		% Rejects	% Late deliveries		% Rejects	% Late deliveries	
1	0,1958	1,2	5	1,0753	2,1	3	1,0892
2	0,1881	0,8	7	1	2,5	1	1
3	0,2204	0	0	2300	3,3	8	1
4	0,2081	2,1	0	1	1,2	8	1
5	0,2118	2,3	3	1	1	5	1,6
6	0,2096	1,2	4	1,2685	2,1	4	1,4276

By utilizing the Add-in Solver in Excel, we can calculate the efficiency of the above DMUs in the case of the original output data and the transformed output data. If we do not transform the data of the undesirable output variables and compute the efficiency according to the output - oriented VRS model, DMU 5 will be ranked as efficient and DMU 3 will be ranked as inefficient. Conversely, if the data has been transformed, then DMU 5 becomes an inefficient DMU while DMU 3 becomes an efficient DMU. This more accurately reflects the business meaning of suppliers.

5.2. Non-performing loans in banking

Credit can be considered as one of the most important activities in the banking industry. Although there is a shift in income structure from credit to non-credit services, the proportion of this activity in total income still accounts for a high level. It can be said that credit growth is always one of the vital goals of commercial banks.

Similar to any development, credit growth always has its negative side, and as a result, undesirable outputs are produced. Specifically, they are “non-performing loans”. Although these are unexpected additions, they always go hand in hand and grow at a certain rate compared to credit growth. This raises a need for bad debt management in the banking industry. In terms of importance, this work is considered to be equivalent to credit growth. Therefore, the weight of this unexpected output is also equivalent to the expected output.

This section uses the data from the research of Phung (2023) Vietnam Maritime University Project (No. DT22.23.99). The data consists of 17 banks listed in Vietnam’s two Stock Exchange. The descriptive statistics of data is shown in Table 2.

Table 2. Descriptive statistics of variables in banking credit operation

(unit: million VND)

Variables	Mean	Median	Min	Max	St.D	
Inputs	Labor Expenses	4,129,082	3,236,162	394,130	11,428,468	3,051,006
	Fixed Assets	3,860,970	2,748,688	300,052	11,114,537	3,461,197
	Interest Expenses	17,040,136	11,194,263	2,196,765	64,890,703	15,387,874
Outputs	Loans	323,696,051	215,837,420	29,471,994	1,354,632,643	332,359,185
	CAR	11.18	10.88	8.35	16.62	1.92
	NPL 3	1,159,359	517,854	23,123	7,095,731	1,646,938
	NPL 4	961,525	574,218	7,448	7,535,242	1,304,189
	NPL 5	2,516,489	1,387,797	169,912	16,525,054	2,933,139

The calculating results of the efficiency of bank credit activities are shown in Table 3. Since this is only an illustrative example, this study does not show the names of banks. Here two models are utilized to calculate the efficiency scores, that are, traditional DEA-VRS and the model with undesirable outputs that presented in this paper.

Table 3. Efficiency of banking credit operation.

DMU No.	2018		2019	
	Trational DEA-VRS	DEA-VRS with undesirable	Trational DEA-VRS	DEA-VRS with undesirable
1	1,0000	1,2002	1,0000	1,2258
2	1,0000	1,0000	1,0000	1,0000
3	1,0000	1,0000	1,0000	1,0000
4	1,0000	1,0000	1,0000	1,0000

DMU No.	2018		2019	
	Trational DEA-VRS	DEA-VRS with undesirable	Trational DEA-VRS	DEA-VRS with undesirable
5	1,0034	1,0000	1,0078	1,0172
6	1,0177	1,1289	1,0000	1,0003
7	1,0000	1,0000	1,0000	1,1989
8	1,0233	1,1362	1,0116	1,2015
9	1,0000	1,0000	1,0000	1,0473
10	1,0000	1,0000	1,0000	1,0000
11	1,0000	1,0000	1,0000	1,0000
12	1,0000	1,0000	1,0089	1,0050
13	1,0000	1,0000	1,0000	1,0000
14	1,0000	1,0000	1,0000	1,0223
15	1,0000	1,0000	1,0000	1,0000
16	1,0000	1,0000	1,0000	1,0000
17	1,0315	1,0000	1,0000	1,0000

Table 3 shows some differences between the calculation results of the two models. For example, according to the traditional DEA model, Bank 1 is evaluated as efficient in both years. However, according to the model takes into account the undesirable output variable, this bank is considered as inefficient. In contrast, for the case of Bank 17, while the traditional DEA model determines that this bank is inefficient, the DEA model integrating the undesirable variables evaluates this bank as an unique efficiency. Obviously, considering non-performing loan as normal outputs is illogical and the calculation results from the traditional DEA model are unreliable.

6. Conclusion

Studying the efficiency of the decision-making units' operation is always a topic of special interest to managers. Among the quantitative methods to evaluate efficiency, DEA emerges as one of the most popular because of its simplification of constraining assumptions about the economic model of input-output variables in the production operation.

Unexpected outputs and inputs are variables that always appear objectively in the operating cycle of decision-making units. Trying to control these variables can affect the efficiency of the cyclic system.

In this study, the author presents the DEA - VRS model to calculate the efficiency of DMUs in which there exist some undesirable measures (outputs or inputs). The model presented in this study is based on the efficiency classifier invariance. Using two examples

of the case of supply chain operation with undesirable output variables such as delivery rejection rate and late delivery rate, and banking operation with non-performing loans, we can see that applying the model integrating the type of bad outputs more accurately reflect the system's performance than when this factor is omitted.

This study is a premise to apply to the study of the performance of many different fields such as banking industry (NPL ratio), manufacturing industries (industrial emissions), seaports. (Waste into the marine environment) ... However, it should be noted that the calculated results according to the model do not guarantee the invariant of the solution, but only the invariant of the ranking order. In other words, the calculation results from the model are suggestions on how to effectively rank the DMUs instead of quantifying the absolute efficiency scores.

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INVESTIGATING THE MOTIVATIONS OF VIETNAM'S OUTWARD FDI: DOES RESOURCE SEEKING MATTER?

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Abstract

This paper intends to analyze the motivations of outward FDI pattern of Vietnam using the gravity theory and panel data of 159 economies over the world during a 2007-2021 period. The author extends the gravity model proposed by Zhang & Daly (2011) to test the determinants of Vietnam's OFDI. The regression models confirmed that Vietnamese OFDI's location choice was positively impacted by high levels of political stability, export relations, and proximity to Vietnam. Meanwhile, natural resource advantages and the other good governance factors in one economy do not have statistically significant effects on the location choice. Whereas, Vietnamese new registered OFDI amount is negatively affected by governance effectiveness, rule of law, and regulatory quality. Based on the findings, the author proposes some recommendations to promote the Vietnam's outward FDI in the upcoming time.

Keywords: *Outward FDI, political stability, good governance, regulatory quality, resource seeking*

1. Introduction

Since implementing Renovations towards a market economy in 1986, Vietnam has gained numerous outstanding achievements in economic development and international integration. Vietnam has become a reliable destination of multinational corporations (MNCs) thanks to its political and macroeconomic stability and improved ease of doing business. In response, several domestic enterprises have started investing abroad since 1989. This is considered as initial steps in Vietnamese Investment Development Path (IDP), where outward foreign direct investment (OFDI) flows have increased but at much lower level than inward foreign direct investment (IFDI) ones (Dunning, 1981, 1986). Due to its large economic openness and reliance on international cooperation (Pham H.C. et al., 2021), Vietnam's OFDI has become an important factor contributing to its process of extensive economic integration and value chain enhancement. From strategically investing into neighbours such as Laos and Cambodia in the 1990s, Vietnam has expanded its OFDI locations to approximately seventy countries and territories by 2021 (FIA, 2022). While there have been many studies investigating the motives of foreign direct investment (FDI) into Vietnam (Quang et al., 2022; Nguyen, 2008a) or its effects to Vietnamese economy (Nguyen T.M.N, 2021; Jenkins, 2006; Le & Pomfret, 2011; Nguyen, 2008b; Nguyen et al., 2020), the few have been produced to analyse Vietnam's OFDI motivations. OFDI from emerging and developing countries are implemented in distinctive strategies as prevailing theoretical approach to OFDI largely focuses on MNCs in developed countries (Thu Ha et

al., 2021). Empirical research strands on OFDI in developing economies are nearly on prominent powers' strategies such as India and China. These giant economies themselves hold geopolitical senses and consequently tend to design distinctive OFDI plans which might not be applied in medium-scale economies like Vietnam. For example, China showed significant interests on African markets (Mourao, 2018) while Indian MNCs largely invested in developed countries (Hansen, 2009). Therefore, analysis of OFDI motives in Vietnam, a medium-scale economy, contributes to the current literature on OFDI from developing countries and comparisons with others with similar economic sizes at different stages of IDP. Using regression models with panel data of 159 economies in the period 2007-2021, this paper aims to investigate the determinants of Vietnamese OFDI's location choice and the amount of new-registered OFDI capital in host economies.

2. Literature review

In a country level, the IDP model is a classic theoretical framework analysing FDI patterns all over the world, in which the values of FDI flows inward and outward economies depend on their levels of economic development (Dunning, 1981, 1986). Developing countries are at IDP's initial stages IDP. Their OFDI scale begins flourishing; however, it would be much lower the IFDI one. Dunning et al. (2010) also provides empirical evidence on Trade Development Path (TDP) in parallel with IDP; accordingly, levels of trade increase with expansion of cross-border investment flows as economies constantly grow.

In empirical aspects, most studies show the universality of the IDP model. However, in the application of the IDP model, selected specific characteristics of economic structures, monetary policies and especially governance institutions should be taken into account to provide comprehensive analysis on OFDI's features in each country (Bellak & Jel-code, 2001; Liu et al., 2005; Stoian, 2013).

In essence, the empirical literature links economic development with OFDI in the IDP model with large considerations on good governance. When a developing economy grows at significant rates, several aspects of good governance, such as its abilities on control of corruption tend to be improved (Paldam, 2003). In addition, the state would be under increasing civilian pressure (Acemoglu & Robinson, 2000), or the economy can face vital conditions such as better education (Fukuyama, 2001) and a rising middle class (Pittaluga et al., 2015) to undertake institutional reforms towards more transparency and democracy. Therefore, economic development becomes a requisite for good governance in terms of improving democratic and transparent institutions (Boix & Stokes, 2003). These good governance conditions establish crucial fundamentals in appealing IFDI as well as nurturing domestic enterprises to become MNCs for OFDI. For the former, it is confirmed that MNCs are interested in foreign countries with good government infrastructure during their location choice (Globerman & Shapiro, 2002). For the latter, Das (2013) while studying developing countries' behaviours on OFDI, shows that good governance in home economies plays an indispensable role in encouraging these flows. However, weak governance in source countries might be a thrust for MNCs to escape bad institutions and invest abroad (Stoian & Mohr, 2016).

In a firm level, foreign investors can be divided into four categories based on their motives: natural resource seekers; market seekers, efficiency seekers, or strategic asset seekers (Dunning, 1977; Dunning & Lundan, 2008). This is also a key topic in various empirical studies assessing host countries' features and determining OFDI flows from developing and emerging economies. This is because MNC's motives and strategies are diverse across countries, depending on host countries' barriers such as corruption and ease of doing business, and MNCs' own capacity (Kravtsova, 2010).

For the first type, MNCs tend to select locations with ample natural resources and cheap labour to match their technical and administrative efficacy. Studies on China's OFDI flows show that this country is a typical case of resource-seeking motives (Hu, 2013; Kolstad & Wiig, 2012; Zhang & Daly, 2011). Weak governance and large values of natural resource exports in host economies are key drivers of its OFDI flows. Wang et al. (2012) affirm the Chinese government has implemented state-ownership interventions in outward investment activities to orient its OFDI capital to developing countries rather than developed ones. In doing so, China has succeeded in promoting investments in African countries where there are natural resource advantages and limited governance (Mourao, 2018). Market seekers invest abroad with their desires of expanding market shares abroad by providing products to host economies' domestic markets. This market entry usually comes after an increase in export to the host countries. Empirical evidence of Eem et al. (2019) and Goh & Wong (2011) points out that Malaysian MNCs employ market-seeking motives as host countries' market sizes and income levels positively affect Malaysian' OFDI flows. In addition, Ibrahim et al. (2019) vividly indicates that selected ASEAN countries such as Malaysia, Singapore, Indonesia, and Thailand boost their OFDI flows via the market-seeking motives. The efficiency seeking OFDI aims to rationalize firms' operation by technology transferred to host countries and taking advantages of their cheap labour conditions. These enterprises employ economy-to-scale features and a natural monopoly to increase their competitiveness. Among developing countries, Ma et al. (2020) shows that the motives of China's OFDI in the period 2005-2016 in ASEAN countries shifted from resource-seeking to efficiency-seeking.

Beside a traditional exploitative view based on the three aforementioned motives, Kim et al. (2015) investigate a novel theoretical concept, in which businesses can access a explorative view to conduce to their growth via seeking new knowledge and favourable conditions in host countries. Regarding the theory of Dunning & Lundan (2008), the approach of Kim et al. corresponds to the forth motive-strategic asset seeking. In host countries, strategic asset seekers use ownership methods which are ineffective or infeasible in their source country, generate gains from adjusted ownership, and improve their positions in abroad markets by weakening competitors. Analysis of Indian OFDI points out that its MNCs had a tendency of implementing market entries through strategic asset seeking, and largely invested in non-tradable high-tech services such as software and telecommunications in developed countries, which helps its OFDI flows increased sharply from 2001 (Hansen, 2009). This strategy was reinforced by Indian high-tech workforce migrating to developed countries, promoting strategic OFDI from India into those above industries and in turn boosting the Indian economy (Khadria, 2002).

Theoretical and empirical literature review shows that countries design different investment strategies: Although the IDP model is basically universal across countries, specific investigations should be carried out when governments implement intervention policies in developing countries as well as countries under the socialist regime in transition. Vietnam's outward FDI, to a certain extent, follow the IDP model (Phung, 2016a). However, the OFDI's motives have not been thoroughly investigated. To the best author's knowledge, only two papers by Phung (2016b) and Thanh Thu (et al. 2018) empirically analyse determinants of Vietnamese OFDI into its two neighbours, Laos and Cambodia, in which Vietnam's OFDI activities are positively influenced by the State' interventions as well as Vietnamese relative economic development levels compared to Laos and Cambodia. Such studies cannot fully reflect Vietnam's OFDI motives and strategies in its development path. For investigating the motivations of Vietnam's OFDI, we propose three main hypotheses as follow:

H1: Political stability in one country has positive impacts on Vietnam's selection of investment locations.

H2: Natural resource advantages have positive impacts on the registered OFDI amount.

H3: Good governance in host middle income country groups has negative impacts on the new registered OFDI amount.

We follow a gravity model of Zhang & Daly (2011) to test the aforementioned hypotheses. As this paper is the first quantitative one investigating determinants of Vietnam's OFDI strategies, the coefficients of the controls in the gravity model like population, geographical distance, GDP per capita are also analysed in terms of statistical significance levels to investigate associations of these factors with Vietnamese OFDI.

3. Method

We investigate Vietnamese OFDI strategies via constructing panel data of all countries and territories during a 2007-2021 period. The main reason to select the beginning year of 2007 is the highlighted point of Vietnam joining the WTO. It can be said that the year of 2007 is the unique step of Vietnam in the way of globalization and economic openness. We follow an empirical gravity model of Kolstad and Wiig (2012) and Zhang & Daly (2011), and add other independent variables on good governance to test our hypotheses:

$OFDI_i = \alpha + \beta_1 * Governance_i + \beta_2 * Natural\ resources_i + \gamma * Controls_i + \varepsilon_i$, where i is an index by country or territory, ε is an independent and identically distributed random variable.

The calculation and data sources of variables: *OFDI*, *Governance*, *Natural resources* and *Controls* are described in Table 1. We calculate the average value of these indicators in the period 2007-2021 to produce long-term variables (Zhang & Daly, 2011). In our regression models, we use their natural logarithmic numbers, as suggested by Goh & Wong (2011) to be able to compare their impacts and elasticities in relative terms, which cannot be investigated via the original model of Zhang & Daly (2011).

Table 1. Data and Sources

No	Name	Description	Variables ^(a)	Source
<i>Vietnamese outward FDI</i>				
1	OFDI	Annual Vietnam's new registered OFDI flows to host economy	Ln (OFDI)	FIA
<i>Controls</i>				
2	GDPP	GDP per capita	Ln (GDPP)	WDI
3	GGDP	Average GDP growth	Ln (1+ GGDP)	WDI
4	Inflation	Average inflation rate, consumer price index (CPI)	Ln (1+ Inflation)	WDI
5	OPEN	Ratio of inward FDI stock to GDP	Ln (OPEN)	WDI
6	POP	Average population	Ln (DIST)	WDI
7	DIST	Distance between capitals of an economy and Vietnam	Ln (DIST)	CPEII
8	EX	Vietnam's exports to an economy	Ln (EX)	WITS
9	IM	Vietnam's imports from an economy	Ln (IM)	WITS
<i>Governance, Natural resources</i>				
10	NR	Nature Resources Index, measured by the ratio of ores and metals exports to merchandise exports	Ln (NR)	WDI
11	COC	Percentage Rank of Control of Corruption	Ln (COC)	WGI
12	GEF	Percentage Rank of Governance Effectiveness	Ln (GEF)	WGI
13	POS	Percentage Rank of Political Stability	Ln (POS)	WGI
14	ROL	Percentage Rank of Rule of Law	Ln (ROL)	WGI
15	RQU	Percentage Rank of Regulatory Quality	Ln (RQU)	WGI
16	VOA	Percentage Rank of Voice and Accountability	Ln (VOA)	WGI

Source: Prepared by the author (2023)

Note: (a): logarithms of these figures to compare the results in regression models in relative terms.

There are four clarifications on our data and methodology of calculating the variables. Firstly, we use three data sources to calculate the Controls: Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) for the distance variable, World Integrated Trade Solution (WITS) of the WB for the variables on imports and exports, and World Development Indicators (WDI) for the other Controls. Secondly, we calculate our dependent variable, OFDI, as annual average of new-registered OFDI capital from Vietnam to each country and territory over the world. Data on the new-registered OFDI capital is extracted from FIA data set, which records new OFDI registration licenses during the period of 2007-

2021. The measure of new registered capital is employed to reflect the Vietnamese MNCs' expectations at starting points of planning their investments abroad. In the period of 2007-2021, Vietnam has registered to invest in 59 countries and five territories (Macao, Hong Kong, Taiwan, British Virgin Islands (BVI), and Camay Islands). Thirdly, for governance variables, we use the WB's Database on Good Governance to measure 6 sub-indicators: Control of Corruption (COC), Governance Effectiveness (GEF), Political Stability (POS), Rule of Law (ROL), Regulatory Quality (RQU); and Voice and Accountability (VOA) (Kaufmann et al., 2010). Finally, we calculate natural logarithms of (1+ GDPG) and (1+ |Inflation|) as proxies for GDP growth and inflation to run our regressions. A one percentage point increase in (1+ GDPG) corresponds to an increase of one percent in GDP growth (GDPG). In addition, the absolute value of CPI is employed to test a hypothesis that the more stable CPI one country maintains (an inflation rate is near zero), the more motives Vietnamese firms have to invest via OFDI.

We use two regression techniques to test two hypothesis groups: probit for determinants of location choice and Fully modified ordinary least squares (FMOLS) for ones of the OFDI amount. In both regression techniques, we use robust standard errors to avoid heteroskedasticity, which leads regression techniques to become inefficient (White, 1980).

For determinants of location choice, the panel data is constructed in all countries and territories with available data. WITS records countries and territories that Vietnam trades with for significant amounts of exports and imports; therefore, we exclude countries which are not included in the WITS data set due to uncertainties in Vietnamese export and import values (see Table 2 for the variables' description). In addition, we use observations with missing no figures in all of the variables in Table 1 to run probit regressions. The *OFDI* variable in probit regressions has binary values of 0 if there are no OFDI flows from Vietnam to an economy in the period of 2007-2021, and 1, reversely.

Table 2. Description of variables

Variable	Observation	Mean	Std. Dev.	Unit
OFDI	59*	18.0	50.0	Million USD
GDPP	171	12,741	17,655	USD
GDPG	171	1.5	0.5	%
CPI	171	5.8	6.8	%
OPEN	171	10.3	58.5	%
POP	171	38.3	142.0	Million
DIST	168	9244.7	4517.5	Km
EX	171	455.7	1589.3	Million USD
IM	171	455.3	2062.3	Million USD
NR	171	7.9	13.7	%
COC	171	49.1	29.0	%
GEF	171	50.2	28.4	%

Variable	Observation	Mean	Std. Dev.	Unit
POS	171	47.9	27.7	%
RQU	171	50.7	27.9	%
ROL	171	49.3	28.7	%
VOA	171	49.5	28.0	%

Source: Prepared by the author (2023)

To examine factors that impact the OFDI amount, we employ the FMOLS estimate to regress $\ln(OFDI)$ with independent variables. In this model, only observations in Vietnamese host countries-or $OFDI = 1$ in probit regressions-is taken into account. Correlation matrix of the variables for this model is presented in Table 3. It can be seen that good governance variables are strongly correlated with each other.

Table 3. Correlation matrix of variables

	LOFDI	LGDP	GDPG	LCHI	LOPEN	LPOP	LDIST	LEX	LIM	LNR	LCOC	LGEF	LPOS	LRQU	LRQL	LVOI
LOFDI	1.00															
LGDP	-0.27	1.00														
GDPG	0.21	-0.53	1.00													
LCHI	0.27	-0.25	0.04	1.00												
LOPEN	0.03	0.27	0.23	-0.17	1.00											
LPOP	0.22	-0.17	0.07	0.06	-0.26	1.00										
LDIST	-0.14	0.22	-0.47	0.15	-0.16	0.12	1.00									
LEX	0.22	0.36	-0.13	-0.26	0.11	0.67	-0.04	1.00								
LIM	0.18	0.34	-0.05	-0.31	0.16	0.58	-0.14	0.89	1.00							
LNR	0.28	-0.02	0.05	-0.02	0.05	0.22	0.11	0.09	0.05	1.00						
LCOC	-0.40	0.76	-0.39	-0.55	0.19	-0.19	0.18	0.23	0.25	0.04	1.00					
LGEF	-0.38	0.77	-0.36	-0.58	0.23	-0.11	0.08	0.34	0.33	0.10	0.93	1.00				
LPOS	-0.22	0.74	-0.29	-0.36	0.39	-0.49	0.05	0.05	0.11	0.07	0.73	0.72	1.00			
LRQU	-0.34	0.74	-0.39	-0.63	0.29	-0.10	0.16	0.41	0.40	0.09	0.86	0.94	0.66	1.00		
LRQL	-0.41	0.70	-0.34	-0.67	0.21	-0.16	0.08	0.28	0.29	0.08	0.95	0.97	0.72	0.92	1.00	
LVOA	-0.29	0.53	-0.50	-0.31	0.07	-0.05	0.38	0.22	0.11	0.18	0.68	0.71	0.46	0.74	0.71	1.00

Source: Prepared by the author (2023)

4. Results

Regarding the determinants of location choice, the probit technique is employed with regressing the binary OFDI variable with *Controls*, *Natural resources*, and *Governance*. Results of six regressions are presented in Table 4. Among *Controls*, coefficients of three variables, *inflation rate*, *distance*, and *EX*, are statistically significant at different levels of 1%, 5%, and 10% in all 6 columns. At a 1% significance level, all 6 regressions show that geographical distance to Vietnam negatively impacts probability Vietnam choose one country to become its investment location. Meanwhile, export value from Vietnam to one

country has positive association with the probability of Vietnamese investment location, with the coefficients ranging from 0.41 to 0.45 at significance levels of 5% in two columns (4.1) and (4.3) and 1% in the four columns (4.2), (4.4) - (4.6). This result supports correlations between IDP and TDP models in Vietnam. In addition, countries with inflation rates farther than zero percent are more likely to be invested by Vietnamese enterprises. In other words, Vietnam tends to invest in countries with relatively large inflation rates. Finally, a coefficient of the population variable, *POP*, in column (4.3) is statistically significant at a 5% significance level with a magnitude of 0.0658. Population also has a positive effect on Vietnamese OFDI's location choice. However, this effect cannot be confirmed by other results in the remaining five columns of Table 4.

Table 4. Probit Regression for Determinants of location choice

	All economies					
	(4.1)	(4.2)	(4.3)	(4.4)	(4.5)	(4.6)
	LCOC	LGEF	LPOS	LRQU	LROL	LVOA
LGDP	0.0247 (0.0345)	0.0178 (0.0397)	0.0136 (0.0296)	0.0349 (0.0389)	0.0333 (0.0357)	0.0402 (0.0326)
LGDPG	-0.0459 (0.0814)	-0.0505 (0.0820)	-0.0473 (0.0803)	-0.0448 (0.0831)	-0.0472 (0.0823)	-0.0277 (0.0815)
LCPI	0.0117*** (0.00341)	0.0118*** (0.00349)	0.0113*** (0.00304)	0.0114*** (0.00349)	0.0116*** (0.00372)	0.0108*** (0.00324)
LOPEN	-0.0169 (0.0400)	-0.0182 (0.0402)	-0.0251 (0.0388)	-0.0223 (0.0414)	-0.0181 (0.0405)	-0.0186 (0.0406)
LPOP	0.0271 (0.0257)	0.0198 (0.0257)	0.0658** (0.0287)	0.0218 (0.0257)	0.0248 (0.0254)	0.0276 (0.0252)
LDIST	-0.216*** (0.0463)	-0.205*** (0.0444)	-0.220*** (0.0440)	-0.212*** (0.0453)	-0.208*** (0.0451)	-0.223*** (0.0473)
LEX	0.0439** (0.0221)	0.0436* (0.0224)	0.0445** (0.0216)	0.0416* (0.0220)	0.0429* (0.0223)	0.0411* (0.0220)
LIM	0.0133 (0.0185)	0.0163 (0.0181)	-0.000324 (0.0193)	0.0155 (0.0187)	0.0148 (0.0185)	0.0144 (0.0187)
LNR	-0.00556 (0.0168)	-0.00643 (0.0174)	-0.0129 (0.0171)	-0.00456 (0.0178)	-0.00337 (0.0171)	-0.00473 (0.0166)
Governance	0.0819 (0.0575)	0.0874 (0.0619)	0.176*** (0.0577)	0.0548 (0.0539)	0.0543 (0.0503)	0.0630 (0.0507)
Constant	0.787 (0.579)	0.826 (0.578)	0.120 (0.590)	0.859 (0.586)	0.780 (0.571)	0.781 (0.583)
Observations	159	159	159	159	159	159
R-squared	0.422	0.421	0.449	0.418	0.419	0.421

Source: Prepared by the author (2023)

Note: OFDI = 1 if a country is chosen for Vietnam's OFDI during 2007-2021; otherwise, OFDI = 0. Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Regarding *Governance* and *Natural resources*, only a coefficient of *POS* in column (4.3) is statistically significant at a 1% level with its magnitude of 0.176. Political stability positively influences the probability of Vietnamese location choice. In addition, it cannot be confirmed that natural resource advantages are a factor that induces Vietnamese firms to choose their investment locations. Similarly, five other sub-indicators of *Governance*, control of corruption (*COC*), governance effectiveness (*GEF*), regulatory quality (*RQU*), rule of law (*ROL*), and voice and accountability (*VOA*) do not significantly associate with Vietnamese OFDI's location choice.

To compare impacts' magnitudes among variables' coefficients with statistical significance at a 10% level or lower, the two variables *POS* and *DIST* have the largest effects on the location choice. In other words, political stability and distance are the most important factors in selecting investment location in the period of 2007-2021. The possibility of being selected as Vietnamese OFDI's host countries would be large if their political systems remain stable with their close geographical distance to Vietnam. Interestingly, the coefficients of the inflation rate variable are positive and statistically significant, but lower than ones of *POS*. This means Vietnamese's enterprises give priorities to stable political systems over stable economic ones, at least in terms of inflation, when choosing a location to invest abroad.

5. Discussion and Conclusion

Since renovations in 1986, the Vietnamese economy has grown considerably and started to participate in OFDI process, which has been promoted since the 2000s. This process follows the IDP model with its FDI flows larger than its OFDI ones. This paper aims to investigate factors affecting Vietnam's OFDI strategies on location selection and the amount of new registered OFDI capital in host countries. To do so, we employ panel data of 159 countries and territories in the period 2007-2021 with a probit technique for investigating determinants of the location selection and the data of 55 host economies with FMOLS technique for investigating ones of the new registered OFDI amount.

Trade relations, measured by export values, are positively associated with both probabilities that Vietnam chooses investment locations and the new registered OFDI amount in host economies. These findings support a hypothesis on TDP and IDP since trade and investment values have positive correlation with each other and correspond to the level of economic development.

In terms of location selection, proximity to Vietnam and high levels of political stability are the two most important determinant of probability of being chosen as a host economy. Priorities are given to political stability over macroeconomic stability, at least in terms of inflation. In addition, potential on natural resources cannot be confirmed to have significant effects on the choice of investment locations.

Regarding the choice of the new registered OFDI amount, high levels of political stability in host countries no longer affect this amount. Instead, other factors of good governance, including government effectiveness, regulatory quality, and rule of law have

negative impacts on this amount. If degrees of variables *GEF*, *RQU*, and *ROL* decrease by 1%, this OFDI amount in host countries increase by 1.93, 2.11, and 1.80 percentage points, respectively. Also, natural resource advantages are a crucial factor that positively impacts the value of new registered OFDI flows. If the ratio of ores and metals exports to merchandise exports in host countries increases by 1%, there is an increase of around 0.78-0.88 percentage point in Vietnamese new registered OFDI amount. Comparing impact magnitudes of all dependent variables, *Controls*, *Natural resources*, and sub-indicators in *Governance*, low levels of regulatory quality in host countries have the strongest effects on the OFDI amount.

Our empirical analysis contributes to the understanding of OFDI motives in developing countries in IDP initial stages. Before reaching a higher level of economic development like other countries in ASEAN like Singapore, Malaysia, Thailand and Indonesia, OFDI from Vietnam aimed at resource seeking rather than market seeking. In these first stages, Vietnamese strategies are similar to Chinese ones in the early 2000s. However, with its rapid economic development, China has shifted its strategies on the OFDI motives to market-seeking in selected regions (Ma et al., 2020). This also implies research topics and hypotheses for future studies on Vietnam's OFDI motives, as Vietnam climbs to higher stages of economic development.

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A STUDY ON THE RELATIONSHIP BETWEEN CAPITAL STRUCTURE AND PERFORMANCE

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Abstract

This study is conducted to review studies related to the impact of capital structure on the performance and vice versa. Then we synthesize the theoretical framework related to the relationship between capital structure and performance. Then a research model is proposed with deep explanations for the future research. Secondary data were collected from related researches and we employ the at-desk review to synthesize issues on the research topic. Conducting this research is really necessary to collecting data (both primary and second data) for running regression for testing the relationship between capital structure and firm performance and vice versa.

Keywords: *Capital structure, performance, relationship, literature, theoretical framework*

1. Introduction

Capital structure and operational efficiency of enterprises is a traditional topic that has been mentioned in many studies. However, consideration of this relationship is still well received by researchers and policy makers. The value of an enterprise is built up from the accumulation of business performance, but is dependent on the past and future investment decisions of the enterprise. Regarding investment decisions involving funding sources, enterprises can use debt, equity, or combine debt and equity. Operational efficiency of enterprises is influenced by financial decisions that have been confirmed in many studies, or capital structure also plays an important role in the success of enterprises (Kumar et al., 2017).

The discussion which is considered to be the beginning of discussing the relationship between capital structure and operational efficiency is found in the study of Modigliani & Miller (1958) (also known as M&M theory). M&M theory makes arguments based on the unrealistic assumption of a perfectly competitive capital market in which there are no corporate income taxes, no bankruptcy costs, and no financial distress costs on debt,... then the market value of an enterprise is unaffected by its capital structure. Later, other theories of capital structure are proposed, of which the trade-off theory of Myers & Majluf (1984) is widely accepted. Theories about capital structure also only mention that there is a positive impact of capital structure on the operating system of enterprises, but no theory has been found that can completely explain the relationship between capital structure and the operating system of enterprises (Le & Phan, 2017).

Empirical studies on the interaction between capital structure and performance: a study by (Berger & Di Patti, 2006; Margaritis & Psillaki, 2010; Fosu, 2013; Kiprop, 2014; Farooq & Masood, 2016; Mohanad & Ali, 2020) state that financial structure has a positive effect on firm performance. In contrast, studies conducted by Fama & French (1998), Gleason et al. (2000), Khan (2012), Le (2015), Zeitun & Haq (2015), Mai & Tran (2018), Le et al. (2021) discover that there is a negative impact of capital structure on the operational efficiency of enterprises. In addition, some studies confirm that: there is no evidence that capital structure and operational efficiency have a relationship (Karaca & Savsar, 2012; Rajhans, 2013).

Actual discussions on the relationship between the capital structure and the operational efficiency of enterprises show many different results, while new theories only assess a positive aspect in the relationship between them.

Although there have been many studies on the impact of capital structure on the operational efficiency of enterprises, this study still ensures a new contribution in terms of theory and practice when the research is expanded in the following aspects:

- The study shows that the relationship between the capital structure and the operational efficiency is two-way, which means, in addition to clarifying the impact of the capital structure on the operational efficiency, it also clarifies the opposite direction.
- This study uses the ‘firm size’ variable as a moderating variable for the actual relationship between the capital structure and the operational efficiency, while most of the previous studies did not use it as a moderating variable.
- The GMM method is applied to overcome the variable variance and endogenous problems.

2. Literature review

Debates on the topic of the relationship between the capital structure and the operational efficiency of enterprises occur not only on theories but also on empirical evidences. Other than theories that only find their positive relationship, empirical evidence shows mixed results about this relationship: there are conclusions that the capital structure has a both positive and negative effect on the operational efficiency, and there is also no evidence to indicate this relationship. According to the evidence collected, there are various reasons for the above relationship: differences in institutions of the countries (Ahrens et al., 2011); errors of estimation methods (Bhagat & Bolton, 2009; Love, 2011); and the fact that capital markets in developed countries perform better and are less prone to asymmetric information than those in developing countries (Eldomiaty, 2007); capital structure varies across industries...

2.1. The impact of capital structure on firm performance

M&M theory in 1958, which was supplemented and developed in 1963, states that firms with high profitability agree that they are using more debt to take advantage of tax shield benefits when determining income tax. The use of debt has made a positive impact on the operational efficiency of enterprises. Agency theory (Jensen & Meckling, 1976), pecking order theory (Myers & Majluf, 1984) agree that having a loan increases the value of firms.

When borrowing money, the pressure from the control of the creditor and from the cash flow generation forces enterprises to comply with the lender's regulations, minimizes the arbitrariness in management, and directs managers to not only know personal interests as before, but also work for the common interests of enterprises, thereby increasing performance.

Jensen's research (1986) also agrees that enterprises with high profit margins will be bolder in using debt leverage than others in order to better control cash flow, which is the basis for generating costs, helping them maximize the value of enterprises. Thus, enterprises with high profit margins often take advantage of more leverage. This conclusion is shown in the experimental results of (Berger & Di Patti, 2006; Margaritis & Psillaki, 2010; Fosu, 2013; Kiprop, 2014; Farooq & Masood, 2016; Mohanad & Ali, 2020; Nguyen, 2016; Ha, 2022).

The results contrary to the above viewpoint are that capital structure has a negative impact on the operational efficiency found in many empirical studies, typically the value-franchise hypothesis, When enterprises operate with high efficiency, they do not want to use the profit from this operation to pay for the loan interest, so enterprises with a lot of profits will lean towards the capital structure with a high percentage of equity. Empirical researches reveal the positive impact of the capital structure on the operational efficiency (Khan, 2012; Le, 2015; Zeitun & Haq, 2015; Mai & Tran, 2018; Le et al., 2021; IQBAL, Mazhar, 2022).

Contrary to the above research results, some studies confirm that: there is no evidence that the capital structure and enterprise value have a relationship (Karaca & Savsar, 2012; Rajhans, 2013). Zeitun (2014) also shows that debt has no impact on operational efficiency. One more conclusion is the same as above: there is no binding between the capital structure and ROE and growth ability of enterprises, but with ROA, it has the opposite effect, according to Hasan et al (2014). Chadha & Sharma (2016) conclude that debt ratio does not affect ROA and Tobin'Q, but does affect ROE, and debt level will negatively affect ROE. In Vietnam, Dinh & Tran (2022) in their study also showed that debt coefficient has a positive and statistically significant impact on ROE and also has a positive impact but not statistically significant with ROA.

Thus, summarization from theories and empirical evidence shows that the capital structure has an impact on the operational efficiency of enterprises in many directions: positive impact, negative impact, and even no impact.

2.2. The impact of firm performance on capital structure

Theories of the capital structure show that the capital structure has an impact on operational efficiency, and vice versa, which is that the operational efficiency has an impact on the choice of capital structure of enterprises (Modigliani & Miller, 1958; Jensen & Meckling, 1976; Myers and Majluf, 1984). According to the M&M theory, the operational efficiency can have a positive impact on the capital structure. Studies conducted by Givoly et al. (1992), Fraser et al. (2006), Berger & di Patti (2006), Margaritis & Psillaki (2007, 2010) have supported this viewpoint of M&M theory.

According to the pecking order theory of Myers and Majluf (1984), the operational efficiency can have a negative impact on the capital structure. Research results of Biger et al. (2007), Frank & Goyal (2009), Nguyen & Tran (2015) have proved this.

Some other studies show a non-linear relationship between the capital structure and the operational efficiency of enterprises. Research by Margaritis & Psillaki (2007, 2010) suggests that the direction of the impact of debt on operational efficiency is reversed when debt exceeds the threshold. The results show that there is a positive effect between debt and operational efficiency. However, the sign of the debt ratio turns from positive to negative when debt levels are high in some industries. There is a reciprocal relationship between the capital structure and the operational efficiency. Research by Lin & Chang (2011) shows that when the debt ratio is less than 9.86%, every 1% increase in the debt ratio will increase Tobin's Q by 0.0546%. When the debt ratio is between 9.86% and 33.33%, every 1% increase in the debt ratio will increase Tobin's Q by 0.0057%. No relationship will be found between debt and enterprise value when the debt ratio is greater than 33.33%. Berzkalne (2015) pointed out in his study that if the debt ratio maintained at 24.64%, the operational efficiency of these firms will reach the highest value and the increase of the debt ratio will increase the operational efficiency. Small and medium enterprises in this Baltic region should maintain their debt ratio below 62.97%. Nguyen & Nguyen (2018) conclude in their research that short-term debt ratio has a positive impact on ROE, long-term debt ratio and debt ratio have a negative impact on ROE.

Thus, summarization from theories and empirical evidence shows that the operational efficiency has an impact on the capital structure of enterprises in both positive and negative directions.

2.3. Capital structure and firm performance: firm size as a moderating variable

The size of the enterprise partly reflects the position of the enterprise in the market. In Vietnam, enterprises are classified into large enterprises, medium enterprises, small enterprises and micro enterprises, one of the criteria to classify enterprises as above is based on the size of capital, turnover, number of employees. Facing opportunities and challenges, large-scale enterprises often grasp and respond better than small and medium-sized enterprises. When accessing capital markets and debt loans, large enterprises have better and easier access than small and medium enterprises. For this reason, the size of the enterprise is used as a moderating variable of the relationship between the capital structure and the operational efficiency of enterprises of the enterprise, IQBAL, Mazhar (2022).

3. Theoretical framework

3.1. Capital structure

From Kyereboah-Coleman (2007) to Ross et al. (2013), all have the same opinion that: debt is a component constituting capital of an enterprise, a combination of liabilities and equity in an appropriate ratio is natural in most production and business activities of enterprises. Therefore, according to Seetanah et al (2014) to measure the level of debt of a business, it is necessary to base on capital structure, which is, equal to total debt divided by total assets. And so: capital structure = debt capital (liabilities) + equity.

According to Tran (2005), Breathey et al. (2018) liabilities are divided into short-term debt and long-term debt, and the capital structure of the enterprise = short-term debt + long-term debt + equity.

The definitions mentioned above show that the statements about capital structure are consistent with equity and debt sources (liabilities). In this paper, we employ the concept of capital structure = liabilities + equity.

Capital structure measurement

Myers (1984) argues that enterprises benefit from tax deductions through debt, thereby increasing the value of enterprises. Therefore, a positive relationship between the capital structure and the operational efficiency of enterprises is discovered (Taub, 1975; Roden & Lewellen, 1995; Champion, 1999; Berger & Di Patti, 2006; Margaritis & Psillaki, 2010; Fosu, 2013; Nguyen & Nguyen, 2018; Nguyen & Ha, 2022). On the other hand, there is an opinion that using internal capital instead of debt will be more beneficial. Therefore, researchers such as Friend & Hasbrouck (1986), Kester (1986), Titman & Wessels (1988), Nguyen & Nguyen (2018) prove that there is a negative impact between the capital structure and the operational efficiency.

Debt ratio

Equation: Debt ratios = 100% x (Average liabilities/Average total assets).

In which:

Average total liabilities: is all the liabilities of the enterprise at the beginning and the end of the period on the accounting books of the enterprise.

Average total assets: equal to the assets at the beginning of the period plus the end of the period divided by two taken in the accounting books of the enterprise.

Since most of the capital equations in enterprises are measured by = liabilities + equity, when looking at the capital structure of enterprises, it is easy for managers to measure whether their financial risk is high or low, depending on how much debt they use. If an enterprise has a debt ratio greater than 0.5, in addition to showing how much of its total capital is debt, it also indicates that they are using a debt-inclined capital structure, and the assets that they own sponsored mainly by loans. The smaller the debt ratio, the smaller the proportion of liabilities in the total assets of the enterprise, which also means that the level of risk is low and the solvency of the enterprise is good.

Core theories: Modigliani and Miller Theory, Trade off Theory, The Pecking Order Theory

First, Modigliani and Miller Theory

The basis for capital structure theory comes from the theorem Modigliani & Miller (1958). Assuming a stable market: tax obligations, transaction fees, bankruptcy costs and financial distress costs are not incurred, information is timely and available to all investors. This assumption was later deemed too restrictive, Harrison & Widjaja (2014). In 1963, Modigliani & Miller (1963) acknowledged the imperfection of the market, they changed

their previous view and suggested tax benefits of debt as a way to increase enterprise value. Interest payments are tax deductible, borrowing money from a bank effectively reduces the tax liability of the enterprise while paying dividends on equity does not benefit from tax.

Second, Trade off Theory

The trade-off theory provides evidence that for the advantages of debt financing, firms have a trade-off between the benefits of debt and the cost of debt. The benefit that debt brings is the benefit from the tax shield, the potential cost that debt can bring is the bankruptcy cost. In other words, tax advantages will increase the operational efficiency of enterprises. Although bankruptcy costs exist (Miller, 1977; Warner, 1977) conclude that they are much smaller than the tax benefits. There is a positive relationship between debt and the operational efficiency of enterprises is the argument that the trade-off theory wants to confirm.

Third, The Agency cost Theory

Regarding to business finance activities, there always exists a relationship between shareholders (owners), managers (representatives) on the other hand and financial intermediaries (Jensen & Meckling, 1976). The viewpoints of the parties on interests and debts are different. The main reason is that there is a separation of rights: ownership and management right, Berle & Means (1932). The information asymmetry makes people in the role of managers, who directly run the business's operations, they know better than anyone about the health status of the business. Managers in enterprises with high debt, in order to keep their jobs and benefits, they are forced to work hard to generate enough cash flow to pay interest, so they have to find ways to invest in profitable project. This mechanism helps to increase the value of enterprises (Jensen & Meckling, 1976).

Fourthly, The Pecking Order Theory

This theory makes the point of establishing a prioritizing order when finding financing fund: internal funding (retained earnings) is prioritized first, followed by debt financing, and the last when the limit from using the above two sources expires, enterprises will use the new form of issuing common shares. Debt helps businesses increase market awareness, thereby increasing the value of enterprises (Myers & Majluf, 1984).

In summary, although the theories of debt ratio are studied based on different assumptions, the scope of research in terms of different time and space, the final results that the given theories gets positive effect of debt ratio on operating performance. Whether or not the debt ratio has a negative effect on performance, the theories are not clearly mentioned.

3.2. Firm performance

When studying in the fields of business administration, economics, finance, and accounting, the concept of firm performance is quite familiar and is approached from many different aspects.

By the time, the concept of efficient operation/firm performance is recognized and evaluated in accordance with the goals that the business wants to achieve. Georgopoulos &

Tannenbaum (1957) supposed that efficient operation is considered efficiency when evaluated from the perspective of the output of the production process with the inputs needed to produce that output, so the enterprise is considered to have achieved its goal with that scarce resource, the enterprise can still produce a definite amount of output. With the input factors of the given production process, the enterprise produces the most optimal output of products and services, that enterprise is considered to have conducted its business well. Thus, to measure business performance, people use efficient operation (Machmud et al., 2018).

The level of competition between enterprises is increasing, enterprises often have to change their management methods, the concept of efficient operation is also more diverse, the interests of stakeholders are employees and customers. referred to in the concept of performance. Seashore & Yuchtman (1967) in their concept of efficient operation, in addition to referring to the ability to exploit scarce resources, also refers to the ability to exploit the business environment. Warmington et al. (1977) state that an enterprise achieves high performance when the productivity and satisfaction of members are inversely proportional to the turnover rate, dissatisfaction and cost. The ability of a firm to create value for its customers determines its performance (Porter, 1979).

The development of technology has led to a change in awareness and evaluation criteria of an enterprise's operating system, and it is not only the effectiveness of the enterprise itself, but it needs to be associated with the interests of stakeholders. Therefore, in his definition of efficient operation, Sandberg (2003) emphasizes the ability of enterprises to contribute in terms of jobs created, continuous creativity, survival and growth.

Thus, the operating system of an enterprise is both static and dynamic, which is the basis for the enterprise to achieve its ultimate goal. However, stemming from the limitations of time and data sources, we employ the view of efficient operation according to the approach that is *the ability to produce the most optimal amount of goods and services in the world, basis for the most efficient exploitation of input resources.*

Measurement

Firm performance can be measured by quantitative variables (through financial indicators) and qualitative variables (through non-financial indicators). Because the collected data are secondary data, we use financial indicators to measure the operational performance of enterprises. And also because the scope of the study is all of Vietnam's feed manufacturing enterprises (including listed and unlisted enterprises), the financial indicators are calculated based on accounting data taken from relevant reports of enterprises.

The group of indicators reflecting profitability: Return on Assets (ROA), Return on Equity (ROE), Return on Sales (ROS) are often proxied as firm performance variables.

Return on Sales:

$$\text{Return on Sales} = (\text{Profit after tax} / \text{Total average assets}) \times 100\%$$

ROA is determined by profit after tax (NPAT) divided by average total assets, the unit is %, NPAT is equal to total sales, income minus total expenses including tax expenses and loss transfers, if any, in the financial year of the enterprise. ROA reflects the return on

assets of a business. The total assets of a business include resources from the capital contribution of investors to liabilities, so ROA is a composite indicator that evaluates the ability of a business to convert assets into profits? If the larger ROA proves the management level, the business results of the enterprise are good, the enterprise is operating a reasonable asset structure. If the ROA is lower, it not only shows that the business results are not good, but it also reflects the inefficient capacity in investment and production management.

Return on Equity

$$\text{Return on Equity} = (\text{Profit after tax}/\text{Average equity}) \times 100\%$$

If ROA measures the efficiency of a business based on its ability to convert all assets to profit, ROE measures the efficiency of a business through converting only the equity portion into profit. ROE shows how the enterprise has managed and used the capital belonging to the owners? If this capital is used well, ROE will be high, and vice versa.

Return on Sales

$$\text{Return on Sales} = (\text{Profit after tax}/\text{Net revenue}) \times 100\%$$

If ROA, ROE are indicators to evaluate the efficiency of an enterprise based on numerical element indexes taken from the income statement, and the denominator indexes are taken from the enterprise's balance sheet, then ROS is calculated using indicators taken entirely on the income statement of enterprises. Therefore, this indicator shows the business performance of the enterprise in an accounting period (usually a calendar year). To calculate ROS, we assume the target of godly revenue because he wants to properly evaluate the reality of goods and service provision of enterprises. For every dollar of net sales generated, how many dollars of after-tax profit is in it? Therefore, most businesses want to achieve ROS with the highest possible rate.

ROA, ROE, ROS are all important indicators to measure profitability of enterprises and are determined based on profit after tax divided by average total assets (ROA), profit after tax divided by average capital owner (ROE) and profit after tax divided by net sales (ROS). The criteria to calculate ROA, ROE, ROS are taken from the income statement and balance sheet of the enterprise. Depending on the research purpose, the ability to collect data, in the formula for calculating ROA, ROE, and ROS, the numerical element can be profit before interest and tax or profit after tax. In this paper, profit after tax is used to calculate (Le & Phan, 2017). As for the denominator in the formula for calculating ROA, ROE, and ROS, we use the criteria of average total assets, average equity and net sales. With the argument that the total assets and equity at one point in time are not representative numbers of the enterprise for an entire period, the average total assets and average equity are calculated by taking the first number of shares. The period of adding the ending number divided by two can equalize the fluctuations of assets and capital during the period, so it can be a representative number for the whole period of the enterprise.

Besides ROA, ROE, and ROS, which are used to evaluate the performance of enterprises based on accounting books, we investigate more indicators of performance measurement based on market value.

Ratio P/E

P/E = Market value per share/Earnings per share

In exchange for a dollar of profit from a stock, the investor accepts spending how much is the meaning of the P/E ratio. A high P/E could be due to the high market price of the stock or to the low earnings received from the stock. If the P/E is low, the reason is the market price of the stock being low or the income received from the stock is high. Therefore, to evaluate the business performance of enterprises through this index, it is necessary to consider the criteria to calculate the P/E index over a period of time and to compare with other enterprises in the same industry to get the best accurate view.

Ratio Tobin'Q

Tobin' Q = Market value of equity + Liabilities/Total assets

Before the name Tobin'Q index was commonly used, it was also known as the "Kaldor" ratio, the name associated with the economist Kaldor (1966), who invented this ratio. As scientist James Tobin of Yale university continued to develop it, it became a ratio to measure the performance of businesses based on the recognized market value to date. This ratio shows the expectations that investors expect to have in the future when they invest in a certain stock. A high Tobin'Q ratio indicates that the company has more competitive advantages than other companies, Ross et al. (2013). Number is used as a benchmark against Tobin'Q, a value greater than one shows that the business is highly appreciated by the market.

While market-based financial ratios have many advantages, such as their ability to measure long-term, forward-looking performance and reflect shareholders' expectations, performance-based assessments activity in the present or in the past. However, when applying to each specific case, we do not choose the criteria to evaluate the business performance of enterprises based on market value, but chooses two indicators ROA and ROE. One of the reasons for choosing ROA, ROE is a representative indicator to measure the operational efficiency of Vietnamese feed production enterprises, which is (i) these two indicators are used by many researches; (ii) it represents the rate of return that businesses and investors are interested in, because it combines the information of the income statement (profit after tax) and balance sheet (total assets, equity). ROE helps shareholders gauge how well they can achieve the expectations they want from the money they have invested. Also based on ROE, they can vote whether or not to use retained earnings, should or should not increase or decrease the proportion of equity in short and long-term development strategies of enterprises. ROA is an appropriate metric to measure corporate performance and is often used in relation to capital structure (Derayat, 2012; Singh, 2013). This is because of the fact that total assets include both debt and equity, which means that firms with high debt use will not receive a high rate of return as in the case of ROE, Fosu (2013). ; (iii) Due to the data collected on Vietnamese feed manufacturers (including both listed and unlisted enterprises), P/E or Tobin's Q can only be evaluated for listed companies.

4. Proposed research model

The research model is built on the basis of inheriting previous studies and is shown in the diagram below:

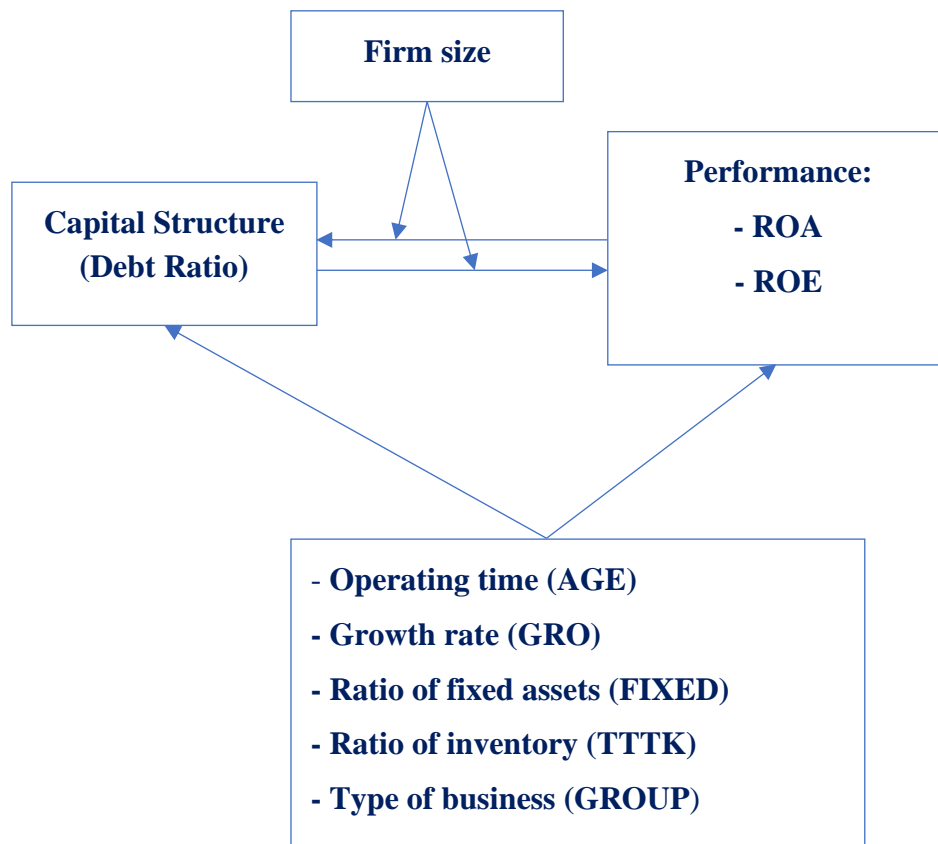


Figure 1. Research model proposed

The study investigates the relationship between Debt ratio and efficient operation (ROA, ROE) in both directions: (i) the influence of Debt ratio on corporate performance, now debt ratio acts as an independent setting variable, ROA, ROE act as dependent variables; (ii) the effect of corporate governance on shareholders, debt ratio acts as a dependent variable while ROA and ROE play two roles as independent variables. Besides, the project studies the influence of a number of factors such as: enterprise scale (SIZE) as a moderating variable; The control variables are: time of operation (AGE), growth rate (GRO), ratio of fixed assets (FIXED), ratio of inventory (TTTK), type of business (GROUP) to business relationship and corporate debt ratio. Therefore, from Diagram 1, we group into three models to determine this two-way relationship.

Model 1: ROA and influencing determinants

$$ROA_{it} = \beta_0 + \beta_1 Ttd_{it} + \beta_2 InSize_Ttd_{it} + \beta_3 Age_{it} + \beta_4 Gro_{it} + \beta_5 Fixed_{it} + \beta_6 Ttk_{it} + \beta_7 Group_{it} + \epsilon_{it}$$

Model 2: ROE and influencing factors

$$ROE_{it} = \alpha_0 + \alpha_1 Ttd_{it} + \alpha_2 InSize_Ttd_{it} + \alpha_3 Age_{it} + \alpha_4 Gro_{it} + \alpha_5 Fixed_{it} + \alpha_6 Ttk_{it} + \alpha_7 Group_{it} + \epsilon_{it}$$

Model 3: Debt ratio (TTD) and influencing factors

$$TTD_{it} = \mu_0 + \mu_1 ROA_{it} + \mu_2 ROE_{it} + \mu_3 InSize_RoA_{it} + \mu_4 InSize_Roe_{it} + \mu_5 Age_{it} + \mu_6 Gro_{it} + \mu_7 Fixed_{it} + \mu_8 Ttk_{it} + \mu_9 Group_{it} + \epsilon_{it}$$

In which

The dependent variable in models 1 and 2 is also an independent variable in model 3:

ROA_{it}, ROE_{it} reflect the business performance of enterprise i in year t. Business performance is measured through two quantitative indicators ROA, ROE, calculated data are taken from the accounting books of enterprises through the report of the General Statistics Office of Vietnam.

The dependent variable in model 3 is also the independent variable in model 1 and 2:

The study employs the debt ratio calculated by the average total liabilities divided by the average total assets as a representative variable for employees mentioned by many theories and researches. TTD_{it} represents the debt ratio of enterprise i in t year.

Mediating variable

Firm size is a variable used to moderate the relationship between shareholders and the operating system of enterprises. The variable InSize_Ttd in model 1, model 2 is the moderator variable that affects the performance relationship, and the variable InSize_Roa and InSize_Roe in model 3 is the moderator variable affecting debt ratio.

Control variables

- AGE_{it} is the active time variable representing the age that the enterprise has up to the time of the study. This variable represents the age of DN i in year t and has the unit of year, which is determined by the year of research minus the year of listing.

- GRO_{it} is the variable that represents the growth rate of DN i in year t. This variable is measured by the growth rate of sales in year i compared to year i-1.

- FIXED_{it} is a variable that represents the percentage of fixed assets acquired in total assets of enterprise i in year t. How much fixed assets will account for the total assets of the enterprise is also to show the level of operating leverage of the enterprise, as well as to show the asset structure that the enterprise is applying in favor of fixed assets. or leaning towards liquid assets.

- TTTK_{it} is a variable that represents the abundance and availability of raw materials and products of enterprises. This variable represents how much inventory accounts for the total assets of enterprise i in year t.

- GROUP_{it} is the variable showing the classification of enterprises i in year t into two categories: foreign-invested enterprises and domestic enterprises. The purpose to consider between these two types of enterprises is whether there is a difference in the way debt is used as well as the operating system?

- β_0 , α_0 and μ_0 are constants; β_j , α_j and μ_j (j takes values from 1 to n) are regression coefficients corresponding to the independent variable, the moderator and the control variable in the model; ϵ_{it} is the random error.

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IMPACT OF FINANCIAL DEVELOPMENT ON ECONOMIC GROWTH: EVIDENCE FROM VIETNAM

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Abstract

The link between financial development and national economic growth is a topic that interests both researchers and policymakers with different perspectives and evaluations existing. The International Monetary Fund cautioned after the 2008 financial crisis that financial development should not exceed a specific limit since it could impede growth. This research presents new empirical evidence on the long-term consequences of financial development on economic growth, focusing on Vietnam's ten-year dataset from 2011 to 2021, using the Autoregressive Distributed Lag Model (ARDL). During this period, Vietnam's financial depth and economic growth rate have an inverted U-shaped relationship, indicating that financial development significantly impacts growth only after reaching a specific level. This finding implies that a high level of financial development may sometimes benefit the national economy. To achieve sustainable growth, countries should focus on the optimal level of financial development.

Keywords: *ARDL, Economic Growth, Financial Development*

1. Introduction

Economic growth is a top priority for nations globally, and Vietnam is no exception. It refers to an increase in the Gross Domestic Product (GDP) or Gross National Product (GNP) over a specific period, and a rise in per capita income can quantify growth. The causes and factors that differentiate the economics of nations and the reasons for disparities in economic growth among them have been studied extensively. Financial development plays an essential role in fostering economic growth. The development of the financial sector can contribute to economic growth, physical capital accumulation, and economic efficiency. An organized financial system allocates financial resources to manufacturing areas, leading to economic growth. The flow of capital determines the efficiency of a financial market to the areas where it can promote economic efficiency at the lowest transaction costs. Developed nations typically have developed financial markets, while developing nations have less developed ones with more significant transaction costs. Most research indicates that the development of the financial sector positively affects economic growth, although some studies demonstrate the opposite.

Vietnam has a low level of financial development due to its economic reform, which began in 1986. In 2011, Vietnam became a middle-income country, with changes and improvements in the quality of growth and per capita income. Innovations in the financial

system have also impacted the economy's growth. Financial development has been crucial in fostering economic growth in Vietnam, particularly in the real estate market. Economic growth is an essential statistical index that reflects the economy's efficiency. Policies promoting the financial sector's development are crucial in accelerating economic growth. However, the relationship between financial development and economic growth may have a negative effect if the "hot" financial market growth produces inflation and inefficient investment. Thus, Vietnam should continue to develop its financial sector optimally, considering the impact on economic growth and ensuring sustainable growth.

2. Literature Review

Several empirical studies provided evidence of financial development's positive impact on countries' growth. The relationship between financial development and economic growth has been established at theoretical and empirical levels. Financial development is essential to developing and transitioning economies (Perotti & Vesnaver, 2004; Tasic & Valev, 2010). Chen (2006) investigated the link between financial development and growth for China in 1985-1998, reporting that the development of financial intermediaries is a driving factor of economic growth. Yang and Yi (2008) reported findings supporting the hypothesis that financial development promotes growth and rejected the hypothesis that growth leads to financial development for the case of Korea in the period 1971-2002.

Financial development has contributed to impressive economic growth in many developing countries. In addition, it has been suggested that relatively more financially developed countries can better avoid or withstand currency crises (Federici & Carioli, 2009). Therefore, enhancing the financial development of countries with developing economies may have significant positive consequences for the many organizations and individuals within such countries affected by economic downturns. These issues are particularly salient given the recent global financial crisis. Generally, financial development increases the supply of capital and, given the appropriate host-country policies, can also facilitate technological innovation. Technological innovation contributes to human capital formation, which can further enhance economic growth prospects (in fact, a bi-directional causality exists between technological innovation and human capital formation). Financial development can facilitate economic growth through direct as well as indirect channels.

In contrast to the theoretical positive long-run effects of financial development on economic growth, the relationship can be negative in the short run, according to the literature on banking and currency crises. Various papers in the banking and currency literature have found that rapid growth of domestic credit signals the onset of a financial crisis and economic downturn (Demirguc-Kunt & Degatriache, 1998; Gourinchas et al., 2001; Kaminsky and Reinhart, 1999). Darrat (1999) proposed that it is during the short run that higher levels of financial development benefit the real economy. However, those benefits disappear in the long run as the economy grows and matures. The study's empirical results generally support the view that financial deepening causes economic growth, yet with varying degrees of strength across countries and different proxy measures of financial deepening. Marques et al. (2015) examined a panel data set of 25 European countries for 1996-2011, reporting that

financial depth measured by a bank and domestic credit has an inverse U-shaped nonlinear relationship with economic growth. Their results suggested that governments should determine the optimal level of financial depth to avoid overdevelopment. Prochniak and Wasiak (2017) analyzed the impact of financial development and financial stability on economic growth using data from 28 European Union countries and 34 OECD countries from 1993-2013. Their results supported three hypotheses: (i) there exists a nonlinear relationship between financial development and economic growth; (ii) an excessive size of the financial system does not boost economic growth, even having a negative impact on growth; (iii) the inclusion of a crisis period in the empirical model provides new insight into the relationship between the financial system and economic growth.

Tarig et al. (2020) also reported a nonlinear impact of financial development on growth for the case of Pakistan using time series data covering 1980-2017, but it is in a U-shape. Accordingly, financial development boosts growth only when its level surpasses a certain threshold. Liu and Hsu (2006) investigated the impact of financial development on economic growth in three Asian countries, namely Taiwan, Korea, and Japan. They found that (i) high investment promotes economic growth in Japan while high investment does not lead to better economic growth if the investment is not allocated efficiently in both Taiwan and Korea; (ii) the finance aggregate has positive effects on Taiwan's economy but has negative effects in the other two countries, (iii) the stock market development has positive effects on Taiwan's economic growth, but its economy suffered from the Asian financial crisis in the late 1990s; (iv) capital outflows have a negative impact on all three countries while the effect of capital inflows is negative.

Many studies investigated the causal relationship between financial development and economic growth. Employing cointegration techniques with time series data from 16 countries from 1960-1990, Demetriades and Hussein (1996) found considerable evidence of a two-way relationship between financial development and growth. Kemal et al. (2007) reported no causal relationship between financial development and economic growth based on data from 19 highly developed economies. Odhiambo (2009) examined the dynamic relationship between interest rate reforms, financial development, and economic growth. The study concluded that the causal relationship between financial depth and economic growth supports a demand-following path. Abdullahi (2010) employed Panel data Granger causality and JJ cointegration for 15 Sub-Saharan African countries from 1976 to 2005. He concluded that a bi-directional causal relationship exists in five countries and reverse causality from economic growth to financial development in two countries.

3. Method

3.1. Research model

ARDL model

The author used the ARDL model to examine the impact of financial development on economic growth in the short and long run. At the same time, the author also used the

Sasabuvhi-Lind-Melum (SLM) test to see if there exists an inverted U-shaped relationship between financial development and economic growth.

ARDL model (p, q) where p is the lag of the dependent variable, and q is the lag of the independent variables. According to Pham Thi Hong Khoa et al. (2019), the model has the form:

$$\text{GDP}_t = a + \sum^p \beta_{i0} \times \text{GDP}_{t-i} + \sum^{q1} \beta_{i1} \times \text{FD}_{t-i} + \sum^{q2} \beta_{i2} \times \text{POPG}_{t-i} \quad (1) \\ + \sum^{q3} \beta_{i3} \times \text{TRADE}_{t-i} + \sum^{q4} \beta_{i4} \times \text{GOV}_{t-i}$$

In this model:

- GROWTH: Economic growth rate is measured by Vietnam's quarterly nominal GDP growth rate

- FD: Financial depth represents financial development, as measured by the money supply M2 divided by the total GDP

- TRADE: Openness of the economy, measured by total import and export turnover divided by GDP

- POPG: Population growth rate

- GOV: Total government spending

- P: The lag of the GDP variable

- q1, q2, q3, q4: The lags of the variables FD, POPG, and TRADE, respectively

To estimate the ARDL model, the research follows six steps, including Testing the stationarity of the variables in the model; Determining the appropriate delay and estimating the ARDL model, Bounds test; Estimating the long-run equation using the ARDL model; Estimating short-term equations by ARDL model: Checking the model's reliability and suitability.

3.2. Description of variables and research data

The variables in the study include three main groups: dependent variable, independent variable, and control variable:

Dependent variable: Economic growth (GDP)

Economic growth means an increase in the production capacity as well as the supply of goods and services of the economy in a certain period. According to previous studies by Nguyen (2019), and Pham et al. (2019), there are many ways to measure this variable, such as real GDP growth rate, nominal GDP growth rate, GNP growth rate, etc. ... However, according to Pham et al. (2009), the nominal GDP growth rate variable is consistent with the reality of our country.

Independent variable: Financial depth (FD)

Financial depth is a standard measure of financial development used by most research papers (Duong & Le, 2019). The variable is measured by the ratio M2/GDP, representing

the ratio of liquid debt to GDP. This ratio is expected to increase as finance grows more robust than the development of the production of goods and services and vice versa.

Control variables:

The two control variables used in this study are Openness of the economy (TRADE), population growth rate (POPG), and total government spending (GOV). Regarding the Openness of the economy, the variable is measured by the quotient of the total value of exports and imports of goods and services to the total GDP. The role of trade, mainly export, can increase foreign exchange earnings, improve the balance of payments, access new management and business methods, and improve economic structure. In terms of population growth rate, the variable is reflected by the quarterly population growth rate for the period 2010-2021. According to Pham (2019), in developing countries, including Vietnam, when the level of scientific and technological development is still low, the quantity and quality of the labor force will be low. It plays a decisive role in the production capacity of the economy. Finally, the GOV variable is calculated as the ratio of government spending to GDP equal to the total value of final government spending to GDP. The level of government spending can positively affect economic growth by promoting economic factors. However, it can also negatively affect economic growth through inefficient spending—consequences as well as the negative effects of taxes and interest (Duong & Le, 2019).

The data used in the research is taken from reputable sources such as the General Statistics Office of Vietnam, the World Bank, and Finance Vietstock quarterly in Vietnam from 2010-2021.

4. Results

4.1. Stationary test or unit root test

By using Dickey-Fuller (ADF) test, when the study runs the test, the result in the table below shows that $p\text{-value} > 10\%$ and $t > t_{\alpha}$ at three levels of significance, so findings fail to reject the null hypothesis, so variable FD is not stationary at the level (which requires no difference)

Table 1. Unit root test for FD

Null Hypothesis: FD has a unit root		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.227649	0.6539
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

Results show that rejecting the null hypothesis with significance at 1% or the variable FD is stationary at first order difference with significance at 1%. With the same method, findings show that Variable GDP is not stationary at the level (this requires no difference) with significance at 10%. However, the test for a unit root in 1st difference is stationary with significance at 1%.

Variable TRADE is not stationary in level with significance at 10%. However, it is stationary after taking the first difference with significance at 5%. Continuing to run a test for a unit root in 2nd difference for TRADE, table 2 indicated that P_value = 0, so it is stationary with significance at 1%.

Variable POPG is not stationary in the level after taking the first difference with all three test critical values. However, it is stationary after taking the 2nd difference. This finding means that after differencing POPG twice, it exhibits a constant mean and variance over time, indicating that it has reached a state of stationarity.

Variable GOV is not stationary in level with significance at 10%. However, it is stationary after taking the first difference with significance at 1%. In conclusion, the findings can assume that the statistical properties of these variables will remain constant over time, and input data have series that are integrated of order 0 and 1 as well. Hence, using the ARDL model for estimating is simpler and more efficient than other cointegration tests.

4.2. Estimate ARDL model

With the data, which have a basic structure is dated - regular frequency and the frequency set as quarterly, we can select lags for the model. The study also uses the Akaike information criterion (AIC), an estimator of prediction error and the relative quality of statistical models for a given set of data. When we estimate the ARDL model, it can see the selected model is (1, 4, 4, 3, 4).

4.3. Bounds test

Bound testing as an extension of ARDL modeling uses F and t-statistics to test the significance of the lagged levels of the variables in a univariate equilibrium correction system when it is unclear if the data-generating process underlying a time series is a trend or first difference stationary. Here the ARDL model is applied to examine the short and long-run association between variables. In the data, with significance at 5%, F-statistic falls between the lower bound I(0) and the upper bound I(1). This means the test is considered inconclusive, so it is still being determined about cointegration and long-run relationships.

Table 2. Bounds Test Results

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	2.766712	10%	2.2	3.09
k	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37

4.4. Estimate the short-run and long-run coefficient

Table 3. Impact of Financial Development on Economic Growth

Variable	Coefficient	Std. Error	t-Statistic	Proi cub.*
GDP(-1)	0.755778	0.130809	5.777700	0.0000
FD	-0.007128	0.004244	-1.679560	0.1066
FD(-1)	-0.002204	0.004558	-0.483619	0.6332
FD(-2)	0.008909	0.004681	1.903349	0.0696
FD(-3)	-0.007703	0.004548	-1.693784	0.1038
FD(-4)	-0.006967	0.003978	-1.751624	0.0932
POPG	-91.71902	42.73919	-2.146017	0.0427
POPG(-1)	34.98873	49.59376	0.705507	0.4876
POPG(-2)	153.1164	45.94429	3.332655	0.0029
POPG(-3)	-126.3030	48.11214	-2.625180	0.0151
POPG(-4)	92.89511	41.31549	2.248433	0.0344
TRADE	0.087770	0.022592	3.885032	0.0007
TRADE(-1)	0.023314	0.023952	0.973369	0.3405
TRADE(-2)	-0.029389	0.024845	-1.182874	0.2489
TRADE(-3)	0.050708	0.024539	2.066472	0.0502
GOV	-0.428850	0.096975	-4.422263	0.0002
GOV(-1)	-0.054534	0.060212	-0.905701	0.3745
GOV(-2)	0.048005	0.059543	0.806233	0.4284
GOV(-3)	-0.083772	0.060289	-1.389494	0.1780
GOV(-4)	0.207815	0.075697	2.745348	0.0115
C	-0.184896	0.084614	-2.185163	0.0393

The table 3 shows the long-run relationship between the control variable (or independent variable) and the dependent variable using the ARDL model above. Findings show that both financial depth, population growth rate, and total government spending have an inverse relationship with economic growth in the long term. However, the relationship between financial depth and economic growth is not statistically significant. Meanwhile, the relationship between economic openness and economic growth rate is a covariate in the long term. Moreover, those relationships have statistical significance.

In the short run, the finding shows that the economic growth rate in the previous quarter can affect the economic growth rate in the present. In detail, GDP with a lag equal to 1 (or GDP(-1)) has a covariant relationship with variable GDP and statistical significance. Financial depth with a lag equal to 1, 3, and 4 has an inverse relationship with the economic growth rate. Meanwhile, financial depth with a lag equal to 2 has a covariate relationship with the economic growth rate. However, none of them has statistical significance. Population growth rate with lag equal to 1, 2, and 4 have covariate relationship with economic growth rate, but itself with lag equal to 3 has an inverse relationship with economic growth rate. However, only itself with lags equal to 1 do not have statistical significance. So, in the short run, the relationship between the population growth rate and the economic growth rate of Viet Nam can be a covariate from the first quarter of 2010 to the fourth quarter of 2021. Economic openness with lag equal to 1 and 3 has a covariate relationship with economic growth rate, and itself with lag equal to 2 has an inverse relationship. None of them has statistical significance. So, in the short run, I cannot conclude clearly about the relationship between economic openness and economic growth rate in Viet Nam at this period. Total government spending with lag equal to 1 and 3 has an inverse relationship with economic growth rate, and two others have a covariate relationship. However, only the last variable has statistical significance. So, in the short run, I cannot also conclude clearly about the relationship among these variables in Viet Nam at this period.

4.5. Stability test

In figure 5 with the test monitor whether a process drifts away from its meaning. The statistics use the sequence of residual deviations from a model to indicate whether the autoregressive model is misspecified. The chart is centered around the mean value of the process.

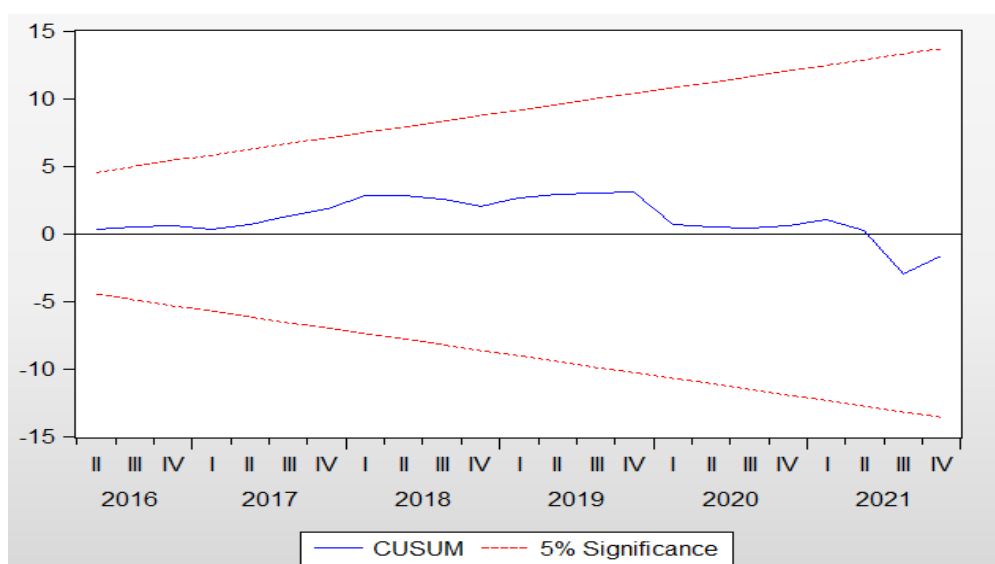


Figure 1. Stability Test of the Model

Figure 1 shows that the standardized deviations' sum does not exceed 5%, so it does not drift away from their mean. I conclude that the coefficient in the short run and the long run is steady in the period from I/2010 to IV/2021.

5. Conclusions

Despite the small sample size and several variables, the test results with data collected from 2010 to 2021 using the ARDL and SML tests show an approximately 5% significant level. The long-run and cointegration relationships between the variables cannot be concluded at the boundary. However, the outcomes of the overview test allow for the following two conclusions:

- Vietnam's economic growth is directly affected by financial development.
- Economic development is propelled by financial depth.

The following are some policy implications based on the experimental results:

First, determine the best circumstances for financial depth to ensure that the financial sector provides the most significant economic benefit. Financial development policies that are appropriate for an acceptable growth scale will have a direct impact on the economy's optimal growth rate.

Second, create intermediary financial markets by a roadmap and work proactively towards equal financial access for organizations, small enterprises, and economic regions.

Last but not least, promoting financial development will support transparency financial environment from which can limit monopolies, manipulations, and crimes in the financial and banking industries. Because, the government must adopt rules and regulations consistent with international practices and standards, and robust monitoring and punishment framework to deal with fraud and group interests in financial and banking sector activities.

Financial markets play a crucial part in economic growth because they shift and allocate capital from areas of excess to areas of scarcity. The economy can cut considerable expenses and operate more effectively when financial markets function properly. The quality of economic growth has increasingly improved as well.

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APPROACHING THE GRAVITY MODEL TO INVESTIGATE FACTOR AFFECTING VIETNAM'S SEAFOOD EXPORT

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Abstract

This study uses the gravity model of trade to identify and evaluate the impact of various factors on the export of Vietnamese seafood, based on panel data of 43 countries accounting for 92-93% of Vietnam's total export turnover. The results show that Vietnam's seafood exports are influenced by factors such as the importing country's population, exchange rate, FDI disbursement in Vietnam, the seafood production price index in Vietnam, average lending rates in Vietnam, as well as being members of APEC, WTO and FTA. Among them, the importing country's population, exchange rate, FDI disbursement in Vietnam, seafood production price index in Vietnam, and membership in APEC and WTO have a positive impact on exports, while average lending rates along with FTA have a negative impact. Based on the research results, the article proposes a group of solutions for each factor to develop Vietnam's seafood exports to countries around the world.

Keywords: *Export, Gravity model, Seafood*

1. Introduction

Research on international trade began with mercantilist ideas in the late 16th to 18th centuries. During that time, precious metals such as gold and silver were used as currency and constituted the wealth of nations. Mercantilist economists also argued that exports enriched a country as it stimulated domestic production while also bringing in rare precious metals to supplement the wealth of the country. In 1776, based on his support for free trade, Scottish economist Adam Smith argued that production and exchange of goods based on absolute advantage would bring economic efficiency to both exporting and importing

countries and thereby benefit the world as a whole. However, Smith's theory of comparative advantage did not answer the question of what would happen if a country had no advantage in any commodity. Therefore, in 1817, British economist David Ricardo developed the theory of comparative advantage. According to this theory, if a country (in the world example comprising of two countries) has an absolute advantage in producing both commodities, specialization of production and international trade can still occur and benefit both countries. In 1936, Gottfried Haberler, an American economist of Austrian origin, presented Ricardo's theory of comparative advantage on the basis of applying the theory of opportunity cost. According to this theory, each country has a comparative advantage over another country in producing a product if the opportunity cost of producing this product in this country is cheaper than in the other country, and in this trade relationship, both countries benefit equally. Based on these arguments, the views of authors in the mercantilist school still hold value to this day. For example, when domestic production capacity exceeds demand, it is necessary to encourage exports and limit imports, which is something that a country needs to pursue (Nguyen Thuong Lang, 2019). In the era of globalization, no country can develop its economy without participating in the process of international and regional integration. This is also true for Vietnam (Than Van Ha, 2007). With the advantage of having a coastline of 3,200 km stretching over 13 degrees of latitude from north to south and being located at the convergence of major fishing grounds, this area is evaluated as having a large and diverse amount of seafood resources. Thanks to these characteristic features, the Vietnamese fisheries sector has developed for a long time and made significant contributions to the country's economy. At the same time, these are also traditional export items that Vietnam has a competitive advantage in.

Before the Covid-19 pandemic broke out, the seafood industry had achieved certain successes and was one of the spearhead economic sectors, making significant contributions to economic development (Ngo Thi Ngoc Binh, 2022). According to the report of the Directorate of Fisheries in 2021, the seafood export turnover in 2021 reached \$8.89 billion, up 5.7% compared to \$8.41 billion in 2020. Compared to \$8.58 billion in 2019, Vietnam's seafood exports in 2020 did not decrease too much, helping Vietnam maintain its position in the top 3 among the 10 largest seafood exporting countries in the world, first in Southeast Asia and second in Asia. The seafood export market is expanding to more than 160 markets worldwide. Although faced with many difficulties due to the pandemic, after the situation was controlled, seafood production and exports quickly recovered strongly. To explain these successes, it is impossible not to mention the fact that our businesses are making good use of free trade agreements (FTA), which have helped to cut tariffs, increase competitiveness for Vietnamese seafood. In addition, the success may also stem from the Vietnamese government's policies to create favorable conditions, remove difficulties for businesses to compete fairly and develop together, and support them to overcome the Covid-19 period. One reason for this success may be the dynamic creativity of businesses in applying modern technology in the processing process, as well as actively researching quality regulations from importing countries. However, these opinions have not yet had specific statistical data, which are subjective and lack scientific evidence to explain how these factors affect seafood

exports. Besides, the seafood industry is also facing certain difficulties such as anchoring areas, estuaries with unstable silt, which do not ensure safe anchoring requirements, and food safety; lacking an environmental treatment system, source tracing, and infrastructure; the technology for loading, transporting, preserving, and processing products is backward, resulting in losses after harvesting, and the operation of the seafood value chain still has many weaknesses. From a practical perspective, studying the factors affecting Vietnamese seafood exports is extremely necessary to be able to identify and evaluate the level of impact of these factors on Vietnamese seafood exports, thereby providing a basis for proposing solutions.

From a research perspective, studying the factors that impact Vietnam's seafood export based on the gravity model in international trade has only been considered by a few scientists. Experimental studies worldwide have utilized the gravity model in international trade to supplement the model with factors suitable for the realistic conditions of each industry and country. From the initial three fundamental factors of national export GDP, national import GDP, and geographic distance between two countries, factors influencing the trade flows of countries have been expanded through experimental studies. However, at present, there is no comprehensive quantitative study in Vietnam on the factors affecting seafood exports to the world market based on the gravity trade model to supplement appropriate factors for Vietnam's practical conditions. With the practical requirements and research context mentioned above, the research on the factors influencing Vietnam's seafood exports through the gravity model in trade allows for adjustments and supplements of factors in the model to match Vietnam's conditions. It also identifies and quantifies the degree of impact of these factors on Vietnam's seafood exports, which is both practical and scientifically significant. The research results will be an important basis for building and proposing solutions to promote and develop Vietnam's seafood export activities to the world market in the coming period.

Given the above significance and reasons, the research team decided to choose the topic "**Approaching the gravity model in trade to study the factors affecting Vietnam's seafood exports**" for investigation. This study is structured into five parts: (i) Introduction, (ii) Research overview and theoretical basis, (iii) Research methodology, (iv) Research results and discussion, (v) Conclusion and recommendations.

2. Literature review and Theoretical basis

2.1. Literature review

International trade has been conducted since ancient times and can be considered as the earliest form of international relations. Nowadays, it still plays a central role in international economic relations. The reason why international trade is so important is that the results of other international economic relations are ultimately reflected in international trade. And it is widely known that international trade can increase welfare and efficiency through the process of enhancing competition, specialization, and economies of scale (Wang & colleagues, 2010). It includes various activities such as import and export of goods, processing, re-export and transit, and on-site export. However, to talk about the sector that

plays a major role and holds an important position in the economic development of each country, it is the import and export of goods (Binh & Mai, 2019). Fisheries - one of the characteristic economic-technical sectors - is one of the important maritime economic sectors of nations. The production and business of fisheries are based on effective and sustainable exploitation of aquatic resources, potential water areas, so it has a very close intersectoral relationship with agriculture, transportation, oil and gas, customs... In addition to the above reasons, the particularity of the sector is the exploitation and development of one of the renewable resources, so the fisheries sector further affirms its important role in the socio-economic development of the country. With such an important role, that is also the reason why many researchers are interested in the topic of seafood export.

Diop et al (1999) created a methodological system to study the impact of imports on sectors related to shrimp production, wholesale and retail. The results of the study show that as South Asian and Latin American countries increase shrimp imports, the profit margins of shrimp processors shrink. In particular, the reduction in shrimp prices is one of the factors affecting the increase in shrimp imports. Therefore, Diop and colleagues (1999) proposed to apply a policy of trade restriction in order to reduce supply and increase selling price, leading to increased profit for selling activities. Kennedy and Lee (2005) also reached similar conclusions, stating that since 2002 the domestic price of shrimp has decreased from \$7.95 to \$6.21/pound in 2004, a decrease of nearly 22% compared to the previous year. This is due to an increase in imports.

Lee & Kennedy (2010) used cointegration analysis to analyze the relationship between aquatic products, including barbs, vannamei, salmon, tilapia and catfish, both domestic and imported. The results of the analysis show that the US domestic catfish industry may be more negatively affected by the import of major seafood products such as salmon, sturgeon and shrimp, compared to imports of fish. Slippy skin. This study shows the negative impact of imported shrimp on the domestic shrimp industry and the seafood market in general.

Kepaptsoglou et al (2010) reviewed and analyzed recent empirical studies using gravity modeling in commercial flow analysis and found that gravity modeling has been a popular choice. favorite of researchers. More than 75 studies have used this model to analyze trade policies and their impact over the past decade. Kepaptsoglou and his colleagues (2010) have found that most empirical studies focus on evaluating policies and their significance, using panel and least squares data. conventional (OLS) to estimate the coefficients of gravity model specifications for the shrimp industry. However, the cost elasticity of shrimp of Asian origin has been shown to be quite high in the US market (Poudel & Keithly, 2008), suggesting a potential competitive alternative to imported shrimp. shrimp products in the country. In fact, the US shrimp industry has seen expansion in southern states where costs are relatively lower. According to Nowak-Lehmann et al (2007), panel data offer several advantages such as the ability to capture relationships over time and to observe individual effects between partners. Most studies over a period of at least 5 years use data, and only a few recent studies draw conclusions based on cross-sectional data from a year or an average of a time period.

In the study by Rabbani et al (2011), they applied an enhanced trade attractiveness model to identify the factors that are important in the importation of catfish, basa, and pangasius species into the United States. The study used time series model and separate analysis for three increasing gravity models of Vietnam, China and Thailand. The determining factors in ending or stopping trade include inverted exchange rates, US prices of catfish/basa/pangasius reported at US Customs, import prices and domestic prices. US address, labeling policy, tariffs, advertising costs, and other basic factors like GDP, population, and distance. However, GDP per capita rather than GDP for the whole economy was used as a factor in their study.

The use of the commercial attractiveness model to assess the impact of different factors on the export of seafood products from Vietnam to different markets, such as the United States and the EU, has brought many meanings. In a study by Disdier & Marette (2010). In 2016, the factors affecting Vietnam's seafood exports through TPP members were clearly presented by Nguyen Thi Quynh Trang. These factors follow previous research results including food safety standards, non-tariff measures, GDP, population, geographical distance, distance in economic development, exchange rates and commitments. bilateral and multilateral trade. Research by Pham Thi Ngan et al (2016) also said that the seafood import tax of the US and Europe does not affect Vietnam's seafood exports to these two markets.

Research papers by Sarker and Jayasinghe (2007); Emlinger et al (2008); Karemera et al (2009); Cardamone (2011) are some specific examples of the applications of commercial gravity models for fishery products and the influence of factors, such as transportation costs, size of the economy, etc. economy and wealth for seafood exports. Since there is a sign of preference for high values, this is potentially an important study (Haq et al, 2013). However, although trade plays a very important role in the seafood market, there has been little research on its application in this area. In fact, there are only a few exceptions that receive special attention, focusing on two types of questions relevant to the fishery trade: (1) Certain fish species, for example shrimp (He et al, 2013) and catfish, basa and catfish (Rabbani et al, 2011), have been studied for the determinants of commercial trade. . These studies cover the impact of food safety standards and non-tariff measures on trade flows (Anders et al, 2006; Nguyen & Wilson 2009; Liu et al, 2012; Tran et al, 2012; Shepotylo, 2016). An important capability of gravity modeling leads to the ability to investigate the impact of factors such as transportation costs, the size of the economy and the degree of induction there is on China's seafood exports. This is significant because developed countries prioritize the value and high quality of seafood (Swartz et al, 2010; Asche et al, 2015), while people in poor countries often choose to buy low-value seafood to save costs (Beveridge et al, 2013).

A study by Kim Sang-Gu and colleagues (2012) used a random effects model and panel data from 38 Korea's frozen fish export partner countries to identify factors affecting frozen fish exports. Research by Kim Eun-Ji and Kim Bong-Tae (2020) focuses on the main export commodities of seaweed and barbs, including dried and seasoned seaweed, canned barbs, and fish consumption. fresh (for sashimi) and raw ingredients. Similar to the study of

Kim Sang-Gu and colleagues, this study also uses a random effects model to assess the factors affecting the export of these commodities. Another particularly important note of this study is that it includes factors that affect many countries such as the European Union (EU), the United States, Peru, Australia, New Zealand, Canada, China, and Vietnam. South and many different countries. The authors have analyzed the determining factors, including FTA, and the results can be used as a basis to propose measures to increase exports for each item.

Natale et al (2015) used weight models to study the determinants of total global seafood exports during 1990-2010, compared with meat. These researchers point to the importance of growth in aquaculture for the expansion of the seafood business. In addition, several other studies have investigated the impact of phytosanitary measures (Anders & Casewell, 2006; Tran et al, 2011; Chen et al, 2018) and the impact of policies preferential incentives (Xie & Zhang, 2017) for seafood exports. The results of these studies can be used as a database to develop measures of seafood export production.

Straume (2017) and Asche et al (2018) presented key reports on changes in trading time for Norwegian salmon exports, while Zhang and Tveteras (2019) and Wang (2019) reported similar results for the EU and ASEAN countries, respectively. Some of these articles use enterprise-level data and do not focus on potential differences in trade patterns between farmed and wild-caught fish, despite the fact that fish farmers may target better access to specific market segments as they have control over the manufacturing process (Asche & Smith, 2018) and control over the manufacturing process also enables a more efficient supply chain (Asche et al, 2007). However, in the process of applying the model, Natale et al (2015) encountered a number of problems, including the removal of zero values in the data table when the linear computer log could not work. dynamics on observations are zero. These values may be due to no transactions in the relevant year, values below the lowest threshold, data loss, or underreporting. The removal of these values can lead to the loss of important information about the effects of the independent variables on the dependent variables, making data analysis inaccurate (Grant & Lambert, 2005). Previous studies have proposed several methods to solve these problems, including the Heckman model proposed by Gomez-Herrera (2013), and the possible sum of least squares by Martinez-Zarzoso (2013).

The factors affecting international trade flows of Indonesian raw fish and fishery products to the EU market are varied. Previous studies have demonstrated that macro variables such as GDP, population, exchange rates, prices and economic distance all have a significant impact on the international trade flows of these products. (Rabbani et al, 2011; Rani et al, 2014; Hidayati & Masyhuri, 2015; Natale et al, 2015). Wiranthi et al (2019) used a critical model to examine the determinants of Indonesian canned fish exports to the EU market. By using commercial attractiveness model and Poisson estimation, the study has shown that Indonesian canned designer fish is affected by competition effect while Thailand is more affected by growth. Import and effect components. The Philippines and Vietnam are more affected by composition and competitiveness effects. Finally, population, ornamental fish production volume and real exchange rate have a significant influence on Indonesia's

canned ornamental fish exports to the EU. This result is similar to previous experimental studies of Zarzoso & Lehmann (2003), and Elshehawy et al (2014).

Recently, the Asian Development Bank (ADB) conducted a study on Sri Lanka's export potential and the impact of non-tariff regulations on the country's trade. However, the scope of the study is limited to the analysis of some international regulations that are directly affecting fish exports and does not cover the entire range of Sri Lankan exports. Prior to that, Rahapakse & Arunatilake (1997) conducted a model-based analysis of trade attractiveness between Sri Lanka and other SAARC countries, including fish and many other export commodities. The results show that the non-tariff provisions have had a negative impact on trade relations between Sri Lanka and other SAARC countries. However, it should be noted that the article does not give enough information about Sri Lanka's seafood exports. As a result, that study has some more confusing limitations on Sri Lanka's seafood export pattern and the impact of trade regulatory measures on seafood exports. In addition, it is important to note that the European Union (EU) ban on seafood exports from Sri Lanka was not addressed in previous studies (Sandaruwan & Banerjee, 2020). Filling in the gaps in the study by Sandaruwan & Banerjee (2020) has shown that only 1% of processed seafood in Sri Lanka reaches its maximum value in the supervariable, which limits its potential. seafood industry to create jobs and profits. Researchers have also found that the elasticities of tax and non-tariff measures against processed fishery products are higher than those of unprocessed seafood products. This means that processed seafood products are more vulnerable to tax changes and non-tariff measures for unprocessed seafood products. However, converting unprocessed fishery products into processed seafood products could improve export revenue for Sri Lanka, but also increase the vulnerability of fishery products produced export.

2.2. Theoretical basis

According to CIEM (2016), the gravity model is used in the analysis of trade, investment, and labor between countries. This model predicts that bilateral trade depends on the size of the two economies and the distance between them. The gravity model was first used by Jan Tinbergen in 1962 and has been widely applied in empirical studies to measure the impact of factors on the flow of trade between countries. This was also one of the studies that helped Jan Tinbergen receive the first Nobel Prize in Economics in 1969 for developing and applying dynamic models and analyzing economic processes.

According to the model above, the factors influencing international trade between two countries are the scale of the exporting country's economy, the scale of the importing country's economy (as a composite factor representing supply and demand factors), and the distance between the two countries (as a composite factor reflecting the barrier between the two countries). Using mathematical analysis and multiple arguments, James E. Anderson (1979) developed a more specific theoretical foundation for the gravity model. He identified the simplest gravity model, which originated from the Cobb-Douglas expenditure system approach. Assuming that each country specializes in producing a specific commodity, without tariffs and transportation costs, the simplest model determines the impact on the

flow of trade between two countries as the income of the importing and exporting countries. Accordingly, the distance factor between countries creates trade barriers that are included in the model to estimate costs and tariff barriers between countries. With these foundations, James E. Anderson asserts that the gravity model in international trade needs to be further developed and used, expanded in building new versions, and identifying new factors that affect the flow of trade between countries.

From the above theoretical basis, the hypotheses are developed and selected to fit the practical context of Vietnam as follows:

GDP of Vietnam

In theory, an increase in the total value of goods and services produced in a country indicates an increase in the country's production of goods, which can lead to an increase in its exports. However, different studies on different products and countries have shown that the impact of GDP on exports varies among countries. The extent to which this factor affects the volume of exports and GDP of different countries and products also varies. However, in economies that do not primarily focus on exports, goods and services produced domestically may not necessarily serve export activities, meaning that the volume of exports and GDP may not necessarily be related to each other. On the contrary, as production capacity increases and the value of a country's production decreases, GDP may have an inverse relationship with exports. The theoretical scenarios can be diverse due to the scale of the exporting country's economy and its impact on exports. However, scientific studies and empirical evidence have shown that GDP and exports are positively and closely related (M. Sevela, 2002; Ly and Zang, 2008; M. Oumer and P. Nvâeeswara, 2015; M. Ebaidalla and A. Abdalla, 2015).

H1: The higher the GDP of Vietnam, the higher the export of seafood.

Population of Vietnam

Studies on the sugar, coffee, and paper industries have added population variables to the gravity model in trade and have shown that population is an important factor for a country's exports (M.Ebaidalla and A.Abdalla, 2015; G.Dlamini et al, 2016). The level of impact of population on seafood exports and overall trade can be analyzed from different perspectives.

From a labor supply perspective, a growing population can contribute to increasing production capacity and export volume. However, this also creates competition among businesses and requires them to improve techniques, increase productivity, and diversify products to increase supply. Therefore, the population of the exporting country (labor supply) has a positive impact on export volume.

H2: The higher the population of Vietnam, the higher the export of seafood.

Foreign direct investment (FDI) disbursement

An important factor added to the trade attraction model is foreign direct investment (FDI) into the exporting country. FDI provides significant financial resources for production development and contributes to enhancing overall export. In addition, FDI activities indirectly increase the scientific and technological capacity of the country, contributing to productivity and export potential. Strengthening FDI investment will have a positive impact

on the seafood export value, as indicated by various studies (Kristjánsdóttir, 2005; Díaz, 2013; Sejdini & Kraja, 2014; Elshenawy et al., 2014; CIEM, 2016; Alfred, 2019).

H3: The more FDI Vietnam attracts, the higher the seafood export value.

The production volume of Vietnam's aquatic products

The seafood production volume of Vietnam is an important indicator to evaluate the country's ability to supply raw materials to importing countries. Increasing seafood production volume implies larger scale production and higher supply capacity. For example, Vietnam's large seafood production volume allows this country to provide products to many countries and meet diverse requirements in import markets, thereby diversifying the export market. Increasing seafood production volume will have a positive impact on the seafood export value (Alfred, 2019; Rahman, 2019).

H4: The more the seafood production volume increases, the higher the seafood export value.

The GDP of the countries importing seafood from Vietnam

GDP of the seafood-importing countries of Vietnam. This variable was first demonstrated in Jan Tinbergen's research in 1962. The GDP of importing countries reflects an increase in the income of the nation, which in turn increases consumption demand and import volume. As a result, exporting countries can increase their export supply to importing countries. This factor has affected the export of many items of various countries, such as sugar, raisins, and coffee. When the GDP of a country increases, it indicates that the production capacity of the country also increases. Therefore, the competition between foreign products and domestic products becomes more intense.

H5: The higher the GDP of the importing countries, the higher the seafood exports of Vietnam.

The population of the countries importing seafood from Vietnam

The population of Vietnam's seafood-importing countries can influence the scale of the import market. The larger the population, the greater the likelihood of imports from that country, and this will also increase the export volume of the exporting country. This information was subsequently added to the trade attraction model by later studies (Miran, 2013; Oumer & Nvaeeswara, 2015; Ebaidalla & Abdalla, 2015; Dlamini & colleagues, 2016; Alfred, 2019).

H6: The higher the population of the seafood-importing countries, the higher the seafood exports.

The distance from Vietnam to the countries importing seafood from Vietnam

The initial factor in the traditional trade gravity model is the distance between countries. The closer the distance between the exporting and importing countries, the more likely they are to "attract" each other and trade more with each other than countries that are far apart. However, this factor has an opposite effect on the export volume of a country. Distance is identified as one of the important factors for the total bilateral trade volume, according to experimental studies by Céline Carrere (2003) and Martínez-Zarzoso and Nowak-

Lehmann, D.F. (2004). In the specific case of Vietnam, studies by Do Thai Tri (2006) and Nguyen Xuan Bac (2010) have shown that distance has an opposite effect on the country's export flow. The distance factor between countries has been used in most subsequent studies, such as Sevela (2002), Khiyav & colleagues (2013), Oumer & Nvaeeswara (2015), Ebaidalla & Abdalla (2015), Dlamini & colleagues (2016), and Rahman (2019).

H7: The further the distance between Vietnam and importing countries, the more the export of seafood decreases.

The nominal exchange rate between Vietnam and the countries importing Vietnamese seafood

Exchange rate: The exchange rate is a factor that has been studied and added to the trade gravity model. This rate directly affects the export price of goods and is an important factor in determining market demand. When the exchange rate decreases, the domestic currency price increases, and the foreign currency earned from export activities decreases. This results in the revenue from export activities being reduced in domestic currency and export volume decreasing. Conversely, when the exchange rate increases, the domestic currency price decreases, the amount of foreign currency earned increases, and the export volume increases. However, the condition for export activities to grow and develop is that the input costs of export goods do not correspondingly increase. To eliminate the impact of inflation differentials between countries and accurately reflect the purchasing power and competitiveness of a country, in the scope of this study, the real exchange rate is used. Authors such as Bhatt (2019), Weckström (2013), Antonio and Troy (2014), Dlamini and colleagues (2016) have indicated the effects of exchange rate policies on export volume.

H8: The higher the exchange rate, the more Vietnam's seafood exports increase.

Average interest rate of Vietnam

Average lending interest rates in Vietnam are affected by state policies that support seafood production businesses to develop the industry. This can be measured through factors such as corporate income tax rates, loan interest rates, infrastructure policies, preferential interest rate loan packages, support for raw materials inputs, administrative procedures and trade promotion (Khiyav & colleagues, 2013; Dlamini & colleagues, 2016; Ly and Zhang, 2008).

H9: As the lending interest rate in Vietnam increases, the export of seafood products decreases.

The average price of aquaculture production in Vietnam

Seafood production prices in Vietnam affect the quantity of exported goods negatively according to the theory of supply and demand. The H-O theory also shows a relationship between domestic production prices and comparative prices between countries. Therefore, high domestic production prices will reduce the ability to compete in export prices and decrease the volume of seafood exports. Empirical studies by Haleem and colleagues (2005) and Hussien (2015) also produced similar results. If domestic seafood production prices increase, Vietnam's export prices will also increase, but this will reduce its

ability to compete in export prices against competitive rivals and decrease the volume of seafood exports. Therefore, the hypothesis is:

H10: As seafood production prices in Vietnam increase, the export of seafood products decreases.

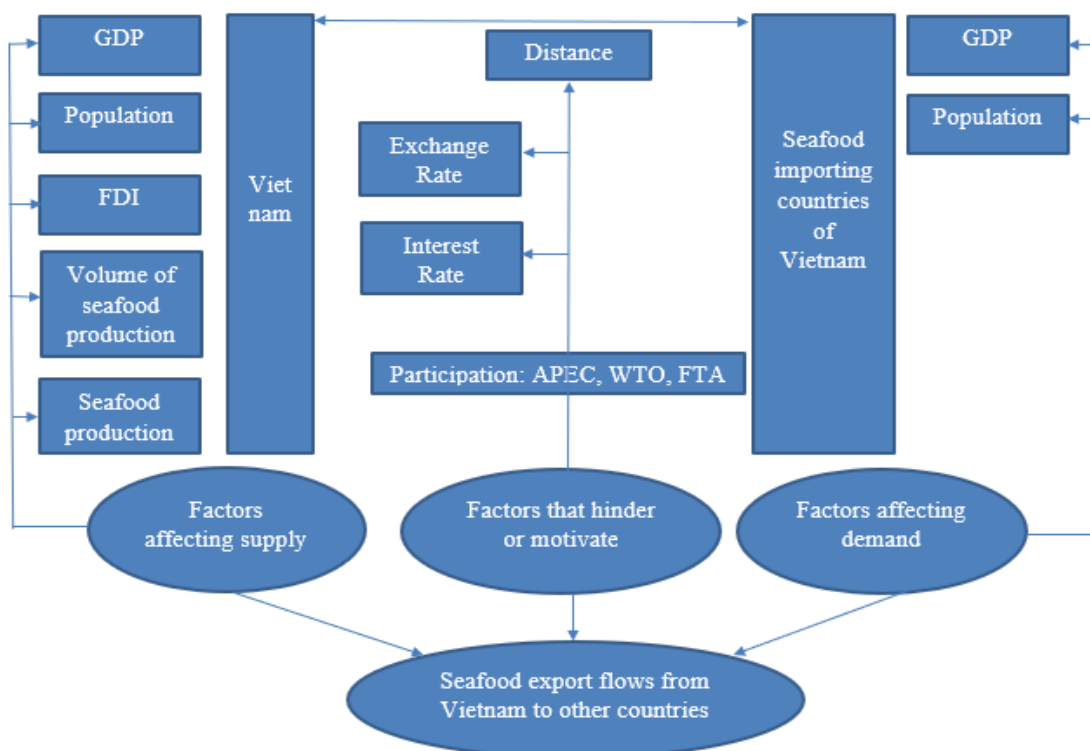
The level of openness of an economy can be measured by various variables, such as the openness index of the economy or the participation of countries in international trade organizations and forums. This is a factor that many researchers are interested in and add to the attractive trade model. The openness and international integration of countries are considered a way to promote trade and enhance exports (Khiyav et al., 2013; Dlamini et al., 2016; Ly and Zhang, 2008; South Africa Department of Trade and Industry, 2003; Stavytsky et al., 2019).

H11: Vietnam's seafood exports are higher if both Vietnam and the importing country join the WTO in year t.

H12: Vietnam's seafood exports are higher if both Vietnam and the importing country join APEC in year t.

H13: Vietnam's seafood exports are higher if both Vietnam and the importing country join FTA in year t.

After adjusting based on feedback from a preliminary study of practical conditions in Vietnam, the model of factors affecting Vietnam's seafood exports based on the attractive trade model is proposed as follows:



With the specific adjusted and identified factors mentioned above, the model to measure the factors affecting Vietnam's seafood exports is determined as follows:

$$\ln(EX_{Vjt}) = K + \beta_1 \ln(GDP_{Vt}) + \beta_2 \ln(DS_{Vt}) + \beta_3 \ln(FDI_{Vt}) + \beta_4 \ln(KL_{Vt}) + \beta_5 \ln(GDP_{Jt}) + \beta_6 \ln(DS_{Jt}) + \beta_7 \ln(KC_{Vj}) + \beta_8 \ln(TYGIA_{Vjt}) + \beta_9 \ln(LAISUAT_{Vt}) + \beta_{10}(\text{GIASANXUAT}) + \beta_{11}(\text{WTO}_t) + \beta_{12}(\text{APEC}_t) + \beta_{13}(\text{FTA}_t) + \varepsilon$$

3. Method

3.1. Collecting data

To ensure the accuracy of the data source, the study collected data from reputable organizations worldwide and in Vietnam. Specific data sources include: Vietnam's seafood export turnover and import tax data were collected from the Trademap - ITC database of the WTO; GDP data for Vietnam, GDP of seafood importing countries, and population data of seafood importing countries were obtained from the databank.worldbank database of the World Bank; FDI disbursement capital into Vietnam was collected from the database of the General Statistics Office of Vietnam; VND lending interest rates and X/VND exchange rates were obtained from the IMF database; The distance between countries, measured from the distance between the two capital cities of two countries, was obtained from the website <http://vn.toponavi.com>; Information on participation in WTO, APEC, EVFTA, CPTPP, and FTA organizations was directly obtained from the website of the World Trade Organization (www.wto.org), the Asia-Pacific Economic Cooperation (www.apec.org), and the Vietnam Chamber of Commerce and Industry (www.trungtamwto.vn).

The study uses a dataset with 860 observations of 43 countries and Vietnam over the period from 2002 to 2021.

Table 1. Explanation of variables and data sources.

Observed variable	Explanation	Data source
EX_{Vjt}	The export value of Vietnamese seafood to Japan in year t	ITC
GDP_{Vt}	GDP of Vietnam in year t	World Bank
DS_{Vt}	Population of Vietnam in year t	World Bank
FDI_{Vt}	Investment in Vietnam from foreign direct investment (FDI) disbursement in year t	General Statistics Office of Vietnam
KL_{Vt}	The production volume of Vietnam's aquatic products in year t	General Statistics Office of Vietnam
GDP_{Jt}	The GDP of the countries importing seafood products from Vietnam in year t	World Bank
DS_{Jt}	The population of the countries importing seafood from Vietnam in year t	World Bank

Observed variable	Explanation	Data source
KC _{VJ}	The distance from Vietnam to the countries importing seafood from Vietnam	Distancefromto
TYGIA _{VJt}	The nominal exchange rate between Vietnam and the countries importing Vietnamese seafood in year t	IMF
LAISUAT _{Vt}	Average interest rate of Vietnam in year t	IMF
GIASANXUAT _{Vt}	The price index of seafood production in Vietnam in year t	General Statistics Office of Vietnam
WTO _t	The value is 1 if both Vietnam and the partner country are WTO members in year t, and 0 if either Vietnam or the partner country is not a WTO member in year t	WTO
APEC _t	The value is 1 if both Vietnam and the partner country are APEC members in year t, and 0 if either Vietnam or the partner country is not a APEC member in year t	WTO
FTA _t	The value is 1 if both Vietnam and the partner country are members of the same Free Trade Agreement (FTA) in year t, and 0 if either Vietnam or the partner country is not a member of any FTA in year t	WTO

Source: Proposed research group

3.2. Data Processing

The study uses the Stata program to perform estimation and model testing for optimal OLS, REM, FEM, and GLS models. Specifically, the estimation techniques are carried out as follows:

(1) Choosing between OLS and FEM: Estimating the model using the OLS method by considering all coefficients as constant in different time and space conditions and estimating the FEM model by considering the correlation between the fixed factor and the residual. Conducting an F test with all $u_i = 0$ with the Prob coefficient. If this coefficient < 0.05 , there is a correlation between the fixed factor over time with the residual, which means that the FEM estimation is better than OLS. Conversely, if $\text{Prob} > 0.05$, the OLS estimation may be better than FEM.

(2) Choosing between OLS and REM: Estimating the model according to REM with the assumption that there is no correlation between the independent variable and the residual. Testing for random effects with $\text{corr}(u_i, X) = 0$ with the Prob coefficient. If this coefficient < 0.05 , there is randomness in the model, or there is no correlation between the independent

factor and the residual, which means that the REM estimation is better than OLS. Conversely, if Prob > 0.05, the OLS estimation may be better than REM.

(3) Choosing between FEM and REM: Using the Hausman test to choose a suitable model between REM and FEM. Testing the hypothesis H0: there is no difference in regression coefficients between the two REM and FEM models through the Prob coefficient. If this coefficient < 0.05, reject the H0 hypothesis. Conversely, if Prob > 0.05, the REM estimation will be better than FEM.

(4) Testing the phenomenon of autocorrelation: the correlation between independent variables and the residual has been corrected with assumptions in the REM or FEM models. However, to perform regression, the autocorrelation in the residual also needs to be eliminated. Conducting the Wooldridge test with the hypothesis H0: there is no autocorrelation phenomenon with the Prob coefficient. If this coefficient < 0.05, reject the H0 hypothesis, meaning that there is an autocorrelation phenomenon in the model. Conversely, if Prob > 0.05, there is no autocorrelation phenomenon in the model.

(5) Testing the phenomenon of constant error variance: the assumption of the regression model is that the variance of the error is constant. Testing $\text{Var}(u) = 0$ with the H0 hypothesis: the variance of the error is constant with the Prob coefficient. If this coefficient < 0.05, reject the H0 hypothesis, meaning that the variance of the error changes in the model. Conversely, if Prob > 0.05, the model has a constant error variance.

(6) Correcting model errors with GLS regression.

4. Results

4.1. Model selection

4.1.1. Choosing between OLS and FEM

Performing a regression using the Ordinary Least Squares (OLS) method to examine the impact of factors on Vietnamese seafood exports. The OLS regression results are shown in the table below.

Table 2. OLS regression results

lnEX	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
lnGDPi	1.117854	.059191	18.89	0.000	1.001675	1.234032
lnGDpv	-.6097621	.7673718	-0.79	0.427	-2.115938	.8964139
lnDSi	-.1734543	.0625061	-2.77	0.006	-.2961395	-.050769
lnDSv	-20.63222	5.180773	-3.98	0.000	-30.80089	-10.46354
lnKC	-.0441109	.0590828	-0.75	0.456	-.1600769	.0718551
lnKL	5.497259	2.159626	2.55	0.011	1.258406	9.736112
GIASX	.0063843	.0038208	1.67	0.095	-.0011151	.0138837
lnFDI	.4152718	.3105843	1.34	0.182	-.1943344	1.024878

lnEX	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
LAISUAT	-.000825	.0075905	-0.11	0.913	-.0157235	.0140735
lnTYGIA	.0379808	.0258199	1.47	0.142	-.0126977	.0886593
APECT	.6683217	.0605303	11.04	0.000	.5495146	.7871289
WTO	.0205958	.1354695	0.15	0.879	-.2452999	.2864915
FTA	-.1509924	.0704183	-2.14	0.032	-.2892076	-.0127773
_cons	140.2172	38.41534	3.65	0.000	64.81667	215.6178

Source: Compiled from STATA 15

Continuing with testing for multicollinearity among variables in the model, the results showed that some factors had large multicollinearity coefficients. Four variables, lnKL, lnGDPI, lnGDPv, and DSv, were removed until the multicollinearity coefficient met the required threshold. The results of the multicollinearity test for the remaining variables after removing the non-compliant variables are presented in Table 3.

Table 3. Result of multicollinearity test for variables after removing unsuitable variables

Variable	VIF	1/VIF
FTA	1.78	0.562223
lnTYGIA	1.57	0.638720
APECT	1.51	0.660941
lnDSi	1.34	0.748163
lnFDI	1.24	0.806262
WTO	1.14	0.875269
GIASX	1.02	0.982849
LAISUAT	1.00	0.998181
Mean VIF	1.32	

Source: Compiled from STATA 15

With the remaining variables satisfying the multicollinearity test requirement, a fixed-effects model (FEM) regression analysis is conducted. The estimation results are presented in Table 4.

Table 4. Estimation results of the fixed-effects model (FEM) regression analysis.

lnEX	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
lnDSi	.7529783	.6737543	1.12	0.264	-.5695345	2.075491
lnKC	-.1209247	.0387416	-3.12	0.002	-.1969707	-.0448787
GIASX	.0114361	.0021245	5.38	0.000	.007266	.0156063
lnFDI	1.423158	.0607181	23.44	0.000	1.303974	1.542341
LAISUAT	-.0041497	.0048641	-0.85	0.394	-.0136975	.0053982

lnEX	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
lnTYGIA	.1054876	.051867	2.03	0.042	.0036778	.2072974
APECT	0	(omitted)				
WTO	.4614672	.1179755	3.91	0.000	.2298929	.6930414
FTA	-.2591533	.0493535	-5.25	0.000	-.3560294	-.1622773
_cons	-8.639461	4.758387	-1.82	0.070	-17.9797	.7007804

Source: Compiled from STATA 15

Performing the F test with all $u_i=0$ yields a Prob of $0.000 < 0.005$ after running the FEM, which allows us to conclude that there is a correlation between the time-fixed factor and the residuals. This means that the FEM estimation is better optimized than the OLS model.

4.1.2. Choosing between OLS and REM

Performing the random effects model (REM) regression yields the following estimation results:

Table 5. Results of regression analysis using random effects model (REM)

lnEX	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
lnDSi	.7955209	.1477701	5.38	0.000	.5058967	1.085145
lnKC	-.1227704	.0387926	-3.16	0.002	-.1988025	-.0467384
GIASX	.0110938	.002125	5.22	0.000	.0069288	.0152588
lnFDI	1.415937	.0542796	26.09	0.000	1.309551	1.522323
LAISUAT	-.0041824	.0048755	-0.86	0.391	-.0137381	.0053734
lnTYGIA	.1596917	.0452509	3.53	0.000	.0710015	.2483818
APECT	.8193147	.2505154	3.27	0.001	.3283135	1.310316
WTO	.4797091	.1163472	4.12	0.000	.2516728	.7077453
FTA	-.2762934	.0489818	-5.64	0.000	-.372296	-.1802909
_cons	-9.325188	1.080414	-8.63	0.000	-11.44276	-7.207615

Source: Compiled from STATA 15

After running the REM model, testing the random effect shows that $\text{corr}(u_i, X) = 0$ with Prob = $0.0000 < 0.05$. This means that we accept the presence of randomness in the model or that there is no correlation with the residuals. In this case, the REM estimation will be better optimized than OLS.

4.1.3. Choosing between REM and FEM

After the selection process based on pairwise comparisons, the results show that the estimation using FEM and REM models is more optimal than using the OLS model. Therefore, we proceed to choose between the FEM and REM models to see which model is more optimal using the Hausman test.

Table 6. Hausman test between FEM and REM.

Variable	Coef.		Difference (b-B)	S.E.
	FEM(b)	REM(B)		
lnDSi	.7529783	.7955209	-.0425426	.6573499
lnKC	-.1209247	-.1227704	.0018457	.
GIASX	.0114361	.0110938	.0003423	.
lnFDI	1.423158	1.415937	.0072208	.0272105
LAISUAT	-.0041497	-.0041824	.0000327	.
lnTYGIA	.1054876	.1596917	-.0542041	.0253484
WTO	.4614672	.4797091	-.0182419	.0195334
FTA	-.2591533	-.2762934	.0171401	.0060459
b = consistent under Ho and Ha; obtained from xtreg				
B = inconsistent under Ha, efficient under Ho; obtained from xtreg				
Test: Ho: difference in coefficients not systematic				
$\text{chi2}(7) = (b-B)'[(V_b - V_B)^{-1}](b-B)$ $= 11.70$ $\text{Prob} > \text{chi2} = 0.1650$				

Source: Compiled from STATA 15

The results of the Hausman test show a value of Prob = 0.1650, indicating acceptance of the hypothesis that there is no correlation between the independent variables and the residuals, and that randomness exists. This means that the REM estimation will be more optimal than FEM because the REM assumption is no correlation with the residuals and estimation based on random effects. Therefore, REM will be selected to estimate the impact of factors on Vietnam's seafood exports to other countries.

4.2. Model validation

4.2.1. Autocorrelation test

After conducting the Hausman test to choose between the FEM and REM models, an autocorrelation test is performed for the REM model with the following hypotheses:

H0: The model does not have autocorrelation

H1: The model has autocorrelation

The result of the autocorrelation test for the REM model is shown in table 7 below:

Table 7. Autocorrelation test for the REM model

Wooldridge test for autocorrelation in panel data	
H0: no first-order autocorrelation	
F(1, 42)	14.694
Prob > F	0.0004

Source: Compiled from STATA 15

The test result shows that the coefficient of Prob = 0.0004 < 0.005, so we reject the null hypothesis H0 and accept the alternative hypothesis H1, meaning that the REM model has autocorrelation.

4.2.2. Heteroskedasticity test

Similar to the autocorrelation test, we conducted a heteroskedasticity test for the REM model with the following hypotheses:

H0: The model has constant variance

H1: The model has varying variance

The result of the heteroskedasticity test for the REM model is shown in table 8 below:

Table 8. Heteroskedasticity test for the REM model

stimated results:	Var	sd = sqrt(Var)
lnEX	1.544968	1.242967
e	.1613705	.4017095
u	.435494	.6599197
Test: Var(u) = 0	chibar2(01)=	3931.30
	Prob > chibar2=	0.0000

Source: Compiled from STATA 15

The result shows that the coefficient of Prob = 0.000 < 0.005, therefore, rejecting the null hypothesis H0 and accepting the alternative hypothesis H1. This means that the REM model has heteroskedasticity.

4.3. Rectifying the chosen model using GLS method

To rectify the issues of autocorrelation and heteroscedasticity in the REM model, GLS regression was performed. The results are presented in table 9 below:

Table 9. GLS regression results

Estimated covariances		43		Number of obs	860	
Estimated autocorrelations		1		Number of groups	43	
Estimated coefficients		10		Time periods	20	
				Wald chi2(9)	1910.42	
				Prob > chi2	0.0000	
lnEX	Coef.	Std. Err.	z	P>z	[95% Conf.]	
lnDSi	.9756663	.041991	23.24	0.000	.8933655	1.057967
lnKC	-.0342758	.0369876	-0.93	0.354	-.1067702	.0382187
GIASANXUAT	.0083871	.0019642	4.27	0.000	.0045373	.0122368

lnFDI	1.202911	.0499724	24.07	0.000	1.104967	1.300855
LAISUAT	-.0104136	.0045928	-2.27	0.023	-.0194153	-.0014118
lnTYGIA	.3052579	.0279303	10.93	0.000	.2505155	.3600003
APECT	.7281688	.0658295	11.06	0.000	.5991453	.8571923
WTO	.5483446	.0910397	6.02	0.000	.36991	.7267791
FTA	-.255399	.0442511	-5.77	0.000	-.3421295	-.1686684
_cons	-10.20579	.4307014	-23.70	0.000	-11.04995	-9.361633

Source: Compiled from STATA 15

The results show that the remaining variables in the model, after removing the variables identified in the multicollinearity test and addressing the issues of autocorrelation and heteroskedasticity in the REM model, are all statistically significant at the 95% level. Specifically, these variables are lnDSi, lnTYGIA, lnFDI, GIASANXUAT, LAISUAT, APECT, WTO, and FTA.

5. Discussion and Conclusion

5.1. Recommendations

5.1.1. Solution based on the population factor of importing countries

The population represents the demand for seafood. The selection of Vietnam's seafood consumption partners should be based on the population scale in that market. Seafood is one of the essential products, so the larger the population, the higher the consumption capacity, which will always be the preferred markets to choose from. Among them, potential markets with large populations to focus on include ASEAN, the United States, China, etc. After selecting the market, it is necessary to focus on researching and analyzing the characteristics of that market to have a long-term seafood export strategy.

5.1.2. Solutions based on exchange rate factors

Based on the model results, exchange rate policies have a significant and consistent impact on Vietnam's agricultural export activities. When the X currency increases, the export cost of Vietnamese products will increase, reducing the competitiveness of these products in the international market. The X/VND exchange rate also affects consumer purchasing power. Therefore, the Vietnamese government and businesses need to have flexible policies to cope with exchange rate fluctuations. Strengthening monitoring and forecasting of exchange rate conditions to make timely and effective decisions is necessary. At the same time, the government needs to protect the domestic market by establishing price regulations and trade agreements to ensure the rights and interests of export businesses.

5.1.3. Solutions based on FDI factor

Continuously attract foreign direct investment to increase the production capacity of the seafood industry. In addition, solutions need to be implemented to accelerate the disbursement progress of FDI capital after registration. Focus on investing in high-tech projects and manufacturing products with high added value and large scale in the seafood industry.

5.1.4. Solutions based on the production price index factor

Product quality is one of the most important factors in improving production prices. Manufacturing and exporting high-quality seafood products will increase their value and selling price. Investing in modern production technology during the process helps to improve productivity and product quality while reducing production costs. In addition, there needs to be coordinated efforts from the government, such as strengthening product quality management and control to increase brand value.

5.1.5. Solutions based on the factor of Vietnam's average lending interest rate

The government needs to be flexible in managing interest rate policies, particularly prioritizing monetary policy easing or low-interest stimulus packages for businesses to access capital and expand production because low-interest rates have a positive impact on export turnover. In particular, research results have shown that interest rate policies have a stronger short-term impact after they are issued. Therefore, in addition to issuing policies, the government needs to push forward the implementation process of interest rate and credit policies to have a timely impact on production.

5.1.6. Solutions based on the degree of openness of the economy

Develop domestic and international relationships through trade promotion activities to expand markets, promote and sign bilateral and multilateral trade agreements. Expand cooperative relationships with domestic and international organizations and individuals through organizing and participating in workshops, projects, and forums. Act as a bridge between Vietnamese businesses and international non-governmental and non-profit organizations. Introduce seafood-related activities and projects to international partners and customers to attract interest in cooperation and investment in Vietnam. Publish Vietnamese documents and media worldwide. Be responsive to the demands and preferences of markets to provide information on consumption trends and forecast prices for businesses.

5.2. Conclusion

The estimated results using the GLS method to correct for the REM model allowed for the determination of factors influencing seafood exports in Vietnam based on the gravity model.

$$\ln EX = 0.975 \ln DS_i + 0.3051 \ln TYGIA + 1.202 \ln FDI + 0.008 GIASANXUAT - 0.010 LAISUAT + 0.728 APECT + 0.548 WTO - 0.255 FTA - 10.205$$

Compared to the hypotheses, the regression results for the explanatory variables are statistically significant. The majority of the factors are similar to previous studies. However, the biggest difference in this study compared to previous studies is the reverse impact of the FTA variable. It can be seen that China, a large country with significant export potential, has only signed 15 FTAs. Currently, Vietnam has 17 FTAs, of which 15 are already in effect and 2 are being negotiated. The excessive signing of FTAs without changes in institutional and management aspects has sometimes made domestic businesses unable to compete with foreign businesses that enjoy lower tariff rates. This may be some of the reasons leading to this result. In addition, the producer price index has gone against the initial hypothesis and

has a positive impact on seafood exports. The reason for this result is that in the process of fishing and aquaculture, Vietnamese fishermen have not yet applied solutions and technologies leading to increased production costs, but this increase in cost is insignificant compared to the value obtained from seafood exports. Furthermore, it can be seen that Vietnam's seafood exports are currently facing many anti-dumping lawsuits. Therefore, the correlation between seafood production prices in Vietnam and those in other countries is still low.

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IMPACT OF CAPITAL STRUCTURE ON PROFITABILITY IN THE BANKING SYSTEM

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Abstract

Choosing the right capital structure has a great impact on a bank's ability to generate profits, especially in the context of macroeconomic fluctuations and fierce competition among banks in the current financial market. Researching the influence of 31 banks from 2010 to now, through quantitative analysis, the research results show that banks that choose capital in favor of equity have the ability to improve business results. Moreover, large-scale banks have many advantages in the market, so they often have higher business efficiency, the same is true for older banks. However, inflation and the bank's market share have not had a positive impact on the bank's profit.

Keywords: *Bank, capital structure, quantitative analysis*

1. Introduction

In recent years, our country's economy has achieved a high growth rate compared to other countries. Contributing to this growth has merit from economic entities such as individuals, individual business households, enterprises, and banks. In which, banks are financial intermediaries holding a key role to connect the two sectors of savings and investment in the economy, and banks are also facing fierce competitive pressure due to the growth of the economy as well as the growth of domestic and foreign non-bank financial intermediaries. Depending on the performance, adaptability and profitability of banks, the impact of this capital structure on banks is also different. As a result, banks with weak competitiveness may be replaced by stronger banks. It shows that a bank with more profitable and stable ability is consistent with the better their competitive advantage. In the current international competitive environment, the existence of a bank will be assessed by an important criterion of profitability.

The current profitability of banks is not stable over the years and periods for many different reasons and many researchers do it with the goal of finding out the factors that affect the profitability in the banking system. This is also an issue that managers and investors need to manage businesses and make investment decisions. Because of this reason, this topic will give a systematic and an investigation of the factors affecting profitability in commercial banks in the case of Vietnam.

2. Literature review

Profitability is defined as the ability of a business to generate profits over the long term under the assumption that operating conditions remain constant. This is an indicator that shows the relationship between the capital structure and profitability of a business over a certain period

of time. At the same time, profitability also shows the results of using capital and tangible assets of the business. The production and business capacity, debt repayment capacity and investment expansion of an enterprise are guaranteed when the enterprise has large enough profitability. On the contrary, if the enterprise has low profitability, it will have difficulties in maintaining production and business activities, problems such as the production and business or financial difficulties can also arise at the same time (Nguyen Van Ngoc, 2012).

According to Le Ha Diem Chi (2022), financial capacity is a factor that shows the scale of a bank's operations, its ability to mobilize capital as well as its ability to extend credit will be high if the bank has a large equity capital. To ensure competitiveness in the context of integration, each bank needs to focus on increasing its own capital. Most banks with large charter capital are constantly expanding the scale of operations, developing products, improving service capacity and increasing convenience for customers.

Isayas, Y. N. (2022) conducted a study of 14 banks for the period 2008-2019. The study showed that firm size, liquidity ratio, tangible assets, capital adequacy, leverage and speed real GDP growth has a positive and statistically significant effect on profitability of banks, while firm age and inflation rate have a negative effect but the effect is not statistically significant. on the profitability of banks in Ethiopia.

Nguyen Anh Tu, Pham Tri Nghia (2019) conducted factors affecting the bank performance of joint-stock commercial banks in Vietnam through unbalanced panel data of 27 commercial banks in Vietnam in the period 2005 - 2017, and by fixed factor regression model (FEM). Research results show that bank performance tends to be positive with credit risk, equity structure and loan/total mobilized capital ratio; in contrast, bank performance tends to be inversely related to assets with liquidity and quality of management. In addition, the authors suggested to commercial banks about increasing capital mobilization to increase credit output, and at the same time rebalancing the capital allocated to liquid assets with profitable assets to optimize their performance. Further, commercial banks need to have scenarios to respond to macroeconomic crises in order to minimize losses in operations. Also, some recommendations to the State Bank of Vietnam, there should be appropriate management to regulate the efficiency of commercial banks in the short term such as the borrower may not must bear credit costs when commercial banks incur bad debts; and in the long term, it is necessary to manage to reduce the inflation rate of the economy in order to enhance the performance of commercial banks, thereby promoting the development of the real economy.

3. Method

The study analyzes data of 31 banks in the period from 2010 to present. The data are collected from audited financial statements and annual reports.

Based on the theoretical basis and through a review of domestic and international studies, building a research model based on the combination of factors in experimental studies of Berger (1995), Adelopo (2018), Gupta, N., & Mahakud, J. (2020), the author chooses ROA, ROE as two dependent variables, two research models for the case are rewritten as follows:

❖ for ROA

$$ROA_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 CAP_{it} + \beta_3 CIR_{it} + \beta_4 RD_{it} + \beta_5 AGE_{it} + \beta_7 TANG_{it} + \beta_8 MP_{it} + \beta_{11} GDP_{it} + \beta_{11} INF_{it} + \epsilon_{it}$$

❖ for ROE

$$ROE_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 CAP_{it} + \beta_3 CIR_{it} + \beta_4 RD_{it} + \beta_5 AGE_{it} + \beta_7 TANG_{it} + \beta_8 MP_{it} + \beta_{11} GDP_{it} + \beta_{11} INF_{it} + \epsilon_{it}$$

Where:

ROA or ROE is a measure of the bank's profitability;

SIZE is the size of the bank, measured in the natural base logarithm of total assets;

CAP is the equity ratio, measured by Equity/Total Assets;

CIR is a cost-to-income ratio, measured by operating expenses/operating income;

RD is the coefficient reflecting non-interest income, reflecting income diversification, total non-interest income/Total revenue;

AGE is the age of the bank;

TANG is the indicator representing tangible assets;

MP is the indicator reflecting the strength and market share of the enterprise, measured by the total assets of 1 bank / total assets of the 31 banks studied;

GDP and INF are growth and inflation;

4. Results

4.1. Descriptive statistical analysis

Table 1. Descriptive statistical analysis

Variable	Obs.	Mean	Std. Dev.	Min	Max
ROA	253	0.0081	0.0066	-0.0076	0.0305
ROE	253	0.0932	0.0693	-0.0459	0.2682
NIM	253	0.2828	0.0125	0.0010	0.0884
SIZE	253	14.1502	0.4415	13.2500	15.1800
CAP	253	0.0817	0.0282	0.0269	0.1911
CIR	253	0.5374	0.1657	0	1.1152
RD	253	0.2183	0.1639	-0.1775	1.3457
AGE	253	1.3056	0.2682	0	1.7993
RISK	253	0.0148	0.0309	0	0.5000
TANG	253	0.0059	0.0057	0.0006	0.0361
MP	253	0.0432	0.0468	0.0020	0.1790
GDP	253	0.0620	0.0116	0.0294	0.0720
INF	253	0.0582	0.0481	0.0063	0.1867

Source: The authors

Based on descriptive statistics of the variables in the study. In general, ROA of 31 banks on the stock exchange in Vietnam in the period 2010-2020. The mean is 0.81%, the minimum and maximum values of ROA are -0.76% and 3.05%, respectively, with standard deviation of 0.66%. This shows that, in recent times, besides some effective banks, there are still a few banks that are operating inefficiently in the fierce competition. ROE has a mean of 9.32% with a standard deviation of 6.93%. With the fluctuation between the minimum and maximum values of ROE at -4.49% and 26.82%, respectively, it shows that there is fierce competition in the digital revolution and globalization of capital flows.

SIZE - bank size with an average value of 14.15 with the smallest decreasing by 13.25% and the value the largest is 15.18%, showing that there is no big difference in the magnitude between commercial banks.

Regarding CAP, it shows that the equity ratio accounts for 8.17%, the rest is from other sources of capital.

4.2. Correlation coefficient matrix analysis

In order to check whether the correlation between the independent variables and the research of the study has multicollinearity phenomenon, the table of correlation matrix data of the research study will show the issues that need attention as follows:

Table 2. Correlation matrix

Items	SIZE	CAP	CIR	RD	AGE	RISK	TANG	MP
SIZE	1.0000							
CAP	-0.4993	1.0000						
CIR	-0.3943	-0.0345	1.0000					
RD	0.1868	-0.0456	0.1403	1.0000				
AGE	0.2947	0.0600	-0.3622	-0.2623	1.0000			
RISK	0.0784	-0.0700	-0.0514	0.0221	0.0472	1.0000		
TANG	-0.3212	0.4460	0.1999	-0.0910	0.0940	-0.0732	1.0000	
MP	0.7886	-0.3418	-0.3908	0.0687	0.3982	0.0252	-0.1005	1.000

Source: The authors

From the table above, we can see that some pairs of variables have a positive correlation relationship and some variables have a negative relationship. Independent variables have low correlation with each other, correlation coefficient < 0.8, there is no phenomenon of multicollinearity.

4.3. VIF analysis

To check the multicollinearity of the variables, we have the following statistical table:

Table 3. VIF analysis

Variable	VIF	1/VIF
SIZE	4.77	0.209853
MP	3.87	0.258305
CAP	1.92	0.521158
CIR	1.72	0.580730
AGE	1.54	0.650984
TANG	1.50	0.665263
INF	1.39	0.721705
RD	1.34	0.747497
GDP	1.07	0.938242
RISK	1.02	0.980923
Mean VIF	2.01	

Source: Analysis

According to Hoang Trong et al. (2008), predictors with $VIF = 2.01 < 10$, the research model is considered to have no serious influence on multicollinearity.

4.4. Results

The study performs additional tests such as: Pooled OLS, FEM and REM to examine the relationship between variables. Through the table of the results of the variables corresponding to the regression models as shown when running with Stata 15 program. In order to choose the best and most suitable regression model for the study, the authors perform the tests.

Table 4. The test of Hausman

Items	Test	FEM	REM	Hypothesis	Result
ROA	Hausman Frob > chi2= 0.0274 < 5%	Prob > F = 0.0000 < 1%	Prob > chi2 = 0.0000 < 1%	Reject hypothesis H0 => Accept hypothesis H1	FEM
ROE	Hausman Frob > chi2 = 0.1309 > 5%	Prob > F = 0.0000 < 1%	Prob > chi2 = 0.0000 < 1%	Reject hypothesis H1 => Accept hypothesis H0	REM

Source: Analysis

After using Hausman test to select the model: Hausman test gives Prob value $> \chi^2 = 0.001 < 5\%$, so we reject hypothesis H1 (ϵ_i and independent variable are not correlated) accept hypothesis H0 (ϵ_i and correlated independent variable). Thus, Hausman test results FEM model is better than REM for ROA, REM model is better than FEM for ROE.

Next, we use the F test to choose between the FEM and Pooled OLS models.

Table 5. The F test

Items	Test	Result
ROA	F(30,212) = 5.81 Prob > F = 0.0000 <5%	FEM
ROE	F(30,212) = 6.80 Prob > F = 0.0000 <5%	FEM

Source: Analysis

After using the F-test to select the model: The test results for the FEM model are better than POOLs for ROA, ROE. So, the general result is as follows: FEM is the best model for the dependent variable ROA. REM is the best model for the dependent variable ROE.

Table 6. Diagnostics test

Items	Test	Model selection	Sta.	Hypothesis	Result
ROA	Heteroskedasticity	FEM	Prob > $\chi^2 = 0.0000 < 5\%$	Reject hypothesis H0 => Accept hypothesis H1	There is a phenomenon of variance
	Autocorrelation	FEM	Prob > F = 0.000 < 5%	Reject hypothesis H0 => Accept hypothesis H1	There is autocorrelation
ROE	Heteroskedasticity	REM	Prob > F = 0.000 < 5%	Reject hypothesis H0 => Accept hypothesis H1	There is a phenomenon of variance
	Autocorrelation	REM	Prob > F = 0.000 < 5%	Reject hypothesis H0 => Accept hypothesis H1	There is autocorrelation

Source: Analysis

4.5. Results based on GLS

The models all have problems with autocorrelation or variable variance, so the topic analyzes according to FGLS to correct defects, the results are as follows:

Table 7. Regression coefficient and P-value based on FGLS

Variable		ROA	ROE
SIZE	β_1	0.010677***	0.098024***
	P-value	0.000000	0.000000
CAP	β_2	0.100535***	0.097476
	P-value	0.000000	0.482000
CIR	β_3	0.018530***	-0.195270***
	P-value	0.000000	0.000000
RD	β_4	-0.001700***	-0.014057
	P-value	0.336000	0.463000
AGE	β_5	0.000001	0.000665**
	P-value	0.820000	0.048000
RISK	β_6	-0.010160	-0.046567
	P-value	0.242000	0.621000
TANG	β_7	-0.092920*	-0.096995
	P-value	0.098000	0.874000
MP	β_8	-0.067367***	-0.586031***
	P-value	0.000000	0.000000
GDP	β_9	0.017826	0.263767
	P-value	0.408000	0.260000
INF	β_{10}	0.036147***	0.440779***
	P-value	0.000000	0.000000
_CONS	N	-0.140217***	-1.220687***
	P-value	0.000000	0.000000

Source: Analysis

Note: *, **, *** correspond to the significance level of 10%, 5%, 1%).

Table 8. Summary table of research results

	Model	SIZE	CAP	CIR	RD	AGE1
ROA	OLS	0.017*** [8.07]	0,101*** [7.71]	-0.018*** [-8.97]	-0.001 [-0.94]	0.000007 [0.22]
	FEM	0.0136*** [2.91]	0.124*** [-8.75]	-0.018*** [-8.52]	0.0029 [1.5]	-0.000183 [-0.50]
	REM	0.0108*** [6.55]	0.107*** [8.05]	-0.018*** [-9.05]	0.0017 [0.93]	-0.000055 [-0.95]
ROE	OLS	0.0980*** [6.82]	0.0975 [0.69]	-0.195*** [-8.71]	0.0141 [0.72]	0.000666* [1.94]
	FEM	0,0733 [1.50]	0.168 [1.14]	-0.189*** [-8.25]	0.0332 [1.62]	0.00249 [0.66]
	REM	0.0925*** [5.24]	0.0435 [0.31]	-0.196*** [-8.91]	0.0257 [1.32]	0.000181 [0.28]

	Model	RISK	TANG	MP	GDP	INF
ROA	OLS	-0.0102 [-1.14]	-0.0929 [-1.62]	-0.0674*** [-5.39]	0.0178 [0.81]	0.0361*** [4.6]
	FEM	-0.0083 [-1.13]	-0.301* [-1.81]	0.0198 [0.41]	0.0254 [1.34]	0.0292*** [3.71]
	REM	-0.0080 [-1.07]	-0.134 [-1.42]	-0.0419 [-2.59]	0.0187 [1.03]	0.0314 [4.24]
ROE	OLS	-0.0466 [-0.48]	-0.0970 [-0.16]	-0.586*** [-4.32]	0.264 [1.10]	0.441*** [5.17]
	FEM	-0.0273 [-0.35]	-3.147* [-1.81]	0.682 [1.34]	0.378* [1.90]	0.418*** [5.07]
	REM	-0.0236 [-0.30]	-0.870 [-0.84]	-0.305* [-1.75]	0.258 [1.35]	0.414*** [5.34]

Source: Analysis

Note: *, **, *** correspond to the significance level of 10%, 5%, 1%).

The research results show that an increase in equity has a positive effect on financial performance (ROA), moreover, the larger the bank's size, the higher the financial efficiency of the bank. Similar results show that bank age has a positive effect on firm profitability. However, inflation has an impact on the bank's business performance, moreover, the market share of enterprises has not had a good impact on the profitability of the business.

5. Discussion and Conclusion

Some solutions to improve profitability in the coming years:

5.1. Bank expansion

The balance sheet of banks is shown specifically through a system of indicators to reflect the situation of assets and capital to form assets (According to Circular 49/2014/TT-NHNN). In which, total bank assets including cash, gold, silver and gems, deposits at the State Bank, deposits and loans to other credit institutions, fixed assets (fixed assets).

Tangible fixed assets are the main labor materials with physical form satisfying the standards of tangible fixed assets, participating in many business cycles but still keeping the original physical form such as buildings, architectural objects, machinery, equipment, means of transport... Meanwhile, intangible fixed assets are assets that have no physical form but can be determined and are held and used by enterprises in production and business, provision of services or leased to other entities in accordance with the standards for recognition of fixed assets.

Thus, in order to improve business efficiency or profitability, banks are forced to focus on the most rational use of facilities such as premises, projects (tangible fixed assets), and constantly improve technology, software, equipment (intangible fixed assets) and expand the scale of business activities by opening more branches and transaction offices carefully and with a roadmap and objective appraisal.

5.2. Improve efficiency of capital cost

According to Circular 49/2014/TT-NHNN, the bank's capital sources include equity and liabilities. Equity is one of the basic capital sources of the bank and formed with the establishment of the bank. Similar to businesses, one of the basic business objectives of a bank, besides profits, is to "preserve and develop equity. Further, the bank must maintain and grow that capital during its operation. This can be done by the bank by adding more capital or using retained profits to reinvest, demonstrating investment policy in both breadth and depth. Equity capital of a commercial bank is the amount of capital actually allocated by the owner or actually contributed by shareholders and capital contributors and recorded in the charter of the bank (according to Clause 1 of this Article). Article 29 of Circular 40/2011/TT-NHNN regulating the charter capital of banks). One of the ways to expand capital is the fact that businesses and banks pay dividends in shares, such as the Bank for

Agriculture and Rural Development of Vietnam (Agribank), which has been granted an additional 3,500 billion VND by the Ministry of Finance

5.3. Developing new branches, expanding new market shares, new products

Regarding the development of new branches and new transaction offices: In the period after the 2009 Asian financial crisis, a few weak banks were bought out at non-dong prices, a series of banks increased their equity capital in recent years. After the increase in charter capital, banks expand their market share by opening new branches, transaction offices and new products, more diversified in cross-selling products. However, the expansion of market share by increasing the number of transaction offices and branches must comply with the regulations of the State Bank, specifically Circular TT 21/2013/TT-NHHH.

In terms of expanding new market shares, new products are of special interest to banks, especially in the era of the industrial revolution 4.0, banking products and services are extremely competitive, therefore, banks do not have enough strong financial resources to invest in new technologies, new software and new services.

5.4. Forecasting the macroeconomic situation in the country

Banks are forced to grasp the domestic economic situation through management policies, fiscal policies, monetary policies and the world political and economic situation in order to forecast and make appropriate business strategies for each period, specifically the input and output interest rate policy, the level of provisioning in accordance with the economic situation and the Basel II standards in Circular 41/2016-TT-NHNN and especially the ensure the level of capital adequacy, meet the desired profit level.

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FACTORS AFFECTING THE QUALITY OF FINANCIAL REPORTING INFORMATION OF LISTED ENTERPRISES IN VIETNAM

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Abstract

The purpose of this article is to identify the factors affecting the quality of information on the financial statements of listed enterprises on the stock market. Mixed studies is used in the article, in which qualitative research is used first with the method of discussion with experts to determine the appropriate factor. The results show that there are six influential factors to build the research model, in which accounting voucher impact on other factors in the research. Then, quantitative research is used to retest the model. The results show that all six factors selected are statistically significant, arranged in order of decreasing influence: audit firms, managers, accounting standards, accounting documents, accounting books and tax. Based on the study outcomes, we give some recommendations to listed enterprises for improving the quality of accounting information and new directions in future research.

Keywords: *Financial statement, level of influence, listed enterprises, quality of information.*

1. Introduction

In the current era of technology and information, which has developed rapidly, financial statements are still the basis for complete and reliable information. Financial statements for the purpose of providing financial information useful to current and prospective investors, lenders, and other creditors in making loan facility decisions is one of the capital providers.

The quality of the financial statements can be fundamental or complementary depending on their usefulness to the information of the financial statements. In fact, over the

years, there have been many scandals related to information disclosure and the quality of published information, causing negative impacts on the global market. There is no shortage of cases related to the disclosure of information about the financial status of listed companies in Vietnam. Consequences of the scandals have significantly affected the confidence of investors and the public in the quality of financial statement accounting information from listed companies.

Information systems success model was developed by Delone and McLean (1992). This is the most influential and popular premise theory to this day through the citation of thousands of scholarly articles. In 1992, the author pointed out 6 factors affecting information systems, including: system quality, information quality, information system use, individual-related impact factors, and influencing factors. organization related activities. In which, the main factor that the research team relies on to form the research paper is the quality of information. The research model of Nelson et al. (2005) both inherits the previous research of Delone and McLean and adds four additional factors to assess information quality including: accuracy, completeness, relevance and comprehensibility... Research by Ferdy van Beest & ctg (2009) and Geert Braam & Ferdy van Beest (2013) have many similarities. These two studies are based on the criteria of information quality of financial statements published by IFRS and IASB to build a second-order scale consisting of 5 first-order components: appropriate, truthfully presented, understandable, and capable. comparative, timely. The research team has inherited these components to build the scale of information quality of financial statements.

2. Method

a. Qualitative research methods

Conducted by interview technique. The process of discussing with experts in the field of accounting to select appropriate variables that they believe have a significant impact on the quality of financial reporting information. Here, the research team has introduced twelve factors, including: Accounting standards; Audit firms; Financial paper; Information technology; Objectives of preparing financial statements; Manager; Accounting books; Fixed assets; Frequency of meetings of the board of directors; Accounting information; Tax; Professional qualifications in finance and accounting of the board of directors. The discussion process excluded four factors because of the low impact or difficulty in the survey process, including: Information technology; Objectives of financial reporting; Fixed assets; Frequency of meetings of the board of directors; Accounting information; Professional qualifications in finance and accounting of the board of directors.

b. Quantitative research methods

Data collection subjects: people with qualifications and expertise in the field of accounting - auditing and management executives.

Research sample size: The sample size is determined depending on many factors. In which, researchers can determine sample size based on two methods of population

estimation: multiple regression analysis and exploratory factor analysis (EFA). The research project is expected to use a combination of the two methods above to process the data.

For exploratory factor analysis (EFA), the sample size will be determined by the formula: $n = k \times \text{number of observed variables}$; where the sample size determination ratio k is usually: 5:1 (Hair et al., 2014). So, in this study with the number of observed variables of the research model being 22 and the k coefficient of 5/1, the minimum sample size is 110.

For multiple regression analysis, the sample size is usually determined by the formula: $n = 50 + 8k$ (where k is the number of independent variables of the model). With the number of independent variables in this study being 6, the minimum sample size is 98.

Thus, combining the sample size requirement of EFA analysis and multiple regression analysis, and considering the time condition, the number of observations of the study is 300 will be suitable.

Sampling method: The study used a non-probability sampling method. The research will select listed companies that are easily accessible.

Data collection: Conducted through survey questionnaires. More than 300 survey questionnaires were distributed to accountants, auditors and business managers.

3. Result

3.1. Test of Cronbach's Alpha coefficient

Scale reliability analysis by Cronbach's Alpha to evaluate the relationship between the observed variables in the same factor. This method allows the analyst to eliminate the inappropriate variables in the research model. Corrected Item - Total Correlation coefficient represents the correlation between each observed variable with the remaining variables in the scale. According to Cristobal et al. (2007), when the observed variables have the value Corrected Item - Total Correlation from 0.3 or more, the scale is evaluated as good. According to Hoang Trong and C.N.M. Ngoc (2008), if the value of Cronbach's Alpha coefficient is from 0.6 or higher, the scale is eligible to conduct the analysis of the next steps.

The results of **Cronbach alpha** reliability estimate show that the correlation coefficient of the total variables of the observed variables in the scale of NQL, CTKT, CT, SKT, CMKT, THUE are all greater than 0.3 and Cronbach's Alpha coefficient of the total variables are all greater than 0.6. Thus, the variables are all acceptable and eligible to be included in the analysis in the next steps.

Table 1. The results of testing the reliability of the scale

Observed variables	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. Cronbach's Alpha coefficient of the scale Manager (NQL): 0.603				
NQL1	6.977	3.619	0.470	0.425

Observed variables	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
NQL2	7.617	3.668	0.307	0.669
NQL3	7.215	3.467	0.476	0.410
2. Cronbach's Alpha coefficient of the scale Audit firms (CTKT): 0.797				
CMKT1	11.726	4.332	0.585	0.758
CMKT2	11.805	3.985	0.683	0.708
CMKT3	11.746	4.488	0.573	0.764
CMKT4	11.871	4.165	0.596	0.753
3. Cronbach's Alpha coefficient of the scale Accounting documents (CT): 0.725				
CT1	8.234	1.928	0.539	0.645
CT2	8.317	1.873	0.564	0.614
CT3	8.314	2.017	0.534	0.650
4. Cronbach's Alpha coefficient of the scale Accounting books (SKT): 0.708				
SKT1	8.185	1.886	0.530	0.614
SKT2	8.132	2.115	0.521	0.625
SKT3	8.145	2.019	0.529	0.614
5. Cronbach's Alpha coefficient of the scale Accounting standard (CMKT): 0.797				
CMKT1	11.726	4.332	0.585	0.758
CMKT2	11.805	3.985	0.683	0.708
CMKT3	11.746	4.488	0.573	0.764
CMKT4	11.871	4.165	0.596	0.753
6. Cronbach's Alpha coefficient of the scale Tax (THUE): 0.845				
THUE1	8.056	7.007	0.669	0.809
THUE2	7.871	6.795	0.640	0.822
THUE3	7.980	6.357	0.722	0.785
THUE4	8.063	6.655	0.696	0.797

Source: Result of research data analysis

3.2. Exploratory Factor Analysis (EFA)

Factor analysis is conducted to examine the relationship between variables across all factors. The KMO coefficient is used to assess the suitability of the factor analysis. A KMO value between 0.5 and 1 is sufficient for factor analysis to be appropriate, and vice versa.

The Bartlett test is used to examine the correlation between observed variables within the factor. The Bartlett test is statistically significant when Sig Bartlett's Test < 0.05, indicating that the observed variables are correlated with each other within the factor.

The test results show that the KMO coefficient is 0.856, which satisfies the criterion of $0.5 \leq \text{KMO} \leq 1$, and the Bartlett's test has a Sig of $0.000 < 0.05$. Therefore, the observed variables are correlated with the representative factor. These measured variables of the research group are meaningful and appropriate, meeting the conditions for conducting EFA.

Table 2. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.856
Bartlett's Test of Sphericity	Approx. Chi-square	2680.487
	Df	210
	Sig.	.000

Source: Result of research data analysis

Table 3. Total Variance Explained

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	% of Variance	% of Variance	% of Variance	% of Variance	% of Variance	% of Variance	% of Variance
1	5.263	25.063	25.063	5.263	25.063	25.063	3.459	16.473	16.473
2	3.810	18.142	43.205	3.810	18.142	43.205	3.129	14.900	31.372
3	1.765	8.406	51.611	1.765	8.406	51.611	2.772	13.201	44.574
4	1.543	7.349	58.960	1.543	7.349	58.960	2.444	11.638	56.211
5	1.288	5.659	64.620	1.188	5.659	64.620	1.766	8.408	64.620
6	1.048	3.562	68.181	1.103	5.503	66.457	1.012	7.803	65.760
7	.705	3.356	71.538						
8	.637	3.031	74.569						

9	.616	2.936	77.504						
10	.544	2.591	80.095						
11	.536	2.554	82.649						
12	.505	2.406	85.055						
13	.478	2.277	87.332						
14	.452	2.151	89.482						
15	.430	2.049	91.532						
16	.393	1.870	93.402						
17	.340	1.619	95.022						
18	.307	1.460	96.482						
19	.286	1.361	97.843						
20	.236	1.124	98.967						
21	.217	1.033	100.000						

Source: Result of research data analysis

The initial Eigenvalues of the first six factors are all greater than 1, with the smallest value of 1.048 for the 6th factor. Therefore, these six factors best summarize the information from the 21 observed variables in EFA. The total extracted variance of the independent variables is 68.181% (>50%), indicating that the six main factor groups have explained 68.181% of the variation in the observed variables. The research model is appropriate for EFA analysis.

Table 4. Result of Rotated Component Matrix

	Component					
	1	2	3	4	5	6
CT1	.764					
CT2	.756					
CT3	.698					
SKT3		.787				
SKT1		.769				
SKT2		.695				

CTKT1			.873			
CTKT2			.864			
CTKT4			.859			
CTKT3			.802			
THUE3				.828		
THUE4				.804		
THUE1				.795		
THUE2				.779		
CMKT2					.837	
CMKT4					.741	
CMKT3					.674	
CMKT1					.622	
NQL3						.833
NQL1						.801
NQL2						.559
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 6 iterations.						

Source: Result of research data analysis

The factor loading coefficients are all greater than 0.5 and no variable loads on both factors with a similar loading coefficient. Therefore, the factors ensure convergence and distinguishability during EFA analysis.

4.3. Correlation Analysis

Table 5. Regression coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	Constant	2.344	.359		6.527	.000		

T_NQL	.174	.038	.218	4.532	.000	.941	1.362
T_CTKT	.382	.051	.401	7.561	.000	.772	1.296
T_CT	.080	.073	.076	1.096	.004	.456	1.294
T_SKT	.018	.077	.017	.236	.014	.402	1.289
T_CMKT	.104	.061	.100	1.695	.031	.624	1.302
T_THUE	-.140	.043	-.170	-3.256	.001	.797	1.255

a. Dependent Variable: T_CLTT

Source: Result of research data analysis

The form of general regression equation:

$$\mathbf{T_CLTT = 2.344 + 0.174 \times T_NQL + 0.382 \times T_CTKT + 0.080 \times CT + 0.018 \times T_SKT + 0.104 \times CMKT - 0.140 \times THUE}$$

The regression coefficient: Regression coefficients, from β_1 to β_5 , are positive (>0), in addition that coefficient β_6 is negative (<0). All regression coefficients are statistically significant at the level of significance less than 0.05 (Sig. < 0.05). The variables included T_NQL, T_CTKT, T_CT, T_SSKT, T_CMKT, have positive coefficients, thus, these independent variables have positive effects on the dependent variables. T_THUE variable has a negative effect on dependent variables. The variance Inflation Factors (VIF) is less than 2, showing no multicollinearity phenomenon.

Table 6. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin - Watson
1	.597 ^a	.357	.344	.56106	2.137

a. Predictors: (Constant). T_THUE, T_CT, T_NQL, T_CTKT, T_CMKT, T_SKT

b. Dependent Variable: T_CLTT

Source: Result of research data analysis

Adjusted R^2 is equal to 0.357, which means 35.7% of changes in the dependent variable are explained by the independent variables. The remaining 64.3% are explained by factors, which are not included in the model. The Durbin Watson index is equal to 2,137, less than 3, so there is no autocorrelation.

Table 7. Analysis of variance (ANOVA)

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	51.685	6	8.614		
Residual	93.178	296	.315	27.365	.000 ^b
Total	144.863	302			

a. Dependent Variable: T_CLTT

b. Predictors: (Constant). T_THUE, T_CT, T_NQL, T_CTKT, T_CMKT, T_SKT

Source: Result of research data analysis

The results of ANOVA analysis showed that F-value (6, 296) is equal to 27,365 with a level of significance less than 5% (Sig. = 0.000^b). This proves overall adjusted R² is not zero, equivalent the linear regression model built is appropriate overall.

The coefficients such as adjusted R², Sig. F is inappreciable, there is no heteroscedasticity, no multicollinearity. It can be concluded that the model is suitable to explain the factors affecting the quality of information. Financial statements of listed enterprises in Vietnam.

4. Discussion and conclusion

4.1. Discussion

To compare the influence of each independent factor against the independent variable, the study is based on the standardized Beta coefficient. Regression model shows that there are 6 factors affecting the quality of financial information on financial statements of listed companies in Vietnam: NQL with $\beta = 0.218$, securities companies with $\beta = 0.401$, CT with $\beta = 0.076$, SKT with $\beta = 0.017$, and accounting accuracy. with $\beta = 0,100$ and THUE with $\beta = -0.170$. The effects are explained as follows:

- NQL increased by 1 unit, the quality of financial reporting information increased by 0.218 units.

- CTKT increased by 1 unit, the quality of financial reporting information increased by 0.401 units.

- CT increased by 1 unit, the quality of financial reporting information increased by 0.076 units.

- SKT increased by 1 unit, the quality of financial reporting information increased by 0.017 units.

- CMKT increased by 1 unit, the quality of financial reporting information increased by 0.100 units.

- THUE increased by 1 unit, the quality of financial reporting information decreased by 0.170 units.

Through the above research results, among the 6 factors, the accounting document has the strongest positive effect ($\beta = 0.401$) and the opposite effect is THUE ($\beta = -0.170$).

4.2. Conclusion & Solution

This study inherits from previous research results the quality of financial reporting information in the world and in Vietnam, combined with data collected from quantitative and qualitative research methods to determine the influencing factors and influence levels as well as build a research model suitable for listed enterprises in Vietnam. Based on the results of the reliability assessment: Scale using Cronbach's alpha, Validating the value of the EFA exploratory factor analysis scale; and Regression analysis have shown that 5 factors positively affect the quality of information on financial statements by increasing levels from Accounting books, Accounting standards, Accounting documents, Managers, Audit firms - specific factors of the study and at the same time have an impact on other factors affecting the quality of information on financial statements. Besides the factors that have a positive effect, there is a tax factor that has a negative effect compared to the other factors. Based on these results, the study proposes recommendations to improve the quality of information on the financial statements of listed enterprises in Vietnam as follows:

- For the Audit firms, it is necessary to raise awareness about the importance of the quality of the audit members; choose reputable and experienced auditing firms, because most investors make investment decisions based on the opinions of financial statement auditors.

- For Managers - considered the biggest intangible asset of the company, it is necessary to improve the leadership ability of managers in finding strategy and direction for the company, thereby creating Core core value that is definitely for the company. At the same time, the owner must also create favorable conditions for the manager to feel secure and have a long-term commitment.

- For accounting documents, it is necessary to improve the way of managing accounting vouchers. The organization of accounting vouchers needs to base on the production scale and submit them to the organization and management to determine the appropriate quantity and type of vouchers. The relevant laws, regulations, and circulars also form the basis for strengthening the validity of the document.

- For accounting Standards - an important legal framework, the listed enterprises should aim to apply IFRS international standards to receive more investment opportunities and expand their scale. In addition, the listed enterprises should invest in recruiting and training a team of qualified accounting staff to meet the requirements of converting from Vietnamese accounting standards to IFRS international accounting standards.

- For Tax, these businesses must comply with the national tax policy, declare tax, completely, honestly and comply with applicable tax laws. At the same time, interprises must also prepare tax returns relating to the use of provisions or accounting estimates to ensure that such provisions or estimates are satisfactory and to update quickly with changes in tax policy, if any.

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FACTORS AFFECTING ORGANIC AGRICULTURAL PRODUCE EXPORT READINESS OF ENTERPRISES IN VIETNAM

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Asbtract

The objective of the article is to analyze and evaluate the factors affecting the readiness of enterprises to export organic agricultural products in Vietnam. The article uses Cronbach's Alpha test, EFA factor analysis and linear regression model to analyze factors based on data collected from a survey of 202 enterprises exporting organic agricultural products in Vietnam. Research results have shown that Export market characteristics; Government support; Export motivations have a strong impact on the readiness to export organic agricultural products. Meanwhile, Ability to attract capital from credit institutions and Geographical characteristics have a marginal impact on export readiness. Besides, the total capital and the number of years in operation of the enterprise also affect differently on the preparedness to export organic produce of enterprises in Vietnam. From this result, several policy implications have been proposed to help promote enterprises' readiness to export organic agricultural products to international markets.

Keywords: *Readiness level, Organic agricultural products, Export.*

1. Introduction

In line with socio-economic development, especially in industrialized countries, the trend of clean and safe food is no longer an idea but is actually existing in people's lives. People are increasing their demand for organic food - which is both good for health by providing many safe nutrients, preventing cardiovascular disease, blood sugar... and as a solution to preserve the environment and develop while still ensuring sustainability. Although the demand for organic agricultural products is enormous and tends to increase,

the supply has not shown any sign of catching up with the demand. This is an opportunity for the economy of Vietnam - a country which always takes pride in the production scale and diversity of the agricultural sector. Many agricultural products have top production in the world. Currently, organic products are mainly consumed domestically and exported to markets such as Japan, the UK, Korea, Singapore and Russia, etc. Vietnam ranks fifth among countries with organic agricultural area in Asia.

The problem of demand for organic agricultural products and the modest ability of supply to meet the needs of the market has been brought to notice, but there have not been many in-depth studies in this area, especially the bottlenecks that need to be solved. For example, the reason why the "gold mine" of this market has not been "dug into", is it because the technical standards are too high? Or because of the trust issues with clean agricultural products? Or is it because switching from traditional farming to organic farming is expensive and complicated? It can be said that the development of organic agriculture contributes to bringing clean Vietnamese agricultural products closer to international friends. If this opportunity is exploited, our country's economy will also flourish, people's living standards will be improved and our country's position in the international arena will be further enhanced. The authors conducted a study to analyze and evaluate the factors affecting the readiness to export organic agricultural products of enterprises in Vietnam, thereby proposing a number of solutions to help Vietnamese enterprises improve their export readiness in organic produce.

This study's structure consists of five parts: (i) Introduction, (ii) Research overview and theoretical background, (iii) Research methodology, (iv) Research results and discussion and (v) Conclusion and recommendations.

2. Literature review and theoretical basis

2.1. Literature review

Nguyen Ngoc Quynh et al (2018) *assessed the factors affecting the export of Vietnamese agricultural products to the European Union (EU) market*. It is known that the EU is one of Vietnam's traditional export markets (export turnover to the EU market accounted for 19.7% of Vietnam's total export turnover in 2016). Based on previous studies, along with the actual characteristics at the time of the study, the authors have built a model of 5 factors affecting the export of Vietnamese agricultural products to the EU.

All the above impact variables are collected by the authors from the database of the United Nations (UN), the International Monetary Fund (IMF)... and have obtained 432 observations (including 27/28 EU member countries, excluding Luxembourg due to lack of data) during the period 2001-2016. The analysis was carried out based on the feasible generalized least squares (FGLS) model. The research results confirm the export-promoting effect of the economic scale factor, which is reflected in GDP, free trade and export-restricting effect of the importing country's sea contiguity on Vietnamese agricultural products. Geographical distance and GDP per capita were not statistically significant in this study. The advantage of the model is that the FGLS method has overcome the phenomenon

of Heteroscedasticity in this study, thereby helping the authors to assess the impact of factors on the export of agricultural products of Vietnam to the EU market. The authors also recommend that: it is necessary to expand research into other aspects, such as the efficiency of export activities and the potential of Vietnam's agricultural exports to this market...

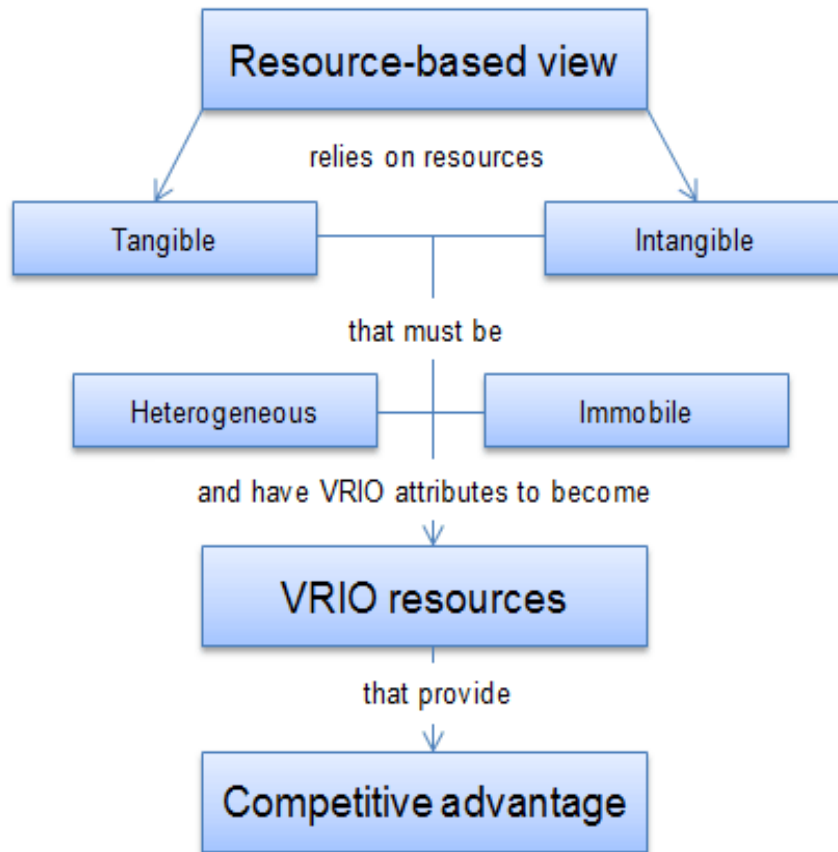
In another work, Stephan Gerschewski et al (2020) studied *the factors affecting the export readiness of small and medium enterprises in the geographical area of New Zealand*. The authors have based on important theoretical perspectives related to export and internationalization including business perspective (Andersson, 2000) and internationalization perspective (Johanson & Mattson, 1988; Axelsson & Easton, 2000). 1992). In particular, the business perspective strongly focuses on entrepreneurs as individuals promote internationalization of enterprises (Shane & Venkataraman, 2000). This view is mainly based on the Schumpeterian concept of the entrepreneur. According to Schumpeter (1934), the entrepreneurship function includes the introduction of new products and production methods, the opening of new markets, the identification and access to new sources of supplies and materials, and the reorganization of an industry. Therefore, entrepreneurs exert an important influence on the internationalization behavior of a firm (Acedo & Jones, 2007; Andersson, 2000; Shane & Venkataraman, 2000; Stevenson & Jarillo, 1990). As for the view of internationalization (Johanson & Mattson, 1988; Johanson & Vahlne, 2003) emphasizes the important significance of networks for export and internationalization, particularly in the context of enterprises medium and small. From a network-based point of view, successful internationalization depends strongly on network growth and interdependence with other firms, even more than the advantage of ownership (Axelsson & Easton, 1992; Dunning, 1988; Johanson & Mattson, 1988).

Through exploratory factor analysis (analysis of main components and factors with eigenvalues greater than 1 and varimax rotation) and reliability analysis (using Cronbach's α) based on collected data from 96 SME exporters in the manufacturing sector, Stephan Gerschewski et al found that almost all the given independent variables have a certain impact on the export readiness of these enterprises. Specifically, the factors including the Intrinsic Motivation to stimulate export; Formalizing export activities (associated with marketing elements); Domestic expansion prior to export are factors that positively affect export readiness (proven true). Besides, two independent variables including Import prior to export and Export planning are not statistically significant during model testing at 10% significance level.

2.2. Theoretical basis

Through a selective and unified analysis and synthesis, the authors have based on a number of previous theoretical models as the basis for their research. Resource-based view (RBV) is an approach to achieving competitive advantages that emerged in the period 1980 - 1990, after a series of works by Wernerfelt, B. ("The Resource - based view of the firm"). Prahalad and Hamel ("The core competence of the corporation"), Barney, J. ("Firm resources and sustained competitive advantage") and others were published. The main idea of the theory is that a firm's competitive advantage lies primarily in its efficient use of a set of valuable tangible and/or intangible resources. Firms in the market are different because

they possess different resources. Businesses will succeed if they are equipped with the most suitable resources and know how to combine resources more effectively than their competitors. RBV focuses on analyzing the internal resources of the business as well as linking internal resources with the external environment.



Source: *Strategic Management Insight* (2021)

Based on the above theory, the research hypotheses are constructed and selected as follows:

Export stimulus

Export motivation leads to encouragement and promotion of participation in export activities under the export behavior of enterprises. Perceiving export motives means that through its operating environment, enterprises understand the factors that drive their export decisions. At the same time, it helps to understand the real motivations to promote and encourage enterprises to export.

The study of export motives of enterprises includes external and internal motives. Internal motivations are those associated with the internal environment of the firm (Lenidou et al., 2007). Thus, perceiving export motives within the enterprise are the motives that business managers perceive from the internal environment of the enterprise. Jobber (2004) divides the importance of the factors within the firm's capacity related to market selection as skills, resources, product adaptation and competitive advantage. Katsikeas (1996) investigated the incentives for Cypriot producers to decide to continue and maintain export operations in the EU, in which the results showed an appreciation of

the factor of excellent governance. Recently, Nylund (2015) argues that the factors affecting the decision to choose a market are largely dependent on the resources and business environment of the company at a particular time. Management's perception of economic and political risks in export markets largely depends on the expertise and knowledge, accumulated experience... of business managers.

Extrinsic motivations originate from the firm's domestic market environment or the foreign environment (Lenidou et al., 2007). Thus, perceiving export motives outside the enterprise are the motives that business managers perceive from the environment of the home country and the host country. Katsikeas (1996) studied the incentives that encouraged Cypriot producers to decide to continue and maintain export activities in the EU, in which the results show an appreciation of the factor of the government's export policy. Albaum and Duerr (2008) argue that the factors promoting internationalization of enterprises in general or entering the international market in particular are due to the push factors from the domestic market (small scale, low economic openness, competition) and pull from foreign markets (large market size, high economic openness). Therefore, research hypothesis H1 is proposed as follows:

H1: Export motivation has a positive effect on a firm's readiness to export

The company's ability to raise capital

The ability to raise capital of an enterprise is the ability of a commercial legal entity to raise capital to create capital for its business activities in various forms. For example: Borrowing capital, raising capital, issuing and offering securities, joint venture, domestic and foreign association; formation of a real estate trust fund.

Financial capacity means the ability to ensure financial resources for the operation of the business in order to achieve set goals. To be more precise, the financial capacity of an enterprise is the ability to mobilize capital from different sources to meet the activities of the enterprise and the ability to ensure the financial safety of the enterprise. Financing capabilities are traditional performance techniques including the company's ability to obtain sufficient loans from commercial banks; the company's ability to finance external operations with retained profits, the amount of current capital, the company's liquidity and purchasing power of capital requirements. In this regard, the research team hypothesized the following:

H2: A firm's ability to raise capital has a positive effect on its export readiness

Export market features

The characteristics of the foreign market pose both opportunities and challenges for exporters, so businesses need to seize opportunities and limit challenges to ensure their success. (Cavusgil & Zou, 1994). Characteristics of foreign markets may include: The attractiveness of the export market (economic development, demand potential, etc.), barriers from the export market (Zou & Stan, 1998). , the level of competition in the export market (Cavusgil & Zou, 1994; Zou & Stan, 1998; O'Cass & Julian, 2003; Altıntas et al., 2007; Sousa et al., 2008; Chen et al., 2016), potential demand from export markets (Cavusgil & Zou, 1994),

cultural similarities (Cavusgil & Zou, 1994; Sousa et al., 2008), similarities in laws and legal frameworks (Cavusgil & Zou, 1994; O'Cass & Julian, 2003). Furthermore, Sousa et al. (2008) found that cultural similarities affect export performance. When the export market is culturally similar to the domestic market, businesses can have an advantage in communicating with consumers and local governments. In particular, the level of competition in the export market is a factor of interest to many researchers (Chen et al., 2016).

Research results of Cavusgil and Zou (1994), Gemünden, (1991), Zou and Stan (1998), Katsikeas et al. (2000), Sousa et al. (2008), Chen et al. (2016) show that the characteristics of the foreign market are factors that have a direct impact on the export results of enterprises. Therefore, the team put forward a research hypothesis as follows:

H3: The characteristics of the export market have a positive effect on the level of export readiness of enterprises

Geographical features

Geographic distance is an issue that has been mentioned in studies of international trade. Tinbergen (1962) uses geographic distance to reflect costs in international trade. Specifically, the greater the geographical distance between countries, the greater the transportation costs, the longer the transit time and vice versa. In the scope of the study, agricultural products are products with high price elasticity and there is not much difference in quality between different countries. Therefore, the import markets will tend to choose the suppliers that are closer to their country to save cost and reduce shipping risk. Chen (2004) calculates the geographical distance based on the longitude and latitude of the main cities of the countries and regions, thereby showing that the geographical distance reduces trade between pairs of countries. The greater the geographical distance, the more problems in transporting goods between two countries such as risks in transportation and cargo insurance, thereby increasing costs. In addition, when transporting heavy goods in conditions of long distances, it requires insurance, which also increases the cost of trade transactions between the two countries with large geographical distances. Products with low added value will suffer from high costs if the distance is long.

Geographic distance also represents the cost of international transactions for goods and services. These costs include the cost of time, the cost of accessing market information (Heo and Doanh, 2015). In addition, it also comprises costs incurred due to differences in culture, preferences and institutions (Blum and Goldfarb, 2006).

Contiguousness status: This variable is generally considered to have a restrictive effect on export. Countries with a landlocked geographic location have higher costs of transportation, insurance, and customs than other countries with a contiguous geographic location (Arvis et al., 2010). The reason is that it is often more expensive to use road transport than sea transport. As a result, the cost of exporting goods to a landlocked country tends to be higher than the cost of exporting goods to a contiguous country. Through the above studies, the authors make the following expectations about hypothesis H4:

H4: Geographical features are negatively related to the export readiness level of enterprises

- *Export barriers*

Export barriers are considered as issues that limit the ability of firms to start, develop and maintain operations in foreign markets (Morgan & Katsikeas, 1997). Export barriers can include: procedural barriers (Altintas et al., 2007; Al-Hyari et al., 2012), barriers to competition (Altintas et al., 2007), barriers to entry differences (Altintas et al., 2007), tariff barriers (Morgan & Katsikeas, 1997), information barriers (Al-Hyari et al., 2010), geographical distance barriers (Virvilaite & et al., 2010). Seinauskiene, 2015).

According to Katsikeas and Morgan (1994), since firms know about the environment in which they operate, it can be hypothesized that there is a positive correlation between actual problems and perceived problems. Therefore, exporters are aware of export barriers in their export activities. According to Leonidou (1995, 2004), export barriers are limitations that hinder the ability of enterprises to improve, develop or maintain business operations in foreign markets. According to Arteaga-Ortiz and Fernández-Ortiz (2010), an export barrier is any factor or component, whether internal or external, that hinders or discourages an enterprise from improving, increasing or maintaining export activities. According to Leonidou (1995) internal barriers are associated with the ability of the company's organizational resources and access to export business. The external barriers of enterprises originate from the domestic environment and the export market environment.

From the studies done by the previous authors, the research team hypothesized H5 as follows:

H5: Export barriers are negatively related to the export readiness level of enterprises

- *Government support*

According to Gençtürk and Kotabe (2001), government export support programs are available external resources of information, empirical knowledge and provide enterprises with external capacity to solve problems in export. Kotabe and Czinkota (1992) argue that export support programs help reduce export barriers. For SMEs with limited knowledge and resources, the Government's support will add more resources for businesses, thereby reducing export barriers, bringing success in export activities for businesses. There are many ways to classify export support programs such as financial and market support (Shamsuddoha et al., 2009); financial and non-financial support (Ayob & Freixanet, 2014); under four components: information, education and training, trade and financial facilitation (Leonidou et al., 2011); lists of support programs in each country (Gençtürk & Kotabe, 2001; Ali, 2007)... Among the above classifications, the classification divided into four components is quite clear, showing the full range of government support programs, which helps businesses overcome export barriers. This is also the approach of the authors in this study.

As stated by Francis and Collins Dodd (2004), export promotion programs provided by the government help businesses, especially SMEs, overcome real barriers and understand

the importance of export support services. Shamsuddoha, Ali and Ndubisi (2009) conducted a study on the effects of export support programs on SMEs in developing countries. The result shows that market development support has a large and direct influence on export activities, while financial services only affect indirectly. Research by Jaud and Kukenova (2011) suggests that agricultural products need extended and long-term financial resources if they want to develop export activities. According to Do Thu Hang (2016), export support policies include financial support, technical support, support for awareness raising, information about export markets and risk support. Therefore, the research team hypothesize:

H6: Government support is positively related to the export readiness level of enterprises

- *Export readiness level*

According to Rosnan et al. (2015), the concept of export readiness is considered as the starting point to recognize the transformation potential of enterprises from a domestic company to an international company. Export readiness is a term commonly used by export support organizations to denote that a company has the character, capacity and courage to enter international markets. Export readiness is often used to describe a company that is willing and able to obtain the information, resources and support provided and use it effectively.

The formal research model and hypotheses are presented in Figure 2.

3. Method

3.1. Data Acquisition

The research team used research data including both primary and secondary data. In there:

The secondary data: It is collected from articles discussing the export of agricultural products, the factors affecting the willingness to export organic agricultural products of foreign and Vietnamese enterprises. The research team has sought data from books, reports, and websites from time to time, focusing on the period between 2015 and 2022 relating to the export of agricultural products from abroad and in Vietnam.

The primary data: The research team has conducted an online survey for organic agricultural enterprises in Vietnam that have intention of exporting these kinds of products to foreign markets. During the implementation of the survey, 220 samples were collected, of which 202 valid samples were put into data processing using SPSS software version 25.0.

The research team proposes a model consisting of 6 independent variables, 3 control variables and 1 dependent variable. The research team collects primary data through a set of questionnaires (Google form) including questions that are referenced and developed by the research team. The questionnaire will be sent by email to both production enterprises and commercial enterprises participating in exporting organic agricultural products to foreign countries. The data collection process will be done using a 5-level Likert scale.

3.2. Data processing

The secondary data: The collected documents continue to be synthesized and classified in addition to systematic methods of analysis, data comparison, evaluation to find useful information, and completing the theoretical basis of the problem.

The primary data: The model used in the study is a multivariable linear regression without intermediate or moderator variables so the research team used data analysis software SPSS version 25.0 with Cronbach's Alpha tools to measure the suitability of the scale for the variables included in the model and EFA factor analysis to check the convergence of the observed variables and the separation between the independent variables. Linear regression is also used to evaluate the influence of factors on the dependent variable. The tool to measure is a 5-level Likert scale indicating the influence of observed variables on the export readiness of organic agricultural products of enterprises in Vietnam from 1 - strongly disagree to 5. - Very agree. In addition, Independent Samples T-Test and Anova tools are also used to test the difference in the evaluation of enterprise information.

4. Results

4.1. Description of the study sample

4.1.1. Descriptive statistics relating to internal information of the business

Regarding the total capital of enterprises, 42.1% of enterprises have total capital from 3 to less than 20 billion VND, accounting for the largest number of participating enterprises. The second largest share with 25.7% is the group of enterprises with a total capital of 20-100 billion VND and nearly 21.8% for enterprises have total capital of less than 3 billion VND. And finally, to ensure the objectivity of the research paper, the group obtained a small number of surveyed enterprises from the group with a total capital of over 100 billion VND.

Regarding the number of employees participating in annual social insurance, the results are mainly enterprises with fewer than 100 employees (accounting for 52%). The two groups of employees participating in social insurance annually, less than 10 people and from 100 to 200 people, have 18.8% and 19.3% votes, respectively. In general, this result can show that employers have been paying attention to the labor of enterprises who participate in social insurance.

Survey results: The number of years of operation of enterprises shows that 38.6% of enterprises participating in the survey have 5 - 10 years of operation. 29.7% of enterprises participating in the survey have less than 5 years of operation. Enterprises participating in the survey have 11-15 years of operation, accounting for 24.8% and the remaining 6.9% belong to enterprises with more than 15 years of operation. This result can reflect the level of interest of enterprises in the export topic of enterprises operating from 5 to 10 years, which may be the period of transformation and development of enterprises.

4.1.2. Descriptive statistics related to export activities of enterprises

The number of years the enterprise has been involved in exporting is an important factor in the study's thesis analysis. Of the 202 results obtained, the majority of enterprises

have exported from 1 to 5 years (accounting for 56.1%). Besides, 28.7% of enterprises have exported for more than 5 years, partly showing the importance and experience of exporting goods to foreign markets. The rest are enterprises that have only exported for less than 1 year, accounting for the smallest proportion with 15.2%.

For the factor “Number of countries enterprises have exported”, the results show that up to 49.1% of enterprises have exported from 3 to 10 countries. This is followed by 29.2% and 21.6% respectively, corresponding to the proportion of Vietnamese enterprises exporting to "greater than 10 countries" and "less than 3 countries". This number is quite reasonable because it reflects partly the scale and number of years that the enterprise has exported.

Surveying the number of products exported to the international market, 42.7% of enterprises export from 5 to 10 products. 33.3% of enterprises that have less than 5 products exported abroad are followed. The smallest portion of the survey data is represented by enterprises exporting 10 products. It can be seen that businesses also somewhat diversify their products to attract more consumers while selling abroad.

Out of a total of 202 survey questionnaires, 84.2% of enterprises export in the field of “Agricultural products”. This is completely consistent with the target group, which consists of companies that have engaged in the export of agricultural products, specifically organic agricultural products to foreign markets. This result also ensures that the number of agricultural exporters participating in the survey is large enough to serve the next analysis process.

4.2. Cronbach's Alpha reliability test

Table 1. Reliability level of factors

	Number of variables	Cronbach's α
Export stimuli	4	.816
Capability to raise capital	4	.790
Export market's features	5	.816
Geographical features	4	.806
Export barriers	4	.841
Government support	5	.858
Export readiness level	4	.850

Source: Summary of the research team

The summary table of Cronbach's Alpha reliability analysis results shows that all the survey variables have high coefficients (all above 0.6). In which the factor “Government support” has the highest reported value of 0.858 and the factor “Capability to raise capital” has the smallest value with a coefficient of 0.790. In general, the results of the reliability scales of the variables in the survey are suitable and can be used for further analysis.

4.3. EFA exploratory factor analysis

4.3.1. Exploratory factor analysis with independent variables of export readiness

Table 2. KMO and Bartlett test results for independent variables

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.855
Bartlett's Test of Sphericity	Approx. Chi-Square	2240.192
	df	325
	Sig.	0.000

Source: Summary of the research team

We hypothesize as follows:

H1: The observed variables are correlated with each other in the population.

H0: The observed variables are not correlated with each other in the population.

Based on the results obtained from EFA exploratory factor analysis, it can be seen that the data set is completely suitable for EFA analysis. In which the KMO coefficient is 0.855 in the range [0.5-1]; Bartlett test results with significance level of Sig coefficient is $0.000 < 0.05$; so we reject the hypothesis H0: observed variables are not correlated with each other in the population. Thus, the data used for factor analysis is completely appropriate.

4.3.2. Exploratory factor analysis with dependent variables of export readiness

Table 3. Results of KMO and Bartlett test of dependent variable

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.823
Bartlett's Test of Sphericity	Approx. Chi-Square	328.670
	df	6
	Sig.	0.000

Source: Summary of the research team

We hypothesize as follows:

H1: The observed variables are correlated with each other in the population.

H0: The observed variables are not correlated with each other in the population.

The KMO coefficient is 0.823, in the range [0.5-1], it can be seen that the factor analysis is consistent with the collected data. Bartlett test results with significance level of Sig coefficient, which is $0.000 < 0.05$. So we reject hypothesis H0: observed variables are not correlated with each other in the population. The results prove that observed variables are correlated with each other in the factor.

4.3.3. Summary of EFA exploratory factor analysis results

Table 4. Summary of EFA . exploratory factor analysis results

	KMO coefficient	P - value of Bartlett test	Total variance (%)	Conclusion
Independent variables	0.855	0.000	64.721	Fully - qualified for analysis
Dependent variable	0.823	0.000	69.108	Fully - qualified for analysis

4.4. Correlation of factors affecting the level of export readiness of enterprises test (pearson correlation)

Table 5. Correlation analysis results

		Correlations						
		MDSS	DC	KNHDV	DDTT	DL	RC	HTCP
MDSS	Pearson Correlation	1	.403**	.423**	.575**	.364**	.476**	.544**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000
	N	202	202	202	202	202	202	202
DC	Pearson Correlation	.403**	1	.472**	.314**	.153*	.310**	.182**
	Sig. (2-tailed)	0.000		0.000	0.000	0.030	0.000	0.010
	N	202	202	202	202	202	202	202
KNH DV	Pearson Correlation	.423**	.472**	1	.329**	0.124	.256**	.308**
	Sig. (2-tailed)	0.000	0.000		0.000	0.080	0.000	0.000
	N	202	202	202	202	202	202	202
DDX K	Pearson Correlation	.575**	.314**	.329**	1	.353**	.298**	.300**
	Sig. (2-tailed)	0.000	0,000	0.000		0.000	0.000	0.000
	N	202	202	202	202	202	202	202
DL	Pearson Correlation	.364**	.153*	0.124	.353**	1	0.094	.342**

Correlations								
		MDSS	DC	KNHDV	DDTT	DL	RC	HTCP
	Sig. (2-tailed)	0.000	0.030	0.080	0.000		0.184	0.000
	N	202	202	202	202	202	202	202
RC	Pearson Correlation	.476**	.310**	.256**	.298**	0.094	1	.425**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.184		0.000
	N	202	202	202	202	202	202	202
HTCP	Pearson Correlation	.544**	.182**	.308**	.300**	.342**	.425**	1
	Sig. (2-tailed)	0.000	0.010	0.000	0.000	0.000	0.000	
	N	202	202	202	202	202	202	202

** . The correlation is significant at the level of 0,01 (2 - tailed).

* . The correlation is significant at the level of 0,05 (2 - tailed).

Source: Summary of the research team

The results show that all Sig. (2-tailed) in the linear correlation between groups of independent variables (DC, KNHDV, DDTT, DL, RC, HTCP) with the dependent variables (MDSS) are guaranteed to be less than 0.05. This result ensures that the condition on the relationship between these two groups of variables is suitable for further research analysis.

After proving the linear correlation between the groups of independent variables and the dependent variable, the research team analyzed the degree of correlation between groups of variables. The relationship between the two groups (DC and KNHDV) and (RC and HTCP) is so strong that export readiness with the r-index correlated with 0.472 and 0.425, respectively.

Next is the level of correlation between groups of independent variables and dependent variables (MDSS). The research results show that the correlation between DDTT and MDSS has the highest value ($r = 0.575$). On the contrary, the variable DL and the variable MSM have the weakest correlation with $r = 0.364$.

In addition, all variables have a linear correlation at the 95% reliability level. At the same time, the results also show that the correlations between the variables are positive, which means that an increase in the variability of one group of variables will increase the value of the other group of variables.

4.5. Regression analysis

Table 6. Results of analysis of coefficient of determination of regression function

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.748 ^a	0.560	0.547	0.42729	2.092
a. Predictors: (Constant), DC, KNHDV, DDXK, DL, RC, HTCP					
b. Dependent Variable: MDSS					

Source: Summary of the research team

Based on the above table, we can see that the adjusted R² value is 0.547, which reflects the regression variable explaining 54.7% of the change of the dependent variable. Durbin - Watson is 2.092 (ranging from 1.5 - 2.5), from which no first-order correlation occurs.

Table 7. Results of regression coefficient between factors affecting export readiness

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.729	0.288		-2.535	0.012		
	DC	0.131	0.059	0.125	2.223	0.027	0.715	1.398
	KNHDV	0.116	0.058	0.112	1.987	0.048	0.704	1.421
	DDTT	0.349	0.060	0.324	5.867	0.000	0.739	1.353
	DL	0.113	0.057	0.106	1.985	0.049	0.796	1.257
	RC	-0.180	0.054	0.185	3.341	0.001	0.736	1.358
	HTCP	0.280	0.058	0.275	4.804	0.000	0.690	1.450
a. Dependent Variable: MDSS								

Source: Summary of the research team

Linear regression equation:

$$\text{MDSS} = -0,729 + 0.131*\text{DC} + 0.116*\text{KNHDV} + 0.349*\text{DDTT} + 0.113*\text{DL} - 0.180*\text{RC} + 0.280*\text{HTCP}$$

Explanation:

- When the independent variables of the DC group increase by 1 unit, the dependent variable (MDSS) increases by 0.131 units and the independent variable (DC) has a positive effect on the dependent variable (MDSS) (provided that other independent variables remain constant). The above results are consistent with the study done by Katsikeas (1996) and Nylund (2015). For each company, the operational goals are different so the business strategy will also have many differences. Enterprises doing business in the domestic market that have achieved certain success in branding will decide to export for the purpose of expanding their name. This will also be an opportunity to help businesses earn higher profits when accessing large foreign markets.

- When the independent variables of the KNHDV group increase by 1 unit, the dependent variable (MDSS) increases by 0.116 units and the independent variable (KNHDV) has a positive effect on the dependent variable (MDSS) (provided that other independent variables remain constant). This is a new finding of the research team relating to the capability to raise capital on the export readiness level of enterprises. Any company that makes a decision to expand its business requires a large amount of capital to implement. Capital can be raised from owners, but this source can be limited in scale. To optimize efficiency, businesses often choose to raise their capital from credit organizations. The capital raised quickly and timely with a large enough amount reflects the potential and reputation of the enterprise.

- When the independent variables of the DDTT group increase by 1 unit, the dependent variable (MDSS) increases by 0.349 units and the independent variable (DDTT) has a positive effect on the dependent variable (MDSS) (provided that other independent variables remain constant). Especially when this is the independent variable having the greatest impact on the dependent variable. This result is similar to previous studies such as those of Katsikeas et al. (2000), Sousa et al. (2008) and Chen et al. (2016). These are factors that influence directly on business activities in foreign markets and business decisions. For an export market with a large customer base, which means that the demand for organic agricultural products is high and regularly - consuming, businesses will prioritize for development.

- When the independent variables of the DL group increase by 1 unit, the dependent variable (MDSS) increases by 0.113 units and the independent variable (DL) has a positive effect on the dependent variable (MDSS) (provided that other independent variables remain constant). Although this variable has an impact on the dependent variable, contrary to the hypothesis stated by the research team, the geographical feature factor has a positive influence. This conclusion is in contrast to previous studies by Chen (2004) and Arvis et al. (2010). Domestic and abroad studies have also researched the impact of this factor on the level of export readiness and have discovered a definite impact. In addition, the team

assumed that, during the survey, the set of questions relating to geographical features presents a positive trend in whether close distance factor or contiguousness factor is more favourable when exporting to these markets. Therefore, the assessment of the enterprise also reflects the exact meaning of the questionnaire and the reality.

- When the independent variables of the RC group increase by 1 unit, the dependent variable (MDSS) decreases by 0.180 units and the independent variable (RC) has a negative effect on the dependent variable (MDSS) (provided that other independent variables remain constant). This result is consistent with the research results of Leonidou (1995, 2004) and Arteaga-Ortiz & Fernández-Ortiz (2010). During the deeper international economic integration process as today, besides the positive aspects from FTAs such as tariff preferences, export activities in general face many trade barriers. Because trade is increasingly complex and demanding, especially in the agriculture sector. In order to successfully penetrate into strict markets such as the EU, Japan, Korea, etc. Vietnamese agricultural products in general, organic agricultural products in particular must compete fiercely with many countries, and at the same time must satisfy many food safety standards and strict technical regulations of these countries. Therefore, this factor easily leads to the fear of enterprises in making decisions to export to potential markets.

- When the independent variables of the HTCP group increase by 1 unit, the dependent variable (MDSS) increases by 0.280 units and the independent variable (HTCP) has a positive effect on the dependent variable (MDSS) (provided that other independent variables remain constant). This is similar to previous works such as Francis and Collins Dodd (2004) or Jaud and Kukenova (2011). Government agencies such as the Ministry of Industry and Trade and the Ministry of Agriculture and Rural Development always pay much attention to the export of agricultural products of domestic enterprises when they coordinate together by organizing many meetings themselves to consult and answer inquiries of enterprises about exporting to a specific market. These actions help businesses grasp useful and important information, especially about export procedures, which makes it easier for them to meet the right process.

5. Discussion and Conclusion

5.1. Suggestions

The government should have policies aimed at effectively exploiting abundant natural resources for agriculture, such as: land resources, water resources, marine resources and labor. One of the competitive advantages of Vietnamese agricultural products in the world market for centralized agricultural production is fertile agricultural land. Vietnam is located in the tropical monsoon climate, which has provided our country's agriculture with a large amount of sunlight, and suitable temperature to help plants grow. In addition, this benefit allows farmers to plant many crops in a year and ensure high-yield crops of good quality. Water resources in Vietnam are also quite abundant. Currently, agriculture is the industry that consumes the most water, so only 10-15% of the reserve should be exploited to meet the demand for production and life.

It is necessary to invest in science and technology in organic agricultural production such as human resource training, highly applicable scientific topics such as biotechnology in organic production, research on organic farming and animal husbandry process that is suitable to each type of plant and animal; research on biological fertilizer products, biological plant protection drugs, animal feeds and organic aquaculture. Suppliers should research and create new varieties of plants and animals with high yield, high quality, good resistance to pests and diseases, suitability for organic farming processes and adaptation to climate change.

The government needs to continue the communication and propaganda work on organic agriculture. In many appropriate forms, companies should focus on exploiting basic science and technology information and update new information as well as new models of organic agriculture to replicate in production in the near future. It is necessary to assign tasks to ministries, departments and agencies in the agricultural sector to have an information network on forecasting, so that businesses and production associations can regularly monitor information and make some production plan adjustments: increase/decrease output or redirect products, from raw export to processing. In addition, information on policies and laws related to production, export, and technical standards should be clearly disseminated to people, production households and production enterprises.

To export organic agricultural products, organic certification is always one of the top requirements. The Ministry of Science and Technology needs to coordinate with the Ministry of Agriculture and Rural Development to continue conducting field surveys to diversify organic certification organizations.

Ministries, and sectors need to have coordination and cooperation to support the export of agricultural products, specifically, the government should consider minimizing procedures in the stage of inspection, grant GAP certificates, and take advantage of the amount of on-site labor done at the garden to help farmers sell agricultural products for domestic use and export. Other supports can be considered, such as: supporting tax and credit policies for the production, processing, preservation and export of agricultural products; deploying a package of solutions to extend tax and land rent for businesses, organizations and individuals, etc.; reducing interest rate for enterprises exporting organic agricultural products; having a preferential electricity price policy applied to cold storage operation and other policies to support fees, air freight and sea freight for key markets.

On the business side, market research must be paid more attention because the consumption market is much more difficult than traditional agricultural products. Moreover, businesses need to proactively prepare capacity, source of goods, improve competitive benefits through building a long-term, methodical plan and strictly complying with regulations on traceability, simultaneously build and protect brands to promote sustainable exports, maintain and diversify markets. It is essential to be proactive and flexible in the risk management strategy, especially in the currently complicated and volatile period, such as the Russia-Ukraine conflict, which causes a sudden increase in logistics costs, exporting to China being in a state of fluctuating opening and closing. Therefore, businesses require information as well as experts to assess the situation and develop a proactive response plan to minimize risks.

5.2. Conclusion

From the above results, the study has resulted in one factor negatively impacting the willingness to export organic agricultural products of enterprises in Vietnam, which is export barriers. The remaining 5 factors that have a positive impact on the level of willingness to export organic agricultural products of enterprises in Vietnam are respectively: characteristics of the export market, government support, export stimuli of enterprises, capability to raise capital from credit organizations and geographical features. In addition, the intrinsic characteristics of the enterprise including the total capital and the number of years of operation also have various degrees of impact on its export readiness.

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FACTORS INFLUENCING NON-INTEREST INCOME OF COMMERCIAL BANK IN VIETNAM

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Abstract

Diversifying non-interest income sources and restructuring the operating structure of commercial banks is considered a necessary development trend in the current context of Vietnam's banking system. A study analyzes and evaluates the factors affecting non-interest income, including the Covid-19 pandemic, based on a data sample of 27 commercial banks in Vietnam from 2009 to 2022. The study shows that factors such as capacity management (RELROE), bank size (SIZE), capital adequacy ratio (CAR), and Covid-19 have a positive impact on non-interest income, while liquidity (LIQ), net interest margin (NIM), loans to assets ratio (LOAN), credit risk (RISK), and inflation rate (INF) have a negative impact. The article provides recommendations to improve the non-interest income of Vietnamese commercial banks. Specifically, research has also shown that the Covid-19 pandemic positively impacts non-interest income. Based on that, the article provides some recommendations to improve the non-interest income of Vietnamese credit institutions.

Keywords: *Covid-19 pandemic, commercial banks, non-interest income.*

1. Introduction

The income of a commercial bank consists of two categories: interest income and non-interest income. Interest income is the traditional source of income, mainly from loans and deposits, and accounts for a large proportion of the bank's total income. However, since the early 1980s, the market for loans and deposits from commercial banks has started to decline (DeYoung & Roland, 2001). This trend originated from regulations restricting product competition in the banking market, especially due to the development of information technology systems that have eliminated some of the traditional comparative advantages of commercial banks. In response to this trend, commercial banks have increased the production and sales of fee-based financial services (DeYoung & Roland, 2001). In Vietnam, diversification of non-

interest income sources is seen as an inevitable trend for commercial banks (Huynh Thi Huong Thao et al., 2021). Especially after Vietnam officially became the 150th member of the World Trade Organization (WTO), the number and scale of bank networks increased rapidly with the participation of domestic and foreign investors. This is both an opportunity and a challenge for Vietnamese banks as the market becomes increasingly competitive. With their management expertise and years of experience in the banking sector, foreign banks have many advantages in providing non-traditional financial products and services. This requires Vietnamese commercial banks to continue improving their industrial platforms and diversifying their products and services in a modern direction to keep up with the trend.

This study aims to evaluate the factors affecting the non-interest income of commercial banks, with a focus on the impact of the Covid-19 pandemic. To achieve this goal, after the introduction, section 2 will provide an overview of previous studies and research hypotheses. The research methodology and model will be introduced in section 3. Section 4 will present and analyze the results achieved, thereby providing a basis for making recommendations to increase the non-interest income of Vietnamese commercial banks in section 5.

2. Literature Review

The two primary sources of revenue for the bank are interest income and non-interest income. According to DeYoung & Rice (2004), non-interest income is revenue that is not directly related to lending activities, it comes from service activities; trading in gold, silver, precious stones, foreign exchange; securities trading and other service activities. Income from non-traditional banking activities like commissions, fees, and other related fees accounts for most of non-interest income (Olowolaju & Segun, 2018).

2.1. Net interest margin

Net interest margin is an important variable in assessing non-interest income factors because it represents net interest income (Alfarisi, 2015). Hakimi et al. (2012) showed that net profit margin is negatively and significantly correlated with non-interest income. A bank with a higher net profit margin indicates an orientation toward developing traditional operations rather than new ones based on information technology and applications that generate more fees and commissions. Having the same result, Le Duc Quang Tu (2017) indicated that net interest margin has a negative impact on non-interest income, suggesting that Vietnamese banks have to trade off between non-interest income and profit margin.

H1: There is a negative relationship between Net interest margin and non-interest income

2.2. Bank size

Bank size is understood as the total assets of commercial banks. As demonstrated by Hahm (2008), relatively big banks will dominate the production of consumer loans by utilizing economies of scale. Big banks must use non-interest revenue to supplement their interest income due to the fierce competition in the market for these lending products. According to Rogers & Sinkey Jr (1999), bank size is one of the most important factors affecting non-interest income. However, the research results of Vu Xuan Dung and Doan Viet Hung (2018) show that bank size has no impact on non-interest income of Vietnamese commercial banks.

H2: There is a relationship between bank size and non-interest income

2.3. Loans to assets ratio

According to Craigwell & Maxwell (2006), a high level of loan-to-total assets is indicative of an intermediary-based lending strategy, in which banks rely on interest income. On the contrary, non-interest income will increase when the bank has a strategy of income diversification. Therefore, a high loan-to-asset ratio corresponds to a low non-interest income (DeYoung & Rice, 2004; Craigwell & Maxwell, 2006). However, the research results of Nguyen The Binh and Nguyen Duong Gia Tran (2022) showed that has a positive impact on non-interest income.

H3: There is a positive relationship between loans to assets ratio and non-interest income

2.4. Capacity management

DeYoung & Rice (2004) pointed out a negative relationship between capacity management and non-interest income. This implies that well-managed banks tend to generate lower non-interest income to total assets. The extra portion of non-interest income is not large enough to justify its increased risk, so well-managed banks are not inclined to expand into potentially high-value activities. poor risk exchange. With the same results, Islam et al. (2019) argue that leadership capacity has a negative impact on non-interest income, which means that banks with good management expertise will not earn non-interest income by taking on higher risk.

H4: There is a negative relationship between capacity management and non-interest income

2.5. Capital adequacy

Theoretically, a bank's capital adequacy ratio that is excessively high could be a sign that it is being overly cautious and ignoring potential profit possibilities. Within financial markets and banking regulators, a guaranteed level of capital is needed to enable the bank to engage in new activities such as trading in securities, derivatives and investments (Merton & Bodie, 1992; Hahm, 2008). In addition, banks with high capital are more able to absorb losses from non-traditional activities (Rogers & Sinkey Jr, 1999). Therefore, the capital adequacy ratio has a positive impact on non-interest income (Nguyen Thi Diem Hien & Nguyen Hong Hat, 2016; Vu Xuan Dung & Doan Viet Hung, 2018). However, the relationship between capital adequacy ratio and non-interest income is negative and insignificant in study of Damankah et al. (2014).

H5: There is a positive relationship between capital adequacy and non-interest income

2.6. Credit risk

Credit risk is the risk arising from the borrower's failure to comply with the terms of the credit contract such as: late payment of the loan, incomplete payment of the loan principal and interest when due. According to Damankah (2014), loan provisions are the traditional way that banks use to manage credit risk and bad debts. Risk is a very important factor for most banks when conducting their business in both traditional and non-traditional activities. In principle, the ability to handle unforeseen losses will determine the level of risk of the

bank (Goddard et al., 2004). Increased risks from traditional activities could be the driving force behind banks to step up non-traditional activities.

H6: There is a positive relationship between credit risk and non-interest income

2.7. Bank Liquidity

Bank liquidity is the ability of a bank to instantly meet the cash withdrawal needs of depositors and lenders. According to Rogers & Sinkey (1999), one uncertainty that banks face is liquidity risk, which includes unexpected deposit withdrawals and unexpected borrowing needs. Liquidity acts as a shield against losses arising from “burning” assets to meet liquidity needs. If banks need more liquidity to increase non-interest income activities, the empirical relationship between them will be positive (Roger & Sinkey, 1999). Research by O'Donnell et al. (2002) shows that liquidity is the dominant factor in non-interest income of banks. Damankah et al. (2014) find a positive and significant relationship between liquidity and non-interest income. However, Vu Xuan Dung and Doan Viet Hung (2018) pointed out that liquidity (LIQ) has a negative, opposite effect on non-interest income. From the above studies, the research team expects a positive impact of liquidity on non-interest income.

H7: There is a positive relationship between bank liquidity and non-interest income

2.8. Customer deposits

According to Damankah et al. (2014), when banks can mobilize more deposits, the propensity to lend will be higher, thereby increasing the level of participation in traditional activities. Conversely, if a bank is constrained in terms of the amount of deposits it can raise, it will engage more in non-traditional activities. Similar to this, Nguyen The Binh and Nguyen Duong Gia Tran (2022) demonstrated that when lending activities are constrained due to a restriction on deposits, banks are compelled to concentrate on replacing their income sources by government securities, foreign currency trading, securitization of existing assets, and derivative securities. These sources of income increase non-interest income. Therefore, customer deposit has a negative impact on non-interest income (Rogers & Sinkey Jr, 1999; Damankah et al., 2014; Nguyen The Binh and Nguyen Duong Gia Tran, 2022).

H8: There is a negative relationship between customer deposits and non-interest income

2.9. Inflation

The rate of inflation greatly affects the capital market. The high inflation environment discourages the development of long-term capital markets such as bond markets and pension funds (Hahm, 2008). High inflation is also often seen as a negative signal for the stock market. Therefore, banks will need to consider investing in capital market instruments. In contrast, low inflation and high capital market growth allow the expansion of non-interest income of commercial banks (DeYoung & Rice, 2004). Vu Xuan Dung and Doan Viet Hung (2018), Nguyen The Binh & Nguyen Duong Gia Tran (2022) also found a negative relationship between inflation rate and non-interest income. However, the study of Lin et al. (2012) shows no effect from inflation. Nguyen Thi Diem Hien & Nguyen Hong Ha (2016) also have similar results.

H9: There is a negative relationship between inflation and non-interest income

2.10. GDP

Gross domestic product (GDP) is often used to represent economic growth. Hahm (2008) commented that GDP has a negative impact on non-interest income. The reason is that a sluggish economy is likely to reduce income from investment activities, thereby causing banks to have to expand non-interest income if they do not want to depend on income from interest. Research by Rahim Atellu (2012) also shows similar results. However, some studies in Vietnam have different results. Nguyen Thi Diem Hien & Nguyen Hong Ha (2016) showed that GDP has a positive impact on non-interest income, while Doan Viet Hung (2020) does not find any relationship between non-interest income and GDP.

H10: There is a relationship between GDP and non-interest income

2.11. COVID-19 pandemic

Li et al (2021) investigated the impact of the Covid-19 pandemic on the relationship between non-interest income and bank profitability and bank risk. The economic impact of the pandemic has resulted in tighter credit standards, which in turn reduces demand for loans. Research by Le Thanh Tam et al. (2022) showed that, despite the strong outbreak of the Covid-19 pandemic, the Vietnamese banking system still witnessed a remarkable development. By reducing dependence on interest income by lending, Vietnamese commercial banks have diversified income to achieve growth during the pandemic. Vietnamese commercial banks have increased non-interest income through card issuance, insurance, bond issuance or any other financial services. The research team believes that the COVID-19 pandemic has brought economic activities to a halt, thereby reducing demand for credit services. However, social distancing promotes non-traditional services such as electronic payments and cards.

H11: There is a positive relationship between COVID-19 pandemic and non-interest income

3. Method

The study uses panel data of 27 commercial banks in Vietnam in the period 2009 to 2022, including: 4 state-owned commercial banks (Agribank, Vietcombank, VietinBank, BIDV) and 23 domestic private commercial banks. Total assets of commercial banks in the sample account for most of the total assets of Vietnamese commercial banks. Therefore, the research sample is highly representative of the Vietnamese commercial banking system. The study data were taken for the period 2009 to 2022. In this period, 2020 and 2021 are the two years of the COVID-19 pandemic, and the first period of 2022 onwards, is the recovery period.

- The data is taken from the synthesis of Fiin Group, the audited annual financial statements of 27 commercial banks and some indexes that the research team self-calculated based on the above secondary data.

- Macroeconomic data such as Gross Domestic Product (GDP), Inflation Rate (INF) are taken from the World Bank's website.

The study uses panel data to analyze the factors affecting non-interest income of Vietnamese commercial banks. Panel data provides more informative data, less collinearity

between variables, suitable for studying the change over time of cross units. In particular, the effects of the Covid-19 pandemic and the mobility of non-interest income of banks are better studied with panel data.

The study combined using 3 models: (1) the constant coefficient model (Pooled OLS), (2) the fixed effect model FEM (Fixed Effect Model) and (3) the random effect model. Random Effect Model (REM). Then, the F-test and Hausman-test are used to select the most suitable model. Then, the research team tested the model's defects by using the LM - Breusch and Pagan test to check for variable variance and the Wooldridge test to check for autocorrelation in the model. Finally, the study uses regression results according to GLS model to analyze the factors affecting non-interest income.

The study will approach the research model of DeYoung & Rice (2004), Hahn, (2008), Hakimi et al (2012). These studies are studied in countries with developing economies and are quite consistent with the database that can be collected in Vietnam. In addition, the study also references studies in Vietnam by Vu Xuan Dung and Doan Viet Hung (2018), Nguyen The Binh and Nguyen Duong Gia Tran (2022) on factors affecting non-interest income. Through domestic and foreign studies related to the topic, the authors have identified research models as follows:

$$NII_{i,t} = \alpha + \beta_1 NIM_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LOAN_{i,t} + \beta_4 RELROE_{i,t} + \beta_5 CAR_{i,t} + \beta_6 RISK_{i,t} + \beta_7 LIQ_{i,t} + \beta_8 DEPO_{i,t} + \beta_9 GDP_{i,t} + \beta_{10} INF_{i,t} + \delta COVID_{i,t}$$

4. Results

4.1. Descriptive statistics

Table 1. Descriptive statistics of original data sample

Variable	Mean	STD	Min	Max
nim	.0324307	.0130508	-.0088855	.0942614
size	32.3819	1.300759	28.83398	35.29044
loan	.5639586	.1312752	.1448259	.8083796
relroe	.1071677	.081838	-.5633	.3033
car	.0944389	.0439842	.0400355	.3323916
risk	-.0076797	.0038337	-.0256254	-.0007454
liq	30.58405	1.266578	26.83609	33.68193
depo	.6368453	.1312456	.2508404	.9095316
gdp	.0583786	.0148247	.0258	.0802
inf	.0542286	.044331	.0063	.1858
NII	.0068697	.0051798	-.0058772	.0386092

4.2. Regression results

To choose between the pooled OLS model with fixed effects (FEM) and random effects (REM) models, the research team conducted an F-test for the collected data set.

At the 5% significance level for this test, the results show that $P\text{-value} = 0.000 < 0.05$, which means that hypothesis H_0 is rejected. Therefore, we conclude that there is a fixed effect, the Pooled OLS model is not suitable to use in this case.

Therefore, the authors continue to test the fit between the fixed effects model (FEM) and the random effects model (REM). To determine the fit between these two models, the research team used Hausman test.

From Hausman test results, the research team found that $P\text{-value} = 0.7535 > 0.05$, that is, not enough basis to reject hypothesis H_0 , then the residual and independent variable in the model have no correlation. together. Therefore, using the random effects model REM is more suitable for the data of the subject

The research team used LM - Breusch and pagan test to check the phenomenon of variable variance. Results $P\text{-value} = 0.0000 < 0.05$, rejecting hypothesis H_0 , which means that the model has variable variance.

The research team used Woolridge test to test the phenomenon of series correlation. Results $P\text{-value} = 0.0000 < 0.05$, rejecting H_0 , which means that the model has serial correlation phenomenon.

To overcome the model defects, the research team uses the GLS model. The results of GLS regression are as follows:

Table 2. Regression results according to GLS model analyzing factors affecting non-interest income

Variables	Thubq	
	Coef	P- value
NIM	-0.07512	0.002**
SIZE	0.00356	0.000***
LOAN	-0.01008	0.000***
RELROE	0.02727	0.000***
CAR	0.06113	0.000***
RISK	-0.26089	0.001**
LIQ	-0.00229	0.000***
DEPO	-0.00373	0.142
INF	-0.01678	0.008**
GDP	0.03504	0.283
COVID	0.00250	0.086*

4.2.1. NIM

The research results show that the estimated coefficient of the NIM variable has a negative value and is statistically significant at the 1% level. Therefore, there is enough basis to accept the hypothesis H1: Net profit margin (NIM) has a negative impact on non-interest income of Vietnamese commercial banks. This conclusion is also consistent with the study of (Hakimi et al., 2012; Le Duc Quang Tu, 2017). When the NIM of Vietnamese commercial banks shrinks and thins, NIM is affected but still wants to keep the growth rate, commercial banks tend to promote income diversification, reduce transaction costs for banks, boosting income especially in the service segment.

4.2.2. SIZE

The research results show that bank size and non-interest income have a significant and positive relationship. Therefore, there is enough basis to accept hypothesis H2. This result is similar to the results of studies by DeYoung & Rice (2004), Hakimi et al. (2012), Nguyen The Binh and Nguyen Duong Gia Tran (2022). With large banks, they can take advantage of economies of scale, be more flexible in investing in modern technologies, promote income diversification and increase non-interest income.

4.2.3. LOAN

The research results show that loans to assets ratio variable and non-interest income have a negative relationship because the coefficient is negative and has statistical significance at 10%. This shows that, with a negative influence coefficient, the hypothesis H3 provides enough basis to accept. This result is similar to some studies such as: DeYoung & Rice (2004), Craigwell & Maxwell (2006). Like the above studies, the higher the ratio of customer loans to total assets, the more evidence that the bank is focusing on interest income instead of non-interest income.

4.2.4. RELROE

The research results show that the relationship between capacity management and non-interest income is positive. Therefore, the study results are contrary to the proposed hypothesis. This can be explained, banks with leaders with good management capacity, better risk management ability, will know to seize opportunities to develop the bank.

4.2.5. CAR

The research results show that the relationship between capital adequacy ratio and non-interest income is positive. Therefore, hypothesis H5 has enough basis to accept. The above results are consistent with the research of Rogers & Sinkey Jr (1999), Nguyen Thi Diem Hien and Nguyen Hong Hat (2016), Vu Xuan Dung (2018). When CAR increases, operational safety increases, commercial banks tend to expand their network, restructure and diversify products to increase revenue.

4.2.6. RISK

The research results show that credit risk (RISK) and non-interest income have a negative relationship with non-interest income with the coefficient of influence = -0.2789 and

statistically significant at 1%. This shows that the research results are different from the hypothesis. When credit risk increases, the bank's receivables from credit decreases, therefore, interest decreases, and at the same time the amounts associated with interest are also less. However, it is also because of the increased credit risk that the bank will have to allocate risky assets to other items - for example, investing in off-balance sheet items such as guaranteeing, implementing outside commitments, trading derivative financial contracts to reduce risk, and allocating investment portfolio.

4.2.7. LIQ

The research results show that liquidity and non-interest income have a significant and negative relationship. This result is contrary to some studies such as Rogers & Sinkey Jr (1999), Damankah et al. (2014), however, has the same result with Vu Xuan Dung and Doan Viet Hung (2018). Liquidity is an important factor determining the safety of credit institutions in general and banks in particular. The liquidity of the banking system decreased, the quality of credit became unstable, so banks promoted non-credit activities.

4.2.8. DEPO

According to the research results, customer deposits (DEPO) variable is not statistically significant at 5%, indicating that there is no impact of deposit size on non-interest income of Vietnamese commercial banks during the research period. Therefore, hypothesis H8 is not accepted. Presumably, during the study period the banks did not have liquidity risk problems, and there was no financial pressure.

4.2.9. INF

The research results show that the inflation rate (INF) and non-interest income have a negative relationship because the coefficient is negative and has statistical significance at 10%. Therefore, there is enough basis to accept hypothesis H10, this result is consistent with the study of DeYoung & Rice, (2004), Hahm (2008), Vu Xuan Dung and Doan Viet Hung (2018), Nguyen The Binh and Nguyen Duong Gia Tran (2022).

4.2.10. GDP

The research results show that the growth rate of gross domestic product (GDP) is not statistically significant. This indicates that, GDP growth rate has no impact on non-interest income of Vietnamese commercial banks, or, hypothesis H9 is not enough to accept. The above research results are similar to Vu Xuan Dung and Doan Viet Hung (2018).

4.2.11. Covid

The research results show that there is a relationship between Covid-19 and non-interest income of Vietnamese commercial banks. Covid has a positive effect. This is a new contribution, because it shows that, in economic conditions with shocks, such as Covid-19, the production activities of banks such as lending are delayed, but other activities are used up. re-commitment has increased demand, for example selling guarantee contracts. Enterprises in the economy do not need to borrow capital from banks, but only need banks

to commit to help them with financial obligations. Therefore, in the context of social distancing, this is an opportunity for commercial banks to develop non-credit services.

4. Discussion and conclusion

The research team examines the impact of various factors such as scale (SIZE), leadership factor (RELROE), capital adequacy ratio (CAR), liquidity (LIQ), deposit scale (DEPO), loan scale (LOAN), net interest margin (NIM), credit risk (RISK), GDP growth rate, inflation rate (INF), and Covid-19 on the non-interest income (NII) of Vietnamese commercial banks during the period 2009-2022. The results indicate that:

- GDP and customer deposits (DEPO) had no impact on non-interest income.
- Liquidity (LIQ), net interest margin (NIM), loans to assets ratio (LOAN), credit risk (RISK), and inflation rate (INF) had a negative impact on non-interest income.
- Capacity management (RELROE), bank size (SIZE), capital adequacy ratio (CAR), and Covid-19 had a positive impact on non-interest income.

Based on the results above, the research team has made some recommendations to improve the non-interest income of commercial banks in Vietnam as follows:

Firstly, based on the conclusion that liquidity has an inverse effect on non-interest income, commercial banks in Vietnam need to consider adjusting the amount of cash and deposits in credit institutions at a reasonable level, balancing the increase in income and liquidity risk. Liquidity is an important factor for safe operation. Banks must create liquidity, allowing depositors to withdraw money when needed while protecting borrowers from the liquidity needs of depositors (Douglas & Raghuram, 2001). Therefore, commercial banks need to forecast and grasp the withdrawal and borrowing needs of customers to keep a reasonable amount of money, avoiding surplus liquidity leading to "idle capital", wasting resources that can generate income.

Secondly, based on the affirmation that the Capital Adequacy Ratio (CAR) has a positive impact on non-interest income, commercial banks should consider increasing the ratio of owner's equity to total assets to increase non-interest income. Commercial banks can issue more shares to large partners to increase owner's equity and take advantage of their partners to expand the scale of operations. In addition, it is necessary to consider accumulating owner's equity through profit distribution policies, prioritizing retained earnings, and dividend payments in shares.

Thirdly, based on the conclusion that the leadership factor has a positive impact on non-interest income, commercial banks should increase their management capacity and upgrade their management system to be compatible with international standards. In Vietnam, some banks have brought a new generation into leadership positions. New managers have more advanced thinking in diversifying income compared to old managers who usually focus on credit services to increase income. Moreover, applying technology to the management system also helps leaders predict and understand the situation better to make decisions that promote non-traditional activities.

Finally, based on the conclusion that the COVID-19 pandemic has a positive impact on non-interest income. In the future, if the economy suffers a similar shock, commercial banks should actively reduce interest income activities because it highly depends on whether the economy can resist as well as recover. In fact, during the COVID-19 period, non-interest income sources such as card fees, commissions, and digital banking of many commercial banks had a strong breakthrough. In addition, the diversification of products and services to suit the needs of customers during the crisis period also increases satisfaction and loyalty to commercial banks, contributing to the stable income growth.

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IMPACTS OF THE VIETNAM - UK FREE TRADE AGREEMENT (UKVFTA) ON THE EXPORT OF VIETNAM'S AGRICULTURAL

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Abstract

The study was conducted to assess the impact of the UK and Vietnam Free Trade Agreement (UKVFTA) on the export of Vietnam's agricultural products to the UK market. The study uses a qualitative research method combined with a quantitative analysis method through the use of the SMART model with data sources collected from UN Comtrade and the scenario of reducing import tariffs to 0% when UKVFTA regulations come into effect. Based on the research results, the author's analysis shows the prospects and competitive advantages of agricultural products in the UK market. Through the results of the analysis, the authors identify the strengths, limitations that still exist and the causes of them, thereby offering solutions, orientations and recommendations to promote the export of Vietnam agricultural products to the UK in the near future.

Keywords: *Agriculture, export, trade creation, trade diversion, UKVFTA.*

1. Introduction

Agricultural products are one of the key manufacturing and export industries, making great contributions to Vietnam's export turnover in recent years. In the first 7 months of 2022, the export turnover of Vietnam's agricultural products reached about 32,3 billion USD, up 12,2% over the same period last year. In recent years, Vietnam's agricultural products in general have continuously made their mark on the export map as the 11th largest supplier of processed fruits and vegetables to the United States, and the largest supplier of coffee to Russia (in terms of quantity) is particularly favoured by quality assurance and meeting the strict criteria of the European market.

The United Kingdom (UK) is considered to be one of the most globalised economies in the world and is an important member of the OECD, WTO, etc. For Vietnam, the UK is

an important strategic partner, especially when UKVFTA is implemented. UKVFTA has brought prosperity to the trade exchanges, specifically a huge change to Vietnam's agricultural export industry when we had the opportunity to appear on store shelves in large, high-end UK supermarket chains. Through the deep bilateral relations between Vietnam and the United Kingdom, Vietnam's agricultural products export has a growing potential. However, the question is how much impact does UKVFTA have on trade? What solutions can the Vietnamese government and enterprises use to compete with other British partners?

2. Literature Review and Theoretical Framework

2.1. Literature review

The empirical study of Cheong (2016) adopted the CGE general equilibrium model, showing the positive impact of trade liberalization between China and South Korea on exports. Mohammad et al (2014) also used the general equilibrium model to analyze the current situation and potential of trade liberalization between Bangladesh and India.

The research conducted by Huang & Associates (2021) using the gravity model reveals the factors affecting Vietnam's tea export, and concludes that the free trade agreement is one of the positive impacts on Vietnam's tea export. Anh (2021) also used gravity model to evaluate the impact of UKVFTA on Vietnam's export of electronic products to the UK market.

There are some optimistic studies on the positive impact of UKVFTA on Vietnam's exports to the United Kingdom. The study of Ha Van Hoi (2022) shows that although there are some challenges in the implementation of UKVFTA, it has produced many positive effects and benefits on Vietnam's textile and clothing exports and tariff incentives. Therefore, it proposed a series of long-term and short-term measures aimed at developing Vietnam's textile industry.

Unlike Huong & Associates, Tien & Associates (2021) used intelligent tools to study the impact of EVFTA on the trade flow of footwear in Vietnam and the EU. In this study, the research team compiled a theoretical review focusing on footwear. In addition, many studies use other models to predict the impact of free trade agreements on export trade of goods.

Vu Thuy Duong, 2020 used the GISM model to predict the impact of the new generation of free trade agreement on Vietnam's export of seafood to member countries. Nguyen et al. (2022) applied the WITS-SMART model to predict the potential impact of Vietnamese seafood imports under the European Free Trade Area. Nguyen Tien Hoang (2021) analyzed the impact of EVFTA on EU imports to Vietnam by using the SMART pharmaceutical model. James Cassing (2010) applied the SMART model to show the impact of the free trade agreement on Vietnam's economy. Nguyen (2021) assessed the impact of EVFTA on Vietnam's export of timber and timber products to the EU. T.T. (2021) used the intelligent model to evaluate the impact of EVFTA on Vietnam's footwear exports to the EU.

At present, there are many theoretical and empirical studies showing the impact of free trade agreements on Vietnam's commodity exports. However, due to the novelty of the agreement, UKVFTA, on the contrary, has not conducted a comprehensive and detailed study on the impact of the agreement on Vietnam's export of agricultural products to the United Kingdom.

2.2. Theoretical framework

2.2.1. General Equilibrium Theory

The General Equilibrium Theory was put forward by the French economist Leon Walras at the end of the 19th century to explain the supply, demand and price of an economy with a large number of markets and commodities. This theory shows that there is an equilibrium price of goods. When the market prices of all goods reach equilibrium, the economy will reach the overall equilibrium. The overall balance model is explained by endogenous variables in the model, such as price, export output, import output, household income, etc. The advantage of the overall balance model is that it provides an empirical basis for assessing the impact of trade policies (e.g. through free trade agreements). However, the model has some shortcomings, such as the impact of non-tariff barriers (SPS, TBT, etc.) and issues related to customs and technical standards.

2.2.2. Partial Equilibrium Theory

Marshall (1890) believed that the equilibrium price was determined by the intersection of demand and supply curves, provided that other factors remained unchanged (*ceteris paribus*). The change of supply and demand curve will change the equilibrium price level of the market. Marshall's theory was later adopted by Wiener (1950), Francois (1997), Zheng (2010), Bachetta and others (2010). By further expanding some relevant theories, such as trade creation theory, trade transfer, government tax and social welfare.

2.2.3. Viner's Model Theory

Viner model focuses on two indicators: trade creation and trade redirection to evaluate the effectiveness of free trade agreements. In particular, the establishment of trade is to transfer production from low-productivity partner countries to high-productivity partner countries. Compared with other countries exporting similar goods to one country, the occurrence of trade transfer increases the export of (exporting country) and correspondingly reduces the import. Because the assumptions of the model are far from reality, the use of the Viner model also brings some limitations. Suppose that each exporter source has a single price, and each country always imports goods from one country and one country, but in fact, a country can import from many different countries, including free trade agreement member countries.

2.2.4. Gravity Model Theory

The gravity model is used to evaluate a posteriori method, that is, after countries sign free trade agreements. Tinbergen (1962) and Poyhonen (1963) first used gravity models to evaluate bilateral trade between European countries. The export of one country to another

country is explained by its economic scale (measured by gross national product or GDP) and the geographical distance between countries. The disadvantage of this model is that it relies on data to produce accurate estimates and the data need to be a complete feature of the pre- and post-analysis to evaluate the actual impact.

2.2.5. SMART Model Theory

The SMART model is its own balance model based on the core assumption of the Armington hypothesis, which assumes that goods imported from different countries are imperfect substitutes. By default, these substitutes are integrated in WITS software. The model is used to analyse the impact of changes in the domestic market, and provide information on all aspects of the expected period of policy changes. At the same time, the model also assumes that the demand of consumers is determined by a two-step optimization process, which involves the distribution of expenditures by commodity and country. The main disadvantage of this model is its own balance model, so its results are limited to the direct impact of any national policy change.

2.3. Objectives

The purpose of this study is to determine the quantitative impact of UKVFTA on the export of Vietnamese agricultural products to the UK market. At the same time, it also proposed some management policies and enterprise-oriented programs to the government to continue to take advantage of the new opportunities brought by UKVFTA and minimise the risks in the future environment of trade relations.

3. Method

3.1. Research scope

Scope of content: The study uses the SMART model with a tariff scenario of 0% to estimate the impact of UKVFTA on the export of agricultural products with 4-digit and 6-digit HS codes through HS codes through trade creation values.

Time range: Vietnam's export to the UK in the 5-year period, from 2018 to 2022. The simulation scenario uses data from Vietnam's agricultural exports to the UK in 2021.

3.2. Research instruments

This study combines two methods: qualitative research method and quantitative research method, and uses SMART model to evaluate the indicators and effect of the UKVFTA agreement on Vietnam's export of agricultural products to the United Kingdom.

Through the qualitative research method, the authors collect secondary data sources to get richer and more detailed information about the research issues. The information is collected from government websites, featured articles in domestic and foreign scientific journals and portals of state management agencies. The data collection and processing are all in accordance with the basic principles and are completely accurate.

In quantitative research, two models are usually used to evaluate the impact of free trade agreements on imports and exports of countries, including:(i) Computable General Equilibrium (CGE); (ii) Partial Equilibrium Theory (PGE) and Viner model. In this

research, the author team uses a Partial Equilibrium Theory (PGE) to evaluate the impact of exports on specific markets (UK).

The author team uses qualitative and quantitative research methods, combined with SMART method, to help investigate the impact of tariff reduction in UKVFTA on the export of Vietnamese agricultural products to the United Kingdom, and details the 6-digit HS code in commodity HS code classification system. When applied to partial analysis, the SMART method has many advantages. Typically, SMART is attached to a part of the Information and Data of the World Integrated Trade Solution (WITS) provided by Worldbank, making it easy to fulfill the basic entry requirements by extracting export information from a database available from WITS.

SMART is the most ideal model to analyse the impact of FTA on a nation's commodity exports. It is based on the theoretical basis of partial equilibrium theory, trade creation and diversion theory, import demand theory and export supply theory, elastic theory and parameters. The model is helpful to determine the impact of tax policy on trade creation and trade diversion, and predict the growth potential of commodity exports when a country joins the FTA.

In order to run the SMART model, the author team uses the data selected from UN COMTRADE, Trade Map, the portal website of the General Administration of Customs of Vietnam on the trade value of agricultural products exported from Vietnam to the United Kingdom (the total export volume of agricultural products from Vietnam, the import demand of the United Kingdom, etc.) and the MFN tariff data applicable to the United Kingdom in UKVFTA. The data provided by SMART supports automatic extraction and is collected manually by the author team. In addition, data for qualitative analysis, including statistical data and descriptions related to agricultural products, were collected from reports and websites of Vietnamese institutions. All data are from authoritative and mainstream information sources, covering the five years from 2018 to 2022.

This study combines research methods and the use of SMART models to analyze the impact of tariff reduction on trade creation and trade diversion. In the case of tariffs, agricultural products exported from Vietnam to the United Kingdom have to meet the strict requirements of the rules of origin and the import tariff will be reduced to 0%, after the UKVFTA agreement comes into force. Since then, there have been basis and data to evaluate the impact of the UKVFTA agreement on Vietnam's export of agricultural products to the United Kingdom, and put forward strategic policies that help promote Vietnam's export of agricultural products to the United Kingdom to achieve the most effective economic benefits.

4. Results

Trade Creation

From the SMART simulation results, the total value of trade creation (increase in exports) in 2021 is estimated at about 533.000 USD when the tariff scenario is reduced to

0%. Among these agricultural products, HS 1901 (*Malt extract; food preparations of flour, groats, meal, starch or malt extract, not containing cocoa or containing less than 40% by weight cocoa; defatted, not elsewhere specified or included; food preparations of products of headings 04.01 to 04.04, not containing cocoa or containing less than 5% by weight of cocoa, defatted, not detailed or included elsewhere*) contributed the highest total value of trade creation, although turnover did not account for a significant proportion of total exports.

With the scenario of tariff reduction to 0%, the value of trade creation of agricultural products is estimated as follows:

Table 1. Trade creation value by product group

HS Code	Export turnover (USD)	Trade Creation (USD)	Contribution rate (%)
0401	1,435	85,703	16.05%
0409	1,860,148	458	0.09%
0712	241,554	283	0.05%
0901	55,907,176	8,108	1.52%
1212	53,766	21,814	4.09%
1702	11,486	826	0.15%
1704	57,791	8,116	1.52%
1806	7,540	28,425	5.32%
1901	211,887	246,771	46.21%
1904	600,832	86,386	16.18%
1905	17,228,675	34,144	6.39%
2005	277,284	10,040	1.88%
2008	12,341,220	2,457	0.46%
2009	1,046,479	460	0.09%
Total	89,847,273	533,991	100.00%

Source: Calculated by the research group

Of the goods in heading HS 1901, HS 190110 (*Preparations suitable for infants or young children, put up for retail sale*) accounted for 93.19% of the total trade creation of the industry group with value added. export growth amounted to 229,963 USD.

Although it is the group of goods with the largest trade turnover among Vietnamese agricultural products exported to the UK market (nearly 56 million USD), the value of trade creation with the tariff scenario is reduced to 0% of HS 0901 (*Coffee, roasted or unroasted, whether or not decaffeinated; coffee pods and skins; coffee substitutes containing coffee in*

certain proportions) is remarkably low. Items in HS 0901 include HS 090111 (*Coffee, unroasted: Not decaffeinated*, USD 512) and HS 090112 (*Decaffeinated*, USD 7,596). Although the UK is a potential market for Vietnam's agricultural exports, it is a market with strict requirements on animal and plant quarantine. In 2021, the UK's coffee imports from Vietnam will have decreased by 35,5% in volume and 31,1% in value compared to 2020. This led to a decline in Vietnam's coffee market share falling to 17,04%. The main cause comes from the impact of the Covid-19 pandemic and the home-drinking culture of tea in UK households; the tastes of UK consumers are clearly different when brewed coffee. Instant coffee is the most popular type of coffee, so instant coffee brands are easier to reach consumers than ground coffee.

Trade Diversion

Based on simulation results from the SMART model, the reduction of tariffs to 0% of Vietnamese agricultural products has created a trade diversion value, which is shown in detail in the following table:

Table 2. The value of trade diversion of Vietnamese agricultural product groups exported to the UK when tariffs are cut to 0%

HS Code	Export turnover (USD)	Trade Diversion	Contribution rate (%)
0401	1,435	70,027	13.24%
0409	1,860,148	731	0.14%
0712	241,554	766	0.14%
0901	55,907,176	4,045	0.76%
1212	53,766	42,041	7.95%
1702	11,486	1,762	0.33%
1704	57,791	14,983	2.83%
1806	7,540	34,750	6.57%
1901	211,887	244,380	46.20%
1904	600,832	28,022	5.30%
1905	17,228,675	62,310	11.78%
2005	277,284	20,543	3.88%
2008	12,341,220	3,533	0.67%
2009	1,046,479	1,124	0.21%
Total	89,847,273	529,017	100.00%

Source: Calculated by the research group

The above table shows that the trade diversion effect is approximately equal, about 2% apart from the trade creation effect. It indicates that when the UKVFTA comes into effect, it will increase exports, but Vietnamese goods have not really created a breakthrough to be able to dominate the market compared to other competitors, such as: France, China, the Netherlands, etc. UKVFTA, when it comes into force, will increase exports of mainly goods that enjoy preferential tariffs, and it also proves that competitive pressure from rival countries is still very large.

Under chapters 09, 19, and 20 of the HS classification system that implements UKVFTA and imposes 0% tariff on Vietnamese imports, the countries with the largest decline in agricultural exports to the UK market include:

Table 3. Countries with the largest decrease in export turnover are HS 0901, HS 1905 and HS 2005 groups to the UK market

Country	Export turnover before UKVFTA (USD)	Export turnover after UKVFTA (USD)	Changes (USD)
HS 0901			
France	195.642.970	51.874.045	-143.768.925
Spain	69.879.824	28.779.567	-41.100.257
China	7.820.886	1.644.522	-6.176.364
Poland	9.613.237	6.058.329	-3.554.908
HS 1905			
France	461.827.380	385.581.238	-76.246.142
Netherlands	291.124.941	227.342.634	-63.782.307
Germany	418.768.432	355.130.173	-63.638.259
Ireland	422.860.397	398.068.941	-24.791.456
HS 2005			
Germany	34.699.863	8.906.390	-25.793.473
France	51.081.011	26.774.152	-24.306.859
Italy	148.847.281	135.176.976	-13.670.305
Spain	80.193.188	68.781.760	-11.411.428

Source: Calculated by the research group

For the above commodities, since the UKVFTA agreement came into force, the share of UK imports from European partner countries has dropped significantly, and the total value has changed by hundreds of millions of dollars.

In particular, France suffered significant losses because they were among the countries with the largest changes in market share (total value decreased by 24.432.926 USD) China, the largest trading partner of the UK, is also facing a decline in exports of 6.176.364 USD. In addition, the strong impact of the COVID-19 on the global economy has also led to substantial fluctuations in trade between the UK and its partners. In general, the impact of the transfer of some agricultural products in Vietnam is relatively low, and it does not really bring huge competitive pressure to the competitors exporting similar products to the UK market, it can only create a small bright spot in market redistribution. This is mainly because Vietnam enjoys lower tariffs on goods exported to Britain. However, it is undeniable that the impact of trade transfer helps Vietnam's agricultural products to occupy market share in the hands of major competitors such as France, Germany or Spain.

Table 4. Total effect from UKVFTA

Effect	Trade value (USD)	Contribution rate (%)
Trade creation	533,991	50.3
Trade diversion	529,017	49.7
Total	1,063,008	100

Source: Calculated by the research group

The research results show that the UKVFTA has an impact on promoting the export of Vietnamese agricultural products to the UK market, especially key products such as: Malt extract, flour food products, sheet, raw powder, starch; Milk and cream, not concentrated and not containing added sugar or other sweetening matter; Bread, dough (pastry), pies, cookies and other cakes. These are items that have a large commercial impact and are considered complementary in the UK market structure. When the tariff rate is completely reduced to 0%, the trade impact of UKVFTA on Vietnam's agricultural sector is quite positive. The trade creation impact is 50.23%, which means that Vietnamese agricultural products will have a higher price competitive advantage over British domestic agricultural products. With a trade diversion effect of 49.77%, the UK will prioritise importing goods from Vietnam, rather than importing similar products from other countries. However, in the long term, this advantage will no longer exist when the UK is implementing the "Global Britain" trade strategy, actively negotiating to join FTAs, in order to promote exports, and is ready to open the market with other countries. international partners.

Currently, Vietnam's agricultural export turnover to the UK market is still low, accounting for only about 1% of the total import demand for agricultural products here, while

the opportunity in this market is huge. Most of Vietnam's agricultural exports are crudely processed, without high added value, while the tax on Vietnam's deep-processed products entering the UK market is 0%.

5. Discussions and Conclusion

5.1. Summary of the study

The topic "Impacts of the Vietnam - UK Free Trade Agreement (UKVFTA) on the export of Vietnam's agricultural products" is based on the SMART model, as the basis and focus by the appropriateness in assessing the impact of the FTA on the export of goods between the two economies participating in the Agreement through the effects of trade creation and trade diversion. The topic was analysed and clarified the contents, including:

(i) Theoretical basis for the mechanism of impact and methods of assessing the impact of FTAs on the export of Vietnamese agricultural products to the UK market in the context of UKVFTA implementation;

(ii) Analyse the current situation of the UK market and Vietnam's agricultural product industry, thereby concluding the outstanding advantages and disadvantages for Vietnamese agricultural products to the UK market in the context of the application of UKVFTA;

(iii) Using the SMART model in the context of tariff reduction to 0% to quantify the impacts of the UK - Vietnam Free Trade Agreement (UKVFTA) on agricultural exports through value creation, trade establishment and trade diversion. The simulation results for the group of agricultural products under the 4-digit HS code and the 6-digit HS code (excluding meat and aquatic products) from Vietnam to the UK in 2021 show that: (i) the total trade value (increase in export value) due to tariff reduction was estimated at 1.06 million USD, up nearly 1.5% compared to the total value of Vietnamese agricultural exports to the UK market, in which the value of trade creation trade accounts for more than 50% of the remaining contribution from trade diversion; (ii) in the agricultural product group the 4-digit HS code, HS code 1901 (*Malt extract; food preparations of flour, groats, meal, starch or malt extract, does not contain cocoa or contains less than 40% by weight of cocoa, completely defatted, not elsewhere specified or included; food preparations of products of headings 04.01 to 04.04, not containing cocoa or containing less than 5% by mass of fat-defatted cocoa, not elsewhere specified or included*) make a major contribution for the increase in the value of Vietnam's agricultural exports to the UK market, specifically, HS 1901 contributed 246,771 USD, accounting for nearly 47% of the value of trade creation and more than 45 % for total commercial diversion value; (iii) in the group of agricultural products with 6-digit HS code, the product with HS code 190110 (*Preparations suitable for use in infants or young children, put up for retail sale*) made the largest contribution to the total trade

value. , with a trade creation value of nearly \$230 thousand and a trade diversion value of more than 200,000 USD; (iv) a number of agricultural products Vietnam exports to the UK market with great value (HS0804, HS0812, HS0813, HS0904) and enjoys a preferential tariff rate of 0%, thus this group of products does not contribute to the increase in export value under the scenario of tariff reduction to 0%.

The research results can be said to be clear evidence to confirm that UKVFTA has a positive impact on the value of Vietnam's agricultural exports to the UK market, the impact is quantified and estimated in detail through simulation results according to the scenario of tariff reduction to 0%. The value of trade creation benefited from FTA tariff preferences, the value of trade diversion also gives an overview when UKVFTA will be completed, capable of creating competitive advantages for Vietnamese agricultural products compared to other products. countries exporting to the UK market with the same items.

From the positive impact of the Vietnam - UK Free Trade Agreement (UKVFTA) on Vietnam's exports of agricultural products to the UK, we can conclude that international economic integration is the right direction for Vietnam. Thanks to the free trade agreement, Vietnam's export barriers have been eliminated, which helps to balance the trade balance and achieve Vietnam's trade surplus goal in the next stage.

5.2. Recommendations and Conclusion

Orientation for agricultural development and export of Vietnamese agricultural products to the UK until 2025 with a vision to 2030

Many experts believe that Vietnam still has a lot of room to continue exploiting the UK market in the near future. So, how should the government and enterprises develop the country's agricultural sector?

Vietnam's agricultural products industry should pay attention to standards and quality as well as food hygiene and safety according to the standards of partners. In order to penetrate into difficult markets such as the UK, Vietnamese agricultural products need to adopt VietGAP, GlobalGAP and other standard planting methods to meet these standards, and farmers need to obtain advanced mechanical technology and high-tech production lines. In addition, production enterprises also need to introduce traceability technology into the planting and production process to improve the transparency of the origin and achieve green and sustainable development. This will help Vietnam go further in the international market where traceability requirements of goods are required. In addition, Vietnam should earnestly fulfil its commitment to achieve net zero emissions. In order to fulfil its commitment, farmers should minimize pesticide residues and focus on natural and organic elements, which will help make products more "green", ensure the health of producers and consumers.

Recommendations for the export supply chain of agricultural products

Currently, transportation costs are one of the major difficulties of exporting Vietnamese agricultural products to the UK. Compared to other agricultural product exporting countries, Vietnam is suffering from a relatively large level of transportation besides the underdevelopment of transportation services in Vietnam. Transportation plays a very important role in the process of exporting goods. Therefore, to be able to strongly increase the export of agricultural products from Vietnam to the UK, Vietnam should have ways to cut transportation costs, besides improving the quality of transportation services. It is necessary to have more tightly managed frozen warehouses, cold logistics chains throughout from the place of cultivation to the places of consumption to help easily control quality and minimize damage during the transportation of goods. And always ensure that the quality of agricultural products is in line with the strict standards of the UK market.

Recommendations for improving the quality of agricultural products

Focusing on product quality is one of the prerequisites for Vietnam to compete with other export markets. Vietnam needs to invest in more modern technology machines around the world as well as provide farmers and producers with more knowledge on how to preserve agricultural products. Agricultural products need to be carefully stored to keep fresh during the whole process of export to the UK market. Producers should adjust the structure of agricultural products according to the value chain from raw material export to processed products; From simple product processing to post-processing. In addition, we need to invest in innovation, from the quality of machinery, equipment, technology, production process to the quality of human resources, in order to improve product quality, packaging and preservation of agricultural products.

Enterprises need to introduce traceability technology into agricultural planting, producing and processing, because the UK consumers always pay attention to the transparency of production companies. So, enterprises producing high-quality food with clear traceability, towards green and sustainable development, will have many advantages in this market. Using information technology and electronic devices to facilitate information updating, data management and product traceability is the current trend. And with the application of traceability, agricultural products will be the foundation for Vietnamese enterprises to reach further into the international market with strict requirements on goods. Because the requirements for goods traceability are very high, this is the passport for the next step in integration and positioning of Vietnamese goods on the world stage.

Strengthening the quality management of export enterprises is regarded as the key link to ensure that all agricultural products are exported from Vietnam to the UK market,

when agricultural products must meet food hygiene standards and consumer market requirements. The State shall closely inspect and control the production and export process, so as to timely identify enterprises that do not comply with regulations and are subject to sanctions. Not only that, enterprises should be prohibited from exporting agricultural products that affect the overall quality of agricultural products exported by Vietnam. In addition, since farmers are the main raw material suppliers of enterprises for export processing, attention should be paid to the quality management of families planting agricultural products. In order to make agricultural products meet the quality inspection from the beginning, farmers participating in agricultural product breeding must comply with the national provisions on food hygiene and safety. Therefore, strict control of the supply chain from production input to export is a sustainable solution.

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FACTORS INFLUENCING PERSONAL BEHAVIORAL ATTITUDE IN USING FINANCIAL LEVERAGE IN REAL ESTATE TRANSACTIONS - EMPIRICAL EVIDENCE FROM CB-SEM

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Abstract

Following the COVID-19 pandemic, the real estate market has rebounded and progressed. However, the mid-range commercial housing segment remains constrained, and real estate prices are increasing faster than income growth, resulting in a mismatch between housing needs and income levels. This study aims to investigate the relationship between borrowers' ability to use financial leverage and their behavioral attitude in real estate transactions in Vietnam. The study uses a combined model of the Theory of Planned Behavior (TPB) and Technology Acceptance Model (TAM) based on quantitative data collected from 1,002 surveys and qualitative data from 10 expert interviews in the real estate, finance, and economics fields. The results indicate that both "Policies" and "The ability to use financial leverage" have a positive influence on "Behavioral attitude," while "Real estate features" have a negative effect. Based on these findings, the authors propose policy recommendations for credit institutions to enhance their quality and support for borrowers. At the same time, the government should establish stricter legal frameworks and policies to manage the real estate market effectively and meet the housing requirements of the population.

Keywords: *Housing bubble, Real estate features, Real estate market, Vietnam*

1. Introduction

Yunus (2012) posits that the housing market, which represents the real estate market, is crucial in determining people's quality of life by meeting the demand for residential accommodation, urban development, industry, and tourism. Liu and Xiong (2018) share this

perspective, stating that real estate is a leading industry group in the economy and a vital component of the financial system in many countries worldwide. Sughana and Sheela (2021) note that owning a house with hard-earned income and meagre savings has become challenging due to the impressive increase in real estate value. Therefore, it is necessary to study financial leverage and people's behavioral attitudes toward the challenges of real estate transactions meticulously and comprehensively.

The authors develop the research based on two original theories: Ajzen's (1991) Theory of Planned Behavior (TPB) and Davis's (1989) Theory of Technology Acceptance (TAM). The authors aim to strengthen the study's foundations by exploiting the literature review of these theories and research hypotheses.

2. Literature review and hypotheses

2.1. Borrowers' behavioural attitude in real estate transactions

Based on the definition of "attitude" in Ajzen's Theory of Planned Behavior (1991), the borrower's "behavioural attitude" in real estate transactions is understood as the borrower's assessment of the outcome obtained from performing the act of borrowing capital to carry out real estate transactions. Precisely, it reflects the degree of favourable or unfavourable evaluation of the borrower's behaviour, and these assessments are based on three reflection factors, including: "perception of usefulness", "perception of convenience", and "social influence" when using loans. For studies on the personal loan model, Hayhoe *et al.* (1999) and Kisaka (2014) agree with the above point of view when arguing that "attitude" plays an essential role in the intention to carry out the action of the borrowers. Meanwhile, the studies of Opoku & Abdul-Muhmin (2010), Panghegar *et al.* (2014) and Liang & Osmadi (2015) also reached the same conclusion regarding the "attitude" factor in terms of research on individuals' real estate transaction decisions. Therefore, when studying the behaviour of borrowers in real estate transactions, the findings of "behavioural attitude" plays an important role. Borrowers' behavioural attitude in real estate transactions.

2.2. Hypotheses

2.1.1. Government policies

Eberly & Krishnamurthy (2014) assert that the government plays a crucial role in promoting and reviving the real estate market through policies related to real estate credit. These policies have a direct impact on borrowers' access to capital and loan interest rates. Slamet (2016) indicates that there is a negative correlation between borrowing interest rates and borrowers' ability to use financial leverage. In other words, if interest rates are high, borrowers will weigh the risk of paying interest more carefully, which can lead to a decrease in demand for loans to purchase real estate. Conversely, real estate credit policies can also stimulate borrowers' interest if they are offered incentives such as favorable interest rates, terms, and loan limits (Devlin, 2002; Gupta & Sinha, 2015). Apart from real estate credit

policies, the state's investment policies in infrastructure can also create opportunities for the real estate market in certain regions.

Therefore, the hypothesis is proposed:

H1: Government policies have a positive impact on the ability to use financial leverage in real estate transactions.

Government policies play a crucial role in influencing the price characteristics of real estate by establishing legal regulations and sanctions that help stabilize the property's actual value. As Warrent-Myers (2012) notes, the "actual value of real estate" is the value that real estate can generate stable income over the long term if utilized properly. Implementing appropriate regulations related to real estate prices can help the government manage the risks of a real estate bubble and ensure that individuals have access to properties with genuine value.

Therefore, the hypothesis is proposed:

H2: Government policies have a positive impact on real estate features.

Dale & McLaughlin (2000) argue that government policies to protect the real estate market can ensure its sustainability and health, increasing investor confidence. Ensuring market sustainability involves managing credit risks for the real estate sector and establishing clear tax regulations, loan procedures, and related fees. These policies can positively influence the attitudes of individuals towards investing in real estate, as they perceive it as valuable and convenient. For financial intermediaries such as banks, streamlined regulations on loan procedures, costs, and customer care services also help improve borrowers' attitudes towards real estate investment (Wu *et al.*, 2016).

Therefore, the hypothesis is proposed:

H3: Government policies have a positive impact on the behavioural attitude of borrowers in real estate transactions.

2.1.2. Ability to use financial leverage in real estate transactions

Black (2020) identifies two main factors affecting the ability to use financial leverage in real estate transactions: borrower variables and borrower resource variables. From the borrowers' aspect, Sayani & Miniaoui (2013) and Slamet (2016) show that "Interest" is a significant factor affecting borrowers' intention to borrow capital. Geetha (2016), Breeden (2018), and Weida *et al.* (2020) add two more factors: "Financial capability" and "Risk appetite." "Financial capability" indicates a borrower's ability to repay the loan, while "Risk appetite" reflects the borrower's willingness to take risks. From the aspect of loan providers, "Collateral" is a crucial resource that borrowers need to have to get loans, as stated by Aivazian *et al.* (2015), and the amount of capital provided to the borrower will increase with the value of the asset provided as collateral. In addition to borrowers and resources, "Market opportunity" is another factor that affects investors' ability to use financial leverage. Investors in the real estate market evaluate the added

value and profit opportunities of investment properties in the future, or they assess real estate market opportunities. Shilling & Wurtzbaach (2012) and Islam *et al.* (2015) highlighted the importance of this factor.

Based on the literature review mentioned above, the authors propose that the ability to use financial leverage in real estate transactions is influenced by several factors, including: “Interest rate”, “Financial capability”, “Risk appetite”, “Collateral”, and “Market opportunity”.

Vidada & Rakhmanita (2017) indicate that there is a positive correlation between the value of the real estate and its associated characteristics such as geographical location, living space, and quality. Therefore, real estate with more advantages will have a higher value. Due to the high cost of real estate ownership with these advantages, many individuals without sufficient capital opt to borrow from credit institutions. However, borrowers must meet certain requirements, such as loan repayment capacity, interest rates, collateral, and legal regulations. Consequently, when the ability to raise capital is greater, borrowers will have a higher demand for real estate ownership with more advantages.

Therefore, the hypothesis is proposed:

H4: The ability to use financial leverage has a positive impact on real estate features.

Marx & Turner (2019) suggest that loans are helpful in fulfilling immediate capital needs for individuals who require them for shopping, investments, or daily expenses. Furthermore, for investors, the ability to mobilize capital from different sources provides more profitable investment opportunities. In the present scenario, borrowers have diverse loan options, including commercial banks, non-banking financial intermediaries, and investment funds, which allows them to choose a suitable loan source based on their financial capability. Ajzen’s (1991) theory of planned behaviour asserts that an individual’s behavioural attitude is positively influenced by perceived usefulness, convenience, and social influence, highlighting the relationship between convenience and individual behaviour.

Therefore, the hypothesis is proposed:

H5: The ability to use financial leverage has a positive impact on the behavioural attitude of borrowers in real estate transactions.

2.1.3. Real estate features

Brata *et al.* (2017), Rahayu & Zanky (2018), and Rachmawati *et al.* (2019) suggest that when investors consider purchasing real estate, they prioritize factors such as “price,” “credibility of the real estate providers” and “quality” of the property. On the other hand, Martz *et al.* (2006), Opoku & Abdul-Muhmin (2010), and Liang & Osmadi (2015) mention characteristics of real estate that contribute to its latent value, such as “quality of public services”, “living space”, and “location”. The authors also propose a new factor that reflects the potential value of the real estate, which is the “future value increment”. This factor is relevant because certain regions and areas may receive infrastructure investments as part of government socio-economic development policies.

Based on the literature review mentioned above, the authors propose that the real estate features are influenced by several factors, including: “Credibility”, Location and space of the house”, “Quality and price of the house”, and “Future value increment”.

Nasar & Manoj (2015) posits that the perceived value of quality products is an essential factor influencing the attitude of customers towards buying real estate. Similarly, Rachmawati *et al.* (2019) observed that the quality of real estate has a positive effect on customers’ purchasing attitudes. Hence, customers’ attitude towards real estate is likely to be favorable when the value of the property aligns with its quality. Furthermore, investors can benefit from public utilities around the property that enhance the property’s location. This positively affects investors’ perception of convenience and usefulness when considering real estate investment.

Therefore, the hypothesis is proposed:

H6: Real estate features have a positive impact on the behavioural attitude of borrowers in real estate transactions.

3. Research methods and model

3.1. Research methods

The authors employ both qualitative and quantitative research methods to comprehensively analyze and accurately examine the issues related to behavioral attitude, financial leverage utilization, and credit accessibility intentions used in real estate transactions by individuals in Vietnam.

For qualitative research, the authors conducted surveys and collected data directly from experts using face-to-face and online methods. The authors successfully connected with 10 experts from the fields of real estate, finance, and economics. The results revealed that the interviewees shared similar opinions with the authors and advocated the proposed hypotheses. The majority of the candidates were aware of the significance of using financial leverage in real estate transactions.

In the quantitative research, the authors developed a preliminary questionnaire based on ideas from previous research and consulted with experts for feedback. The questionnaire was then refined and used to collect data through face-to-face and online methods, resulting in 1,002 observations. After filtering the data, 889 valid responses were used for analysis. The authors utilized various statistical methods, including Cronbach’s Alpha, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modelling (SEM), and employed software such as SPSS 26 and AMOS 24 to process the data.

3.2. Research model

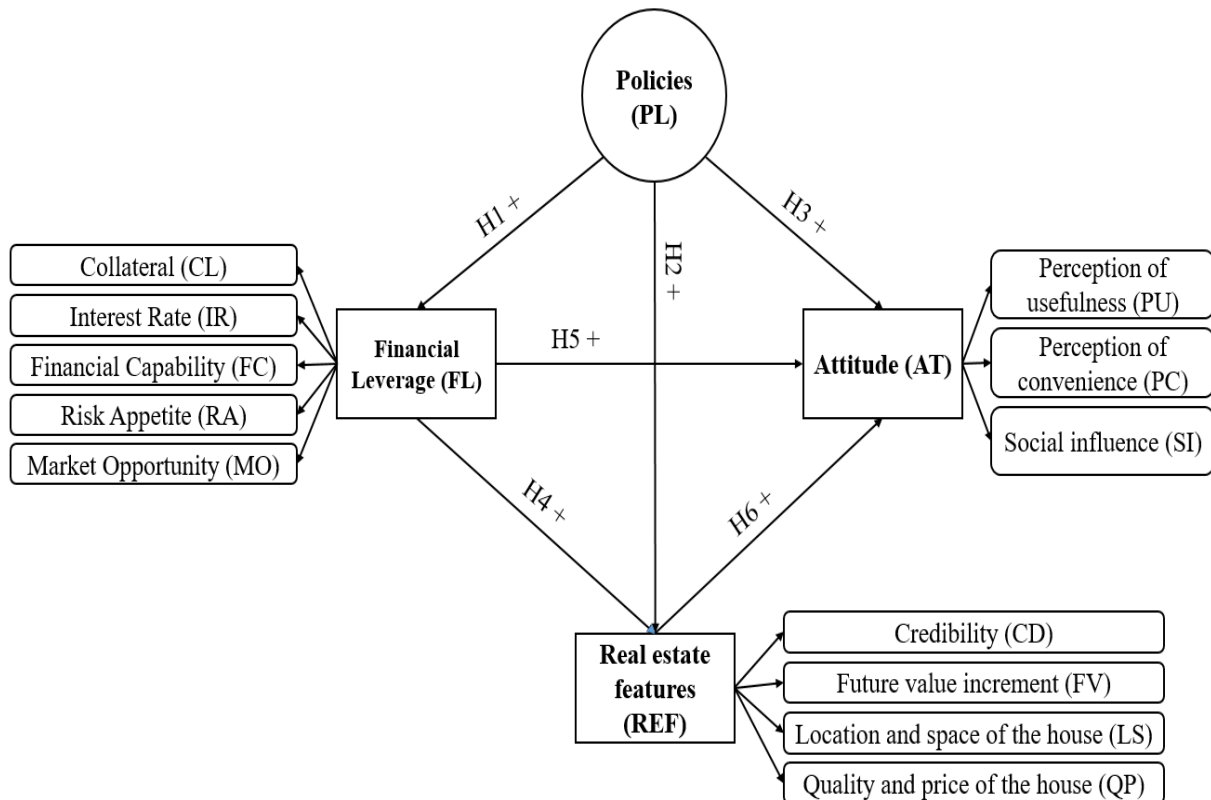


Figure 1. Preliminary research model

Source: Authors' recommendation

The research model incorporates factors derived from an extensive review of prior studies, as well as feedback from experts in the financial and real estate domains. In which, the independent variable, Policies (PL), is composed of 7 observable variables. The ability to use financial leverage (FL) encompasses 5 reflecting factors: collateral (CL) with 4 observable variables, interest rate (IR) with 4 observable variables, financial capacity (FC) with 5 observable variables, risk appetite (RA) with 4 observable variables, and market opportunity (MO) with 3 observable variables. Real estate features (REF) are represented by 4 reflecting factors, including credibility (CD) with 3 observable variables, future value increment (FV) with 3 observable variables, location and space (LS) with 5 observable variables and quality and price (QP) with 5 observable variables. Finally, behavioral attitude (AT) is reflected by 3 factors that capture the perception of usefulness (PU) with 4 observable variables, perception of convenience (PC) with 5 observable variables, and social influence (SI) with 4 observable variables.

4. Results and discussion

4.1. Descriptive statistics of the study sample

Table 1. Descriptive statistics of the sample

Characteristics		Frequency	Ratio
Gender	Male	383	43.1%
	Female	506	56.9%
Age	24 - 30	289	32.5%
	30 - 45	353	39.7%
	45 - 60	209	23.5%
	Above 60	38	4.3%
Average monthly income (1 USD = 23,450 VND)	Below \$1,000	566	63.7%
	\$1,000 - 2,000	252	28.3%
	Above \$2,000	71	8.0%
Living area	Urban	665	74.8%
	Countryside	224	25.2%

Source: Calculations of the authors

Based on the statistical results presented in **Table 1**, it can be observed that the descriptive statistics of the study with respect to control variables indicate that there is a relatively equal representation of men and women among the survey participants. The largest group of participants (353 or 39.7%) were aged between 30-45 years. The majority of the participants were from urban areas. In terms of income, most respondents had an average income of less than \$1,000 per month. These results reflect the reality of the high cost of real estate in Vietnam and the low income of a large proportion of the population, highlighting the need for credit access in real estate transactions. The descriptive statistics of the control variables closely mirror the actual state of using financial leverage in real estate transactions in Vietnam.

4.2. The results

The KMO (Kaiser-Meyer-Olkin) coefficient of $0.940 > 0.5$ indicates that the factor analysis used in the study is appropriate for the research data. Bartlett's test result of 29198.893 with a significance level of $\text{sig} = 0.000 (< 0.01)$ confirms that the observed variables used in the analysis are significantly correlated with each other within the same factor.

Table 2. KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.940
Bartlett's Test of Sphericity	Approx. Chi-Square	29198.893
	df	1275
	Sig.	.000

Source: Calculation result from SPSS 26

For the test of extracted variance of factors, the total variance extracted for the 11th factor is 69.437% > 50%. The Eigenvalues for each factor are greater than 1, indicating that the observed variables converge well into factors. The 9 factors together explain 68.985% of the variation in the survey data, and after removing unsatisfactory factors, the remaining factors are able to represent the original survey data effectively. In this study, the authors used a factor loading cutoff of 0.4, which was appropriate given the large sample size. The results also show that the factors of perceived usefulness and perceived convenience were combined into a new variable called the perception of convenience, as there were more contributing factors. This decision was justified by the authors, as the boundary between usefulness and convenience is often blurred when using financial leverage in real estate transactions. Additionally, the factors of investor credibility and value-added were combined into a new variable called credibility, as the two factors were closely related. It was noted that for credible investors, their products tend to retain value and even increase in value over time.

Table 3. Summarize the reflective factors of the Second-order construct

Second-order construct	First-order construct	Standardized Regression Weights	P-value	Conclusion
Financial leverage (FL)	CL	0.587	***	Accept
	IR	0.572	***	Accept
	FC	0.835	***	Accept
	RA	0.545	***	Accept
	MO	0.779	***	Accept
Behavioural attitude (AT)	PC	0.778	***	Accept
	SI	0.752	***	Accept
Real estate features (REF)	CD	0.821	***	Accept
	LS	0.768	***	Accept
	QP	0.730	***	Accept

Source: Calculation result from SPSS 26 and AMOS 24

The results in **Table 3** demonstrate that all factors effectively represent representativeness with statistical significance at sig = 0.000 < 0.01. The factor loading values in order of contribution for the representativeness variable FL are FC (0.835), MO (0.779), CL (0.587), IR (0.572), and RA (0.545). The AT representative variables include

PC (0.778) and SI (0.752). Furthermore, the REF representative variables include CD (0.821), LS (0.768), and QP (0.730).

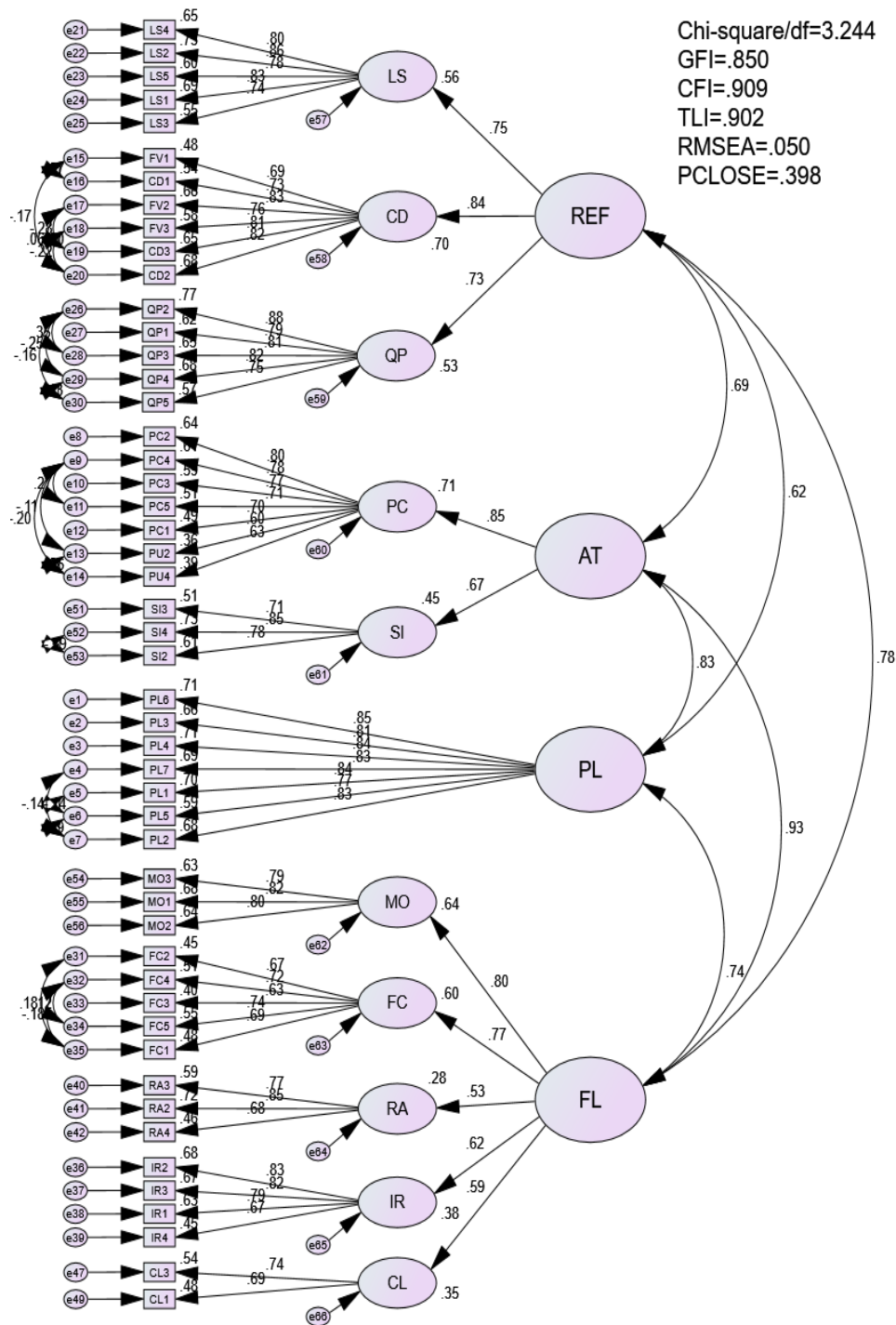


Figure 2. The results of confirmatory factor analysis (CFA)

Source: Calculation result from SPSS 26 and AMOS 24

The results of **Figure 2** of the CFA analysis show that all observed variables have a standardized regression coefficient greater than 0.5 and have a P-value = 0.000 < 0.01, so it is confirmed to have a good performance in the CFA model. The results of the criteria for measuring the model's fit show that the Chi-square/df = 3.244 < 5 is acceptable. The GFI

coefficient = 0.850 ranges from 0.8 to 0.9 but is still acceptable (Baumgartner & Homburg, 1995; Doll *et al.*, 1994). CFI value = 0.909 > 0.9 is good, TLI value = 0.902, and RMSEA coefficient = 0.050 < 0.06 should be evaluated as good.

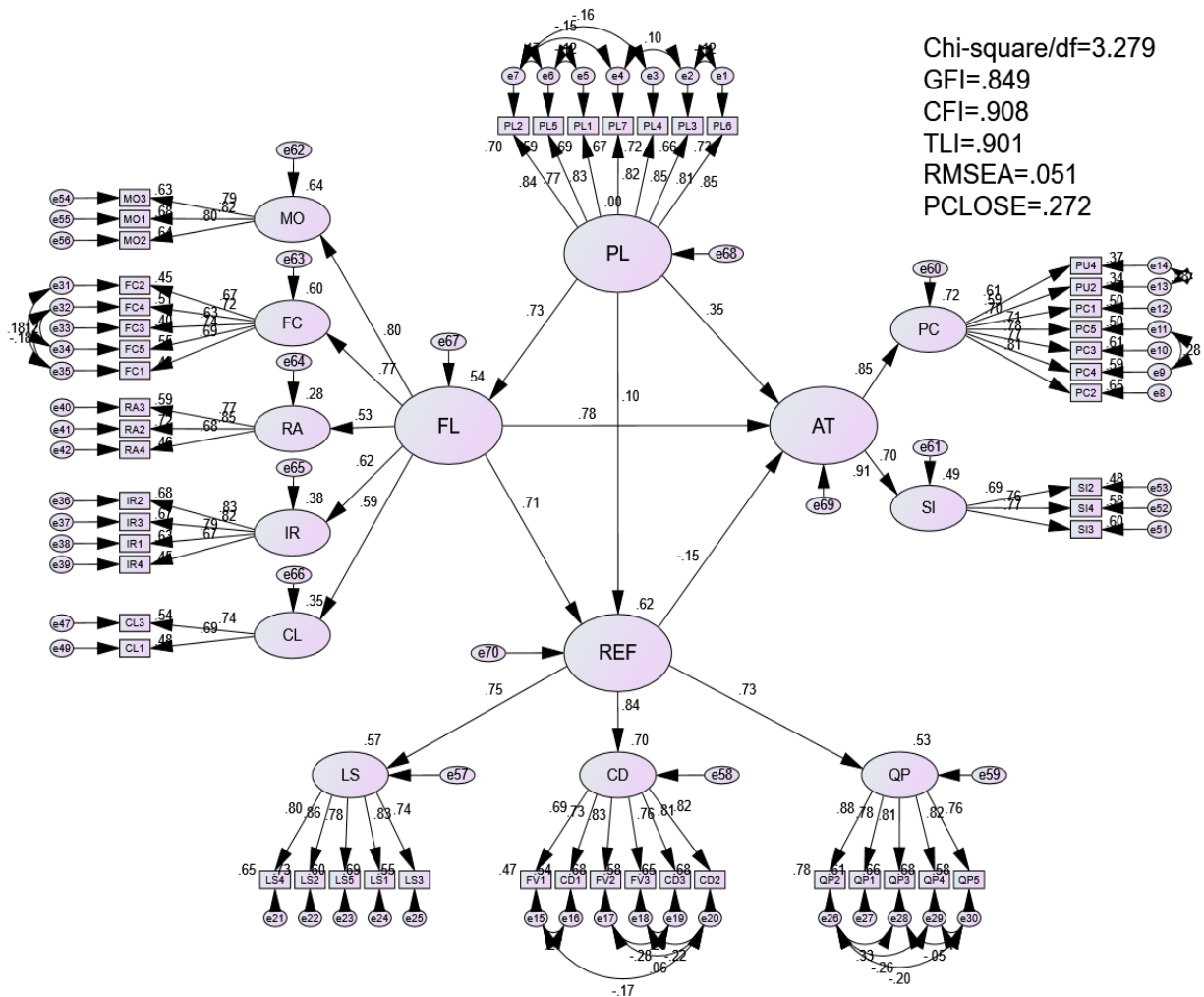


Figure 3. SEM results of the theoretical model

Source: Calculation result from SPSS 26 and AMOS 24

Table 4. Hypothesis testing results

Hypothesis	Relationship	Standardized Regression Weights	P-value	Conclusion
H1	FL ← PL	0.735	***	Accept
H2	REF ← PL	0.104	0.065	Accept
H3	AT ← PL	0.348	***	Accept
H4	REF ← FL	0.706	***	Accept
H5	AT ← FL	0.782	***	Accept
H6	AT ← REF	-0.147	0.037	Accept

Source: Calculation result from SPSS 26 and AMOS 24

According to **Figure 3**, the criteria to measure the model's fit show that the Chi-square/df value = $3,279 < 5$ should be assessed as acceptable. The GFI coefficient = 0.849 ranges from 0.8 to 0.9 but is still acceptable (Hair *et al.*, 2014). CFI value = 0.908 is good, TLI value = 0.901 and RMSEA coefficient = $0.051 < 0.06$, so it is also considered good.

The results of **Table 4** indicate that most of the hypotheses are accepted at a 1% significance level (95% confidence level), with the exception of hypotheses H2 and H6, which are found to be significant at a 5% significance level (95% confidence level). The standardized regression coefficients show that the factor with the strongest impact on hypothesis H5 is 0.782, which is the largest among all the factors. The factors with the strongest impact on hypotheses H1, H4, and H3 have standardized regression coefficients of 0.735, 0.706, and 0.348, respectively. The level of influence of hypothesis H6 is the lowest, with an impact coefficient of -0.147.

4.3. Results discussion and policy implications

Based on the results of the analysis and model study, the authors found that:

The findings of this study confirm the direct impact of “Policies” on “The ability to use financial leverage”, “Behavioral attitude”, and “Real estate features”, thereby leading to the acceptance of H1, H2, and H3. These results align with Dale & McLaughlin (2000) and Wu *et al.* (2016). The findings posit that current government policies, such as tax regulations and real estate transaction processes, have contributed to the increased transparency and openness of the real estate market. The simplification of loan procedures and the provision of customer care have also positively influenced individuals investing in real estate. Moreover, the study's findings are consistent with Hanson & Hillier (1998) and Reis (2003), which indicate the significant impact of policies on people's attitudes towards real estate transactions. Additionally, Smith *et al.* (2008) and Ogu & Ogbuozobe (2001) found that policy plays a crucial role in creating a favourable environment that supports investment in housing for households. Residential infrastructure development also enhances the location and living space around the property, thereby increasing its value. The research results provide important implications for policymakers and financial intermediaries in the real estate investment market. The authors suggest that regulatory bodies prioritize providing timely, transparent, and clear information about the market to the public. In addition, long-term infrastructure and traffic development planning in residential areas should consider the interests of real estate users to create a favourable investment environment. Lastly, financial intermediaries should ensure transparency in their loan terms and procedures to facilitate informed decision-making by potential investors. These recommendations can help foster a more open and supportive investment environment in the real estate market, ultimately benefiting investors and the overall economy.

The findings of the study confirm that “The ability to use financial leverage” has a direct impact on both “Behavioral attitude” and “Real estate features”. Consequently, H4 and H5 are supported. These results align with Marx & Turner (2019), who suggest that borrowing for purchases and investments helps borrowers address their capital burdens

quickly. These findings are consistent with Liang & Osmadi (2015) and Mohamad *et al.* (2017). The analysis concludes that, besides their own capital, individuals who can acquire an immense amount of money tend to be more selective in their choice of real estate properties. They are more likely to invest in properties that offer more significant advantages and are worth the capital they borrow. Based on these findings, the research team recommends that relevant government agencies, credit institutions, and financial intermediaries improve their policies and regulations to increase the borrower's financial leverage. This could be achieved by clearly defining the beneficiaries of preferential loan packages in terms of interest rates and collateral and streamlining loan procedures. Such measures would positively impact the attitude of borrowers towards investment in real estate. Furthermore, the study suggests that strict regulations on real estate credit limits should be implemented to address the "bubble" situation that causes real estate prices to be higher than their actual value. This would promote sustainable development in the real estate market and prevent potential economic instability.

Hypothesis H6 suggested that the real estate features have a positive impact on the borrower's behavioral attitude in real estate transactions. However, the research results contradict this hypothesis. This finding is different from Rachmawati *et al.* (2019), which reflects the relationship between the reputation of real estate supply and social influences on buyers. In fact, the higher the reputation of the project owner, the less the buyer's attitude and behavior are affected by social factors such as advice from relatives or information on social networks. Moreover, the majority of the surveyed individuals in this study were relatively young, had a low frequency of real estate transactions, and purchased houses for the purpose of living. As a result, they did not have high requirements for the characteristics of real estate and did not pay attention to the high-end segment with high prices. The policy implications for buyers and investors are to prioritize information selection, trust the reputation of the project owners and providers, and avoid being influenced by irrelevant information to make informed decisions. Regarding policies, the research team suggests that managers should direct credit flows to the real estate sector to meet the real needs of the people, particularly in the social and affordable housing segments where supply is limited. Additionally, the imbalance between supply and demand in the high-end housing and villa segments, which currently demonstrate signs of excess supply, should be addressed.

4. Conclusion

The study provides valuable insights into the factors influencing the behaviour attitude of borrowers in real estate transactions in Vietnam, which have significant implications for credit loan models in the sector. Specifically, the study identifies three direct factors that influence borrower behaviour: "Government policies", "The ability to use financial leverage", and "Real estate features". The analysis reveals that "Government policies" affects both "The ability to use financial leverage" and the "Real estate feature". Furthermore, the study demonstrates that "The ability to use financial leverage" positively impacts "Real estate features". The findings suggest that financial intermediaries need to develop specific solutions to improve borrowers' access to credit in the real estate sector,

given its unique characteristics. Additionally, the authors offer recommendations for government agencies to promulgate policies that support the sustainable development of the real estate market in Vietnam. Overall, this research expands and enriches the existing theory of credit loans in the real estate sector, providing empirical evidence on the factors influencing borrower behaviour in Vietnam. The study's results have practical implications for financial intermediaries and policymakers, enabling them to make informed decisions that promote sustainable growth and development of the real estate market.

Despite the valuable contributions of the study, the authors acknowledge certain limitations that need to be addressed in future research. Firstly, the survey sample was only taken from certain places in Vietnam, such as Hanoi and other cities, which may limit the generalizability of the study. To overcome this, future studies can expand the geographic reach and increase the survey length to assess the differentiation of various demographic segments. Secondly, the study did not compare the access to real estate credit between those with knowledge and experience in the financial and real estate sectors and those with little knowledge and experience. Therefore, future studies can include the factor "Financial literacy" to analyze the influence of financial expertise on "Borrowers' attitude" in using financial leverage. Thirdly, the study did not explore the impact of "behavioural attitude" on "intention to use financial leverage". Thus, future research can expand the research model of influencing factors that affect the intention to use financial leverage in real estate transactions. Finally, the authors did not test the proposed solutions in practice, so the effectiveness of policy implications has yet to be evaluated. Future studies can investigate real estate credit from the perspectives of credit institutions and managers to provide more comprehensive results.

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ANNOUNCEMENT EFFECT OF CORPORATE BOND ISSUANCE ON VIETNAMESE LISTED COMPANIES' STOCK PRICE

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Abstract

Corporate bond has become increasingly prominent in the context of Vietnam as sustainable capital instruments and the integrity of capital market attract more attention of investors as well as the Government. Vietnam Chamber of Commerce and Industry (VCCI) (2022) reported that the corporate bond market reached approximately 20% of national GDP by the end of 2022 as a result of the Government effort and local enterprises capital demand. In turn, the purpose of this paper is to investigate the effect of corporate bond issuance announcements on the stock price of issuing companies. The announcements effect of corporate bond issuance is measured by the abnormal returns which are calculated using the market - adjusted returns (MAR) model (Altman et al., 2004; Soongwang, 2007) while the stock price is measured by market value to asset replacement cost (Tobin, 1969; Xia & Fang, 2005). The research is conducted with 410 listed companies and 1078 firm - year observations. The key findings show that positive cumulative average abnormal return resulting from corporate bond issuance positively affect stock price. Based on the result, it is evident to confirm that there is a signaling impact of bond issuance announcements on stock price indicating that the market considers bond offers to be a favorable news.

Keywords: *Corporate bond, Corporate bond issuance, Stock price, Listed companies.*

1. Introduction

In the past, companies in emerging countries were interested in borrowing from banks (Luengnaruemitchai & Ong, 2005). However, the interest rate charges of banks are relatively high and they are usually reluctant to issue loans or debentures with long maturities (Eichengreen, 2004). As an alternative, companies can issue long-term bonds at low interest rates (Navarrete, 2001) and deduct interest payments as business expenses. In the context of Vietnam, as an emerging economy, the VCCI survey (2020) reported that that the majority of surveyed firms (47.9%) evaluated corporate bonds as moderately importance debt instruments beside loans from bank and other financial institutions (Chart 1). While the number of firms considered the bonds as slightly important and unimportant are 22.9% and 10.3% respectively, the smaller number of firms evaluated this debt instrument as very important and important are 1.5% and 17.4%. The statistic confirmed that the corporate bond market has been increasing considerably in the recent years. The studies of bond offerings to the public has been an interesting debate because of the importance of this corporate financing alternative.

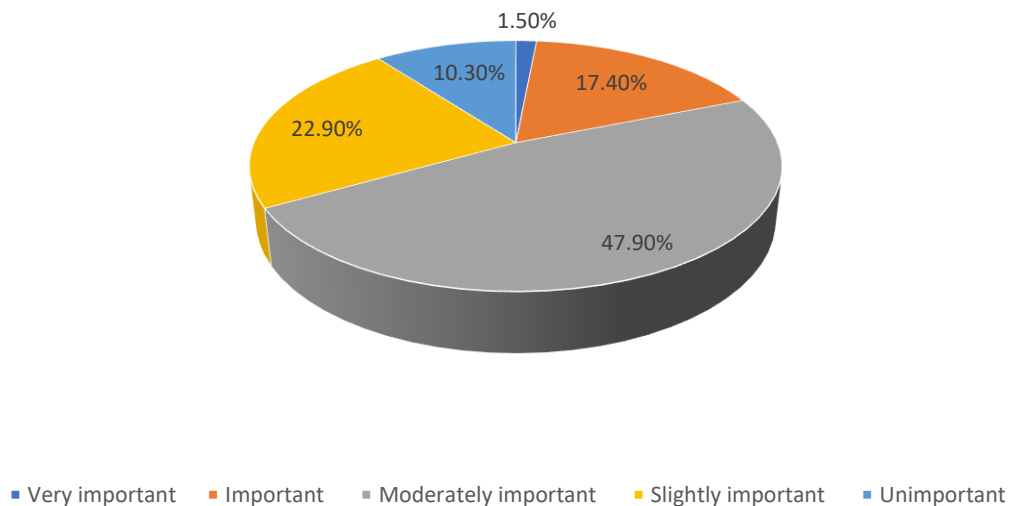


Figure 1. The importance of corporate bonds from enterprises' viewpoint

Source: VCCI (2020)

As the bond market has been becoming the major source of funds, there is a possibility that it could have an impact on corporate cost of capital as well as firm value (Kong & Shen, 2007; Sierpińska & Bak, 2016; Bessembinder et al, 2018; Huaman et al, 2022). Several studies such as Gebhardt et al (2005), Zhang et al (2020) found that bonds and stocks have the same unique operating cash flows and could influence fundamental corporate capital. Therefore, statistical correlations between bonds and stock characteristics as stock price, credit spread, stock volatility are expected. In this sense, one convincing explanation for the correlation between bond issuance and stock price is investors and public evaluate the issuance behavior as a favour news.

In summary, from academic and practical perspectives, the study aims to provide evidence to fill the “research gap” in respect to existing literature review of corporate bonds and stock price. In detail, the study focuses on two main objectives: firstly, identify the measurements of announcement effect of corporate bond issuance and stock price; secondly, empirically examine the impact of corporate bonds issuance on stock price of listed companies within the typical context of Vietnam.

In order to achieve the above objectives, the study firstly apply VOSViewer to depict a comprehensive and reliable literature review of research issues. VOSViewer is an updated and modern tool of bibliometric analysis method that helps researchers to visualize prior studies by co-authorship, co-citation, keywords occurrence and bibliographic coupling research patterns, trends and connection networks. Secondly, the study summarizes measurement method of announcement effect of corporatate bond issuance and stock price basing on literature review. Ultimately, the research tests the empirical model to identify correlation between research objects.

To present these above issues, the paper is structured as follows. Section 2 reviews existing literature review while Section 3 introduces research methodology including data

collection, variable measurement and proposed empirical model. Section 4 represents the empirical analysis including research result and robustness tests. Section 5 is overall conclusion, contributions and some identification for future research and some limitations of the study.

2. Literature review and hypothesis development

2.1. Bibliometric analysis on corporate bond and stock price

In order to develop a comprehensive and reliable literature review on the research issues, the paper applies the bibliometric analysis and the bibliographic visualization maps from the data of 207 academic publications on Scopus database from 1974 to 2023 via VOSViewer. The method obtains relevant information on scientific production, following the methodological structure of a rigorous bibliometric process, which ranges from the search for descriptors or keywords to the configuration of visualizations of tables and maps that allowed to consider the contributions by authors, journals and topics that have shaped the evolution of this field of study.

The generations of bibliometric maps present the overall understanding on the intellectual structure of corporate bond and cost of capital made up of 207 articles where the analysis of co-occurrence of author keywords (Illustration in chart 2). The map identified five main lines of association between corporate bonds and stock market, corporate social responsibility, credit risk, stock returns, credit spread.

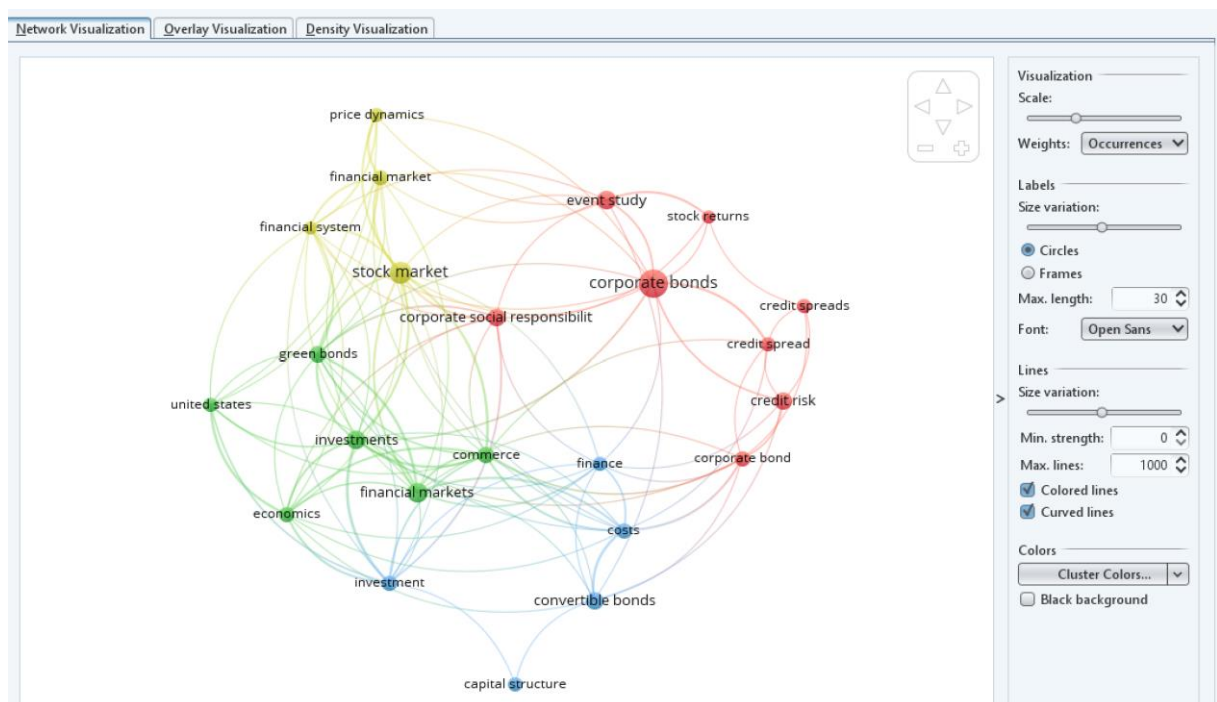



Figure 2. The association lines between corporate bonds and other typical keywords

Source: Author's assessment based on Scopus databases by VOSViewer

Table 1 presents the authors who had the highest cited publications. In the scope of this research, the paper focuses on these typical articles to accumulate and analyze research

trends of existing literature review. The result shows that a study by John (1993) “Top-Management Compensation and Capital Structure”, which was published on the The Journal of Finance has been cited by 403 times and a study by Ramelli (2020) “Feverish stock price reactions to COVID-19”, which was published on the Review of Corporate Finance Studies has been cited by 376 times are classical outstanding research.

Table 1. Statistic of highest citation publication in literature review

 Verify selected documents			
Selected	Document	Citations	Links ▼
<input checked="" type="checkbox"/>	ramelli s. (2020)	376	1
<input checked="" type="checkbox"/>	tang d.y. (2020)	213	1
<input checked="" type="checkbox"/>	reboredo j.c. (2018)	236	1
<input checked="" type="checkbox"/>	gabaix x. (2012)	298	1
<input checked="" type="checkbox"/>	brockman p. (2010)	226	1
<input checked="" type="checkbox"/>	john t.a. (1993)	403	1
<input checked="" type="checkbox"/>	shiu y.-m. (2017)	212	0
<input checked="" type="checkbox"/>	longstaff f.a. (2010)	348	0
<input checked="" type="checkbox"/>	gilchrist s. (2009)	210	0
<input checked="" type="checkbox"/>	amihud y. (2005)	284	0
<input checked="" type="checkbox"/>	lamont o. (1998)	269	0
<input checked="" type="checkbox"/>	eckbo b.e. (1986)	283	0

Source: Author’s assessment based on Scopus databases by VOSViewer

2.2. Literature review on corporate bond issuance and stock price and hypotheses development

Corporate bonds benefit issuing organizations by either attracting more investors (Ramelli, 2020) or positively changing in the trading activities of a company’s common stock (Lewis et al, 1999; Longstaff, 2010). Reboredo (2018) found that changes in stock prices are positively related to leverage changes, indicating that firm value is positively affected by changes in debt level. The author also noted that financial leverage could increase a firm’s value but also increases portfolio risks. In addition, the research result showed that when a company promote corporate bond issuance, the rate of return can be magnified.

Signaling theory which was demonstrated by Ross (1977) illustrating a strong assumption that corporate managers are better informed about their companies rather than their creditors or investors. It means that they are insider and they could achieve a better position to foresee their companies’ future cash flow. Any signal they suggest that cashflows that are better than expected may enable investors to create value. Potential investors are therefore constantly watching for these types of signals. The theory affirms that the financial structure of a company provides information about its financial situation and company quality and that the values of company will increase with their levels of leverage. Higher debt ratios could be a positive signal of management expectations concerning future cash flows.

The theory of information asymmetry also has been applied in the research field of corporate bond issuance to explain a problem in debt markets of borrowing and lending. In

these typical markets, the borrower is more equipped information about his financial position than the lender. This results in information asymmetry situation and a market failure (Bessembinder et al, 2018). Several authors suggest that the private equity such as corporate bonds or self - financing are the financial intermediates best suited for situations where information is significantly asymmetric (Bernile et al, 2007; Gompers, 1995). Roll (1988) confirmed that change of prices is based on the new information, so stock prices reflect some of new information in the stock market. In accordance with the studies of Bessembinder et al (2018), Zhang et al (2020), Huaman et al (2022), Krebbers et al (2022), the disclosure requirements of corporate bond issuance increase information exposure by directly reducing the asymmetric information between corporate insiders and the debt market participants. As a result, both parties gain benefit from corporate bond issuance by reducing corporate information asymmetry.

Prior research such as Titman (1985), Kim and Ryan (2013), Kim and Jeon (2015), Sierpińska and Bak (2016) state that investors often follow subjective norms when they form their investment portfolios. Some findings suggest that common subjective norm constrained institutional investors are frequent issuance, good credit rating, the Government's policy. In addition, identification from existing literature review show that firms with bond market access could be considered to be larger, have stronger credit ratings and higher reliable level of leverage and these characteristics are attracted the investors demand. In spite of the fact that investor demand is higher for firms with lower leverage, investors seem to be more interested in frequent issuers in the bond market. These behaviors are explained by debt sourcing theories that proposes that a firm build reputation in credit markets through borrowing and repaying private debt initially, and that repeating this process over time allows the firm to build a reputation in credit markets (Diamond, 1991). Several academic research prove this statement and conclude that debt market liquidity improves after issuing corporate bonds (Bolton and Freixas, 2000; Bolton and Freixas, 2006; Dangel and Zechner, 2004; Ni and Giles, 2010). Overall, corporate bonds issuances will attract investors' attention; therefore, debt market liquidity improves after issuing the bonds and as a result the stock price positively increase (Diamond 1991).

From the viewpoint of positive corporate bond issuance effect on stock price, several studies of Tang & Zhang (2020), Vasylieva et al (2021), Frino et al (2019), Ammann et al (2006), Chen et al (2005) found significant positive abnormal returns following the issuance of bonds. For the Japanese listed stock exchanges, Kim & Stulz (2002) found that 0.23% stock price reactions to bond issue announcement. The prior research contributed evidences to existing literature review, however, there is still little research in the context of emerging economies.

From the well-established arguments in the literature review, the paper proposes the following hypothesis:

Ho: Corporate bond issuance has a positive impact on stock price

3. Method

3.1. Data and sample selection

All data in this paper refer to firms traded on Vietnamese Stock Exchanges including Hanoi Stock Exchange (HNX) and Hochiminh City Stock Exchange (HOSE) during the seven consecutive years from 2016 to 2022. The sample includes public debt issuance by companies that have no outstanding debt securities at the time of issuance. The study excludes private placement of debt issues. The final data used in this study were reduced to 410 listed companies (issuers) after excluding non-public listed companies, financial institutions and insurance companies, and companies with other major corporate events such as bonus issuances, dividend announcements and stock splits, as well as those with missing data and outliers. Furthermore, to have clean data, companies with existing long-term debt on their balance sheets were also excluded.

Because it is quite common for companies to issue securities several times during one year, meaning there are multiple yearly issues, the method of De Haan and Hinloopen (1999) is employed to make the necessary adjustment so that the multiple issues are aggregated into a single annual figure. In addition, an incremental approach is used to analyze the determinants of new debt issues (Hovakimian et al., 2001; Denis & Mihov, 2003). This approach allows for the identification of companies that have no outstanding debt securities at the time of issuance and therefore enables a more accurate investigation of the company variables that contribute to the debt securities issuance decision.

Event study is used to estimate and draw inferences about the impact of bond issuance on the issuing companies' equity market behavior. The issue date is used instead of the announcement date because the issuance of bonds is generally associated with major corporate events, as evidenced by the 60% of bonds issued for new investment and merger and acquisition (M&A) activities in 2007 (Bank Negara Malaysia, 2007). When the announcement was initially made, the major corporate activities were most likely of higher concern to the market and its reaction can therefore be attributed to the corporate news on M&A or investment activities. As such, it is believed that those earlier announcements indicated more concern over the major corporate events rather than their accompanying financing choices. The actual effect on the financing choice would be felt only upon the issuance announcement. Moreover, according to Kapoor and Pope (1997), it is appropriate to use the issue dates to avoid the problem of uncertainty because some announced proposed bonds are withdrawn. Market reaction therefore may not occur until just before the issue date. This is further supported by Chen et al (2005), who found that only one-third of announced debt issuances were successfully issued.

The investigation window is from day $t=-60$ through day $t=+60$. The pre-event investigation window therefore ranges from day $t=-60$ to $t=-1$ and the post-event investigation window ranges from day $t=+1$ to $t=+60$. The confounding effect is not an issue because companies with major corporate events that are not associated with bond financing are excluded from the sample.

This study uses daily data to compute abnormal returns because this approach provides smaller standard deviations than using monthly returns (Brown & Warner, 1985). The use of daily returns is potentially more effective in that it permits researchers to take advantage of precise information about the specific day of the month on which an event takes place. In accordance with Martel and Padron (2006), the use of daily data reduces the possibility of other types of news being included in the effect. Likewise, Kothari and Warner (2006) also state that the use of daily rather than monthly security return data permits more precise measurement of abnormal returns and more informative studies of announcement effects.

3.2. The proposed empirical model and variables measurement

3.2.1. The proposed empirical model

To investigate the announcement impact of corporate bond issuance on stock price, this paper applies methods of previous studies in literature review such as Tang & Zhang (2020), Vasylieva et al (2021), Frino et al (2019), Pandey (2004), Buferna (2005), and Guha & Kar (2006). The regression model is used in the study as following:

$$Q_{i,t} = \alpha + \beta_t \text{CAR}_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$Q_{i,t} = \alpha' + \delta_1 I_{i,t-1} + \delta_2 \text{AsyInfo}_{i,t-1} + \varphi \text{ContVars} + e_{i,t} \quad (2)$$

Where:

The dependent variable $Q_{i,t}$ is firms i 's Tobin's Q ratio in t , which in the firm market value over replacement cost of firm's asset, so it can be viewed as a standard stock price.

The independent variable CAR is the cumulative abnormal returns, which is obtained by summing up the abnormal returns.

$\text{AsyInfo}_{i,t-1}$ is the measure of information asymmetry.

3.2.2. Variables measurement

Dependent variable

$Q_{i,t}$ is firms i 's Tobin's Q ratio in t , which in the firm market value over replacement cost of firm's asset, so it can be viewed as a standard stock price. According to Tobin's Q theory, when Q is more than 1, the market value is higher than the replacement cost and the cost of equipment for the new factory is lower than the firm's market value, so the firm inclines to increase the investment cost. Otherwise, when Q is less than 1, the market value is lower than the replacement cost, so the firm inclines to decrease the investment cost.

The specific calculation is stated above, in which $\text{Asyinfo}_{i,t}$ is the measure of information symmetry. In the scope of this paper, the price delay measurement method is applied. This method was first proposed by Hou and Moskowitz (2005), which reflects how fast market information can be integrated in stock price. The reason why they construct this index is for measuring the speed with which certain stocks respond to market information. The more asymmetric information, the slower stock prices will respond to new information, as well as a greater degree of price delay. Therefore, the price delay is a good measure of the degree of asymmetric information. Specifically, it can be estimated as following regression:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \sum_{n=1}^4 \delta_i^{-n} R_{m,t-n} + \varepsilon_{i,t} \quad (3)$$

where $r_{i,t}$ is the return of firm i at time t , $R_{m,t}$ is the value-weighted market index at time t .

According to Hou and Moskowitz (2005), the stock itself is not excluded. Using the estimated coefficients from regression, measurement of price delay for each firm at the end of fiscal year is computed. First, R^2 is calculated by estimated regression (3). Then, the price delay is calculated as following:

$$\text{PriceDelay} = 1 - \frac{R_{\delta_i}^{2(-n)}}{R^2} \quad (4)$$

Because our tests are based on fiscal year data, we compute measure of price delay (Delay) as Hou and Moskowitz (2005) for each firm at the end of fiscal year by estimated regression (3) using daily stock return. Kong and Shen (2007, 2008) give further research on China stock market R^2 and Delay index, and they found both are related to information environment.

Independent variable

The independent variable CAR is the cumulative abnormal returns representing the announcement effect of bond issuance. The abnormal returns in this study are calculated using the market-adjusted returns (MAR) model in accordance with studies of Altman et al (2004), Charitou et al (2005), Agrawal et al (2006), Soongswang (2007). In the MAR model, the stock returns are compared to an expected return of the market over the event period. For each sample security, the return on security i ($R_{i,t}$) for the time period t relative to the event is:

$$R_{i,t} = R_{m,t} + e_{i,t} \quad (5)$$

where $R_{m,t}$ is the market return at time t , as calculated from a market portfolio or a market index, and $e_{i,t}$ is the component of returns that is abnormal or unexpected. The MAR model assumes that $\alpha = 0$ and $\beta = 1$. Given this return decomposition, the abnormal return, $e_{i,t}$ is the difference between the observed return and the market return:

$$e_{i,t} = R_{i,t} - R_{m,t} \quad (6)$$

Equivalently, $e_{i,t}$ is the difference between the return that is conditional on the event and the expected return that is not conditional on the event or the market return. Thus, the abnormal return is a direct measure of the (unexpected) changes in company value and returns associated with the event.

Following MacKinlay (1997), the abnormal return observations must be aggregated to draw general inferences related to the event. The aggregation is made along two dimensions: through time and across stocks. The following average company-unique return, in this case the average abnormal return (AAR), is estimated for each day surrounding the issuance of bonds:

$$\text{CAR}_t = \sum_{i=1}^N e_{i,t} / N \quad (7)$$

4. Results

4.1. Event study result

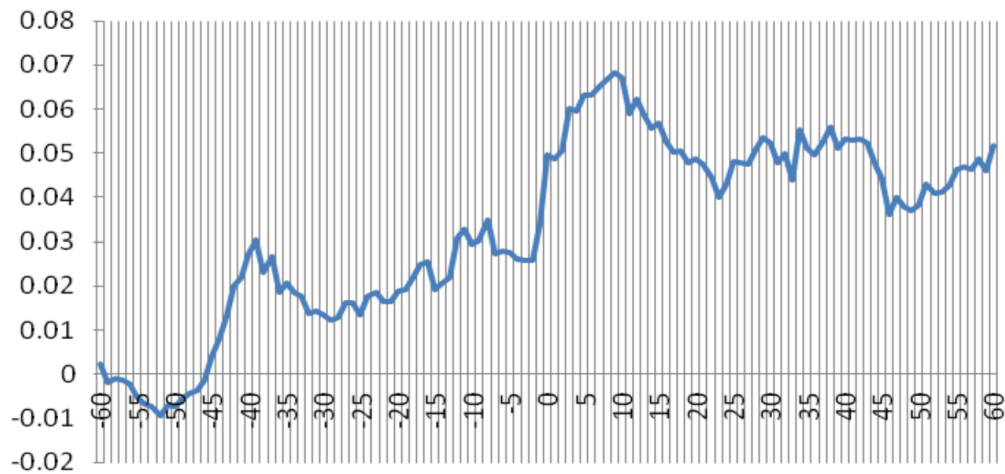


Figure 1. Cumulative abnormal return

Source: Author's assessment

Figure 1 presents the cumulative abnormal return (CAR) for bond issuers. Bond issuers generally experience an increasing CAR trend over the 60 days before ($t=-60$) the event day or the bond issuance date ($t=0$) and over the first 10 days ($t=+10$) of the post event period. There was a decline in CAR from 60 days to 55 days before the event date when there were abnormal losses. Thereafter, the cumulative abnormal return surged to a positive value starting from day $t=-45$, fluctuated between 1% and 3%, and finally increased substantially after day $t=-1$, one day prior to the event day. After the event day, the CAR continued to rise for three days and finally reached a peak of 6.84% on day $t=+9$. However, immediately after the ninth day, the CAR began to show a declining trend, dropping to a low of 4% at day $t=+23$. The CAR rose again after day $t=+24$ and fluctuated between 4.5% and 5.5% until 45 days ($t=+45$) after the issuance date but failed to be sustained thereafter.

To examine the proposed hypothesis of whether there are significant cumulative abnormal returns, a t test is carried out over different intervals and the result is shown in Table 2. Overall, bond issuers enjoy a significant positive cumulative abnormal return 10 days after the issuance date and 21 days surrounding the event day at the $\alpha=0.10$ and $\alpha=0.05$ levels, accepting the null hypothesis. A positive relationship between bond issuance and equity market return implies that increasing the leverage position of a company can have a positive impact on stock prices. The favorable information content and signal could also be attributed to the use of the funds from the bond instruments that are generally meant for productive purposes such as company growth and expansion. In summary, the equity market appears to generally react positively to the issuance of bonds.

A significant and positive cumulative average abnormal return 21 days surrounding the bond issuance date explains the signaling model of Ross (1977), which suggests that

increased debt levels convey positive news. Market participants perceive that higher debt levels show insiders' confidence that future cash flows will increase to service the higher debt levels. Additionally, Ross's (1977) signaling model also states that the information asymmetry between a company and outsiders leads the former to make certain changes in its capital structure that could change the relative position and/or power of capital providers (e.g., stockholders and debtors). Thus, the equity market reacts according to the changing capital structure. The finding of this study In contrast, the higher leverage is a signal that a company is confident about its ability to meet interest obligations and thereby indicates its ability to generate future cash flows, which ultimately translates into a higher company value.

Table 2. T test of different CAR intervals

Interval	CAAR	Interval	CAAR
-5 to -1	0.59%	-30 to -1	1.93%
+1 to +5	1.37%	+1 to +30	0.29%
-5 to +5	3.54%	-30 to +30	3.80%
-10 to -1	0.12%	-40 to -1	1.19%
+1 to +10	1.74%*	+1 to +40	0.38%
-10 to +10	3.42%**	-40 to +40	3.14%
-20 to -1	1.74%	-60 to -1	3.38%
+1 to +20	-0.09%	+1 to +60	0.21%
-20 to +20	3.22%	-60 to +60	5.16%

** significant at $\alpha = 0.05$; *significant at $\alpha = 0.10$

Source: Author's assessment

4.2. Multiple regression result

Table 6 illustrates the multiple regression analysis. The R^2 value of 64.4% implies the moderate impact of cumulative abnormal returns, which represents the bond issuance effect, on the Tobin's Q ratio, which represents the stock price. It could be explained that there has been a positive effect of abnormal return caused by the bond issuance announcement on the enterprise's stock price.

The regression analysis result is consistent with previous studies of Bhullar & Sahoo (2023), Saadaoui et al (2022), Li et al (2020) which suggested that an announcement of external financing signals might cause positive stock price reaction.

Table 3. Multiple regression result

Standardized Coefficient			
	Beta	t	Sig.
CAR	0.127	1.392	0.000
Adjusted R ²	0.644		
F	0.771		
Sig	0.		

Tobin's Q ratio which represents for stock price is the dependent variable

Source: Author's assessment

5. Conclusion

In summary, the research findings reveal that there is an increase in the cumulative abnormal return or the equity return of issuing firms. However, these figures are insignificant except during the 21 days surrounding the issuance date. A positive cumulative abnormal return, which represents for announcement effect of corporate bond issuance, indicates that an increase in debt has a positive effect on stock prices. This empirical result confirms that the announcement of corporate bond issues in the context of Vietnam could serve a market signal to the public and potential investors.

In spite of the above findings, the study maintains several limitations. Firstly, as highlighted by Davidson et al (1995) and Lewis et al (2003) the cumulative abnormal return measurement depends on the design and characteristics of a corporate bond. Therefore future studies should focus on different types of bonds such as maturity, coupon rate, convertible or straight debts. Secondly, several proxies of dependent variable should be considered. Specifically, in order to measure asymmetric information of the stock price, literature review addressed some methods such as price non-synchronization ($1 - R^2$) or information disclosure score (InfoIndex). Ultimately, the research sample could be aggregated based on business sector classifications. The effect of bond issuance announcement might differ for companies in different sectors. A small research sample applied in this study could be not relevant.

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THE IMPACT OF CAPITAL STRUCTURE ON FIRM VALUE OF LISTED LOGISTICS COMPANIES

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Abstract

The article studies the impact of capital structure on firm value of 40 companies listed on the HSX and HOSE in the period 2013-2022. The study uses regression methods such as: Pooled OLS, REM, FEM and finally GLS after performing the tests. The results show that capital structure measured by debt ratio (CTV) has a positive effect on firm value with the representative variable being ROE and Tobin's Q. The study also shows variables such as: business size (QUYMO), growth rate (TDTT), asset turnover (VQTS) has the same results with capital structure, but the age of the business (TDDN) gives the opposite result. At the same time, the study also showed that the current ratio has a negative impact on the ROE value but has a positive effect on the value of Tobin's Q. Meanwhile, there is no evidence that the assets structure (CTTS) have any impact on firm value.

Keywords: *Capital structure, logistics business, firm value.*

1. Introduction

Vietnam is regarded as a potential and appealing market for the growth of the transportation service business. However, despite its rapid growth, Vietnam's logistics sector remains underdeveloped in the foreign market. As a result, domestic transportation firms must establish clear business objectives and capital-use plans based on each suitable growth strategy, with the goal of increasing company value in order to obtain a competitive place in the market. The worth of a company is determined not only by its money, but also by its

capital structure. So the issue for managers is how to decide the financing source ratio to optimize enterprise worth while attracting both domestic and international money. That is the problem that runs through the research topic: “*The Impact Of Capital Structure On Firm Value Of Listed Logistics Companies*”

2. Theoretical Framework

2.1. Capital structure and Firm value

2.1.1. Capital Structure

Capital Structure is a financial term that represents the percentage of loaned capital to equity in total capital used by businesses for output and business operations. A company's capital framework is an essential component. It has a direct impact on the growth of those companies. As a result, each company must devise flexible strategies to optimize its capital structure and fit its present situation. The following factors are commonly used to assess company equity: general debt ratio, current debt ratio, long-term debt ratio, debt-to-equity ratio, and self-financing ratio (the ratio of equity to total assets). The general debt percentage is used as the dependent variable in this study.

2.1.2. Firm value

Previous research has characterized enterprise value in a variety of ways: Firm value is a gauge of an enterprise's economic success Grossman and Stiglitz (1977); Sarma and Rao (1969). Corporate value concentrates on the enterprise's capital structure, enabling the enterprise to compare the value of the firm with many various capital structures Quiry et al. (2011); Lin Woon Leong & Song Bee Lian (2022) contend that Enterprise value is the enterprise's market value.

From the definitions given in previous studies, enterprise value is understood as the sum total of monetary values that represent the benefits that the business receives now and in the future. Currently, there are many methods with different viewpoints to determine the value of enterprises such as: from the point of view of absolute valuation, there is the discounted cash flow method or the asset method... but from the point of view based on absolute valuation. In terms of relative valuation, indicators such as NPV, ROA, ROE, EPS, EVA, P/E, or Tobin's Q index... represent enterprise value. In this piece, we illustrate Firm value using both the ROE and Tobin's Q indicators. The ROE ratio measures success per dollar of stock spent by investors, but it is thought to represent only the book value of the company because it is computed solely from profit on the balance sheet. As a result, we use the Tobin's Q ratio to symbolize the worth of a business because it is a combination of a company's book value and market value, as well as investors' future expectations.

2.2. Research hypothesis

The majority of theories and observational data linked to capital structure and firm value have given dependable scientific grounds for the effect of capital structure on firm value. The paper suggests hypotheses and research models to clarify the research goals based on the results of earlier studies, which it will supplement and adjust to be more suitable.

2.2.1. Effect of capital structure on firm value

According to capital structure theory, a company's financial strategy can be used to fund investment initiatives with the aim of maximizing the worth of the company by deciding the capital structure (a combination of debt and equity). Meanwhile, sectors like logistics that must engage in fixed assets will probably be able to use loans more frequently. The typical explanation is that debt's cost of capital is frequently "cheaper" than equity's cost of capital. As a result, when using debt, businesses will benefit from "tax shields" because interest costs are exempt before tax, lowering the income tax that businesses must pay and raising the income tax rate of the owner's revenue, increasing the worth of the company. This is congruent with the findings of other writers, including Durand (1952), M&M (1958, 1963), Antwi et al. (2012), Mohammad et al. (2013), Hoque and partners associates (2014), Do Van Thang et al. (2010), that capital structure has a favorable effect on company value. The following is our study hypothesis:

H1: Capital structure has a positive effect on firm value

2.2.2. Effect of firm size on firm value

Horne & Wachowicz (2009) claim that company size has a favorable and significant effect on the firm's worth. Total assets can be used as a proxy for firm scale Taswan (2003), so the higher the total assets, the bigger the company. The simpler it is to obtain financing, the more investors are interested in the firm and the larger it is. This is so because investors are more likely to buy stock in large companies because of their status as stable entities. Investors have high hopes for big businesses because of this circumstance, which has caused the company's share price to rise on the capital market. The proof indicates that the size of big companies is expanding, which will cause investors to react favorably and raise the company's worth. Consequently, firm growth has a favorable impact on firm worth. Horne & Wachowicz (2009). There have also been successful experiments done by Vidhi Chaocharia and Yaniv Grinstein (2007), Hoje Jo and Maretno A. Harjoto (2011), and M. Hirdinis (2019). The study proposition is then made from there:

H2: Firm size has a positive effect on firm value

2.2.3. Effect of growth rate on firm value

Fahmi (2014) argues that growth rate is a measure of a company's ability to maintain its position in the industry and overall economic development. The growth rate of the business is calculated by the growth rate of total assets. Therefore, the growth rate of the business is proportional to the growth rate of the company's assets. According to research by Ardina Zahrah Fajaria (2018), companies with high growth rates show that the company is expanding its business or operating a high-productivity business. This will be a positive signal for investors to pay attention, so the demand for shares will increase, which can increase the value of the business. From there, we put forward the research hypothesis:

H3: Growth rate has a positive impact on firm value

2.2.4. Effect of asset structure on firm value

According to Nyamasege et al.'s research, the asset structure indicates the quantity allocated in each section of the assets, and the proportion of those assets defines the company's asset structure. The allocation is significant because it pertains to the amount of money required for the company's long-term objectives, which will influence investors' perception of the business D.Aggarwall (2017). The enterprise's investment index is based on its asset structure, which is determined by dividing fixed assets by total assets. This high ratio indicates that the company is moving in new paths, has a stable future investment, and has comparatively high business leverage. This sends a positive indication to investors and makes it simpler for the business to raise money, resulting in an increase in the company's worth. From there, we put forward the research hypothesis:

H4: Asset structure affects firm value positively

2.2.5. Effect of current ratio on firm value

The current ratio is a frequently employed metric to assess the capacity to pay current debt, claims Sawir (2015). Fraser and Ormiston's research from 2004 found that an organization's amount of current payments is a good indicator of its financial health. A greater current ratio will indicate that the company can settle its present current obligations promptly and easily, which lowers the company's risk of bankruptcy. According to research by Brigham & Houston (2018), buyers favor businesses with high liquid assets because they are thought to be capable of making payments on time. Conversely, the lower the value of the current ratio, the more the lower the liquidity of the company and can significantly negatively affect the value of the company. The higher the current ratio value, the higher the liquidity of the company, which can positively affect the value of the company. We then advance the following study proposition:

H5: Current ratio has a positive effect on firm value

2.2.6. Effect of the age of the business on firm value

The business age indicates how long the company has been in operation. The longer a company is in the market, the simpler it is to establish itself as a genuine expert in their field. However, according to Jovanovic's (1982) model, older firms are closer to the optimal state and thus grow less. This is due to the company's decreasing ability to adapt to new knowledge. Meanwhile, the development rate is an indicator that is closely linked to the value of the company, so the impact of the business's age is opposite to the enterprise's value. Studies by Evan (1987), Dunne et al. (1989) and Hughes (1994) also show a negative relationship between age and firm growth. From there, we put forward the research hypothesis:

H6: Firm age has a negative effect on firm value

2.2.7. Effect of asset turnover on firm value

According to Widodo (2018)'s study, the asset turnover ratio will assess how well a company's assets are managed in terms of producing total net income. The worth of a

company's overall asset turnover is one of the factors that prospective buyers will consider. As a company's overall asset circulation rises, it can be determined to be effective in asset utilization. A higher proportionate value of total asset movement will be joined by an increase in net sales, which will be followed by an increase in net profit, influencing the company's income. The greater the profit margin, the higher the company's worth. This is also true for the findings of R.B Utami and Prasetiono (2016) and Firdaus (2020). From there, we put forward the research hypothesis:

H7: Asset turnover has a positive impact on firm value

3. Method

The article uses quantitative research methods with secondary data from financial statements of logistics companies listed on HSX and HOSE that have been audited for the purpose of measuring the level of capital structure affecting the firm value to statistically analyze the most general description of the research sample. In addition, the article uses the Pearson correlation coefficient to consider the suitability of the research variables when included in the regression model and finally implement the regression models: Pooled OLS, REM, FEM and GLS as well as performing tests: F, LM, Hausman, variable variance, linear multi - addition, self -correlation and verification of secific regression coefficients (T - Test) with 40 listed Logistics businesses on the stock market in the period from 2013-2021 with Stata 15.0 software.

4. Results

4.1. Statistical descriptions

Table 1. Statistical Result

	Obs	Mean	Std. Dev	Min	Max
ROE	305	0.1694865	0.1235056	0.0226543	0.7152765
TobinsQ	305	1.593985	1.086125	0.0458431	9.101845
CTV	305	0.3078325	.1954742	0.0146128	0.8740852
QUYMO	305	13.57223	1.49952	10.60507	18.30619
TDTT	305	0.1590305	0.339814	-0.3395577	2.407059
CTTS	305	0.3973049	0.238752	0.001473	0.9108139
TDDN	305	20.18033	12.1424	5	63
TSTTNH	305	4.513582	6.302589	0.2769185	67.11175
VQTS	305	0.8134473	.6051071	0.0060693	3.606766

Sources: The research team

A total of 40 enterprises were investigated. There were 305 observations in total. The table above shows the maximum, minimum, mean, and standard deviation from 2013 to 2021.

The descriptive analysis for both dependent and independent variables is shown in the table above.

Logistics companies use nearly 0.3078 average debt in total capital. This ratio is much lower than the debt ratio of other industries according to research statistics of Le Thi Minh Nguyen, (2016); Dang and Do, (2021), Vo Minh Long (2017).

The average firm size (QUYMO) is 13.57. The average growth rate (TDTT) of logistics companies by 2022 is 0.159. Asset structure (CTTS) is measured by the ratio of residual value of tangible fixed assets with an average value of 0.3973. The asset turnover ratio (VQTS) has a pretty good value of 0.8134. This shows that the use of assets and capital to generate revenue of Logistics companies is quite effective. Logistics companies have an average age (TDDN) of 20.18 years and have a current ratio (TSTTNH) of 4.51 times.

4.2. Correlation analysis

Table 2. Correlation matrix result

	(ROE)	(TobinsQ)	(CTV)	(QUYMO)	(TDTT)	(CTTS)	(TDDN)	(TSTTNH)	(VQTS)
ROE	1.000								
TobinsQ	0.9472	1.000							
CTV	-0.1154	-0.121	1.000						
QUYMO	-0.0207	-0.011	0.515	1.000					
TDTT	0.1251	0.097	0.018	0.072	1.000				
CTTS	-0.0217	0.012	0.135	0.060	-0.064	1.000			
TDDN	-0.0422	-0.071	0.234	0.247	0.037	0.085	1.000		
TSTTNH	-0.0407	-0.044	-0.234	-0.326	0.010	-0.067	-0.056	1.000	
VQTS	0.0119	0.000	0.035	-0.043	0.026	-0.106	-0.084	-0.062	1.000

Sources: The research team

The correlation coefficient (r) has an small absolute value. This supports the argument that there is no multicollinearity among the model's explanatory variables. According to the correlation coefficient matrix, capital structure, firm size, firm age, current ratio are negatively correlated with both ROE and Tobin's Q. Meanwhile, growth rate is positively correlated with both ROE and Tobin's Q. Asset structure is negatively correlated with ROE but positively correlated with Tobin's Q. Asset turnover is positively correlated with ROE but do not have correlation with Tobin's Q.

4.3 Model estimation

For bothh models, research team will compare and select a suitable model among ordinary least square (OLS), fixed effects model (FEM), random effects model (REM) and generalized least squares (GLS).

4.3.1. The Breusch-Pagan test

In order to consider and select the appropriate model among the three regression methods, the research team used the Breusch-Pagan test and the Hausman test.

The Breusch-Pagan test shows $\text{Prob} > \chi^2 = .000 < \alpha = 5\%$, so with a statistically significant value of 5%, reject H_0 . That is, with the data collected, indicating that the REM modeling method is appropriate, OLS is not suitable because of the existence of random effects in each enterprise over time.

4.3.2. The Hausman test

After selecting the FEM model instead of the OLS method, the research team in turn considered the existing table data based on FEM and REM modeling methods. From the FEM and REM models, the authors will go to the Hausman test to compare the effectiveness of FEM and REM models.

Hausman's test results show that $\text{Prob} > \chi^2 = 0.2538$ in model 1 and $\text{Prob} > \chi^2 = 0.3721$ in model 2, both value $> \alpha = 5\%$, so there is enough evidence to accept the H_0 hypothesis. Thus, random effects method (REM) is more suitable than fixed effect model (FEM).

However, before analyzing in details the factors affecting firm value, the team research will use the following tests: auto-correlation, heteroskedasticity, and multicollinearity, and make the necessary corrections to modify the model.

Table 3. The results of the defect testing models

Test	Model 1	Model 2
Wooldridge test	$\text{Prob} > F = 0.0055$	$\text{Prob} > F = 0.0055$
Breusch- Pagan Lagrangian	$\text{Prob} > \chi^2 = 0.0000$	$\text{Prob} > \chi^2 = 0.0000$
Mean VIF	VIF= 1.147	

Sources: The research team

4.3.3. Auto-correlation test

The Wooldridge test is used to test whether auto-correlation exists for regression models. Place hypothesis:

H_0 : no autocorrelation phenomenon

H_1 : autocorrelation.

The test result for $\text{Prob} > F = .0055 < \alpha = .05$, suppose H_0 is negative, that means autocorrelation occurs.

4.3.4. Heteroskedasticity test

To test whether the variance was altered or not, the authors used the Breusch- Pagan Lagrangian test. Under the assumption:

H_0 : there is no change in variance

H_1 : there is a change in variance.

The test result show $\text{Prob} > \chi^2 < \alpha = .05$ in both models, so H_0 is rejected with statistically significant level of 5%, indicating that heteroskedasticity occurs.

4.3.5. Multicollinearity test

To detect the phenomenon of multicollinearity in the model, the author uses the VIF. The coefficients of VIF of the variables are less than 2, indicating that there is no multicollinearity.

The test results show that the auto-correlation (Prob > F = 0.0055), heteroskedasticity (Prob > chibar2 = 0.0000) occurs in both models. Therefore, the authors correct the defect of the regression model by generalized least squares (GLS) regression.

Table 4. Result of Generalized Least Squares (GLS) Regression

Variances	Firm Value (Represented by ROE)		Firm Value (Represented by Tobin's Q)	
	Coef	P- value	Coef	P- value
CTV	-0.4260348	0.022	-0.0504022	0.029
QUYMO	0.0258425	0.026	0.0032409	0.035
TDDT	0.1637605	0.003	0.0234983	0.003
CTTS	0.1515303	0.018	0.0228346	0.007
TDDN	-0.0084974	0.033	-0.0008528	0.080
TSTTNH	-0.001083	0.784	-0.0001492	0.797
VQTS	0.061663	0.026	0.0079268	0.041
_cons	1.217464	0.000	0.1161774	0.000

Sources: The research team

The results show that the current ratio does not affect the firm value. Capital Structure and Firm Age have negative impacts on Firm Value when measured in both ROE and Tobin's Q, whereas Firm Size, Growth Rate, Asset Structures and Asset Turnover Ratio have positive impacts on Firm Value.

From the result, the research team came up with the following two research models:

Model 1: Firm Value represented by ROE

$$\text{ROE} = -0.426 * \text{CTV} + 0.0258 * \text{QUYMO} + 0.164 * \text{TDDT} + 0.152 * \text{CTTS} - 0.0085 * \text{TDDN} + 0.0617 * \text{VQTS} + 1.217464$$

Model 2: Firm Value represented by Tobin's Q

$$\text{Tobin's Q} = -0.0504022 * \text{CTV} + 0.0032409 * \text{QUYMO} + 0.0234983 * \text{TDDT} + 0.0228346 * \text{CTTS} - 0.0008528 * \text{TDDN} + 0.0079268 * \text{VQTS} + 0.1161774$$

- Dependent variances: ROE, Tobin's Q.

- Independent variance: Capital Structure (CTV)

- Sub Variances: Firm Size (QUYMO), Growth Rate(TDDT), Asset Structure (CTTS), Firm Age (TDDN), Asset Turnover Ratio (VQTS).

4.3.6. Research hypothesis test results

From the above analysis, the research team has come up with the results of testing the following hypotheses:

Table 5. Result of testing hypotheses

Hypotheses	Result
H1: Capital structure has a positive effect on firm value	Rejected
H2: Firm size has a positive effect on firm value	Accepted
H3: Growth rate has a positive impact on firm value	Accepted
H4: Asset structure affects firm value positively	Accepted
H5: Current ratio has a positive effect on firm value	Rejected
H6: Firm age has a negative effect on firm value	Accepted
H7: Asset turnover has a positive impact on firm value	Accepted

Sources: The research team

From the test results, the research team came to the following conclusions about the research hypotheses:

H1: Capital structure has a negative effect on firm value

H2: Firm size has a positive effect on firm value

H3: Growth rate has a positive impact on firm value

H4: Asset structure affects firm value positively

H5: Current ratio has a no effect on firm value

H6: Firm age has a negative effect on firm value

H7: Asset turnover has a positive impact on firm value

5. Discussion and Conclusion

This research analysed and came up with conclusions about the direct impact of capital structure, firm age, firm size, growth rate, asset turnover ratio, current ratio and asset structure on the firm value of listed Logistics companies effect of these factor on firm value.

5.1. Discussions of the results

Capital structure (CTV): The research results show that capital structure negatively impacts both ROE and Tobin's Q. When businesses use debt, it will bring the benefits of tax shields, but at the same time, businesses will have to bear a huge burden, which is the cost

of financial distress. Especially for Logistics businesses facing a lot of business risks such as fluctuations in energy prices, input materials; competition between enterprises in the same industry; supply chain risks. This can also be the reason why businesses that use a lot of debt will easily go bankrupt, causing the value of the business to decrease.. This is consistent with Myers' hierarchical order theory (1977) and research results by Dang Ngoc Hung et al. (2019), Do Thi Van Trang and Pham Thi Van Huyen (2021),...

Firm age (TDDN): Research results show that business age negatively impacts both ROE and Tobin's Q. The older the business, the closer to the optimal condition and thus the growth level of the business will be less. Especially for the Logistics industry always have to try to change and adapt to the new transformation from technology in the era of social integration today. Since then, the value of long-term Logistics businesses may be reduced cause there is no change in the supply chain restructuring leading to the growth of the enterprise not catching up with the growth of the industry. The results of this study are consistent with earlier research by authors Evan (1987), Dunne et al. (1989), Hughes (1994),...

Firm size (QUYMO): The research results show that QUYMO variables have a positive impact on both ROE and Tobin's Q. The large businesses scale will tend to be more stable and more reputable in terms of economic potential, thereby attracting attention and the investment from many partners both domestic and foreign, helps the value of the enterprise's assets increase. In addition, large -scale enterprises will often have lower probability of bankruptcy, from which financial difficulties decrease, contributing to increasing firm value. This result is consistent with the research of Aggarwal and Padhan, (2017), Carpentier (2006), Ahmad and colleagues (2012),

Growth rate (TDTT): The research results show that the growth rate has a positive influence on both ROE and Tobin's Q. Business growth rate is measured by the growth rate of total assets. The higher the greater the asset growth, the greater the solvency of the enterprise's debt. This is suitable for logistics businesses because of a large amount of assets such as ships and boats will significantly help the operation of businesses in increasing the growth rate. This will help businesses avoid bankruptcy risks and increase firm value. This is consistent with the results of the research of Cheng & Co -colleagues (2010), Hermuningsih (2013), Abor (2005), ...

Asset Turnover Ratio (VQTS): The research results show that asset turnover ratio positively affects both ROE and Tobin's Q. The higher the ratio, the more efficient the business is at generating revenue from assets. Besides, the operational efficiency is associated with the firm value. The activities of Logistics businesses are often associated with assets such as machinery, boats, warehouses, etc. Therefore, the effective use of these assets will create high revenue for businesses and at the same time show that the business operates effectively, thereby increasing the firm value. This result is consistent with the research of Vo Minh Long (2017), Le Thi Phuong Vy et al (2013), Asiri et al. (2014) ...

Current ratio (TSTTNH): The results of the study show that current ratio is not statistically significant to ROE and Tobin's Q. This result is consistent with the study

conclusion of authors Asmaul Husna and Ibnu Satria (2019) that there is no scientific evidence on the impact of current ratio on firm value.

Asset Structure (CTTS): Research results indicate that asset structure has a positive impact on both ROE and Tobin's Q. Asset structure is measured by the share of tangible fixed assets in total assets. The larger the proportion of tangible fixed assets proves that firms invest a lot in their facilities and equipment and have many investment projects that can bring high profits. In particular, Logistics businesses require a large volume of fixed assets to serve their service activities. Therefore, Logistics businesses with a large proportion of fixed assets will often have abundant resources in operation and high firm value. This result is consistent with research by Liu Dehua (2021), Rindu Rika Gamayuni (2015), Nagaraja and Vinay (2015).

5.2. Recommendations and Conclusion

On that basis, the article proposes a number of recommendations in choosing a capital structure with the goal of both controlling financial risks well during operation as well as aiming to ensure the improvement of the value of firms listed on HSX and Hose.

The Covid-19 epidemic has severely affected Vietnam's society-economy. However, difficult realities also open up new opportunities with new trends, models and protocols in the production, circulation and consumption of goods globally. That makes Logistics firms have to promote their own internal strength, overcome difficulties, seize opportunities to get a breakthrough in the development process. In addition to inspection, cost reduction, human resource training, information technology investment, the role of capital structure policy is undeniable in raising the scale and reputation of enterprises in the market and increasing firm value. From the research results, the authors make some recommendations to increase firm value for Logistics businesses listed on the Vietnamese stock market as follows:

- Logistics businesses should consider speeding up the payment of short-term debts with long terms and high interest rates.

- For long-term loans, businesses should use that money to invest in large fixed assets because the benefits from those assets can offset the interest rates as well as the debt that the business has to bear.

- A joint-stock Logistics company can increase its charter capital by offering shares. Public offering of shares is a form of raising capital from outside widely because the subjects that can participate in buying shares include investors who are not necessarily professional securities investors. This approach will help increase charter capital, thereby increasing the efficiency, stability and development of the business due to its abundant capital. From there, businesses will have the opportunity to invest in business projects and without additional financial costs to borrow from banks and partners, and at the same time generate net profit to continue reinvesting in the business. However, businesses also need to consider carefully because increasing charter capital costs a lot in censorship as well as issuance.

- Enterprises should pay attention to improving operational efficiency to create large profits, help the capital of enterprises to be expanded, and contribute to limiting borrowing from outside.

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FACTORS AFFECTING TRANSFER PRICING OF FDI ENTERPRISES IN VIETNAM

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Abstract

The article studies the main factors in the determination of transfer pricing of Foreign Direct Investment enterprises (FDI) in Vietnam. The factors investigated in this article include profit management, financial difficulties, exchange rates, effective tax rates and audit quality. All statistics are collected from financial statements of FDI enterprises listed on HNX, HOSE and UPCOM from 2018 to 2021. All collected data were processed by Stata software in the form of a panel data model to conduct descriptive statistical analysis. Next, with the REM and FEM models, we can control for these separate effects. The following steps are conducted, respectively, as F test, Hausman test to select the appropriate model in the Pooled OLS model, REM model or FEM model with the research model. Finally, the research team uses the correction method by FGLS model to overcome the defects, if any, and shows the results of the independent variables that affect the dependent variable in the research model. The results of the study indicate that the enterprise's transfer pricing is negatively impacted by two factors: profit management and financial difficulties. Furthermore, the effectiveness of the audit quality is positively impacted. Additionally, the research has demonstrated that the transfer pricing is unaffected by the effective tax rate or the exchange rate. The article recommends the Vietnamese government, tax authorities and other related parties propose strict regulations to limit businesses from taking advantage of the negative factors of transfer pricing but still ensure to attract foreign investment capital into Vietnam. This application can be applied to the tax authorities of Vietnam and foreign countries in the management of foreign-invested enterprises.

Keywords: *Transfer pricing, Foreign Direct Investment enterprises, Profit Management, Financial Difficulties, Exchange rate, Effective Tax Rate, Audit Quality.*

1. Introduction

The role of investment, especially FDI, is considered as one of the most important contributors to the development of the economy. Since the promulgation of the Foreign Investment Law in 1987, Vietnam has officially opened to FDI and has become a potential destination for foreign investors due to its political stability and abundant human resources with cheap labor cost. FDI in Vietnam plays an important role in contributing to improving the market economy institution, changing the economic structure, forming several key industries and helping Vietnamese enterprises improve their technological capacity, competitive capacity, expanding of foreign relations and international economic integration.

For many years, the State has had preferential policies on tax and finance for enterprises to attract FDI, however, the act of transfer pricing negatively or the declaration and fulfillment of tax obligations of some FDI enterprises have caused losses of tens of thousands of billions to the national budget. Speaking at the seminar "Sharing tax fairness reports from the perspective of multinational corporations and banks" organized by Oxfam, Babeth (2017) said: 100 billion USD is the number that developing countries (including Vietnam) are losing every year due to tax avoidance activities of multinational corporations.

From an academic perspective, since the early 90s of the twentieth century, the determination of transfer pricing has become a hot topic. These studies have essential implications for policy makers, multinational corporations and other stakeholders involved in cross-border trade and investment. The results of these studies underscore the complexity and diversity of the transfer pricing context, as well as the importance of interdisciplinary studies to inform policy decisions and improve the global tax system. In developing countries in general and Vietnam in particular, research on factors affecting the determination of transfer pricing has not been widely mentioned. Moreover, the Covid 19 period is also a new point and there is no research during and after this period.

Stemming from the above theoretical and practical bases, the study on the topic "Research on factors affecting transfer pricing of FDI enterprises in Vietnam" aims to contribute more scientific and practical arguments to partially solve the problems that are posed.

The objectives of the study include (1) Clarifying the theoretical basis of transfer pricing and the transfer pricing situation in FDI enterprises operating in Vietnam, (2) Pointing out the factors affecting the transfer pricing of FDI enterprises in Vietnam, (3) Building a research model to analyze and evaluate the influence of factors on transfer pricing of FDI enterprises, (4) Based on the research results and the collected information, the study will propose some suitable solutions to minimize the negativity of transfer pricing of FDI enterprises and contribute to the development of the economy general economy in Vietnam.

Theoretically, the study has shown the level of influence and confirmed the impact of factors affecting the determination of transfer pricing of FDI enterprises in Vietnam. In addition, the topic has synthesized and accumulated from previous studies but put it in the context of the Covid-19 pandemic, thereby contributing and supplementing the existing theoretical basis of previous studies on the Covid-19 pandemic. factors affecting transfer pricing.

In terms of practice, the study has made a number of recommendations and proposals to the state and stakeholders in order to come up with appropriate strategies and solutions to minimize the reality of implementing transfer pricing that causes loss. exempt from state taxes, contributing to the development of the economy while ensuring the attraction of foreign investment capital into Vietnam.

2. Literature review and Theoretical framework

2.1. Literature review

2.2.1. Research on determination of transfer pricing

The concept of determination of the transfer pricing is no longer a new concept to economists. However, it is difficult to define this concept precisely. There have been many explanations given by previous case studies. As early as the 1900s, concepts of transfer pricing were introduced, typically Williamson's (1996) study that identified transfer pricing classified on the basis of cost, market price, and programming. linearity and profit sharing. While Jamal, Saleh and Karima (2008) classify the above methods based on market and non-market. In other words, transfer pricing is defined as the price charged to transfer a tangible and intangible asset, goods or services, raw materials, know-how and technology to its subsidiaries or affiliates (Aranoff, 2000; Davidmann, 1996; Doğan, 2003).

However, besides determining the transfer pricing in compliance with the law, businesses tend to take advantage of the loopholes in determining the transfer pricing to maximize their profits. Baistrocchi & Roxan (2012) also pointed out that downside and said that the determination of the transfer pricing is a subjective activity and taking advantage of that, multinational corporations intentionally use the loophole to minimize the risk of loss. most tax payable. Along with the views of previous researchers, Tran Xuan Hai (2012) argues that illegal transfer pricing is an act performed by business entities to change the exchange value of goods, services in relation to related parties or simply not at market prices, the main object of such behavior is price. However, Pham Minh Quoc (2019) argues that the issue of combating the illegal elements of transfer pricing has not yet been codified, which means that the concept has not yet been formally defined in Vietnamese law.

2.2.2. Research on transfer pricing control

From the very beginning, the government's help in controlling transfer pricing abusers is essential. In the context that the Vietnamese government is facing difficulties in preventing abuses of illegal transfer pricing and controlling transfer pricing activities at FDI enterprises, Hong Nhat Nguyen et al. (2020) shared that the government needs to come up with specific laws: a good transfer pricing database is also expected; the transfer pricing audit process needs to be stronger; Transfer pricing training courses should be introduced more to businesses. Besides, the research articles suggest that tax is also one of the factors that need to be controlled to ensure the positive in determining the transfer price.

In summary, we can see that controlling the determination of transfer pricing is always a difficult problem posed to enterprises in general and the state in particular. Based

on previous studies, it can be seen that the government needs to focus on defining clear tax provisions and tax incentives. In addition, businesses also need to focus on human resource management, audit process management and need to be trained in the most methodical and effective way.

2.2.3. Research on factors affecting transfer pricing determination

International studies on the factors affecting the intention to exercise transfer pricing of FDI enterprises have been widely developed, from which some remarkable conclusions have been drawn. The researchers focus on finding out the causes that will have a positive or negative impact on FDI enterprises implementing transfer pricing. In the United States, Al-Eryani et al. (1990) examined the influence of environmental variables and company-specific on the choice of international transfer pricing strategy. According to Susan (1992), the variables that are said to have an impact on the determination of the transfer pricing of the enterprise include 5 variables: size (size), conflict (conflict), common transfer pricing implementation target (objective), performance evaluation, and decentralization. Also, from the analysis of organizational, environmental and new factors is financial, Susan (1997) has shown the change in income that can occur between FDI enterprises in the United States and Canada. From there, it can be concluded that if important environmental and organizational factors are missing, transfer pricing methods can be selected by FDI enterprises in Canada to meet tax regulations, favorable conditions for income change. Later, when it comes to determining the transfer pricing in the UK market, Doğan et al (2013) clearly pointed out the influencing factors including legal, political, internal and external factors. outside. Earlier, a study by Sikka & Haslam (2014) showed that improper transfer pricing practice is deeply related to social conflict. A major factor in this is that companies report higher earnings, but as a result many societies become poorer.

2.2.4. Identify research gaps

In recent years, when the Covid-19 pandemic raged, the country's economy encountered many difficulties, domestic enterprises increasingly lost money and were at risk of bankruptcy. Along with that, previous studies can see that there are a variety of methods to take advantage of the negative side of the transfer pricing determination. However, foreign research papers are not suitable because of the location and time of doing research. With domestic studies, only surveying in a locality or small area should not be accurate enough. More specifically, during this period, there has not been any research paper that has really studied the factors affecting the decision to implement transfer pricing, including the period when the Covid-19 pandemic raged and when returning to the state of transfer pricing. new normal. In addition, two factors, which are profit management and financial difficulties in previous studies, are both intermediate and unanalyzed variables that have a direct impact on transfer pricing behavior. Seeing that gap, the research team decided to choose to conduct a research project on "**Factors affecting the determination of transfer pricing of FDI enterprises in Vietnam**" with the research objective: determine the factors affecting the transfer pricing determination of FDI enterprises in Vietnam and consider the correlation of those factors with the transfer pricing implementation of enterprises.

2.2. Theoretical framework

2.2.1. Agency theory

In the current economic climate, running and managing the business is frequently used to divide firm ownership. An agency relationship develops between the two parties when the owner grants the other party decision-making authority. The concept of problem arising from separation of ownership and control in agency theory has been confirmed by Davis, Schoorman & Donaldson (1997). As Jensen & Meckling (1976) stated that agency relationships sometimes lead to problems between managers and shareholders; conflicts arise because people are essentially important players in the economy, and each wants to achieve his or her goals. Agency theory assumes that differing interests between the two parties have resulted in each party trying to maximize its own profits while shareholders expect maximum and instant returns on their investments, while agents expect rewards for their work to be met by providing appropriate incentives. It is clear from the description above that there is a propensity for agents to conduct fraud within the firm, particularly with those with whom they have unique relationships. Agents can manipulate the actual conditions of the company, such as "beautifying" financial statements using creative accounting that deviates from the rules. Applying agency theory to this study, the research team wants to emphasize that these disagreements generally stem from the basis of benefit sharing, so it can be the basis for promoting fraudulent acts in the profession, especially taking advantage of loopholes in tax policy to maximize the amount of tax payable.

2.2.2 Resources - based theory

According to the enterprise resource theory (Wernerfelt, 1984), focus on analyzing: (i) tangible resources such as financial resources which is the capital contributed by the owner and funding; (ii) intangible resources can be knowledge and skills of managers, employees. Through the ability to accumulate strategies and harness those resources, companies can achieve a competitive advantage leading to above-average returns (Barney, 1991; Das & Teng, 2000; Dietrickx & Cool, 1989; Reed & Defilippi, 1990; Rumelt, 1984). Besides that, there is also a theory of business management business, to establish a relationship between home management, shareholders and related parties in order to accomplish the overall goals of the organization, through means of monitoring and control. The effectiveness of control and inspection expressed through the quality of information disclosed in the financial statements increase interest among the parties and are the basis for economic decision making (John, 1992). Resource-based theory focuses on optimizing a firm's resources to gain competitive advantage and to win in business competition. Applying resource theory to the study helps to explain that determining the transfer pricing at each stage based on resources is different. The determination of the transfer pricing can be considered as one of the loopholes due to its subjectivity to serve the self-interest of enterprises in development policies.

2.2.3. Signaling Theory

Signaling theory introduced by Michael Spence in 1973 is used to describe the behavior of parties when dealing with dissimilar information. One party chooses how to

convey (or signal) information, and the other chooses how to interpret the information. The party with a lot of information can faithfully and reliably broadcast signals to the less informed party. On the stock market, companies can choose to make announcements and signal to users about their financial status, good business results, projects with potential for development, the choice of appropriate accounting methods, etc. to convince investors of its business situation. Businesses that provide information about the quality or value of the business to investors by showing signals through loss-making activities but still calling for investors in increasing investment, dividend policy by choosing a reputable auditing company to audit reports finance (Riley, 2001). Applying signaling theory in a research model to interpret the audit quality factor through information sources provided to interested parties to have a basic awareness of the transfer pricing policy in foreign direct investment enterprises.

3. Method

3.1. Research models

Based on the theoretical basis of the premise of previous works, the factors affecting the determination of transfer pricing of FDI enterprises are selected including: 5 factors are Profit management, Financial Difficulties, Exchange Rate, Effective Tax Rate and Audit Quality. From there, the proposed research model is shown in the figure below:

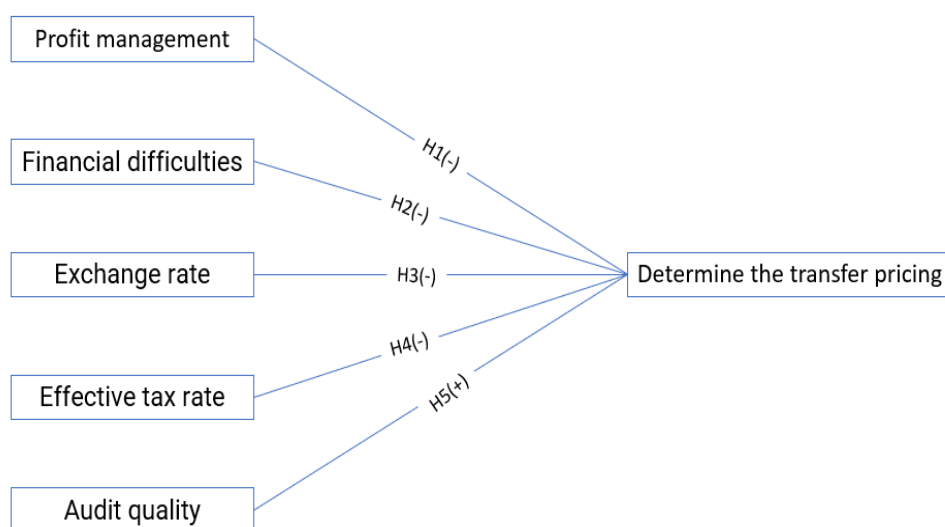


Figure 1. Research models

Source: Compiled by the author

In which:

[H1]: Profit management has a negative impact on the determination of transfer pricing of FDI enterprises

[H2]: Financial difficulties have a negative impact on the determination of transfer pricing of FDI enterprises

[H3]: Exchange rate has a negative impact on the determination of transfer pricing of FDI enterprises

[H4]: Effective tax rate has a negative impact on the determination of transfer pricing of FDI enterprises

[H5]: Audit quality has a positive impact on the determination of transfer pricing of FDI enterprises

3.2. Research Method

3.2.1. Quantitative research

All FDI enterprises listed on the Vietnam stock market are sampled in this study. Sample selection criteria:

- Enterprises publish consistent and complete financial statements from 2018-2021
- The enterprise does not suffer a loss to ensure the objectivity of all indicators in the financial statements and has all necessary information related to the calculated indicators used as variables in this study.

We find a total of 227 enterprises that satisfy the initial condition to be FDI enterprises according to the theory but can only use data from 127 enterprises that meet the criteria in our measurement method. study.

3.2.2. Data collection method

Research data is based on FDI enterprises listed on the Vietnam stock exchange. The data in the study are extracted from the audited consolidated financial statements provided by Vietstock and collected in 4 years 2018-2021 of 127 enterprises with 508 observations. The above data has been verified by auditing companies and the State Securities Commission, consistent across all different websites and information services. Data from the above 127 businesses guarantees no data gaps in any given year and is no exception. Thus, the team obtained a balanced panel data with 508 observations.

3.2.3. Data processing method

Collected data were processed by Stata software in the form of panel data model to conduct descriptive statistical analysis, find Pearson correlation coefficient and regression analysis by Pooled OLS model. However, the OLS model considers firms to be homogeneous, which can often lead to skewed estimates when these separate effects are not taken into account. With the REM and FEM models, we can control for these separate effects. The following steps are conducted, respectively, as F test, Hausman test to select the appropriate model in the Pooled OLS model, REM model or FEM model with the research model. Next, the research team carried out the model defect tests, the multicollinearity test by the VIF coefficient, the test of the variable variance phenomenon by the Breusch-Pagan Lagrangian multiplier test and the test for the phenomenon of non-variance. Correlation by Wooldridge test was used to find defects. Finally, the research team uses the correction method by FGLS model to overcome the defects, if any, and shows the results of the independent variables that affect the dependent variable in the research model.

4. Results

4.1. Descriptive statistics

Descriptive statistics were performed to test the effects of independent variables. The mean of the dependent variable for determining the transfer pricing (TP) is 0.1788. On the other hand, the mean value of the profit management variable (PM) and the financial difficulties variable (FD) are -2.9125 and 2.1671 respectively. The mean value of the impact of exchange rate variable (ER) is -0.0008 and a number also mentioned is the mean value of the effective tax rate variable (ETR) which is 0.2247. The average value of the audit quality (AQ) variable is 0.3445, which means that nearly 35% of enterprises in the sample use audit services of Big 4 auditing firms.

4.2. Pearson's correlation coefficient analysis

The correlation between the determination of transfer pricing (TP) measured through the financial difficulties variable (FD) measured through Christine Maria Monika, Naniek Noviari (2021) is significantly negative at 0.1486 in significance level of 1%. Similarly, the effective tax rate variable (ETR) also has a negative impact on the dependent variable, but at 0.0294. There is a clear negative correlation between the impact variables of the exchange rate (ER) and the audit quality variable (AQ) compared with the determination of the transfer pricing (TP), a significant positive correlation respectively at 0.0261 and 0.1184. Thus, the linear correlation of 5 independent variables including: profit management, financial difficulties, impact of exchange rate, effective tax rate and audit quality all reach the confidence level of up to 99%.

4.3. Check the fit of the model

Lagrange multiplier method (LM) with Breusch-Pagan test and Hausman test shows that the random effects model (REM) gives the best results with the research model. Comparing the three estimation models OLS, REM and FEM, the Breusch and Pagan Lagrangian tests give H₀ rejection results and Hausman results accept H₀, showing that the random estimation model (REM) is the best fit.

4.4. Check for model defects

The research team conducts a multicollinearity test by VIF coefficient and autocorrelation test by Wooldridge method. First, the group tested the phenomenon of multicollinearity using the VIF coefficient. The results of the multicollinearity test using the VIF coefficient show that the mean VIF is 1.03. The VIF coefficient < 2 indicates that the model does not have multicollinearity defects. Next, the research team tested the autocorrelation phenomenon of the series. From the results, p-value = 0.000 < 0.05, rejecting H₀ (with H₀ being the model without autocorrelation of the series). Therefore, the research model has a defect in the autocorrelation phenomenon of the series. To overcome this defect, the research team used a correction method using a practical generalized least squares regression model (FGLS).

4.5. Practical generalized least squares (FGLS) model

Table 1. Regression results by FGLS method

Variables	Normalization Coefficient	Sig
PM	-0,0008*	0,000
FD	-0,0193**	0,089
ER	0,0643	0,340
ETR	-0,0077	0,546
AD	0,0601**	0,068
cons	0,2035*	0,000

Source: Stata analysis results of the research team

*Note: * and ** indicate significance at 1% and 10%.*

After running the new study results, the team found that the profit management variable (PM) has a significant negative relationship with the determination of transfer pricing (TP) ($\alpha < 0.01$). It affects and negatively affects the determination of transfer pricing of FDI enterprises in order to minimize the amount of tax payable, so hypothesis H1 is accepted. The negative and significant association between the financial difficulties variable (FD) and the determination of the transfer pricing (TP) ($\alpha < 0.1$) supports hypothesis H2: Firms in financial difficulty will accept more risk in tax avoidance to keep capital stable. Furthermore, a significant positive association between the audit quality variable (AQ) and the determination of the transfer pricing (TP) ($\alpha < 0.1$) is clearly shown from the test results, so support hypothesis H5. The results for the variables of exchange rate (ER) and effective tax rate (ERT) show that neither of these variables has any effect on the dependent variable Y of this statistic. ($\alpha > 0.1$)

5. Discussion and Conclusion

5.1. Summary of the research results

First, the research team has clearly shown the relationship between the determination of the transfer price and the behavior of profit management. The research team's results show that profit management is a factor that has a negative impact on the determination of transfer price. It can be shown that the behavior of profit management, also known as a set of management decisions to maximize the value of the enterprise through inaccurately reflecting real profits in the short term, will be one of the factors contributing to the transfer of non-compliant prices.

Second, the group has pointed out that the financial difficulties of the enterprise is also a negative factor affecting the determination of the transfer price. The situation when an enterprise has difficulty in paying or inability to pay its due financial obligations will put the enterprise on a path of misery, approaching bankruptcy and dissolution. This can completely promote the negative aspects in determining the transfer price that is not in accordance with regulations.

Third, the authors have found a relationship between the determination of the transfer price and the exchange rate. The results given by the research team suggest that the impact

of the exchange rate does not affect the determination of the transfer price of the enterprise. The third hypothesis is not supported, it is possible that because the financial statements of the sample companies have many differential profits and losses due to exchange rates, the exchange rate is not the focus of the mining trend to determine the transfer price.

Fourth, the research team has found that the effective tax rate factor does not affect the determination of the transfer price of the enterprise. The goal of tax management can be divided into two goals, that is, the correct implementation of tax regulations and business efficiency to achieve the right profit and liquidity. Depending on each development policy and the perspective of each business based on the legal context of different countries will make different results.

Fifth, the authors have pointed out that the audit quality factor positively affects the determination of the transfer price of FDI enterprises. The quality of the audit will control the transparency and quality of a financial report, which promotes the clarity of the declarations as well as the information that the business provides on the report and reduces the risk of the transfer price.

5.2. Recommendations

5.2.1. For the earnings management factor

For *the State*, it is necessary to improve the professional level of inspection and supervision of financial reporting activities of enterprises. The State needs to create favorable conditions to improve the professional level and honesty for the resources of the tax system to carry out the task of supervising, inspecting and examining the transfer pricing performance of Vietnamese enterprises. Moreover, the State should strictly handle enterprises that commit frauds in earnings management. It is not necessary for the State to make excessive concessions to large corporations. In fact, both at the central and local levels, in order to attract large investors, the government or local authorities often have overly condescending attitudes or actions with large corporations, especially FDI enterprises or multinational corporations. This can cause concessions in tax policy for businesses.

In addition, *businesses* need to improve the control of transparency in financial reporting activities. The profit adjustment leads to incorrect accounting information and misunderstanding to information users. Each enterprise, especially FDI enterprises, are required to raise their awareness and responsibility to properly perform their obligations, understand the obligations as well as the close relationship between social responsibility and business activities.

5.2.2. For the financial difficulties factor

For *the State*, it is essential to establish financial policies to promote the development of enterprises. The State needs to be proactive, flexible and urgent in implementing quickly, effectively and comprehensively policies to stabilize the macroeconomy, control inflation, and consider solving difficulties for businesses as an important political task of the authorities at all levels. The purpose is for businesses to adapt and recover quickly after the financial crisis in order to limit, control and combat negativity in the intention to perform transfer pricing behavior. Furthermore, the State needs to supplement and improve its policy on capital market development. The capital market is an effective medium and long-term

capital mobilization channel for the economy in general. The State should continue to improve the legal system to create conditions for enterprises to develop synchronously in the capital market with the principles of respecting market rules, ensuring transparency and consistency with international practices.

Moreover, *businesses* need to focus deeply on production and business activities of products and markets. Businesses should seize opportunities, take advantage of each chance, propose plans to deal with fluctuations and financial difficulties; keep abreast of business trends; continuously improve digital transformation and apply science as well as technology in the production process, promote productivity, quality and efficiency of services and products.

5.2.3 For audit quality factor

For *the State*, it is important to continue to improve Vietnamese auditing standards. In fact, more and more foreign enterprises invest in Vietnam, so the harmonization of domestic and international accounting standards is an important requirement in line with the current trend of deep integration in Vietnam. In addition, The State needs to discuss and propose solutions to improve the quality and efficiency of the audit, especially focusing on attracting healthy foreign investment capital and clarifying the legal basis of the State audits in auditing the promulgation and implementation of the State's policies and management of foreign-invested projects. It is suggested that the State audit agency should integrate the audit of the implementation of foreign-invested projects after being licensed in order to minimize the waste of resources, promptly adjust the foreign investment capital projects that are behind schedule and apply preferential policies in illegal investment.

Besides that, *businesses* must strictly follow the audit process. FDI enterprises need to pay special attention in the preparation of financial statements, collect information and data in a complete and accurate manner, evaluate and review information. In addition, businesses are required to actively coordinate with government agencies and the State in the inspection and assessment of the audit quality of financial statements, contributing to creating a clear and transparent audit environment. FDI enterprises strengthen the responsibility of independent auditors in auditing financial statements.

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FACTORS AFFECTING CHALLENGES IN APPLICATION OF ACCOUNTING SOFTWARE: A STUDY OF SMALL AND MEDIUM ENTERPRISES IN VIETNAM

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Abstract

The paper investigates the factors affecting challenges in the application of accounting software in small and medium enterprises (SMEs) in Vietnam. The research object of the paper focuses on small and medium enterprises, which are currently applying a part of accounting software combined with manual accounting. The study carried out a survey of 144 accountants working in SMEs in Vietnam between May 2022 and August 2022. By using SPSS software to conduct exploratory factor analysis (EFA) and linear regression, the paper points out 3 factors including lack of efficiency, insufficient accounting skills and inadequate training that positively affect the challenges in the application of accounting software in SMEs in Vietnam. Based on the research results, the paper gives some recommendations to improve the application of accounting software in SMEs in Vietnam.

Keywords: *Accounting Software, Accountants, SMEs, Vietnam*

1. Introduction

In the era of information technology 4.0, accounting software plays an increasingly important role in assisting in enhancing the efficiency of operations, helping businesses save time and human resources in the operating process (Aziz et al., 2022). Accounting software is a system of computer programs to process information automatically through a software including data entry, processing transaction and reporting on the financial operations of an enterprise. When applying accounting software to help enterprises and accountants solve problems automatically and quickly related to preparing accounting books and financial statements of enterprises. Large-scale companies mainly apply accounting software to support accountants in processing transactions and financial reporting (Kurniawan and Diptyana, 2011). However, SMEs still apply manual accounting or apply a combination of manual accounting and accounting software. In addition, researches in the world and in Vietnam often study the factors affecting the application of accounting software, especially for large-scale enterprises. With the rapid development of technology, SMEs increasingly need technology for enhancing efficiency, accuracy and promptly process information for managers on a timely basis (Putra, 2019). Therefore, the topic "Research on factors affecting challenges in the application of accounting software in small and medium enterprises in Vietnam" is a practical topic and needs to be studied in order to offer solutions to support SMEs' increase in the application of accounting software.

2. Literature Review and Hypothesis Development

2.1. Literature Review

Mohd Sam (2012) studied the factors affecting the application of computerized accounting system (CAS) in SMEs in Melaka. Research results show that the adoption rate of computerized accounting system in SMEs in Melaka is high. The findings indicate that the CEO innovativeness, perceive ease of use and business competitiveness were negatively correlated with CAS adoption, but perceived usefulness was positively correlated with CAS adoption. In addition, the type of business and location of business have impact on the application of CAS. However, size (paid up capital, sales turnover and number of employees) does not affect the adopter.

Syafrudin (2012) analyzing the acceptance of accounting software from the perspective of accounting students when applying the Technology Acceptance Model (TAM). The study used factors including the perceived ease of use, the perceived usefulness, the attitude towards using, the behavioral intention to use, and the actual system usage that affect the acceptance of accounting software. The research results show that the perceived ease of use had a positive significant effect on the perceived usefulness, while the perceived usefulness had a positive significant effect on the behavioral intention to use and the behavioral intention to use had a positive effect on the actual system usage of the accounting software.

Putra (2019) studies factors affecting the interests of SMEs using accounting applications. A deductive approach is used to measure these factors. The findings of the research point out price, performance, stability, flexibility, implementation, customisation, and vendor have influence on the decision to use accounting software.

Aziz et al. (2022) interview 102 managers and IT staff of SMEs in Malaysia about the challenges in the implementation of accounting software system. The findings reveal that insufficient accounting skill and inadequate training affecting significantly implementation of accounting software. However, the lack of efficiency has no impact on application of accounting software.

In Vietnamese researches, there are several studies about factors affecting application of accounting software as following:

Thong et al. (2023) research the factors affecting the accounting software selection process of enterprises in Ho Chi Minh City. The study finds out that there are five factors affecting this selection process including user requirements, software provider, software features, cost of using technical software, and social influence. Long & Lieu (2023) study the factors affecting the use of digital accounting at small and medium-sized enterprises (SMEs) in Tra Vinh province. The study finds out 6 factors consisting of the information technology capacity of accountant, the information security, the role of government, the environment of enterprise, the cost of using digital accounting, and the perception of usefulness which have impact on the use of digital accounting at small and medium-sized enterprises (SMEs).

Through the analysis of international and Vietnamese studies, the main topics are to study the factors affecting the application of accounting software in enterprises in general, in SMEs in particular. There are few studies on the factors affecting the challenges in the application of accounting software in SMEs in Vietnam. From the research gap, the author chooses the topic title “Factors affecting challenges in application of accounting software: Study of small and medium enterprises in Vietnam”.

2.2. Hypothesis Development

Based on previous researches, three factors affecting challenges in application of accounting software in SMEs are established as following:

Lack of efficiency on the application of accounting software

The benefits of accounting software help businesses reflect data more accurately and reduce time in data processing, recording and reporting (Burgess and Paguio, 2016). Rahmawati and Puspasari (2017) point out because SMEs have fewer transactions, manual accounting is more efficient in comparison with application of accounting software. In addition, when the accounting software is deployed, there may be problems in operating the accounting software, it is possible that the accounting software in operation may be unstable, and there may be errors in data processing, leading to negative effects to submitting the entity’s financial statements. Therefore, the inefficiency of efficiency of accounting software is a factor affecting the application of accounting software in SMEs. Thus, the first hypothesis is established as follows:

Hypothesis 1: Lack of efficiency has a positive impact on the application of accounting software in SMEs

Insufficient accounting skills on the application of accounting software

With the development of science and technology, accounting software often supports accountants to process accounting data quickly and effectively. However, accounting software sometimes has errors in the processing because of the instability of the software. Therefore, in-depth accounting knowlegement support for accountants can detect errors in accounting software. The issue of accounting expertise of accountants working for SMEs is also a matter to consider compared to the lack of technical skills in using software (Pulakanam and Suraweera, 2010). Therefore, the lack of accounting skills is a factor that hinders the application of accounting software in SMEs (Aziz et al., 2022). Therefore, the second hypothesis is developed as following:

Hypothesis 2: Insufficient accounting skills has a positive impact on the application of accounting software in SMEs

Indequate training on the application of accounting software

Professional training associated with information technology is one of the important issues in generating resources of enterprises. With the 4.0 technology era, the support of computers including accounting software in processing accounting tasks becomes more

effective. Therefore, professional training in the proficient use of accounting software in SMEs is an important factor to support the successful application of software. Senior management needs attention and annual financial support for training activities related to accounting software, including software updates and support from technical experts in using computers (Ly, 2016). Aziz et al. (2022) point out that the inadequate training for accounting software usage is a challenge in the application of accounting software in SMEs. The final hypothesis is following:

Hypothesis 3: Inadequate training has a positive impact on the application of accounting software in SMEs

Based on hypothesis development, the regression model is established as following:

$$\text{CAS} = \beta_0 + \beta_1 \text{LE} + \beta_2 \text{IAK} + \beta_3 \text{IT} + \mathcal{E}$$

Where:

β_0 : Constant

$\beta_1, \beta_2, \beta_3$: Regression coefficient

LE: Lack of efficiency

IAK: Insufficient Accounting skills

IT: Inadequate training

CAS: Application of software

3. Method

Qualitative and quantitative research methods are two methods used in studying the factors that hinder the application of accounting software in SMEs.

The qualitative method is used in the form of semi-structured interviews with 10 experts such as accountants and chief accountants. Based on the interview results and combined with the previous researches, the author proceeds to build items to measure 3 independent variables and dependent variables. The author carried out the design of the survey questionnaire including 2 main parts. Part 1 is demographic information of interviewees such as gender, working experience, education level, and working position. Part 2 is the design of questions related to the items to measure dependent and independent variables.

The author uses Likert scale according to 5 levels: 1. Totally Disagree, 2. Disagree, 3. Neutral, 4. Agree; 5. Totally Agree to measure the effects of items on the independent and dependent variables. Survey mail is designed in the form of Google form and is sent to accountants and chief accountants working for SMEs. The survey period was conducted between May 2022 and August 2022 with the number of questionnaires sent out was 300. However, the number of responses was 185. After eliminating the invalid responses, the study selected 144 valid responses for data processing. SPSS 22 is used to conduct reliability testing of scales, exploratory factor analysis and linear regression analysis on factors hindering the application of accounting software in SMEs in Vietnam.

4. Results

4.1. Demographic information of responses

Table 1 shows the demographic information of interviewees. The information includes gender, working experience, education level, working position. The results of gender description show that 96 participants are female, accounting for 66.7% and 48 are male, accounting for 33.3%. This result is consistent because the number of women participating in accounting departments usually accounts for a larger proportion than men. Next in terms of working experience, the survey respondents had 5 to 10 years of experience in the accounting profession, including 48 people, accounting for 33.3%, while those with less than 5 years of experience and more than 15 years of experience. The same experiment had the same number of people as 36 people and all accounted for 25% respectively. Next is the group over 15 years old and under 5 years (all 36 people, accounting for 25%). The last is the group from 10 to 15 years with 24 people accounting for 16.7%. In terms of education level, the bachelor degree includes 102 people, accounting for 70.8%, followed by the master degree with 24 people, accounting for 16.7%, the group with at least number who had college degree with 18 people accounting for 12.5%. Regarding working positions, the number of accountants accounted for 61.8%, including 89 people while the chief accountant had 55 people (38.2%).

Table 1. Demographic information of interviewees

Gender	Frequency	Percent
Female	96	66.7
Male	48	33.3
Total	144	100
Working experience	Frequency	Percent
<5 years	36	25
5 years to 10 years	48	33.3
10 years to 15 years	24	16.7
>15 năm	36	25
Total	144	100
Education level	Frequency	Percent
College	18	12.5
Bachelor	102	70.8
Master	24	16.7
Total	144	100
Working position	Frequency	Percent
Chief accountants	55	38.2
Accountants	89	61.8
Total	144	100

Source by Author

4.2. Reliability Analysis - Cronbach's Alpha

The results of testing the reliability of the items for the LE factor show that all 5 observed variables including LE1, LE2, LE3, LE4, LE5 are reliable to measure for the lack of efficiency of accounting software factor (LE). Because Cronbach's Alpha coefficient is 0.912 which is greater than 0.7 and Corrected Item - Total Correlation coefficient is higher than 0.7 which are all greater than 0.3. Therefore, all the items have good explanations for the lack of efficiency of accounting software factor (table 2).

Table 2. Reliability Analysis - Cronbach's Alpha for LE variable

LE	Cronbach's Alpha	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
LE1	0.912	0.788	0.889
LE2		0.756	0.896
LE3		0.806	0.885
LE4		0.745	0.899
LE5		0.782	0.891

Source by Author

The second independent variable is the Insufficient Accounting skills including 5 items from IAK 1 to IAK 5. The results of testing the reliability of the items with Cronbach's Alpha is 0.884 which is greater than 0.7 and Corrected Item - Total Correlation coefficient greater than 0.3. Cronbach's Alpha if Item Deleted of items are lower than 0.884. Thus, all items are reliable and accepted (table 3).

Table 3. Reliability Analysis - Cronbach's Alpha for IAK variable

IAK	Cronbach's Alpha	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
IAK1	0.884	0.763	0.865
IAK2		0.665	0.879
IAK3		0.595	0.886
IAK4		0.855	0.833
IAK5		0.855	0.825

Source by Author

The third independent variable is Inadequate training. With 5 items from IT1 to IT5, the Cronbach's Alpha coefficient of the factor 0.805 means that it is greater than 0.7 and the Corrected Item-Total Correlation is greater than 0.3. Therefore, the results show that all items can explain the independence variable. No items are deleted because they are all lower than the Cronbach's Alpha coefficient of the factor (0.805).

Table 4. Reliability Analysis - Cronbach's Alpha for IT

IT	Cronbach's Alpha	Corrected Item - Total Correlation	Cronbach's Alpha if Item Deleted
IT1	0.805	0.676	0.746
IT2		0.671	0.743
IT3		0.385	0.803
IT4		0.614	0.769
IT5		0.739	0.718

Source by Author

4.3. Exploratory factors analysis

The results of the EFA analysis for the independent variables are accepted because the KMO coefficient = 0.666 > 0.5, sig Barlett's Test = 0.000 < 0.05. The total variances of the 3 factors explained is 70.41% > 50%, thus, the 3 factors extracted explain 63.357% of the data variation of the items participating in EFA (table 5).

Table 5. Exploratory factors analysis for Independent factors

	Component		
	1	2	3
IAK4	0.921		
IAK5	0.847		
IAK2	0.801		
IAK1	0.789		
IAK3	0.774		
LE3		0.878	
LE5		0.86	
LE1		0.852	
LE4		0.836	
LE2		0.835	
IT1			0.823
IT5			0.812
IT4			0.755
IT2			0.674
IT3			0.601
KMO		0.666	
Total variance explained		70.41%	

Source by Author

4.4. Correlation analysis

The results of the correlation analysis show that CAS is positively correlated with the independent variables (correlation coefficients are all positive). CAS has the strongest correlation with IAK (0.548), followed by IT (0.457) and LEE (0.397). However, to find out the relationship of the variables to the dependent variable (CAS), the research performs regression analysis in the following step. It is concluded that the independent variables are all correlated with CAS.

Table 6. Correlation analysis

	CAS	LE	IT	IAK
CAS	1			
LE	.397**	1		
IT	.457**	.264**	1	
IAK	.548**	.178*	.381**	1
** Correlation is significant at the 0.01 level (2-tailed).				
* Correlation is significant at the 0.05 level (2-tailed).				

Source by Author

4.5. Analysis of regression model

Regression analysis results show that the model does not have multicollinearity with VIFs being less than 2. Therefore, it is appropriate to include independent variables which are appropriate for this model.

The P-value of the F test = 0.000 indicates that the model is suitable. At the same time, R²=0.436 shows the model explaining 43.6% for CAS.

The results show that the independent variables all have the same effect on CAS (positive regression coefficient Beta (B) and statistically significant P-value are both less than 0.05). Specifically, IAK has the strongest effect on CAS with regression coefficient B = 0.413. The variable (LE) has the second strongest effect on CAS (regression coefficient B = 0.263) and IT has the third lowest impact on CAS with regression coefficient B = 0.231 (table 7).

Table 7. Analysis of regression model

	Unstandardized Coefficients		Standardized Coefficients	T	P-value	VIF
	B	Std. Error	Beta			
(Constant)	-0.742	0.466		-1.593	0.113	
LE	0.181	0.046	0.263	3.978	0.000	1.083
IT	0.265	0.081	0.231	3.28	0.001	1.227
IAK	0.705	0.118	0.413	5.989	0.000	1.179
a Dependent Variable: CAS						
F- statistic (ANOVA)			0.000			
R-square			0.436			

Source by Author

Therefore, the regression equation of CAS is established as follows:

$$\text{CAS} = 0.263\text{LE} + 0.231\text{IAK} + 0.413\text{IT}$$

5. Discussion and Conclusion

Through the results of regression model, three factors including lack of efficiency, insufficient accounting skills, inadequate training positively affect the challenges in application of accounting software of SMEs in Vietnam.

The factor that has the biggest impact on hindering the application of accounting software is inadequate training for the application of accounting software. The results are consistent with the study of Aziz et al. (2022). Qualifications of accountants are limited in operating and using accounting software. Because SMEs are businesses with limited investment in training due to the company's size and inadequate financial resources. Lack of training in software operation leads to difficulties in understanding the use of the software and when errors occur in data extracted from accounting software, it will cause pressure and stress for accountants to detect misstatements. Therefore, the leadership of the enterprises needs to have a specific policy in allocating the annual budget for training on operating accounting software and having a technical team to support when accountants have difficulties in operating accounting software.

The second factor that affects the positive direction to hinder the application of accounting software in SMEs is the lack of efficiency of accounting software. The results of this study point out outputs of the accounting software are also several errors in the system such as accounting errors in recording accounting transactions or transferring information from vouchers to accounting books. Therefore, affecting the progress and timing of issuing financial statements of enterprises. Therefore, SMEs need to have a policy to coordinate with accounting software providers to check and upgrade the quality of accounting software, promptly support and correct errors in the processing data so that the entity's financial statements are issued on time.

The third factor is insufficient accounting skill, which has the positive effect with lowest level to challenge the application of accounting software. The research results are completely consistent with the research results of Aziz et al. (2022). SMEs are often small-scale enterprises, so they often cut down on training costs such as training courses to update changes in accounting policies. However, operating accounting software is always updated according to changes in accounting policies, so it creates difficulties for accountants in applying accounting software. Therefore, businesses need to have policies to support investment in training people not only in IT skills but also in specialized skills related to accounting.

The paper also has several limitations. The study focuses on SMEs in the application of accounting software. Therefore, future research can expand the sample size of SMEs. With the development of information technology, new research will need further study such as application of ERP in SMEs.

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ARE BIG GAPS OF CORPORATE INCOME TAX IN DIFFERENT CONTEXTS?

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Abstract

This study was conducted to investigate the differences in corporate income tax (CIT) in different contexts, including Thailand, the United States of America (USA), Hong Kong and Vietnam. Secondary data are collected from the corporate income tax legal frameworks of the above countries. We employ at-desk review and interviews on different aspects of CIT. The results reveal that there are big differences in the recognition, measurement and reporting of corporate income tax in various contexts. Based on the findings, some recommendations are proposed for minimizing the big gaps of CIT in Vietnam in order to be consistent with the tax legal frameworks in the world.

Keywords: *Corporate income tax; Thailand; USA; Hong Kong; Vietnam; tax framework.*

1. Introduction

A corporate tax, also called corporation tax or company tax, is understood as a type of direct tax levied on the income or capital of firms other similar legal entities. The tax is usually imposed at the national level, but it may also be imposed at state or local levels in some countries. Corporate taxes may be referred to as income tax or capital tax, depending on the nature of the tax.

The objective of corporate tax is to generate revenue for the government by taxing the profits earned by firms. Surprisingly, the tax rate varies from country to country and is usually calculated as a percentage of the firm's net income or capital. Corporate tax rates may also differ for domestic and foreign firms as well.

Many countries have tax laws that require corporations to pay taxes on their worldwide income, regardless of where the income is earned. However, some countries have territorial tax systems, which only require corporations to pay taxes on income earned within the country's borders.

In countries around the world, corporate income tax plays a particularly important role in ensuring stable state budget revenues and income distribution. Tax rates applicable to entities subject to corporate income tax vary from country to country. The tax policies applied to depend on the perspective of income regulation and the goals set in the income distribution of each country in each historical period.

In this study, we conduct an in-depth study on corporate income taxes being applied in Thailand, China, Singapore, and Vietnam. First, the main content of this tax of each country will be explained in detail. In the following, some comparisons are conducted among four countries to discover the differences of CIT.

2. Conceptual Framework

2.1. Framework of corporate income tax of Thailand

CIT rates

Corporate income tax in Thailand is regulated by the Revenue Code. The Revenue Department of the Ministry of Finance is responsible for tax administration. The corporate income tax rate in Thailand is 20% of net profit applied from the 2015 to present accounting period. Depending on the type of taxpayer, this rate is adjusted in Table 1, below:

Table 1. Type of taxpayers

Taxpayers	Tax Base	Rate (%)
Small company (A small company refers to any company with paid-up capital less than 5 million baht at the end of each accounting period.)	Net profit less than 300,000 baht	exempted
	Net profit from 300,000 not exceeding 3 million baht	15%
	Net profit over 3 million baht	20%
- Companies listed in Stock Exchange of Thailand	Net profit	20%
- Company newly listed in Market for Alternative Investment (MAI)		
- Companies newly listed in Stock Exchange of Thailand (SET)		

Source: The Revenue Department (2023)

Taxable income

In the case of enterprises conducting production and business in Thailand, the taxable income is the net profit. The company's net profit is determined by taking all the revenue generated or the result of business activities performed in an accounting period and subtracting deductible expenses according to the conditions prescribed by the Revenue Code.

Some of the following business income is subject to specific business taxes. The tax rate for these activities is 0.1% or 2.5% or 3.0% on income. The specific activities are:

- Banking activities in accordance with the law on commercial banks or specific laws;
- Financial business activities: securities trading, credit business According to the law on financial business, securities trading and credit extension;

- Life insurance in accordance with the law on life insurance;
- Accept pawnshops in accordance with the law on pawnshops;
- Carrying out normal business activities such as commercial banks such as lending money, guaranteeing, exchanging foreign currencies, issuing, buying and selling promissory notes or sending money abroad by various methods;
- Sale of real estate is commercial or profitable;
- Sell securities in accordance with the laws governing the Stock Exchange of Thailand on the stock market;
- Other enterprises according to the provisions of the Royal Decree.

Tax incentives

There are several types of legal entities that are subject to corporate income tax under the Revenue Code but are exempt from corporate income tax including:

- A company or a partnership under the obligations that Thailand has under the economic cooperation contract. or technical between the Thai government and the foreign government;
- Limited liability companies are exempt from income tax under the investment promotion law;
- A limited liability company and a legal entity of the same nature as a limited liability company incorporated under the laws of Thailand or abroad. The country is exempt from corporate income tax under the Petroleum Income Tax Act;
- Companies or partnerships based in countries that have double taxation agreements with Thailand. Subject to the conditions set forth in the Convention

Deductible Expenses and Non-deductible expenses

Deductible expenses are as follows:

- Ordinary and necessary expenses. However, the deductible amount of the following expenses is allowed at a special rate: 200% deduction of Research and Development expense, 200% deduction of job training expense, 200% deduction of expenditure on the provision of equipment for the disabled;
- Interest, except interest on capital reserves or funds of the company;
- Taxes, except for Corporate Income Tax and Value Added Tax paid to the Thai government;
- Net losses carried forward from the last five accounting periods;
- Bad debts;
- Wear and tear;
- Donations of up to 2% of net profits;

- Provident fund contributions;
- Entertainment expenses up to 0.3% of gross receipt but not exceeding 10 million baht;
- Further tax deduction for donations made to public education institutions, and also for any expenses used for the maintenance of public parks, public playgrounds, and/or sports grounds;
- Depreciation: Provided that in no case shall the deduction exceed the following percentage of cost according to regulations.

Non-deductible expenses include:

- Reserves (with some exceptions):
 - Fund except provident fund under the rules, procedures and conditions prescribed by Ministerial regulations;
 - Expense for personal, gift, or charitable purpose except expense for public charity, or for public benefit;
 - Entertainment or service fees;
 - Capital expense or expense for the addition, change, expansion or improvement of an asset but not for repair in order to maintain its present condition;
 - Fine and/or surcharge, criminal fine, income tax of a company or juristic partnership;
 - The withdrawal of money without remuneration of a partner in a juristic partnership;
 - The part of the salary of a shareholder or partner which is paid in excess of the appropriate amount;
 - Expense which is not actually incurred or expense which should have been paid in another accounting period except in the case where it cannot be entered in any accounting period, then it may be entered in the following accounting period;
 - Remuneration for assets which a company or juristic partnership owns and uses;
 - Interest paid to equity, reserves or funds of the company or juristic partnership itself;
 - Damages claimable from insurance or other protection contracts or loss from previous accounting periods except net loss carried forward for five years up to the present accounting period;
 - Expense which is not for the purpose of making profits or for the business;
 - Expense which is not for the purpose of business in Thailand;
 - Cost of purchase of asset and expense related to the purchase or sale of an asset, but only the amount in excess of normal cost and expense without reasonable cause;
 - Value of lost or depleted natural resources due to the carrying on of business;
 - Expense in which a payer cannot identify the recipient;
 - Any expense payable from profits received after the end of an accounting period.

2.2. Framework of corporate income tax of the China

CIT rates

The standard CIT rate is 25%, applicable to resident enterprises and non-resident enterprises with income-generating establishments in China. Special tax rates may apply to businesses in specific industries, businesses established in certain regions of Mainland China and engaging in encouraged business activities, including Small-scale enterprises are entitled to a tax rate of 20%, 10% or 2.5% if certain requirements are met; Western qualified enterprises; or qualified High New Technology Enterprises (HNTE) or Advanced Technology Services Enterprises (TASE); or qualified enterprises in the field of pollution prevention are entitled to the tax rate 15%.

Taxable income

Taxable income includes income from the sale of goods; income from the provision of labour services; income from the transfer of property; benefits from equity investment, such as dividends and bonuses; interest income; rental income; income from royalties; income from donations; and income from other sources.

Tax incentives

The State implements preferential tax policies with respect to the industries and projects which have the major support and the development of which is encouraged by the State.

The following income of an enterprise shall be income exempted from tax: income from interest on government bonds; income from equity investment, such as dividends and bonuses, between qualified resident enterprises; income from equity investment, such as dividends and bonuses, which is received from a resident enterprise by a non-resident enterprise that has institutions or establishments in China, and which is actually relevant to the said institutions or establishments; and income of a qualified non-profit organization.

Tax on the following income of an enterprise may be exempted or reduced: income earned from agriculture, forestry, animal husbandry and aquaculture projects; income from investment in and operation of infrastructure projects which have the major support of the State (tax exemption for the first three years and CIT reduction of 50% for the next three years, starting from the year in which the project generates its first operating income); income earned from qualified projects of environmental protection or energy and water conservation (tax exemption for the first three years and 50% CIT reduction for the next three years, starting from the year in which the project generates its first operating income); and income from qualified technology transfer.

Preferential tax rates

For qualified small and thin-profit enterprises

From January 1, 2019, to December 31, 2021, small and low-profit enterprises can enjoy a 20% CIT rate on 25% of their taxable income amount for the proportion of taxable income not exceeding RMB 1 million; and a 20% CIT rate on 50% of their taxable income amount of more than RMB 1 million but not exceeding RMB 3 million.

From January 1, 2021, to December 31, 2022, for the portion of taxable income not exceeding RMB 1 million, the amount of taxable income can be halved from 25% to 12.5%, and the CIT will be levied at 20%. As a result, the effective CIT rate for the portion of taxable income not exceeding RMB 1 million will be reduced from 5% to only 2.5%.

From January 1, 2023, to December 31, 2024, for the portion of taxable amount of more than RMB 1 million but not exceeding RMB 3 million, the amount of taxable income be halved from 50% to 25%, and the CIT will be levied at 20%.

Companies that qualify as “high-tech” are identified by tax authorities are entitled to a tax rate of 15%.

Specific areas with preferential tax treatments. Preferential tax treatments are provided in specific areas, including: Minority autonomous areas; special economic zones plus Shanghai Pudong New Area; western region; Hengqin New Area, Pingtan Comprehensive Experimental Area and Qianhai Shenzhen-Hong Kong Modern Service Industry Cooperation Zone; Shanghai Pilot Free Trade Zone (SPFTZ); Hainan Free Trade Port (FTP), these companies may be reduced or exempted from taxes or entitled to a tax rate of 15%.

Additional deduction incentives

An additional 50% of research and development costs incurred during the development of new technologies, new products and new technological processes, if not capitalized as an intangible asset, can be deducted from income taxes. If capitalized as an intangible asset, these costs can be allocated based on 150% of the capitalization. 75% of research and development costs can be deducted from taxable income for Technology-based SMEs

An additional 100% of the cost of wages paid to disabled employees can be deducted from taxable income

Deductible Expenses and Non-deductible expenses

Deductible Expenses

When calculating the amount of its income taxable, an enterprise may deduct its reasonable expenses which are actually incurred in relation to its income earned, including, among other items, the costs, fees, tax payments, and losses. In addition, an enterprise may deduct its expenses incurred due to donations for public welfare, provided that the portion involved is not more than 12% of the total amount of its annual profits.

Non-deductible expenses

When calculating the amount of taxable income, the following expenses may not be deducted: monies from equity investment paid to investors, such as dividends and bonuses; payment of enterprise income tax; fines for delaying tax payment; losses caused by penalties, fines, and property confiscation; expenses due to donations other than what is specified in Article 9 of The Law of the People’s Republic of China on Enterprise Income Tax (2007); sponsorship expenses; non-verified reserves; depreciation of fixed assets is not in accordance with regulations and other expenses irrelevant to the income earned.

2.3. Framework of corporate income tax of Singapore

Tax rates

The Singapore government takes a progressive and growth-promoting approach in many of its policies, all to attract foreign investors and entrepreneurs to do business here. Taxes Corporate income tax (CIT) has been continuously decreasing over the years and up to now. More than 20 years ago in 1997, this rate was much higher than the 26% tax rate, which has been continuously cut and is currently fixed at 17%.

Taxable income

Your company has to pay tax in Singapore on taxable income that is: accrued in or derived from Singapore; or received in Singapore from outside Singapore.

For Singapore tax purposes, taxable income refers to:

- Gains or profits from any trade or business;
- Income from investment such as dividends, interest and rental;
- Royalties, premiums and any other profits from property;
- Other gains that are revenue in nature

Income Received in Singapore from Outside Singapore

Under Section 10(25) of the Income Tax Act 1947, income from outside Singapore is considered received in Singapore when it is:

- Remitted to, transmitted or brought into Singapore;
- Used to satisfy any debt incurred in respect of a trade or business carried on in Singapore; or
- Used to purchase any movable property (such as equipment, raw material, etc.) brought into Singapore.

Tax incentives

Singapore is known as a regional startup hub because of its business-friendly environment and policies, and a government policy to promote the growth and expansion of businesses is the numerous tax incentive schemes that provide tax exemptions and/or deductions to eligible companies, there are outstanding tax incentives in Singapore:

Tax exemption scheme for new start-up companies

The tax exemption scheme for new start-up companies was introduced under Section 43 of the Income Tax Act 1947 in the Year of Assessment (YA) 2005 to support entrepreneurship and to grow our local enterprises. It was announced in Budget 2018 that the tax exemption under the scheme would be revised with effect from YA 2020, as other support for companies to build their capabilities have been strengthened.

The tax exemptions for qualifying companies for their first 3 consecutive YAs are as follows: 75% exemption on the first \$100,000 of normal chargeable income and a further 50% exemption on the next \$100,000 of normal chargeable income.

This exemption scheme applies to qualifying companies only for their first 3 consecutive YAs. From the fourth YA onwards, companies can enjoy the partial tax exemption: 75% exemption on the first \$10,000 of normal chargeable income and a further 50% exemption on the next \$190,000 of normal chargeable income.

Productivity and Innovation Credit (PIC) scheme, which grants business owners with businesses that invest in activities involving innovation with a tax reduction. This scheme supports businesses to continuously invest in innovation to improve productivity and operational efficiency. The incentive for activities listed above is a 400% tax deduction, with a maximum of SGD 400,000, of the expenses spent on the activities each year. Companies that qualify for the PIC+ scheme are allowed a maximum of SGD 600,000.

Investment Allowance Incentive. this allows businesses to enjoy a tax exemption of up to 100% on fixed capital expenditure incurred, which is expenditure incurred for qualifying projects within a five-year period and can be extended to a maximum of eight years. The types of expenditure that are covered by the investment allowance include acquiring patents and know-how, building factories in Singapore and new production equipment.

Pioneer Tax Incentive applies to businesses engaging in high-value-added products or services and grants a tax exemption from five to 15 years for each qualifying project or activity.

Development and Expansion Incentive. Once the period for the Pioneer Tax Incentive has ended, businesses can apply for the Development and Expansion Incentive (DEI). This incentive allows businesses that engage in new high-value-added projects, undertake incremental activities or expand or upgrade their operations to be entitled to a reduced rate of not less than 5% of their profits for up to 10 years. The total tax relief period is up to a maximum of 40 years.

Double Tax Deduction Scheme for Internationalisation

Companies that intend to expand overseas can benefit from the Double Tax Deduction Scheme for Internationalisation (DTD_i). The DTD_i supports four key categories of a company's overseas expansion, which include market preparation, market exploration, market promotion and market presence. This scheme grants businesses a 200% tax deduction on the first SGD 150,000 that is made on expenses for international expansion and investment development activities. Expenses that exceed SGD 150,000 require Enterprise Singapore's (ESG) approval.

Deductible Expenses and Non-deductible expenses

Deductible Expenses

Deductible business expenses are those 'wholly and exclusively incurred in the production of income'. They must satisfy all these conditions:

- The expenses are solely incurred in the production of income;
- The expenses are not a contingent liability i.e. they do not depend on an event that may or may not occur in the future. In other words, the expenses must be incurred. An

expense is 'incurred' when the legal liability to pay the expense arises, regardless of the date of actual payment of the money;

- The expenses are revenue, and not capital, in nature;
- The expenses are not prohibited from deduction under the Income Tax Act 1947.

The IRAS allows enterprise to declare the following as deductible business expenses: water and electricity costs; employees' wages; transport and travel costs for business assignments; telephone bills; tax fees, including the service fees that enterprise pay a tax agent, medical expenses (restricted to 1%/ 2% of total remuneration if company is under Portable Medical Benefits Scheme or Transferable Medical Insurance Scheme)",...

Non-deductible expenses

Non-deductible business expenses are activities pay for that do not fulfil the conditions above, include:

- Withholding tax on the interest payments paid by companies on-behalf of non-residents;
- Retrenchment payments such as ex-gratia retrenchment payments and outplacement support costs - in the event of a complete business cessation;
- Provision for obsolete stocks;
- Provision for bad and doubtful debts;
- Private vehicle hire;
- Private and domestic expenses that are not incurred for business purposes;
- Prepaid expenses;
- Penalties;
- Motor vehicle expenses for S-plated and RU-plated cars;
- Legal and professional fees for non-trade or capital transactions;
- Interest expenses on non-income-producing assets;
- The installation of fixed assets;
- Singapore income tax and any tax on income in a country outside Singapore;
- Impairment loss on non-trade debts;
- Goodwill payments;
- Fines;
- Acquiring fixed assets.;
- Bills before the commencement of business;
- Exchange loss (non-trade or capital in nature);
- Donations;
- Dividend payments made on preference shares;
- Digital taxes imposed as income taxes;
- Interest incurred on late CPF contributions;
- Voluntary contributions to CPF;
- Certificate of Entitlement (COE) for motor vehicles;
- Bad debts (non-trade debtors);
- Amortisation.

2.4. Framework of corporate income tax of Vietnam

CIT rates

The normally corporate income tax rate applicable to enterprises in Vietnam is 20% on assessable income (applicable for the accounting period from 2016 to present). However, rates for the oil and gas, and other extractive industries, can vary from 32% to 50%. From July 1, 2023 (when the Petroleum Law 2022 takes effect), the tax rates of petroleum industries and fields, or the search, exploration and exploitation of precious resources will from 25% to 50%.

Taxable income

Taxable income is equal to turnover minus deductible expenses of production and business activities plus other incomes, including incomes received outside Vietnam.

Other incomes include: income from the transfer of capital, transfer of the right to contribute capital; income from the transfer of real estate, transfer of investment projects, transfer of the right to participate in investment projects, transfer of the right to explore, exploit and process minerals; income from property use rights, property ownership, including income from intellectual property rights as prescribed by law; incomes from the transfer, lease or liquidation of assets, including valuable papers; income from interest on deposits, loans and foreign currency sales; receivables from bad debts that have been written off and are now recoverable; receivables from liabilities whose owners cannot be identified; omitted business income of previous years and other income.

Tax incentives

Some businesses enjoy preferential CIT rates. Preferential tax rates are 10%, 15% and 17%. This preferential tax rate applies to businesses operating in fields such as education - training, vocational training, health care, culture, sports and environment, and newly established enterprises from investment projects. Investment in areas with difficult socio-economic conditions or high-tech enterprises. The incentive period can last up to 15 years or for the duration of the business operation.

Income from certain activities is tax-exempt, including:

- Incomes from cultivation, husbandry, farming, processing of agricultural and aquatic products, and salt production of cooperatives; income of cooperatives operating in the fields of agriculture, forestry, fishery and salt production in areas with difficult socio-economic conditions or in areas with extremely difficult socio-economic conditions; incomes of enterprises from cultivation, animal husbandry, farming and processing of agricultural and aquatic products in areas with extremely difficult socio-economic conditions; income from fishing activities.
- Income from performing technical services directly serving agriculture;
- Incomes from the performance of contracts for scientific research and technological development, products under trial production, and products made from new technologies applied for the first time in Vietnam;

- Incomes from the production and trading of goods and services of enterprises with 30% of the average number of employees in the year or more are disabled people, people after detoxification, and people infected with viruses that cause depression syndrome. reduce human acquired immunity (HIV/AIDS) and have an average number of employees in a year of twenty or more, excluding businesses operating in the financial sector and real estate business;
- Incomes from vocational training activities exclusively for ethnic minorities, disabled people, children in extremely difficult circumstances, and subjects of social evils;
- Dividend income from capital contribution, joint venture or association with domestic enterprises, after having paid corporate income tax in accordance with this Law;
- The grant received is used for educational activities, scientific research, culture, art, charity, humanitarian and other social activities in Vietnam;
- Income from the transfer of emission reduction certificates (CERs) of enterprises granted emission reduction certificates;
- Incomes from the performance of tasks assigned by the State of Vietnam Development Bank in the activities of development investment credit, and export credit; income from credit activities for the poor and other policy beneficiaries of the Bank for Social Policies; income from state financial funds and other state funds operating for non-profit purposes as prescribed by law; income of organizations in which the State owns 100% of charter capital, established by the Government to handle bad debts of Vietnamese credit institutions;
- The undivided income of an establishment performing socialization in the fields of education - training, health care and other socialized fields shall be left for investment in the development of that establishment in accordance with the provisions of specialized law on the field of socialization. education - training, health and other socialization fields; part of income forming undivided assets of cooperatives established and operating under the provisions of the Law on Cooperatives;
- Income from technology transfer in the fields of priority transfer to organizations and individuals in areas with extremely difficult socio-economic conditions.

Deductible Expenses and Non-deductible expenses

Deductible Expenses

Except for expenses specified in non-deductible expenses, enterprises may deduct all expenses when determining taxable income if the following conditions are fully satisfied:

- Actual expenses incurred in connection with production and business activities of the enterprise; expenses for vocational education activities; expenditures for performing defence and security tasks of the enterprise in accordance with law;
- Expenses with sufficient invoices and documents as prescribed by law. For goods and service purchase invoices, each time with a value of twenty million dong or more, a non-cash payment voucher is required, except for cases where a non-cash payment document is not required according to regulations of the Law.

Non-deductible expenses

Expenses that are not deductible when determining taxable income include:

- Expenditures that do not fully satisfy the conditions specified in Deductible Expenses, except for the value of losses due to natural disasters, epidemics and other force majeure cases, which are not compensated;
- Fines for administrative violations;
- Expenses to be covered by other funding sources;
- The portion of business administration expenses allocated by the foreign enterprise to the permanent establishment in Vietnam in excess of the amount calculated according to the method of allocation prescribed by Vietnamese law;
- Expenses in excess of the provisions of the law on provisioning;
- The interest payment on loans for production and business of entities other than credit institutions or economic organizations exceeds 150% of the basic interest rate announced by the State Bank of Vietnam at the time of payment;
- Depreciation of fixed assets is not in accordance with the provisions of law;
- The advance deduction for expenses is not in accordance with the provisions of the law;
- Salaries and wages of private business owners; remuneration paid to enterprise founders who are not directly involved in the production and business management; salaries, wages and other expenditures to pay employees but in fact do not pay or do not have invoices and documents as prescribed by law;
- The portion of interest payment on the loan in proportion to the deficit of charter capital;
- The deducted input value-added tax, value-added tax paid by the credit method, corporate income tax;
- Grants, except for grants for education, health care, scientific research, disaster recovery, building houses of great solidarity, houses of gratitude and houses for policy beneficiaries as prescribed by law. legislation, grants under the State's program for localities in areas with extremely difficult socio-economic conditions;
- The deduction and payment to the voluntary retirement fund or the fund of a social security nature, purchase of voluntary retirement insurance for employees in excess of the limit prescribed by law;
- Expenses for business activities: banking, insurance, lottery, securities and some other specific business activities as prescribed by the Minister of Finance.

3. Differences among corporate income tax in four countries

3.1. CIT rates

In Thailand, the corporate income tax rate is 20%. In addition, depending on the type of business, this tax rate is adjusted to be 0% or 15%.

The standard tax rate in Vietnam is also 20%, however for the oil and gas industry and mining industries, this rate can be up to 50%.

In China, the general corporate income tax rate is quite high, this rate is 25%. However, for small and medium enterprises, preferential tax rates can be applied: 2.5%, 5%, 10%, and 20% ; while Singapore is one of the countries with the lowest corporate tax rate in the world, the corporate income tax rate in this country is 17%.

Furthermore, regarding the CIT rate for small and medium enterprises, this rate in Vietnam is 20%, in Thailand is 0% or 15%, Singapore is 17%... it can be seen, in the income tax of small and medium enterprises, Vietnam is higher than most countries in the region.

3.2. Taxable incomes

In all 3 countries including China, Singapore, and Vietnam, taxable income is determined as Taxable income equal to turnover plus other incomes, including incomes received outside the territory minus deductible expenses of production and business activities. Other incomes include income from real estate transfer, income from loans, interest on deposits, and income from the capital transfer.

In the case of Thailand, ordinary business income is determined as taxable income and the CIT rate applies. Meanwhile, other incomes such as income from real estate transfer, income from securities sales, and income from lending are specified as specific business taxable income. The tax rate for these activities is 0.1% or 2.5% or 3.0% on income.

3.3. Tax incentives

In general, tax incentives in the four countries have many similarities such as incentives for new investment projects, and investment expansion; incentives for businesses in difficult economic areas; tax incentives to encourage research and development; incentives for businesses applying high technology. However, there are differences in tax incentives for small businesses and low-profit or newly established businesses, specifically: In Thailand Lan, the government has introduced a preferential tax rate for small and medium enterprises of 0% or 15%, respectively, corresponding to the level of net profit.

Similar to Thailand, the Chinese government also has corporate income tax incentives for small businesses or low-profit businesses, specifically: small and low-profit businesses can enjoy a tax CIT rate of 20% on 12.5% of their taxable income on the portion of their taxable income not exceeding RMB 1 million and a CIT rate of 20% on 25% of their taxable income over RMB 1 million but not exceeding more than 3 million RMB. Singapore also has tax incentives to support start-ups such as 75% exemption for the first \$ 100,000 of ordinary taxable income and an additional 50% exemption for the next \$ 100,000 of taxable income. From the fourth YA onwards, companies can get a 75% exemption for the first \$10,000 in ordinary taxable income and an additional 50% exemption for the next \$190,000 in ordinary taxable income.

Meanwhile, currently, Vietnam does not have specific preferential policies for small and medium enterprises. Although in 2021, the Vietnamese government has a

policy to reduce 30% of the payable corporate income tax amount of the corporate income tax period of 2021 for the case of enterprises mentioned above, having turnover in the tax period. The year 2021 is not more than 200 billion VND and the revenue in the tax period 2021 decreases compared to the revenue in the tax period 2019. The criterion that the revenue in the tax period 2021 decreases compared to the revenue in the tax period does not apply to the year 2019 for the case of newly established, consolidated, merged, divided, or split enterprises in the tax period 2020 and 2021. However, by 2022, this preferential policy is no longer valid.

3.4. Deductible Expenses and Non-deductible expenses

Regulations on deductible and non-deductible expenses in different countries have some similarities. Deductible expenses are actual and reasonable expenses incurred in connection with earned income, including expenses not exceeding the allowable limit, fees, taxes and losses. Expenses that are not deductible according to the regulations of other countries are usually expenses that do not serve business activities, expenses for business management activities but exceed the permissible limits, and fines for violations. administrative violations, the expenses cannot be verified.

In terms of Vietnam, most of the expenses of an enterprise are deductible when determining taxable income if the following conditions are fully met:

(i) Actual expenses incurred in connection with production and business activities of the enterprise; expenditure on vocational education activities; expenses for performing defence and security tasks of the enterprise as prescribed by law;

(ii) Expenses with sufficient invoices and documents as prescribed by law. For goods and service purchase invoices with a value of twenty million dong or more each time, a non-cash payment voucher must be provided, unless a non-cash payment document is not required as prescribed under the law.

In Thailand, rate-controlled expenses include research and development expense, job training expense, expenditure on the provision of equipment for the disabled; Donations; Entertainment expenses. In China, donations for public welfare are also a rate-controlled expense, and the portion involved is not more than 12% of the total amount of its annual profits. In Singapore, medical expenses are restricted to 1% or 2% of total remuneration if company is under Portable Medical Benefits Scheme or Transferable Medical Insurance Scheme. In Vietnam, rate-controlled expenses include The interest payment on loans for production and business of entities other than credit institutions or economic organizations which exceed 150% of the basic interest rate announced by the State Bank of Vietnam at the time of payment.

Salaries and wages of private business owners is non-deductible expense in Vietnam, while in Thailand, Singapore, and China, this expense is deductible.

Provisions if they meet all conditions as prescribed, such as provision for obsolete stocks and provision for bad and doubtful debts will be deductible expenses when

determining CIT in Vietnam, Thailand, China; however, these provisions are non-deductible expenses in Singapore.

In short, through this study, it can be concluded that there are still some major differences between the corporate income tax regulations in Thailand, China, Singapore and Vietnam. The difference lies in the tax rate, taxable income, tax incentives and deductible expenses, and non-deductible expenses. In the near future, further studies will be conducted to explore more corporate income tax items and compare them with different contexts such as Asian countries; or countries with some common characteristics of emerging countries such as Vietnam. Understanding the regulations on corporate income tax not only in Vietnam but also in countries in the region such as Thailand, China, and Singapore are very important for those who will work in the economic field.

The results of this study open up a number of perceptions and ideas for stakeholders. In the coming time, policymakers need to study in detail the international tax legal framework in general and corporate income tax in particular, and actively develop and issue a tax legal framework suitable for the current international framework.

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FACTORS AFFECTING THE SUSTAINABILITY DISCLOSURE IN CONSTRUCTION ENTERPRISES LISTED ON THE VIETNAM STOCK MARKET: A BINARY LOGISTIC REGRESSION ANALYSIS

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Abstract

This study aims to estimate the influence of factors on the publication of sustainability reports in construction enterprises listed on the Vietnam stock market. Data is collected from financial statements of 49 construction enterprises listed on Vietnam stock market from 2012 to 2022. In this study, the dependent variable is the publication of sustainability reports (SR) of construction enterprises listed on the stock market. The independent variables include Firm size Auditing, Growth opportunities, Current ratio variable, Return on total assets, Revenue growth. Variable test cover include Type of business, Firm age. The research results show that the publication of sustainability reports in construction enterprises listed on the stock market is influenced by the size of the enterprise, the type of enterprise and the development opportunities of the enterprise. Meanwhile, the variables of profitability, current solvency, age of the enterprise, and audit do not affect whether the enterprise publishes or does not publish the sustainability report.

Keywords: *Sustainable development Sustainability report, Construction enterprise*

1. Introduction

Most countries in the world are facing imbalance problems when the economy is growing but the environment is increasingly polluted; cultural and moral decline. Unsustainable economic growth increases the gap between rich and poor, leading to instability in society (Sachs (2015)). Therefore, it is necessary to harmonize economic growth with environmental protection and social security. Sustainable development is becoming an urgent requirement for all mankind. (Haines at el. (2012)).

Sustainable development is a development process with a close, reasonable and harmonious combination of three aspects of development, including: economic development, social development and environmental protection (Robert at el (2005)). Economic development focuses on economic growth. The focus of social development is to realize social progress and justice; poverty alleviation and job creation. Environmental protection is concerned with treatment, remediation of pollution, restoration and improvement of environmental quality; fire prevention and deforestation; rational exploitation and economical use of natural resources (Sachs (2015)).

Sustainability reporting is a tool to help businesses publish information on sustainability (Bini & Bellucci (2020)). According to Thijssens et al. (2016), the application of sustainability indicators and the preparation of sustainability reports is one of the necessary and effective tools and platforms. It helps businesses re-evaluate their overall development strategy in the short, medium and long term. From there, businesses can seize new opportunities brought by sustainable development.

There have been many empirical studies on the impact of factors on the publication of corporate sustainability reports.

Trotman & Bradley (1981) conducted a study on factors affecting the publication of sustainability reports with a sample of 191 companies on the stock exchange in Australia. The results show that the size of the enterprise, risks in the enterprise, social pressure, and decisions of managers have an impact on the publication of sustainability reports.

Hackston & Milne (1996) studied with 47 large enterprises on the New Zealand stock market, showing that all 4 factors: business size, profitability, business lines and countries in which the enterprises provide reports are all impacts on environmental and social disclosure in New Zealand in the order of impact.

Hossain and Reaz (2007) through the analysis of the usual least squares regression model, have shown that the size of the firm and the value of the existing assets of the enterprise are the factors that positively affect the level of work. publish a sustainable development report. Jennifer Ho & Taylor (2007) have shown that firms with larger size, lower profitability, lower liquidity and lower number of employees significantly influence the publication of sustainability reports (research conducted with 50 largest companies in the US and Japan). Hidayah et al (2019) examines the factors that influence the sustainability of the company's disclosure has registered at Indonesia Sustainability Award (ISRA). Data were taken from 2012 to 2017 and became a sample of 9 companies featured in the ISRA. Regression analysis was used to examine the effect of factors (Current Ratio, Size, Type Industry, Social Responsibility Committee and meetings of the audit committee) on the disclosure of sustainability reporting. Result of regression explains that the variable Current Ratio (CR), Size and Audit Committee Meetings significant effect, while the governance committee and the type of industry effect are not significant. Therefore, Companies are growing fast in asset and have a large debt must disclose the information in a sustainability report.

Luc & Phuoc (2019) studied the influence of factors on the preparation of sustainability reports in 143 enterprises. These enterprises belong to the group of 500 large enterprises and were listed on Vietnamese stock exchanges in the fiscal year 2017. The results show that in addition to the profit factor, the remaining factors such as size and field activities and development opportunities of enterprises have a positive impact on the publication of sustainability reports. Masum et al (2020): A sample of 40 listed companies of DSE has been considered to examine the effect of board characteristics and organisational characteristics on sustainability reporting. An un-weighted index based on GRI has been developed. Results: It has been found that the age of the company, earning per share and

foreign members on board have a significant positive impact on sustainability reporting while for the other variables we do not found any significant association.

Hai et al (2019) analysed with data from 265 managers from head level upwards working in 60 oil trading companies in the Vietnam National Petroleum Group (Petrolimex) spread across the country to examine factors affecting the disclosure of sustainable development reports. The empirical results show that enterprise size, growth opportunities, legal basis, business sector and profitability are factors that have a varying positive impact on disclosing sustainable development reports. The managerial viewpoint, though influencing the impact, is not statistically significant for disclosing sustainability development reports. The results provide a scientific basis for managers to make appropriate decisions in improving the disclosure of sustainable development reporting information.

Vietnam's perspective on sustainable development is now integrated throughout socio-economic development strategies and plans. At the same time, it is concretized in the National Action Plan for the implementation of the 2030 Agenda with 115 instrumental goals that can be suitable to the country's development conditions and priorities (Government of Vietnam (2017)). However, in the process of implementation, Vietnam faced many challenges in terms of society, environment, response to climate change, difficulties in financial resources. The level of connectivity between sectors and fields, as well as statistical capacity for monitoring and monitoring the implementation of sustainable development, is still limited. Besides, many businesses are not fully aware of the sustainable development goals; even indifferent, seeing sustainability reports as a matter outside of business operations.

The impact of the construction sector on the environment is very large such as emissions, air pollution, water pollution, etc. Construction activities can significantly change the surface of an area because most of it is clearing. The surroundings can be heavily polluted, especially the lakes. Atmospheric pollution generated by the construction industry has both direct and indirect impacts on the general environment. Proper assessment and minimization of environmental burdens from construction activities are urgently needed. There must be a comprehensive assessment of the impacts to environment of all construction activities. During the construction process, gases are released directly into the atmosphere, particulate emissions and other trace gases emitted by machinery and equipment, causing serious impacts on the environment, affecting air quality locally (Dar et al (2022)). However, the above issues are almost not transparently disclosed in the reports of construction enterprises in Vietnam. Currently, a number of construction enterprises have published sustainability reports in parallel with financial statements, which shows that business managers have begun to pay more attention to the supply of goods and services. provide information related to environment and society, but the rate of publication of sustainable development reports is not much. Therefore, research on the factors affecting the publication of sustainable development reports is necessary.

Inheriting previous studies and based on the characteristics of the construction field in Vietnam, the authors put forward research hypotheses about the factors affecting

the publication of sustainability reports at construction enterprises listed on Vietnam stock market as follows:

Hypothesis H1: Firm size positively affects the publication of sustainability reports

Hypothesis H2: Type of business positively affects the publication of sustainability reports

Hypothesis H3: Firm age positively affects the publication of sustainability reports

Assumption H4: Auditing has a positive influence on the publication of sustainability reports

Assumption H5: Growth opportunities have a positive influence on sustainability report publication

Hypothesis H6: Current ratio variable positively affects the publication of sustainability reports

Hypothesis H7: Profitability has a positive effect on sustainability report publication

Hypothesis H8: Revenue growth has a positive effect on sustainability report publication

2. Method

Based on the empirical evidence, the following logistic regression equation is proposed to test the hypotheses: Based on the empirical evidence, The following logistic regression equation is proposed to test the hypotheses:

$$SR = \beta_1 + \beta_2 SIZE_{it} + \beta_3 TYPE_{it} + \beta_4 AGE_{it} + \beta_5 AUDIT_{it} + \beta_6 MTB_{it} + \beta_7 CR_{it} + \beta_8 PRO_{it} + \beta_9 SCR_{it} + \varepsilon_{it}$$

All variables and their measures are described in Table 1. In the context of the individual firm, "t" represents the time period, "β" is the estimated parameter, while "ε" is the error term. The study controls for the type and age effect by using type and age control variables.

The significance of this research is tested using the logistic regression model. The underlying assumptions in the regression model are tested for multicollinearity based on the correlation matrix, Variance Inflation Factor (VIF), and Tolerance. Logistic regression is employed in this study due to the dichotomous nature of the dependent variable-the firm has either issued a voluntary sustainability report or not otherwise. This form of regression is more robust by design as it overcomes the restrictive assumptions of linearity, normality, and equal variances. Logistic regression can predict the best possible value for each coefficient in the model. Finally, the logistic regression is validated by Hosmer-Lemeshow Test and Likelihood Ratio Chi-square (LR Chi2).

The data used in the study are all collected from the financial statements of 49 construction enterprises listed on the Vietnam stock exchange in the period 2012 - 2022. The research sample includes all listed companies that are satisfied conditions have full financial statements for the period 2012-2022, so the study sample is highly representative. The variables in the model are described in the following table:

Table 1. Description of variables in the model

Variable name	Code	Measure
Disclosure sustainability report	SR	A dummy variable, takes 1 if the firm publication sustainability report and 0 otherwise
Firm size	SIZE	Natural logarithm of total assets
Type of business	TYPE	The dummy variable takes on a value of 1 when state-owned capital is present, and otherwise 0
Firm age	AGE	Year of research - year of establishment
Auditing	AUDIT	A dummy variable, takes 1 if the auditor is from big 4, otherwise 0
Growth opportunities	MTB	Market value of a firm's equity divided by its book value
Current ratio variable	CR	Current assets/ current liabilities
Return on total assets	PRO	Ratio of income before tax to total assets
Revenue growth	SGR	(Current period revenue - previous period revenue)/ previous period revenue

3. Results

Table 2 and Table 3 present the descriptive statistics and frequency of each variable. Sustainability report disclosure was used in this study as the dependent variable and SIZE, TYPE, AGE, AUDIT, MTB, CR, PRO, and SGR are explanatory variables. Ratios Current Ratio (CR) to measure the ability of the company in the short term with its current assets have an average of 1.55 means the construction companies have a good ability to repay their debts. Table 2 shows that the AGE ratio shows the minimum value of 3, while the maximum value is 68, and the mean value is 25.54, (S.D is 14.53). The average value of AUDIT is 0.8; the average value of MTB is 16,339.25, of which the highest is 111,666. The mean value of CR, PRO, and SCR ratio are 1.55, 1.47 and 15.06. The indicator reflecting the profitability efficiency of company PRO has the smallest negative value, indicating that at least one company in a year has negative profit after tax, the maximum value is 34.82. This shows that in the period of 2012-2022, the business performance of listed companies is quite different.

Table 2. Descriptive statistical analysis of independent variable

Variable	Obs	Mean	Std.Dev.	Min	Max
SIZE	538	11.69	0.57	10.26	13.28
TYPE	538	0.57	0.50	0	1
AGE	538	25.54	14.53	3	68
AUDIT	538	0.80	0.27	0	1
MTB	538	16,339.25	13,942.96	-7,189	111,666
CR	538	1.55	1.69	0.07	21.23
PRO	538	1.47	9.44	-167.62	34.82
SGR	538	15.06	107.79	-323.63	1,805.95

Source: Results of data processing of the authors

In accordance with Table 3, out of 538 observations, 41.26% of observations have published sustainability reports, whereas 58.74% of observations have not.

Table 3. Descriptive frequency of dependent variable

SR	Freq.	Percent	Cum.
0	316	58.74	58.74
1	222	41.26	100.00
Total	538		

Source: Results of data processing of the authors

Table 4 reports the logistic regression results by estimating equation to explore the determinants of factors affecting disclosure sustainability report of construction businesses listed on Vietnam's stock market.

Table 4. Logistic regression results

Variables	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]		VIF	Tolerance
SIZE	1.3648	0.2156	6.33	0.000	0.9422	1.7874	1.37	0.7311
TYPE	0.9492	0.2315	4.10	0.000	0.4953	1.4031	1.30	0.7669
AGE	-0.0020	0.0078	-0.26	0.795	-0.0174	0.0134	1.18	0.8462
AUDIT	-0.1611	0.3874	-0.42	0.677	-0.9204	0.5981	1.14	0.8738
MTB	0.0001	0.0000	4.68	0.000	0.0000	0.0001	1.49	0.6695
CR	0.0317	0.0756	0.42	0.674	-0.1164	0.1799	1.06	0.9444
PRO	0.0102	0.0235	0.44	0.663	-0.0358	0.0563	1.58	0.6344
SGR	0.0002	0.0016	0.13	0.900	-0.0031	0.0035	1.49	0.6708
_cons	-8.3145	2.570	-7.12	0.000	-23.3535	-13.2755		
LR chi2(8)			158.57					
Hosmer-Lemeshow chi2(8)			12.73					
Prob > LR			0.000					
McKelvey and Zavoina's R2			0.508					
Count R2			0.737					
Adj Count R2			0.362					

Source: Results of data processing of the authors

To assess the validity of the logistic regression model and the accuracy of its predicted outcomes, a number of tests are performed. The Hosmer-Lemeshow goodness-of-fit test measures the differences between the predicted and observed outcomes (Meurer and Tolles, 2017). When there is a good agreement, it will not show a statistically significant difference. The likelihood ratio chi-square (LR Chi2) is an omnibus test to ensure the perfect

suit-ability of the logistic regression model to the study data (Girella, Rossi, and Zambon, 2019). The results (Hosmer-Lemeshow $\chi^2(8) = 12.73$; Prob > LR = 0.000) suggest that our model fits the data well. Hence, it provides excellent goodness of fit for logistic regression to study the determinants of corporate sustainability reporting. Moreover, VIF and Tolerance statistics for all variables indicate that collinearity does not appear to create a threat to the interpretation of the regression coefficients (Gujarati and Porter, 2009)

4. Discussion and Conclusion

4.1. Discussion

LR $\chi^2(8)$ is the likelihood ratio (LR) chi-square test. The likelihood chi-square test statistic is 158.57. The number in the parenthesis indicates the number of degrees of freedom. In this model, there are eight predictors, so there are eight degrees of freedom. Prob > χ^2 - This is the probability of obtaining the chi-square statistic given that the null hypothesis is true. In this case, the model is statistically significant because the p-value is less than .000.

Expressed in terms of the variables used in this case, the logistic regression equation is

$$SR = 1.3648 * SIZE + 0.9492 * TYPE + 0.0001 * MTB + \varepsilon$$

Regression model results show: The variables SIZE, TYPE and MTB are the positive factors affecting SR with 1% significance level and the impact level are 1.3648, 0.9492, and 0.001. AGE, AUDIT, CR, PRO, and SGR has no correlation with the disclosure of sustainability report

The first hypothesis investigated the relationship between the company size and the extent of sustainability disclosure. Regression analysis showed that the company size has a positive and significant impact on the extent of the sustainability disclosure. The beta value shows that the coefficient is 1.3648 with p-value of 0.000, which is less than 0.01, suggesting that the relationship is significant at 1% level. Hence it can be concluded that the company size positively impacts the extent of sustainability disclosure. This result leads us to accept the first hypothesis.

The second hypothesis examined the relationship between the type of company and the extent of sustainability disclosure. Table 4 shows that the company type has a significant positive impact on the extent of sustainability disclosure. The beta value showed that the coefficient was 0.9492 with p-value of 0.000, which is less than 1%, suggesting that the relationship is significant at a 1% level. Accordingly, the second hypothesis is accepted. This shows that businesses with diverse state ownership have a propensity to disclose sustainability reports.

The third hypothesis investigated the relationship between the company age and the extent of sustainability disclosure. The age of company has no correlation with the extent of sustainability disclosure (p-value = 0.795 > 0.05) and the third hypothesis is rejected.

The fourth hypothesis investigated the relationship between the company audit and the extent of sustainability disclosure. The factor of audit firm does not have any significant

impact on the disclosure of sustainability reports ($p\text{-value} = 0.677 > 0.05$) and the fourth hypothesis is rejected

The fifth hypothesis examines the relationship between the company growth and the extent of sustainability disclosure. As is shown in Table 5, as per the regression analysis, the company growth has a positive and significant impact on the extent of sustainability disclosure. The beta value shows a coefficient of 0.001 with $p\text{-value}$ of 0.000, which means that the relationship is significant at 1% level. Hence, the fifth hypothesis of the study is accepted.

The sixth hypothesis investigated the relationship between the company current ratio and the extent of sustainability disclosure. The current ratio of company has no correlation with the extent of sustainability disclosure ($p\text{-value} = 0.674 > 0.05$) and the sixth hypothesis is rejected.

The seventh hypothesis investigated the relationship between the company profitability and the extent of sustainability disclosure. The factor of profitability does not have any significant impact on the disclosure of sustainability reports ($p\text{-value} = 0.663 > 0.05$) and the seventh hypothesis is rejected.

The eighth hypothesis investigated the relationship between the company revenue growth and the extent of sustainability disclosure. The revenue growth of company has no correlation with the extent of sustainability disclosure ($p\text{-value} = 0.900 > 0.05$) and the eighth hypothesis is rejected.

4.2. Conclusion

According to the analysis results, the publication of sustainability reports of construction companies listed on stock exchanges is influenced by the following variables: Firm size, Type of business and Growth opportunities.

Sustainability reporting is being used increasingly by businesses as a powerful mechanism in corporate policy and strategy. It covers all areas of economic efficiency, social, responsibility, environmental awareness, ethical culture, and corporate governance. Corporate sustainability reporting is gaining momentum around the globe as a voluntary reporting mechanism to enhance stakeholders' confidence. The findings provide valuable insight to the policymakers by identifying the attributes that require regulatory focus to achieve the public policy objective of sustainable development. In addition, the study suggests that large firms are more likely to issue sustainability reports. Therefore, regulators should encourage small, medium, and younger firms to adopt sustainability practices. The experimental results also indicate that state-owned enterprises are actively involved in reporting on sustainable development. These findings provide useful insight to the state-owned corporate sector to meet the growing information requirements of stakeholders, manage sustainability performance, and address social and environmental risks and opportunities.

This study also has some limitations that need to be considered in the future. The sample size of the study only focuses on construction companies listed on the stock market but not in other fields, so the generalizability is not high. Additionally, based on the aforementioned theories, the research still only includes a small number of independent

factors, which has a partial impact on the sustainability report's assessment of the impact on the dependent variable (the creation of the dependent variable). Future research can therefore broaden the factors influencing sustainability reporting in the sector in which the company is active or perhaps go farther. Businesses operating in the same industry make up the audience who are interested in learning how this sustainability report was prepared.

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THE IMPACT OF FINANCIAL STRESS ON INFLATION IN VIETNAM

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Abstract

After the 2008 global financial crisis outbreak, financial stress - a concept measures the instability and risks in financial markets have attracted more and more attention from the researchers. Various studies have conducted to examine the relationship between financial stress and other economic variables in different economies. Such as other economies in the world, the Vietnamese economy experienced the economic crisis in the period from 2008 to 2012. In this period, besides the downturn in economic growth, uncertainty, and increased risk in the banking sector and financial market, the Vietnamese economy also faced a two-digit inflation issue. Thus, whether there is a link between financial stresses and inflation in Vietnam is a big question. To clarify the question, the study employs threshold vector auto regression for the monthly data from 2008 to 2018. The results suggest that the relationship between financial stress and inflation in Vietnam

Keywords: *Financial stress, inflation, Vietnam, threshold vector auto-regression, TVAR,*

1. Introduction

The impact of financial risks on the economy has been a topic for researchers for a long time. However, according to Roye (2013), before the 2008 financial crisis, the researchers had only considered the risks in the financial market, such as stock market volatility, capital market spreads, variables indicating imbalances on the interbank market as peripheral variables in the economic models. Consequently, these models did not forecast the appeal of the financial crisis in 2008 early. After this crisis, developing new indicators or tools to forecast the financial crisis has become essential. In this situation, the financial stress index- an indicator introduced before 2008 GFC received more attention from academics.

Unlike other financial indexes, the financial stress index includes various variables inside. Thus, different researchers often offer a different definition of financial stress. Illing and Lu (2006) - the pioneer in the studying of financial stress interpreted financial stress as the force affecting economic activity through instability and risk in financial markets and institutions. Hakkio and Keeton (2009) revealed that the increase in uncertainty about the fundamental value of assets and asymmetry of information, and the decline in the demand for risky and illiquid assets were the features of financial stress. While Balakrishnan et al. (2011) defined financial stress as a period of weakened financial intermediation, Aboura and Royeb (2013) showed that financial stress as a combination of uncertainty and risk perception. Hollo et al. (2012) considers financial stress as a state of financial uncertainty,

which was the result of systemic risk. Although the definition of financial stress may vary across the literature, this concept characterizes increasing the instability and risk of financial condition and a sign of financial crisis.

For the period from 2008 to 2012, the Vietnamese economy suffered a double economic crisis- inflation crisis and financial crisis. In both 2008 and 2011, the Vietnamese economy experienced a high inflation period, with the inflation rate rocketing to about 20%. Besides inflation, both in 2008 and in 2011, Vietnam also faced a financial crisis with severe issues in banking sectors and the exchange rate market. In 2008, the interest rate climbed to nearly 20% from the first quarter to the third quarter. The interbank rate also rocketed to nearly 40% in the beginning and middle of 2008. In 2011, the banking sector also faced a crisis regarding liquid risk and the increase in the bad debt of the banking system. Besides, in 2011, the exchange rate market also suffered the big problems that forced the Vietnamese State Bank had to depreciate Vietnam Dong 11%.

The Vietnamese economy's double crisis motivates the authors to investigate the impact of the instability in the financial market on inflation in Vietnam. To reach the findings, firstly, this research will summarize the empirical studies on financial stress and inflation. In the next part, employing the Hansel threshold model, the paper will estimate the threshold of financial stress index to assess the relationship between financial stress and inflation. Lastly, the study gives some recommendations and ends with some concluding points.

2. Literature Review

The impact of financial stress on economic activities was studied in various aspects. One of them is the relationship between financial stress and monetary policy. Baxa, Horváth, and Vašíček (2013) studied the influence of financial stress on monetary policy in five advanced economies: US, UK, Australia, Canada, and Sweden. The result suggested that high financial stress caused the central banks to change policy rates, often cut them. Tnga and Kwek (2015) also found the same result in some ASEAN economies after analyzing the relationship between monetary policy and financial stress in the ASEAN-5 economies (Indonesia, Malaysia, Philippines, Singapore, and Thailand). The authors pointed out that in Malaysia, the Philippines and Thailand, the central banks tended to cut policy interest rates (IRs) when financial stress increased although there is substantial cross-country variation in the magnitude and time dynamics. However, Floro and Roye (2017) suggested a different result. Using panel data of advanced and emerging economies to test for the impact of the increase in overall financial stress on monetary policy, the authors indicated that in the developed economies, the uncertainty of the financial market and banking system affected the monetary policy decision. By contrast, in emerging economies, the threshold effect of financial stress did not influence these central banks' interest rate decisions. These results refer that the impact of financial stress on the monetary decisions is still a controversial topic and needs to continue to study further.

For the relationship between financial stress and inflation, Li and St-Amant (2010) examined the effects of financial stress on the transmission of monetary policy shocks in Canada empirically. They pointed out that the high financial stress regime would lead to weaker output

growth, higher inflation, and higher interest rates. Mallick and Sousa (2013), and Tsagkanos et al. (2018) indicated that a shock the FSI hurts inflation. Galvão and Owyang (2018) used a novel factor-augmented vector autoregressive model with smooth-transition regimes (FASTVAR) for the US economy. They found out that an exogenous deterioration in the financial stress index had strong adverse implications effects on inflation in the stress regime.

As a developing economy, Vietnam usually faces instability and economic issues, particularly inflation. Vietnam has the highest inflation rate in Southeast Asia (over 20 cent year-on-year in 2011) (Pham and Riedel, 2012). Thus, numerous studies focus on finding critical driving of Vietnamese inflation. Nguyen et al. (2012) analyzed the determinants of CPI inflation for Vietnam over the period 2001 to 2009. The findings indicated that the money supply, oil prices, and rice prices present the strongest influences on CPI inflation. Bhattacharya (2014) also referred that the nominal effective exchange rate and credit growth drove Vietnamese inflation in the short run and medium term. Khieu (2014), Nguyen et al. (2017) pointed out that money growth, oil price, and real exchange rate were the main determinants of inflation in Vietnam.

Reviewing the existing papers and articles, the authors found out that the relationship between financial stress and inflation in Vietnam has not been investigated yet, which is the gap for the study to continue to research further.

3. Method

Methodology

The threshold VAR model with two regimes is

$$Z_t = \alpha^1 + A^1 Z_t + B^1(L)Z_{t-1} + (\alpha^2 + A^2 Z_t + B^2(L)Z_{t-1}) I(C_{t-d}, \gamma) + \varepsilon_t \quad (1)$$

Following Nguyen et al. (2012), Khieu(2014), and Nguyen et.al (2017), to find out the factor impact on the inflation in Vietnam, the vector of variables (Z_t) includes the $Z_t = (cpi_t, fsi_t, m2_t, oil_t, gap_t)$. cpi_t is the consumer price index (CPI), fsi_t is the financial stress index (FSI), $m2_t$ is the money supply, oil_t is the monthly oil price, gap_t output gap.

α^i represents the vector of constant, A^i represents the matrix of contemporaneous interaction coefficient, $B^i(L)$ is polynomials created from matrices of coefficients in the lag operator L. ε_t represents the vector of structural innovations.

I is an indicator that equals 1 if the threshold variable C_{t-d} is larger than or equal to the FSI threshold value γ ($C_{t-d} \geq \gamma$) and 0 otherwise. d is lagged periods. When I = 0, the relevant coefficients are α^1 , A^1 , and $B^1(L)$. When I =1, the relevant coefficients are $\alpha^1 + \alpha^2$, $A^1 + A^2$, and $B^1(L) + B^2(L)$.

This paper employs the Tsay (1998) method to test for the threshold nonlinearity of the model. This approach generates the C (d) test statistic following by the estimation of an arranged regression. The null hypothesis that the model is linear $H_0: \alpha^2=0, A^2=0, B^2(L)=0$. C (d) follows a chi-squared distribution with k (pk+qv+1) degree of freedom. In this case, k and v represent the number of endogenous and exogenous variables; p and q are their corresponding lag orders. When the null hypothesis of linearity is rejected, we choose the

delay parameter d as the value, which maximizes the Tsay test statistic. Consequently, this research utilizes a grid search method and finds the value that maximizes the Akaike Information Criteria (AIC).

We utilize the Cholesky ordering for the shock identification in the VAR model. The first order is the CPI since CPI is the slow-moving variable. The second one is the FSI, and the interest rate is placed last. This structure is consistent with the empirical literature, which suggests that financial stress and monetary policy indicators are fast-moving market-based variables (Saldias, 2017). In this study, we use financial stress index data for Vietnam calculated by the Asian Development Bank (ADB), which is based on Park and Mercado (2014) methodology.

Data

We use the monthly data from 2008M2 to 2018M2 on CPI, FSI, money supply, oil price, and output gap. The data sources from the below table

Table 1. Variables and its source

Variables	Source
Financial stress index (FSI)	Asian Development Bank website(www.adb.org)
Consumer price index (CPI)	General Statistics Office of Vietnam website (https://www.gso.gov.vn)
Monthly supply (M2)	State bank of Vietnam (www.sbv.org)
Oil Price (OIL)	Federal Reserve of St Louis (https://fred.stlouisfed.org/)
Out Gap (GAP)	General Statistics Office of Vietnam website (https://www.gso.gov.vn)

Among these variables, the gap represents for the economic activities, as the monthly data of GDP is hard to measure. This variable is calculated through the change of industrial production index and HP filter in Eviews software.

In this study, we use financial stress index data for Vietnam calculated by the Asian Development Bank (ADB), which is based on Park and Mercado (2014) methodology. According to ADB (2019), the FSI for the Vietnamese economy is computed through five variables that come from four sectors: banking sector, equity market, debt market, and foreign exchange market. The variables are used to measure volatility in these sectors including banking sector price index and stock price index, equity market returns, equity market volatility, sovereign debt spreads (long-term (10-year) local government bonds- US Treasuries in basis points), and exchange market pressure index (EMPI).

All series are seasonally adjusted (using the Census X-12 method in Eviews) and then taken in natural logarithm (except for the policy interest rate) before estimation. We also conduct the unit root test by using the Augmented Dickey-Fuller (ADF) test and Phillips-Perron (PP) test (Table 1). The results suggest that all series are stationary at first difference. After that, we set up the VAR estimation in the first difference.

Table 2. Unit root test

Variables	ADF test		PP test	
	P-value	Conclusion	P-Value	Conclusion
CPI	0.0000	stationary	0.0001	Stationary
FSI	0.104	Non-stationary	0.0000	Stationary
FSI at 1 st difference	0.0000	Stationary	0.0000	Stationary
OIL	0.0003	Stationary	0.000	Stationary
M2	0.0001	stationary	0.0000	Stationary
GAP	0.0000	stationary	0.0001	Stationary

Source: Author's calculation

4. Results

Estimation of the inflation threshold

In this section, we employ the method of Tsay (1998) to decide the financial stress threshold for Vietnam. Our objective is to separate the high and low financial stress regime using distinct sets of model parameters. Based on the value of the financial threshold, the times series can be split into two different cases. When the financial stress threshold variable is higher than the critical value, the time points are classified as the high regime. Otherwise, the time points are classified as a low regime.

Table 3 indicates the results of test statistic $C(d)$ rejecting the null hypothesis of the linear relationship in all cases of different starting numbers for recursive estimates ($m_0 = 30$ and $m_0 = 50$). This result implies that FSI is a suitable threshold variable, and that is worthwhile to split into two regimes. We decided the threshold lag delay (d) is 1, corresponding to delay by a month. For two-regime models, we assume the threshold $\gamma \in [-4, .05]$ and use 300 grid points. The interval determination is based on the value of the threshold variable. The estimated threshold value for inflation is 0.44, with the smallest AIC of (345.88504).

Table 3. Result of the threshold test

FSI threshold			
d	m_0	C(d)	p-value
1	30	43.50	0.002
1	50	40.26	0.007
γ	0.44	AIC	345.88504

Note: d is a delay for the threshold variable, m_0 is starting number for recursive estimates, $C(d)$ tests statistic based on the method of Tsay (1998). AIC is the Akaike Information Criterion.

Source: Author's calculation

The low regime is active when the FSI is below the estimated threshold, 0.44. It presents the normal period of the economy, which is described by economic growth and low financial market stress. In converse, the high regime indicates the economy moves to the slowdown situation characterized by high financial market stress.

Figure 1 shows a plot of the estimated inflation threshold value and the threshold variable. The estimated threshold value divides our sample into two regimes that are highly consistent with the economic development in Vietnam. The high episode dominates the period from 2008 to 2009. During this time, the Vietnam economy experienced tremendous inflation, the struggle of the banking system, and the decline in the stock market. The low episode is captured by some period from 2010 to 2015 and the time after 2016. At that time, inflation becomes low and stable; the reconstruction of the banking system has some progress. The empirical model endogenously selects the separation of the sample.

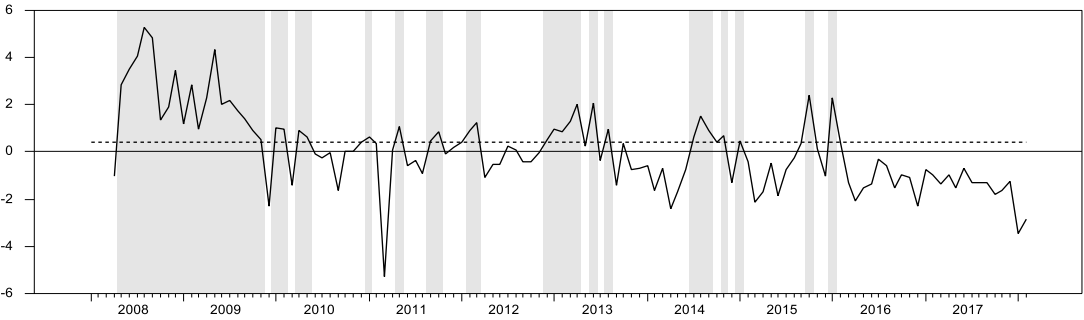


Figure 1. FSI

Note: The solid line illustrates FSI, the dotted line indicates the threshold value (0.44), and the shaded area is the high FSI period.

Source: Author’s calculation

Impulse response analysis

After splitting the sample into a high and low regime, we estimate the VAR model in each regime. We assume two lags in both cases. Figure 2 to 4 indicates the estimated impulse response functions over 12 months horizon in linear VAR, high regime, and low regime.

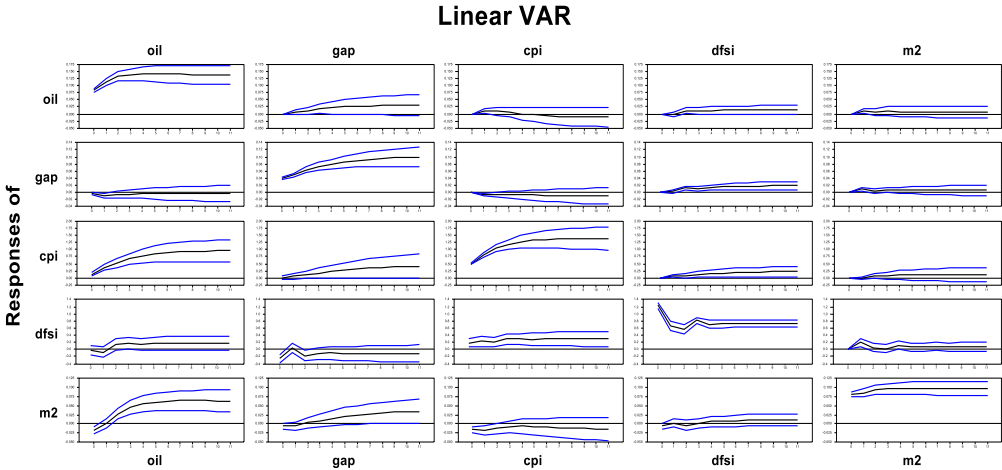


Figure 2: Impulse response functions in linear VAR

Note: The impulse responses (mid-solid line) are presented over a 12-month period along the horizontal axis. 68% confidence intervals based on Monte Carlo simulation are plotted around each response (as per Sims and Zha, 1995).

Source: Author’s calculation

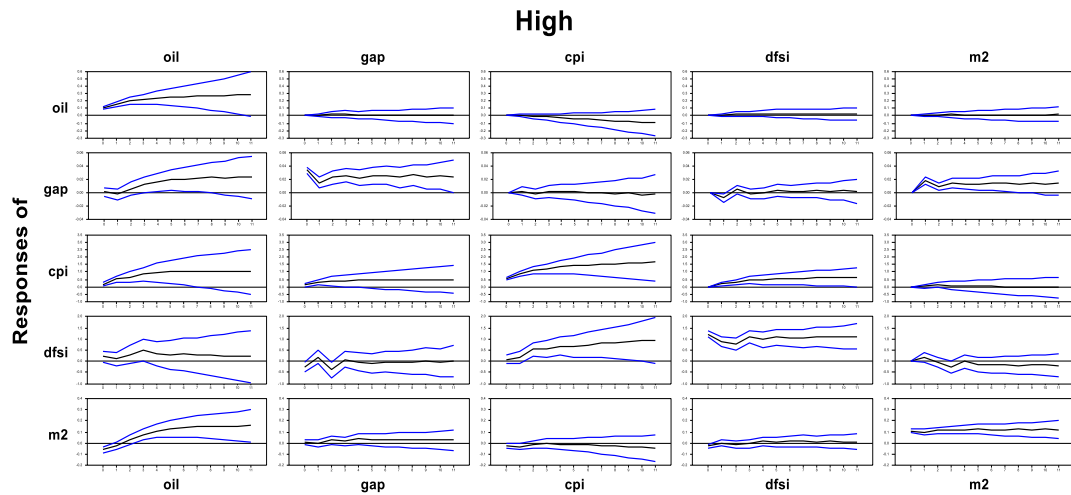
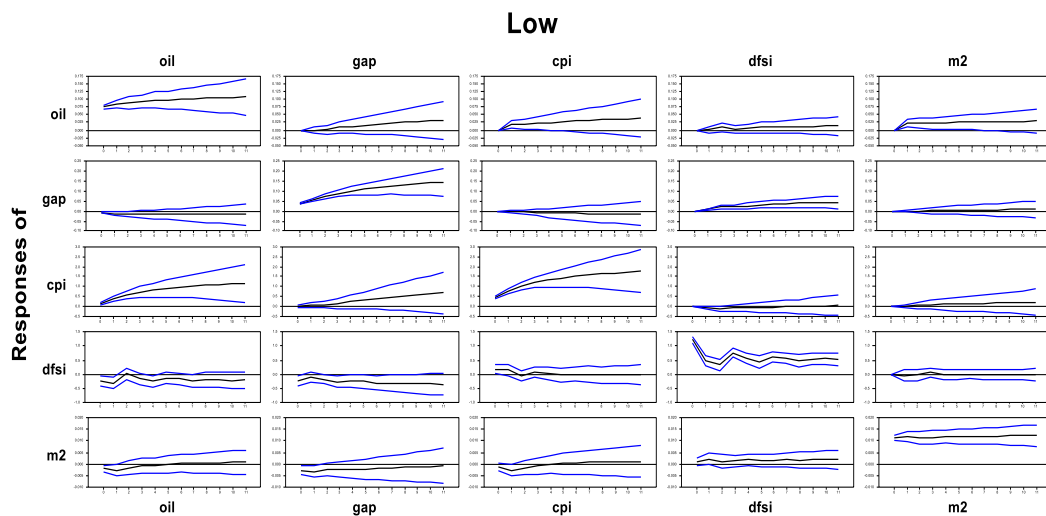


Figure 3: Impulse response functions in high FSI regime

Note: The impulse responses (mid-solid line) are presented over a 12-month period along the horizontal axis. 68% confidence intervals based on Monte Carlo simulation are plotted around each response (as per Sims and Zha, 1995).

Source: Author's calculation

Figure 4: Impulse response functions in low FSI regime



Note: The impulse responses (mid-solid line) are presented over a 12-month period along the horizontal axis. 68% confidence intervals based on Monte Carlo simulation are plotted around each response (as per Sims and Zha, 1995).

Source: Author's calculation

In both low and high regimes, the response of CPI to the shock of oil price is the same and significant, in which the increase of oil price would lead to the rise of inflation in Vietnam. In the case of the GAP variable, the positive shock of GAP would let CPI go up after at least three periods. However, this increase is not significant in the two regimes.

When the economy moves to the high FSI period, the CPI increases in response to the positive financial shock. By contrast, the CPI does not react to the change of FSI in the low regime. This result is consistent with the study of Mallick and Sousa (2013) and Tsagkanos et al. (2018), which suggest that the FSI shocks harm inflation. However, the effect of FSI on CPI in both cases is not apparent.

The response of CPI to the shock of m2 is the same in two regimes. Contradict to Nguyen et al. (2012), Khieu (2014), and Nguyen et al. (2017) this study shows the unclear impact of m2 to CPI in Vietnam.

For the response of FSI to CPI, in the high regime, the increase in CPI immediately would cause FSI to rise. However, the CPI does not show any impact on FSI in the low regime. For OIL, GAP, and M2, these variables seem to have an unclear and insignificant effect on FSI in both low and high regime.

In general, the impacts of shocks in the two regimes are quite different. There is no doubt that the FSI threshold strongly affects the relationship between CPI, FSI, OIL, GAP, and M2 under different states of the economy.

Based on the findings, the study suggests that the State Bank of Vietnam and other policymakers should develop and promote the implementation of effective regulatory, supervisory, and other financial sector policies for the Vietnamese financial market.

5. Discussion and Conclusion

5.1. Limitations

Inspire of proving the impact of financial stress on inflation in Vietnam, and the study still has some limitations that maybe the gap for further research. The first limitation is the financial stress index data. The study employs the ADB financial stress index data based on Park and Mercado (2014) methodology. However, Park and Mercado's (2014) 's method counts the instability in the banking sector through $\beta = \text{cov}(r,m)/\text{var}(m)$. In this case, r and m are the returns to the banking stock price index and the overall stock price index, respectively. The higher the banking sector β , the higher, the greater the banking sector stress. The advantage of this measurement is easy to access the monthly data of the banking sector from the stock market data in Vietnam. However, the number of banking stocks in the Vietnamese stock market for the period of 2008-2014 was quite small compared to the number of banks in Vietnam. Thus, β might not compute the risk and instability in the banking sector comprehensively.

The second limitation of the study is the uncorrelation between M2 and CPI. The reason for this result may come from the lag choice of model. The study chose the lag for the model is only two, while Friedman (1961, 1972) suggests that the effect of monetary policy on inflation would need at least 12 months to show the monetary policy's effectiveness. Otherwise, Bhattacharya (2014) points out that the lag of monetary policy for CPI in developing economies is often from 6 months to 12 months. Thus, two-month lags would not be enough for monetary policy to make an impact on inflation. However, as the

study employs threshold vector auto-regression with 120 observations, 6 to 12 months lags may cause the model to be unable to estimate the threshold.

These limitations may be a suggestion for further research to develop a new method to calculate the volatility in the banking sector, financial stress index in Vietnam.

5.2. Conclusion

This paper extends the literature by analyzing the effect of financial stress on inflation. Through the threshold vector auto-regression, the paper finds that there exists a threshold of financial stress index, which divides the Vietnamese financial stress index into two regimes: high regime and low regime. The study also shows that the FSI threshold firmly influences the relationship between CPI, FSI, OIL, GAP, and M2 under different states of the economy. This studying following Li and St-Amant (2010), Mallick and Sousa (2013), Tsagkanos et al. (2018), and Galvão and Owyang (2018), demonstrates that financial stress impacts on inflation. Additionally, CPI also affects FSI in high regimes. Thus, the authors suggested that the State Bank of Vietnam should implement the macro-prudential supervision policies to control risks in the financial market, which is not only for the security of the financial system but also for the State Bank of Vietnam's controlling inflation target. Although the study demonstrates the impact of financial stress on inflation in Vietnam, it still has a limitation relating to financial stress data which may promote the further researches.

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STOCK MARKET REACTION TO ANNOUNCEMENT CHANGE IN BOARD OF DIRECTORS AT VIETNAMESE LISTED SEAPORT ENTERPRISES

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Abstract

This study focuses on the impact of the announcement of changes in the BoD on the abnormal return caused by changes in stock price of Vietnamese listed seaport enterprises in the disclosure period. The authors employed the event study method to find out the fact that the reaction off stock price of Vietnamese listed seaport enterprises even happens before the date of announcement, implying an information leak existence.

Keywords: *Event study, listed seaport enterprises, change of board of directors*

1. Introduction

In today's 4.0 era, information plays an important role in all fields, especially information on the stock market. The disclosure of financial information such as profits, financial statements has an immediate impact on the stock price of companies, and thus provoke abnormal returns on the ex-day (Woolridge, 1983). In addition to financial information, non-financial information also has certain effects on the stock market. Non-financial information can be understood as qualitative or quantitative data or information, not measured in monetary units, usually aimed at groups of long-term information about the business such as information about the environment, society and corporate governance (Ministry of Finance, 2020). Both financial and non-financial information disclose have significant effect on stock market (Dima et al 2010). However, there is an interesting point that the market reaction to the information disclose does not happen at the disclosing date, but it happens before and after that date (Vo Xuan Vinh and Dang Buu Kiem, 2016).

In recent times, there have been many personnel change socks of senior leader of some companies listed on the Vietnam stock market. In some cases, these changes cause dramatic negative consequences to the stock of price of these company, i.e.: FLC group and Louis Holding. Hence, the change in board of directors can be considered as sensitive information, regardless of whether it is positive or negative change.

Vietnam's stock market has been facing up with from fluctuations in the international market in the face of the trend of tightening monetary policy from major countries to curb inflation and the risk of economic slowdown. In that context, the development and recovery of stock price of many seaport enterprises attract researcher's attention. In the context of

personnel changes in Vietnamese companies, this article analyses the effect of announce changes in seaport company's BoD on the company's stock price, leading to abnormal return of the stakeholders.

2. Literature review

There are some studies referring to the effect of information disclose on the company's stock price. Al-Yahyaee (2015) examines the security returns during ex-dividend period for firms listed on the Muscat securities market in study "Security returns during Ex-dividend period". The author finds stock dividends elicit a significant stock market response. The results indicate that the abnormal returns before ex-day are consistently negative. That is, on each of the 10 days before the ex-day, there is a decline in the abnormal returns. Abnormal returns are statistically insignificant in the all ten days prior to the ex-day. On the other hand, the abnormal return is positive a significant on the ex-day. In addition, the abnormal return seems not to be confined to the ex-day in Oman. In particular, the positive abnormal return extends for seven days after the ex-day. In another research, Dima et al (2010) study the effects of financial and non-financial information disclosure on prices' mechanisms for emergent markets. The result shows that both financial and non-financial information disclose have significant effect on Romanian Bucharest Stock Exchange.

In Vietnam, Pham Tien Manh et al (2018) conducts the study on "The impact of dividend and profit disclosure on stock price volatility of companies listed on the Ho Chi Minh Stock Exchange (HOSE)". The author collected information of selected companies on the HOSE stock market in the period 2015 to 2017, to assess the impact of the announcement of dividend and profit information on the company's variables price movements of companies listed on HOSE. The study also uses the event study method, which is one of the quantitative research methods to analyze and measure the level and direction of the impact of information disclosure on the market. The results show that, for news of dividend increase, at the announcement date, the market reacts negatively to that information. In contrast to the news of declining dividends, the market has positive comments on this information. When announcing unchanged dividend, one day before the announcement date, the average abnormal profit dropped sharply 1 day before the announcement date.

In the study on the reaction of the market when disclosing dividend payment information, the authors Vo Xuan Vinh and Dang Buu Kiem (2015) studied the reaction of the market when businesses disclose information about paying dividends in cash and how business-specific factors such as the size of the business, the dividend rate, etc. have affected on the market's reaction. The authors have collected data from non-financial companies listed on Vietnam's stock market from January 2008 to May 2014. The study also uses the event study method, which results in a moderately inefficient market. On the dividend announcement date, the average abnormal return is non-zero, consistent with the theory of moderate efficiency. However, 1 day after the announcement of the event, the average cumulative profit is still greater than 0 and statistically significant, showing that the information is slowly reflected in the price. That means investors are slow to react to dividend announcements, which means that if an investor buys shares on the date of the

dividend announcement, they can still earn extraordinary profits. The results also show that for investors, dividend payment information is considered good information. Meanwhile, firm-specific factors such as firm size have a negative relationship and dividend rate has a positive relationship with accumulated extraordinary profits. So, large companies are more trusted by investors, keep stock prices more stable, and investors will buy stocks with high dividend rates, so the share price will increase, when the company discloses dividend payment information.

3. Method

To examine the market's reaction to information disclosure of enterprises through price or trading volume, people use the event study of MacKinlay (1997). Event study is a method in quantitative research to analyze the extent and direction of the impact of events on the value of a company's stock. Research events using statistical methods, using time as the dependent variable, and analyzing the market's reaction to those events.

According to Al-Yahyaee (2015), in order to consider extraordinary income when disclosing information on changes in the BoD, based on the market model, the **abnormal return** on event day t ($AR_{i,t}$) is the difference between the actual return on that day ($R_{i,t}$) and normal return $E(R_{i,t})$ based on the market model:

$$AR_{i,t} = R_{i,t} - E(R_{i,t})$$

Where $R_{i,t}$ is **the actual return** of stock i on event t calculated by the formula (Al-Yahyaee, 2015):

$$R_{i,t} = \ln(P_{i,t}/P_{i,t-1})$$

Where $P_{i,t}$ is the closing price of stock I on day t , and $P_{i,t-1}$ the closing price of stock I on the previous day $t-1$.

$E(R_{i,t})$ is **the expected return** of stock i on day t , defined as the normal return expected in the absence of events, as measured by the market model:

$$E(R_{i,t}) = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t}$$

Where $R_{m,t}$ is **the rate of return** of the market index on the day of the event t . α_i and β_i are the market model parameters. $\varepsilon_{i,t}$ is the random error term.

The average abnormal return ($AAR_{i,t}$) is calculated as the average of N abnormal returns of all studied events at time t :

$$AAR_{i,t} = \frac{1}{N} \sum_{i=1}^N AR_{i,t}$$

The cumulative abnormal return of stock i during the event window, for the period $[T1-T2]$ is the sum of the abnormal return in the event window calculated by the formula:

$$CAR_{i,(T1-T2)} = \sum_{T1}^{T2} AR_{i,t}$$

Cumulative average abnormal profit $CAAR_{i,(T1-T2)}$ is calculated as the average of N cumulative abnormal returns of the sequence of events in the event window $[T1-T2]$:

$$CAAR_{i,(T1-T2)} = \frac{1}{N} \sum_{i=1}^N CAR_{i,(T1-T2)}$$

After calculating abnormal returns and cumulative abnormal returns, similar to those reported by Brown and Warner (1980) as well as Saens and Sandoval (2005) use t-test to test the significance level of them.

4. Results

Data

Currently, there are more than 20 seaport enterprises listed on Vietnam stock market. However, the author uses non-probability sampling method to select 10 typical enterprises representing all three regions of the North, Central and South, listed on all three stock exchanges, namely HNX, HOSE and UPCOM with the size equivalent as the research sample, are shown in the following table:

Table 1. Sample

No.	Name of company	Stock exchange	Stock code
1	Danang Port Joint Stock Company	HNX	CDN
2	DoanXa Port Joint Stock Company	HNX	DXP
3	Port of Hai Phong Joint Stock Company	HNX	PHP
4	Cat Lai Port Joint Stock Company	HOSE	CLL
5	Dinh Vu Port Investment and Development JSC	HOSE	DVP
6	GEMADEPT	HOSE	GMD
7	Hai An Transport & Stevedoring JSC	HOSE	HAH
8	Dong Nai Port Joint Stock Company	HOSE	PDN
9	Quy Nhon New Port Joint Stock Company	UPCOM	QSP
10	Saigon Port Join Stock Company	UPCOM	SGP

Research variables include event date, i.e. date of announcement of changes in management practices, stock prices of enterprises during the research period and market prices during the research period from 2007 to 2022. This data serves to calculate the abnormal returns on the stock market around the announcement date is described as in the following tables:

Table 2. Stock price

Stock code	Obs	Mean	Std. Dev.	Min	Max
CDN	1574	17.91	5.72	11.24	36.90
DXP	2626	13.17	4.10	4.45	27.09
PHP	1732	13.89	5.715	7.68	33.70
CLL	2000	23.02	4.92	15.41	37.02
DVP	1435	39.22	9.09	22.19	58.74
GMD	3869	20.88	11.96	5.15	61.40

Stock code	Obs	Mean	Std. Dev.	Min	Max
HAH	1836	17.32	16.91	5.15	90.00
PDN	1731	13.89	5.71	7.68	33.70
QSP	1450	11.81	5.63	3.26	26.07
SGP	1557	13.52	9.43	5.00	42.40

Table 3. Results of t-test by mean abnormal return

t	-6	-5	-4	-3	-2	-first	0	+1	+2	+3	+4	+5	+6
	41	41	41	41	41	41	41	41	41	41	41	41	41
AAR %	-2.72	0.09	0.3	0.05	-0.07	-2.61	0.58	0.32	-0.73	first	-0.17	0.22	-0.45
t-test	***					***							

Table 4. Results of t-test according to cumulative average abnormal returns

t	[-6,-1]	[-5,-1]	[-4,-1]	[-3,-1]	[-2,-1]	[+1,+2]	[+1,+3]	[+1,+4]	[+1,+5]	[+1,+6]
	41	41	41	41	41	41	41	41	41	41
CAAR %	-4.0	-2.2	-2.3	-2.6	-2.7	-0.41	0.63	0.46	0.68	0.19
t-test	***		*	**	***					

Note: *, ** and *** indicate statistical significance at the 10%, 5% and 1%, respectively

Source: Analytical results from research data

Table 1 shows the results of the t-statistic of the average abnormal return AAR. The average abnormal returns 6 days before the event date have a negative or positive sign but with a very small value. In which the average abnormal return on the 6th and 1st day before the event date with values of -2.72% and -2.61%, respectively, has statistical significance at 1%. Thus, the market reacted before the announcement of the change of the BoD and the average abnormal return was negative, indicating that the stock price has decreased before the news of the change of the BoD. This shows the inefficiency of the market before the announcement of changes in the Board of Directors. In addition, it also shows that the market has leaked information, showing the non-compliance with regulations of businesses and investors in information transparency.

The results in Table 2 show the results of the t-statistic of the CAAR cumulative average return. Cumulative abnormal returns of less than zero in the days leading up to the event show that investors consider the news of board changes to be unfavorable, which leads to a drop in stock prices and a drop in extraordinary earnings. Thus, the market shows weak efficiency for the disclosure of information on changes in the BoD of seaport enterprises listed on the Vietnamese market.

5. Conclusion

By adopting event study method, the study finds out that the announcement of changes in the BoD of Vietnamese seaport enterprises has a negative impact on the companies' stock prices from 6 days before and after the disclosing date. This result is consistent with the result of Phan Tien Manh's research. This can be inferred that the disclosure of information on the BoD of seaport company is sensitive and there may exist leak of information from enterprises.

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THE IMPACT OF TRADE OPENNESS ON VIETNAM'S ECONOMIC GROWTH

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Abstract

Economic growth has always been the most concerned issue in many countries, but in recent years, the process of economic integration and the industrial revolution 4.0 has had a strong impact on almost all fields in the world. Socioeconomic. Trade openness is considered as a criterion to evaluate the effectiveness of a country's foreign trade. Trade openness is calculated as total import and export turnover divided by GDP. Thanks to open trade, import and export activities of all kinds of goods and services take place more efficiently. Not only that, opening trade also helps that country to absorb more technological quintessence to improve labor productivity as well as knowledge on management and allocation of resources correctly. Many countries around the world are implementing trade opening and trade liberalization policies to improve the competitiveness of domestic enterprises and create a driving force for national economic growth. The process of world economic integration is currently taking place on a global scale; besides, the trade openness of economies will follow the trend of more expansion in the future. Therefore, assessing the role of trade openness in economic growth has a very important meaning in the development of the country as well as receiving much attention from economists. The study focuses on examining the relationship between trade openness and economic growth, especially in the case of Vietnam to clarify the impact of trade openness on Vietnam's economic growth.

Keywords: *economic growth, trade, import and export, impact.*

1. Introduction

Economic growth is always one of the issues that attract the attention of not only policy makers but also economists and the general public. Economic growth can contribute to creating jobs, improving people's incomes, improving quality of life and many other positive effects.

There have been many studies on the factors that can help an economy grow. It can be investment, international trade, technology, geography according to Rick (2009), or institutions, international trade and geography according to Rodrik (2002). And Acemoglu et al. (2005) argue that institutions are the fundamental cause of economic growth in the long run.

Foreign direct investment can help recipient countries access modern technologies and management methods, as well as utilize domestic resources (Hofmann, 2013), thereby contributing to spreading technology, improving operational efficiency and contributing to economic growth.

Meanwhile, according to Barro and Sala-i-Martin (1997) and Rivera-Batiz and Romer (1991), in the long run, trade openness can promote economic growth through the export of goods and services improve efficiency in allocating resources, and improve aggregate factor productivity through the diffusion of knowledge and technology. Thus, this creates an expectation that countries with greater trade openness can achieve higher growth rates. Therefore, in order to promote economic growth, the policies of many countries have aimed to liberalize trade and improve the competitiveness of enterprises, considering them as driving forces for economic growth. of the country (Belloumi, 2014).

However, not all economists agree on the positive role of foreign direct investment, as well as trade openness, in promoting economic growth. Research by Woo (1995) shows that, FDI does not have a positive effect on economic growth while the studies of Foreman - Peck (1995), Williamson and O'Rourke (1999), Vamvakidis (2002) show that that trade openness has no relationship with growth, even has the opposite effect.

2. Method

The article uses the following methods to learn and analyze in accordance with the content and research objectives.

Statistical method: the data in the thesis are compiled from Ministry of Industry and Trade, World Bank, General Statistics Office, General Department of Customs, Asian Productivity Organization (APO), the periodic reports of the relevant agencies, the results from the surveys.

Modeling method: using drawings, tables, charts to clarify the analysis, and make the problems easier to understand, clear and more convincing.

Comparative analysis method: using time-series comparison, cross-comparison from data sources to draw accurate conclusions about the change, current situation, and trend of the research element.

3. Theoretical Framework

The international trade theory of the classical school and modern international trade theories have shown that international trade plays an important role in economic growth because it expands the production and consumption capacity of each country. The development history of the world economy shows that countries that move fast on the path of economic growth and development are those with strong and dynamic foreign trade. International trade development plays an important role in the process of economic growth and development; promoting the social division of labor, re-forming the specialized area, promoting the development of the production force, improving management, and applying new science and technology to production. International trade contributes to expanding

international economic relations, integrating one country's economy into the world economy on the basis of promoting the country's comparative advantages.

The open-door policy and international economic integration through trade liberalization have brought positive results to all economies in the world, in which import-export activities have shown an important role in serving the economy. Effectively develop production, innovate technology, promote the improvement of the quality and competitiveness of goods, and meet the essential needs of life. Trade liberalization both expands the export scale of each country, creates favorable conditions for imports, and opens the door to international goods and services that the country wishes to enter the domestic market easily. Globalization makes the import-export market expand, allowing enterprises to promote their import-export activities. In terms of products, the diversification of products and goods through the liberalization of import and export leads to an increase in labor productivity and, ultimately,

Along with the strategy of international integration and development, international trade is an important part, associated with the international integration process and plays a decisive role in the advantages of a country in the regional and world markets. Therefore, promoting the development of international trade in general and promoting the export of goods and services in particular are the top economic development goals of countries. Export is the basis for expanding and promoting foreign economic relations, enhancing the economic position and competitiveness of each country in the world market. Commodity competitiveness is enhanced, economic growth becomes more stable and sustainable thanks to resources allocated more efficiently. Export also creates a major source of capital for the import of technology, machinery and other necessary raw materials and materials for the cause of industrialization and modernization. Export activities stimulate economic development, contribute to capital accumulation, production expansion, increase in income for the economy, and improvement of living standards of all classes of the population. Foreign currency earned from export activities is a source of increasing foreign currency reserves, thereby creating the necessary conditions to help stabilize the domestic currency and fight inflation.

Export activities not only contribute positively to economic growth but also create important changes to domestic production. Exports contribute to economic restructuring and promote the production of new products because export-producing industries create favorable conditions for other industries to develop. Besides, export creates economic and technical premise to improve and enhance domestic production capacity; because export is an important means of bringing in capital and technology from the outside world to modernize the domestic economy to create new production capacity. Through export, domestic goods participate in the world market competition in terms of price, quality...

Exports have a positive impact on creating jobs and improving people's lives. The impact of exports on livelihoods includes many aspects. First of all, enterprises producing export goods are the place to attract millions of workers to work with high income. Exports create capital to import essential consumer goods to serve the people's lives and meet the increasingly richer consumer needs of the people. At the same time, exporting positively affects the skill level of exporters.

Meanwhile, import is the phenomenon of moving goods from the world market to the domestic market of a country. Along with exports, import activities are an important basis for expanding a country's external economic relations, one of the important factors promoting production and consumption. Import is aimed mainly at serving the export development strategy and meeting the essential requirements of domestic production and consumption. The import market expands, the quality of imported goods is improved, contributing to the renewal of equipment, technical equipment and production processes, improving the competitiveness of goods and services in general, thereby promoting exports. export development. Thus, the structure of imports should be controlled in the direction of prioritizing production for export and meeting domestic demand...

4. Impact of trade openness on economic growth

New theories, including endogenous growth theory, support the view that trade openness has a positive effect on economic growth. For example, within the framework of endogenous growth, one of the ways that trade openness is thought to affect economic growth is technology transfer (Karras, 2003). Therefore, technology transfer and other movements are more possible in an open economy than in a closed economy. Based on arguments from endogenous growth theory, Adhikary (2011) argues that openness to trade can affect economic growth, facilitate international capital flows as well as redirect favorable factors. favor more productive sectors. In addition to facilitating the movement of factors and capital flows, Trade openness can also affect economic growth through its effect on labor productivity and export capacity. In this view, an economy with a high degree of trade openness tends to increase specialization and division of labor, thereby improving productivity and export capacity. In some cases, the link between trade openness and economic growth is tied to the impact of trade openness on foreign investment. In this view, it is believed that a higher degree of trade openness allows for greater inflows of foreign investment. In some cases, the link between trade openness and economic growth is tied to the impact of trade openness on foreign investment. In this view, it is believed that a higher degree of trade openness allows for greater inflows of foreign investment. In some cases, the link between trade openness and economic growth is tied to the impact of trade openness on foreign investment. In this view, it is believed that a higher degree of trade openness allows for greater inflows of foreign investment.

Due to the development of the trade literature and growth, different channels linking trade openness with economic growth have been identified. For example, in some situations, especially in developing countries, the act of opening up trade through alleviating restrictive trade regimes has led to rapid economic growth. This is so because the growth of developing countries is partly based on their ability to import, especially capital goods, investment and other intermediate goods and services (Krueger, 1998). This situation may provide an explanation why a number of developing countries in the past decades have introduced measures to relax restrictions in their trade regimes towards more favorable trade regimes. more open trade.

In summary, the impact of trade openness on economic growth of transmission channels is depicted through the following figure:

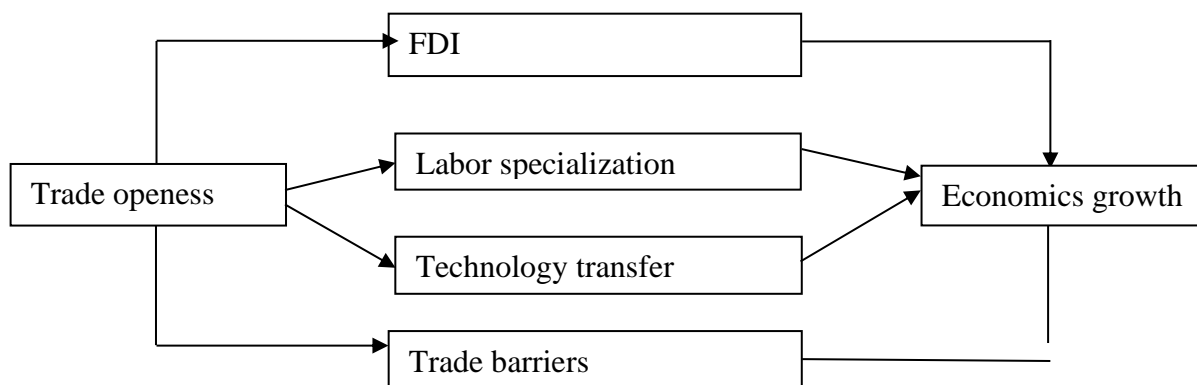


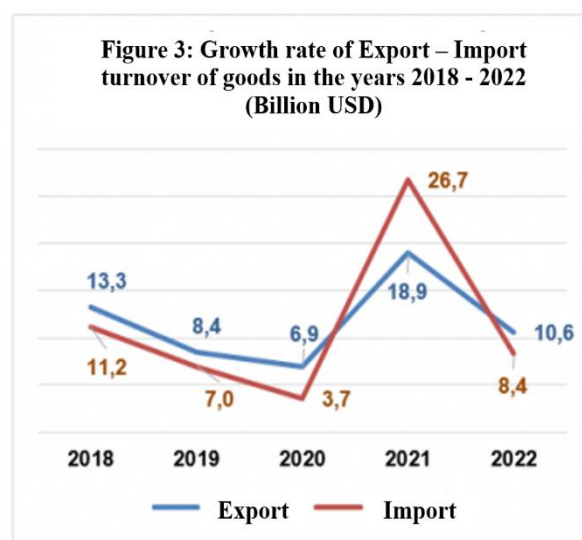
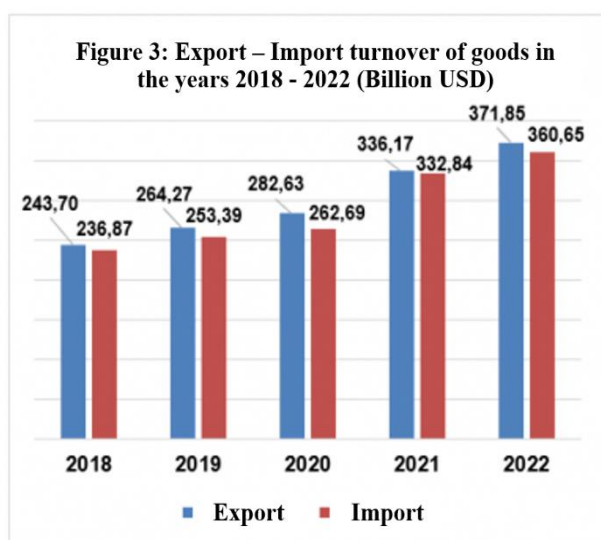
Figure 1. Impact of trade openness through transmission channels

Source: Compiled by the author

5. Vietnam's import and export situation and trade openness

5.1. Vietnam's import and export situation

The process of opening up and integrating into Vietnam's economy over the past three decades has contributed to promoting economic growth extremely strongly, more especially this impact mainly comes from policies focusing on economic growth. growth in investment and export capital. Economic integration opens up many new opportunities for Vietnam to invest and develop, such as removing tariff barriers, strengthening the signing of bilateral and multilateral trade agreements and removing market restrictions. international commerce. In particular, the evidence also shows that Vietnam is making good use of these opportunities when the export growth has made contributions to the development of the national economy in recent times.



Source: The author compiles data from the General Statistics Office

In the first months of 2022, the Covid-19 epidemic continued to develop complicatedly, causing negative impacts on economic activities, in which the import and

export of goods were severely affected, countries tend to using domestic products instead of imported products, especially agricultural and aquatic products. The year 2022 also takes place in the context of the world economy having many rapid and unpredictable changes, increasing risks to financial markets, currency, energy security, and global food security. However, the second half of the year witnessed a strong recovery of the economy when effective control was started and the pandemic was initially overcome. GDP growth for the whole year 2022 is estimated at 8.02% compared to the previous year, which is the highest increase in years in the period 2011-2022. In the general picture there are many bright spots, one of which is import and export activities with the total export and import turnover of goods reaching a record level exceeding 700 billion USD.

Merchandise export turnover in 2022 is estimated at 371.85 billion USD, up 10.6% over the previous year. In which, the domestic economic sector reached 95.09 billion USD, up 6.5%, accounting for 25.6% of total export turnover; the foreign-invested sector (including crude oil) reached \$276.76 billion, up 12.1%, accounting for 74.4%. In 2022, there are 36 items with export turnover of over 1 billion USD, accounting for 94% of total export turnover (there are 08 export items with over 10 billion USD, accounting for 70.1%).

Import turnover of goods was estimated at 360.65 billion USD, up 8.4% over the previous year, of which the domestic economic sector gained 125.79 billion USD, up 10%; the foreign-invested sector reached \$234.86 billion, up 7.5%. In 2022, there are 46 imported items with a value of over 1 billion USD, accounting for 93.3% of the total import turnover (there are 06 imported items with over 10 billion USD, accounting for 52.1%).

Regarding the export and import market of goods in 2022, the United States is the largest export market of Vietnam with an estimated turnover of 109.1 billion USD. China is Vietnam's largest import market with an estimated turnover of 119.3 billion USD. In 2022, the trade surplus to the EU is estimated at 31.8 billion USD, up 36.8% over the previous year; trade deficit from China was 60.9 billion USD, up 11.5%; trade deficit from Korea was 38.3 billion USD, up 11.5%; trade deficit from ASEAN was 13.6 billion USD, up 10.6%.

From 2016 to now, the trade balance of import and export of goods has been continuously in surplus, with the trade surplus of the following year higher than the previous year. In 2016, our country's trade surplus of goods reached 1.6 billion USD; 2017 reached 1.9 billion USD; in 2018 increased to 6.46 billion USD; in 2019 reached 10.57 billion USD, in 2020 reached 19.94 billion USD, in 2021 due to the heavy influence of the Covid-19 epidemic, the trade surplus reached only 3.32 billion USD.

In 2022, despite many difficulties after the severe effects of the COVID-19 epidemic and the unstable situation in the world, the trade surplus will continue to be maintained. Although in the first quarter, the trade surplus was only nearly 1.5 billion USD, then in the second quarter there was a trade deficit, but with continuous efforts in the third quarter (over 6 billion USD) and the fourth quarter (the trade surplus was nearly 4.5 billion USD). billion USD), by the end of 2022, the trade balance of goods has reached a trade surplus of 11.2 billion USD.

5.2. Vietnam's trade openness status

Since the doi moi, Vietnam has been promoting export-oriented industries and at the same time protecting its nascent industries. Open trade policies are characterized by strong protectionism and interventionism through a series of nominal tariffs and especially non-tariff barriers (quantitative controls, permits, taxes), control outsourcing contracts with foreign partners, etc.).

Trade openness also changes the movement of foreign direct investment because increased foreign investment significantly affects overall exports. After the 1986 reform, Vietnam worked tirelessly to advance its trade and liberalization policies. Vietnam transitioned from a typical agricultural-based economy to an industrial one. The country encourages foreign investors to invest in various sectors such as health and education. Since then, Vietnam has continuously focused on improving its economic position through foreign investment and commercial activities.

Vietnam became a member of the World Trade Organization in 2007, which has further boosted trade and FDI inflows. Vietnam has designed a complete FDI growth plan to attract investors and encourage foreign investment for the sake of local development and growth.



Figure 4. Economic openness of Vietnam from 1986 to 2020

Source: The World Bank

Vietnam's trade reform is not motivated by a belief in the theoretical effects of "free trade" but is carried out with the aim of industrialization of the economy. At the same time, another important condition is maintaining the leadership role of the State in the transition. New liberalization measures have only been implemented since the late 1990s under pressure to prepare for the Asian Free Trade Area (AFTA), other bilateral agreements and the WTO. However, the reform of the trading system is far from its goal, and so far we cannot consider Vietnam to have liberalized its openness.

During the doi moi period, dramatic and dramatic changes in trade volumes and trading partners at the early stages of the transition gave the impression that Vietnam would integrate into international trade.

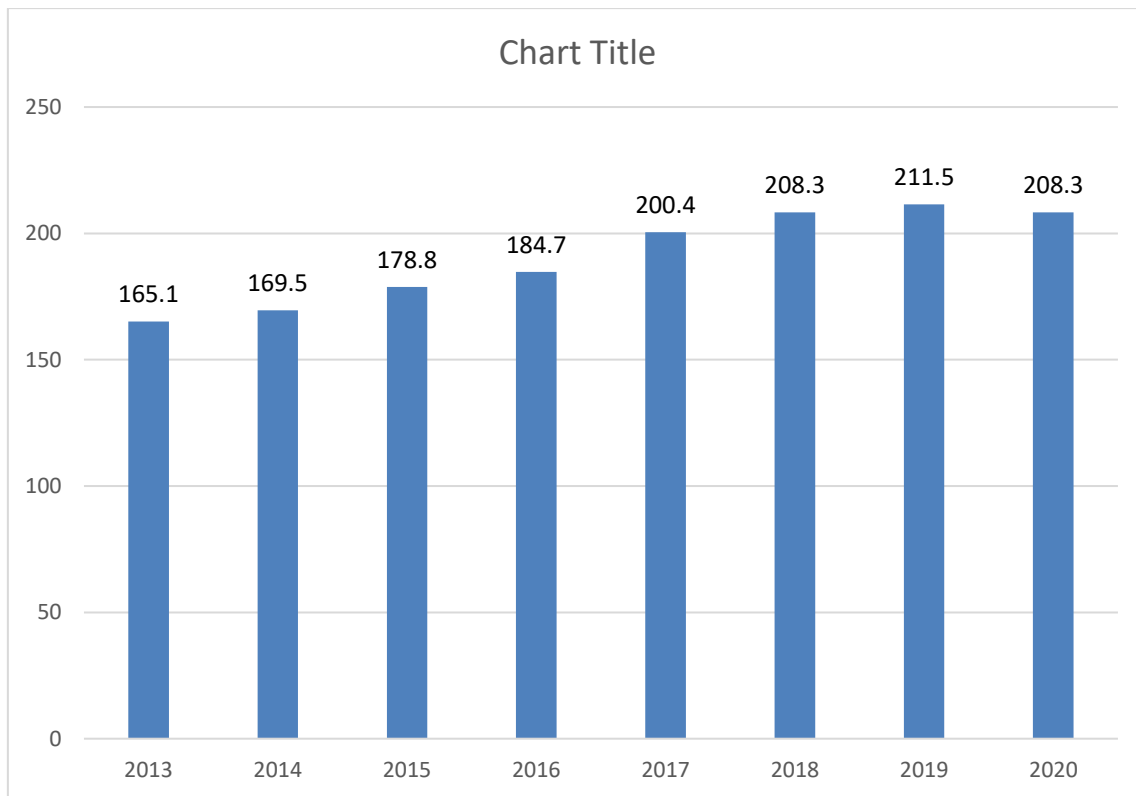


Figure 5. Vietnam's trade openness in recent years

Source: The Global Economy

Vietnam's trade openness has continuously increased year by year, peaking in 2019 this figure reached 211.5%. In terms of 2016, when the trade openness of the three countries with the largest economies in the world, the US, was only 27%, China was 37%, and Japan was 31%, Vietnam was up to 184.7%. It can be seen that Vietnam is a country with a very high trade openness rating in the world in general and in Asia in particular. Reason:

Firstly, Vietnam mainly has to import machinery components for processing and export back, while the other 3 countries can produce goods themselves in their country.

Second, it can be seen that since the average income of Vietnam is much smaller than the average income of countries with developed economies, it will make the denominator in the formula small, leading to a small trade openness. big trade.

6. Vietnam's economic growth situation

After the doi moi 1986, Vietnam has continuously made efforts to revive policies and strategies aimed at stabilizing economic activities and growth. The economy shifted from agriculture to industry based economy although there are certain differences.

Vietnam's economy has a large openness, production depends a lot on imported raw materials and fuels, and has limited resilience and competitiveness. Only a small change in the world can have a big impact on the domestic economy and society.

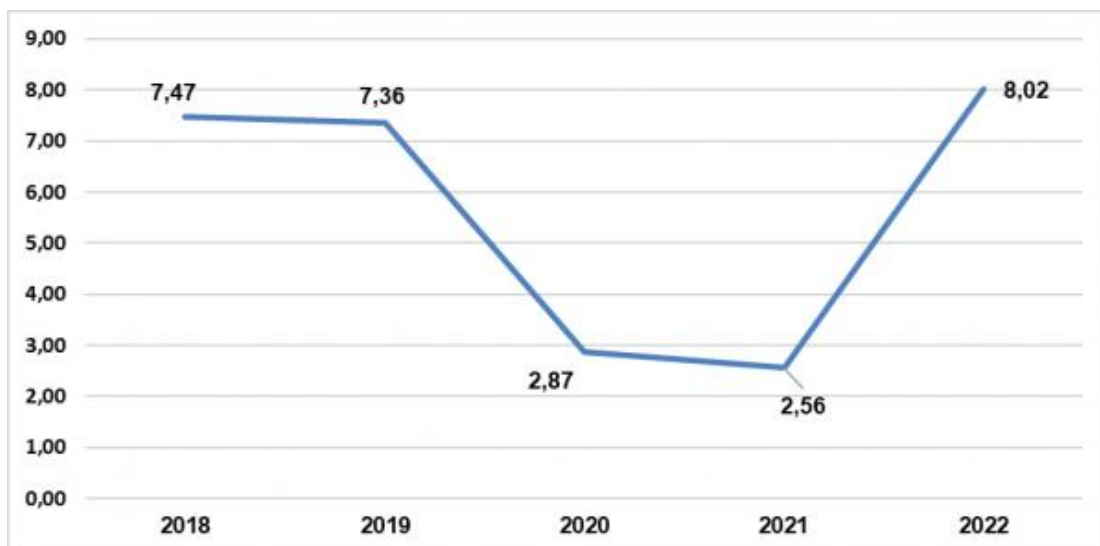


Figure 6. GDP growth rate in the years 2018-2022 (%)

Source: The author compiles data from the General Statistics Office

Economic growth in 2022 will reach 8.02% over the same period last year, this is the highest increase in the period 2011-2022, in which the agriculture, forestry and fishery sector continues to be the foundation of the economy. Vietnam's gross domestic product (GDP) in 2022 exceeded 400 billion USD for the first time. According to the General Statistics Office, GDP per capita in 2022 is estimated at 95.6 million VND/person, equivalent to 4,110 USD, an increase of 393 USD compared to 2021. In particular, Vietnam's GDP in 2022 recorded a high increase. in the past 12 years with an increase of 8.02% over the previous year. In which, the field of agriculture, forestry and fishery increased by 3.36%, contributing 5.11% to the growth rate of total added value of the whole economy. Industry and construction, processing and manufacturing industries had a growth rate of 8.10%, contributing 38, 24% to the growth rate of total value added of the whole economy. The service sector recovered and grew strongly with the growth rate in 2022 reaching 9.99%, the highest in the period 2011-2022; contributed 56.65% to the growth rate of total added value of the whole economy. Vietnam's economic position in international trade has been consolidated and confirmed. While global aggregate demand declined, supply chains broke, export producers faced difficulties in input materials and consumption markets, but the export turnover of goods next year was higher than the previous year. , reflecting the dynamism and overcoming difficulties in finding sources of goods and finding markets. Import and export turnover of goods for the whole year exceeded USD 730 billion, with 36 items achieving export turnover of over USD 1 billion; For the first time, seafood export reached 10 billion USD, making Vietnam the third largest seafood exporter in the world, accounting for over 7% of the global market share; trade surplus was at a high level, reaching 11.2 billion USD, helping to reduce exchange rate pressure in the foreign currency market. Foreign direct investment into Vietnam is the bright spot of the economy in the context of declining international trade and investment. In 2022, 1,107 projects registered to increase investment capital with the total additional registered capital reaching nearly 10.12 billion

USD; Implemented FDI capital reached 22.4 billion USD, up 13.5% compared to 2021. In particular, foreign investment attraction has shifted, focusing on high-tech industries and fields, in line with the theme of the project. promoting quality improvement, prioritizing projects that are modern, pervasive in technology, create highly competitive products, and at the same time meet green and sustainable development goals. The results of foreign direct investment and international trade show that investors are placing great faith in the investment environment and Vietnam's economic position in the global supply chain. The world community assesses that Vietnam plays an important role in promoting international trade and commits to expand investment in Vietnam in the coming time.

7. Conclusion

Through the analysis of import-export situation and economic growth, it is found that trade openness has a positive impact on Vietnam's economic growth, plays an important role in long-term economic growth. Therefore, there should be policies to promote import and export in Vietnam. Policymakers can develop political policies and corporate tax strategies by looking at tax structures and financing local products, both across small and large systems. Outline export diversification strategies that can be positively linked to economic growth. Strengthen international cooperation and sign trade agreements. This will help attract foreign direct investment, create more jobs for workers, help alleviate poverty, build a more productive workforce, meet the economic needs of the Vietnamese people. In addition, reasonable trade policies also contribute to the country's ability to absorb the quintessence of technology and techniques as well as knowledge to allocate national resources more effectively, limit prevent wastage of available resources

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IMPROVE TAX ADMINISTRATION FOR CAPITAL TRANSFER ACTIVITIES IN VIETNAM

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Abstract

The article synthesizes the types of capital transfer and the content of tax collection management. At the same time, the article also analyses current status of tax administration for capital transfer activities in Vietnam and points out the weaknesses and the reasons that make the tax management become more difficult. Tax administration for capital transfer activities only stops at declaration confirmation. This is mainly done by self-declared businesses or those who need confirmation from tax authorities to complete legal procedures. Vietnam has no basis to verify the transfer price, so it only collects tax on capital transfer activities on the exchange rate difference between the time of transfer and the time of capital contribution, leading to loss of tax collection. For an individual transfer of capital, it is difficult to control the transfer price and related costs. Finally, the article offers some solutions to improve the tax administration for capital transfer activities in Vietnam. Tax authorities need to strengthen measures to effectively implement tax policies for capital and asset transfer activities of foreign enterprises. It is necessary to promote international cooperation in preventing tax base erosion and profit transfer, and perfecting tax laws and policies for capital and asset transfer activities of foreign enterprises. In particular, it is necessary to supplement regulations and guidelines on business restructuring activities. The inspection of capital transfer cases related to M&A activities should be strengthened. tax management for individuals transferring share capital should be focused. It is necessary to build a number of professional manuals to inspect and check capital transfer transactions. Tax authorities need to continue to build and perfect the database to improve the efficiency of information management of capital transfer transactions

Keywords: *Capital transfer, tax administration, tax collection management, transfer price, tax treaty*

1. Introduction

In recent years, the transfer of contributed capital and shares of organizations and individuals in enterprises has taken place quite often with a large transaction value. This is complex financial activities which have many potential tax risks. In fact, the inspection shows that many individuals and organizations have not well performed their tax declaration and payment obligations with tax authorities when transferring capital. Meanwhile, the tax inspection and management for capital transfer activities still face many difficulties. The source of timely information to identify and detect capital transfer activities is limited. In

fact, the change of owner is done between foreign legal entities. When the transfer is completed, the transferee will notify the Vietnamese authorities to adjust the investment certificate (change of owner's name) without declaring the capital transfer. Besides, at present, most foreign organizations, when transferring capital to foreign parties, declare the transfer price equal to the cost price. Meanwhile, Vietnam has no basis to verify the transfer price. Therefore, tax authorities currently only collect tax on capital transfer activities on the exchange rate difference between the time of transfer and the time of capital contribution, leading to tax loss.

The legal provisions related to capital transfer activities have not been fully collected and systematized for tax administration. The Law on CIT does not have specific provisions on the collection of CIT for the case of overseas capital transfer by foreign companies, which changes the ownership and control of the parent company that has direct investment capital. into a subsidiary in Vietnam. The tax law also does not clarify the case where foreign organizations and Vietnamese enterprises have activities to transfer capital in Vietnamese enterprises in order to restructure or reorganize investment management activities but in fact there is no capital transfer activity generating taxable income. In addition, the law stipulates unclear subjects and methods of tax calculation for capital transfer transactions in enterprises outside the territory of Vietnam but indirectly change the owner of capital in Vietnamese enterprises.

The amount of corporate income tax collected from capital transfer activities in recent times is still small. Fraudulent acts in capital transfer are still quite common. Therefore, it is necessary to strengthen tax administration for capital transfer activities in Vietnam. The objective of the report is to analyze and assess the current status of tax administration for capital transfer activities in the period 2016 to present, to clarify the achieved results, limitations and causes. The article proposes solutions to improve tax administration for capital transfer activities in Vietnam to ensure compliance with international practices and practical conditions of Vietnam.

2. Theoretical framework

Capital transfer takes the following forms

- Transfer of capital and shares of owners of limited companies and joint-stock companies: Income from the transfer of share capital of the owner of the company being a legal entity will be subject to corporate income tax at the tax rate specified at the time of transfer. Contributed capital and shares are not consumable goods and services, so the transfer of capital and shares in the company is not subject to the value added tax law.

- Swap of contributed capital and shares: Owners can swap contributed capital and shares between member companies or between member companies and the corporation when there is a need to rearrange industry groups. business or focus on business management in the corporation during the restructuring process. The essence of the equity swap process is a series of capital transfer transactions between owners or between owners and related companies. Therefore, income arising from the swap of contributed capital will be subject to tax in accordance with the law on capital transfer.

- Split, merger, consolidation: When the enterprise is restructured in the form of division, separation, merger, consolidation, but the subsidiaries do not have income arising from the split, merger, consolidation, then the owners will not be subject to income tax. However, the difference due to revaluation of assets to contribute capital, transfer of assets upon division, consolidation, merger, conversion of enterprise type is recognized as another income of the enterprise and must be taxed.

- Contributing capital with land use rights: corporate restructuring may lead to the transfer of land use rights of individuals and organizations contributing capital to serve business activities. The capital contribution through the value of land use rights is not considered a transaction of transferring the value of land use rights. When the parties agree that the value of capital contribution is higher than the initial value, the difference obtained from the capital contribution must be recognized as other income when accounting, so corporate income tax must be paid.

Tax collection management for capital transfer activities is the sequence of steps in tax collection management and the responsibility for performing those steps of the tax authorities. The content of the tax administration process depends on the tax authority's choice of tax administration mechanism. A typical tax management process includes the following basic contents:

- Propagating and educating about tax law: conveying information about tax law to all members of the society by specific forms and measures.

- Taxpayer support: create the best conditions for taxpayers to fulfill their tax obligations such as guiding declarations and solving problems.

- Management of tax declaration and payment: capture the entire situation of tax registration, tax declaration, tax payment and tax debt of taxpayers

- Urging tax collection and payment: reminding taxpayers to fulfill their tax obligations to the state budget

- Inspecting taxpayers: controlling and comparing, assessing the correctness and honesty in tax declaration activities and fulfilling tax obligations of taxpayers.

- Tax coercion: using forms and measures to force taxpayers to fulfill tax obligations and implement tax administrative decisions.

3. Method

The narrative reviews are used in this paper. The research has summarized and synthesized the theory of capital transfer and tax collection management for capital transfer activities. The paper has also analysed Vietnam's tax management of capital transfer and pointed out the limitations. The purpose is to help the readers understand the reality of tax management in Vietnam for capital transfer activities. The scope of the research questions being investigated is broad: (a) What are the types of capital transfer activities and the contents of tax collection management for capital transfer activities? (b) What are limitations of tax management for capital transfer activities. in Vietnam (c) how should the tax collection management for capital transfer activities be improved? To provide clear answers

to these questions, a literature review has been conducted. Secondary data are synthesized from domestic and foreign researches

4. Results

4.1 Legal basis of tax administration for capital transfer activities in Vietnam

The tax legal framework for capital transfer was formed very early, along with the formation of the Personal Income Tax Law and the Corporate Income Tax Law. The legal basis for capital transfer is summarized in the following table:

Table 1. Legal basis for capital transfer

No.	Adjusted content	Legal grounds	Target
1.	Recognizing capital transfer activities	Law on Enterprises: Articles 31, 32, 33, 34, 49 Decree 78/2015/ND-CP on business registration: Article 14	Identify capital transfer activities
2.	Identification of subjects with tax obligations	Circular 78/2014/TT-BTC: Article 14 Circular 111/2013/TT-BTC: Article 2 Circular 25/2013/TT-BTC: Article 27 The provisions of the agreement to avoid double taxation	Determining the right to tax, taxpayers are obliged to declare and pay taxes, resident or non-resident
3.	Basis for analysis of capital transfer activity records	Circular 156/2013/TT-BTC: Article 12, Article 16 Circular 111/2013/TT-BTC: Article 26 Enterprise Law: Article 126 Decree 78/2015/ND-CP: Article 4, Article 45, Article 51, Article 52	Determine whether the taxpayer has declared and has an initial declaration to use for risk analysis and identification. Determining available legal documents when there is a capital transfer, change of capital contributors, change of founding shareholders to study the requirements after analyzing the records
4.	Analysis of capital transfer documents	Circular 78/2014/TT-BTC: Article 14 Circular 111/2013/TT-BTC: Article 11, Article 20	Analyze each tax base of the capital transfer, thereby determining the risk for each element of the tax base, determining the content of the application for additional requirements for the enterprise or immediately determining the basis for tax calculation. to determine tax liability

Source: Author's synthesis

4.2. Current status of tax management for capital transfer activities

Firstly, the tax authority has reviewed the data of the tax industry to make a list of cases where capital transfer activities have been declared but have not generated taxable income or generated low taxable income that is not commensurate with regulations. transaction size. Tax authorities focus on the following cases:

- Selling the entire one-member limited liability company in the form of transferring capital attached to real estate, tax must be paid each time it is incurred.

- Foreign organizations that do business in Vietnam or earn income in Vietnam but do not operate under the investment law or enterprise law shall declare corporate income tax for each time capital transfer activities arise.

- Enterprises engaged in M&A activities do not declare and pay tax to tax authorities. Related parties only carry out the registration procedures to change the name of the legal representative and the names of the members. And the rate of capital contribution remains unchanged as the transfer has never happened.

According to the tax administration database, in the period 2016-2022, there were about 800 cases of declaration of capital transfer according to each time of income generation, mainly concentrated in a few large areas such as Hanoi, Ho Chi Minh City and Hanoi. Ho Chi Minh City, Ba Ria Vung Tau, Dong Nai, Binh Duong. Among them, about 300 cases do not generate taxable income (the transfer price is equal to or lower than the cost price, the transfer price is equal to the cost price plus transfer costs).

Second, the tax authority conducts a review to check the completeness and validity of capital transfer documents. Tax declaration dossiers for income from capital transfer of foreign contractors specified in Circular No. 151/2014/TT_BTC include:

- CIT declaration and capital transfer

- Copy of transfer contract. In case the transfer contract is in a foreign language, the following main contents must be translated into Vietnamese: the assignor, the transferee, the time of the assignment, the contents of the assignment, the rights and obligations of each party, and the value. of the contract, term, method and currency of payment.

- A copy of the competent agency's decision approving the capital transfer

- A copy of the certificate of capital contribution

- Original documents of expenses.

The tax authority has reviewed the capital transfer cases in the locality. Tax officers put at risk to plan inspection, check or conduct specialized inspection and examination for cases where the declaration of transfer price equals the cost price, or the low difference between the transfer price and the cost price, resulting in no or low CIT payable.

Third, the tax authority reviewed some cases of capital transfer declaration with signs of risk. Tax authorities combine the collection and analysis of information from inside and

outside (media information, press, anti-money laundering department, inspection and supervision agency of the state bank) to review cases with signs of fraud. Typical cases can be mentioned are Matro cash & carry Vietnam Co., Ltd., Insurance brokerage Gras Savoye Willis Vietnam Co., Ltd., Samju Vina Co., Ltd. (loss adjustment for taxable income is 11,134 billion VND). Since 2016, the tax authority has immediately inspected enterprises with high tax risks, tax refunds, businesses that have not been inspected for many years (from 3-5 years), enterprises using Illegal invoices and documents on tax incentives, capital transfers, trademarks... By 2022, the tax authorities have focused on analyzing risks, strengthening inspection and checking against tax loss in some areas such as e-commerce, business on digital platforms, capital transfer, purchase and sale, mergers and acquisitions, real estate transfer...

Table 2. Results of inspection (up to the end of December 2022)

Number of inspections	31,095
Amount proposed to be handled (billion VND)	22,680
Increased tax collected through inspection (VND billion)	6,129
Decrease of deduction (billion VND)	892
Loss reduction (billion VND)	15.01
Total tax paid to the state budget (billion VND)	3,852

Source: Ministry of Finance (2022)

Tax authorities have conducted 31,095 inspections, reducing losses of 15.01 billion VND, reducing deductions by 892 billion VND. The increase in tax collected through inspection is VND 6,129 billion. The total amount of tax paid to the state budget is 3,852 billion VND.

In summary, Tax administration for capital transfer activities in Vietnam is assessed as follows:

a. Achievements

Tax law on capital transfer has contributed to clarifying the objects and methods of tax calculation for domestic capital transfers and capital transfers between enterprises outside the territory of Vietnam. Many measures have been taken for the purpose of reviewing and evaluating the declaration and payment of CIT for capital transfer activities of enterprises. The draft Law amending and supplementing a number of articles of the Law on Value Added Tax, the Law on Special Consumption Tax, the Law on Personal Income Tax, the Law on Corporate Income Tax and the Law on Natural Resources Tax focuses on amending, supplement and complete a specific, clear, public and transparent legal framework for capital transfer to avoid disputes over tax collection.

Through reviewing CIT declaration dossiers, tax authorities have taken measures to strengthen supervision and urge enterprises with capital transfer activities to fully declare and pay tax in accordance with the law. For some transactions of great value but incomplete or questionable tax returns, an inspection and inspection plan should be developed to ensure compliance with tax laws as well as to avoid loss of state budget revenue.

b. Limitations

Tax administration for capital transfer activities only stops at declaration confirmation. This is mainly done by self-declared businesses or those who need confirmation from tax authorities to complete legal procedures. In the field of real estate, the popular form of real estate project transfer recently is to buy back 80-90% controlling shares or buy the whole company. However, the transfer usually takes place silently, so it is not easy to know the details of the transaction. There are many forms of capital transfer. However, there is no coordination mechanism between tax authorities and licensing agencies. There is no regulation that the licensing agency only carries out procedures for changing capital contributors when organizations and individuals have fulfilled their tax obligations, resulting in loss of revenue for the state budget.

Capital transfer transactions indirectly change the owners of capital in Vietnamese enterprises. But in fact, the majority of foreign organizations, when transferring capital to foreign parties, declare the capital transfer price equal to the cost price. Meanwhile, Vietnam has no basis to verify the transfer price, so it only collects tax on capital transfer activities on the exchange rate difference between the time of transfer and the time of capital contribution, leading to loss of tax collection. For an individual transfer of capital, it is difficult to control the transfer price and related costs. The vast majority of cases declare the difference of 0 leading to loss of tax revenue. This is unfair to the transfer of capital in the form of securities...

c. Causes of limitation

Firstly, the tax policy and tax calculation methods, tax payment procedures related to capital transfer are not appropriate. Currently, there is no legal document stipulating a mechanism to control cash flow for capital transfer transactions, especially indirect forms of capital transfer. The tax administration database system for capital transfers is not yet capable of capturing the number of transfer activities. Most cases are now detected through inspection.

The personal income tax exemption policy in transferring gifts to relatives has facilitated tax avoidance. Some individuals take advantage of this policy when carrying out the procedure of transferring and gifting real estate with relatives to avoid paying personal income tax. If they did not carry out the step-by-step transfer procedure according to each tax-exempt relationship, they would have to fulfill the obligation to pay personal income tax.

Second, some foreign enterprises and multinational corporations have taken advantage of tax agreements to transfer profits to countries with low tax rates, high tax incentives or no tax collection. These are the countries with which Vietnam has signed a tax agreement. As a result, these businesses will reduce the amount of tax payable, affecting the state budget revenue. Multinational corporations establish many branches and subsidiaries in countries and territories with low tax rates or at tax havens. Then, these branches and subsidiaries invest capital in other countries that have signed tax avoidance agreements with the aforementioned countries, territories or tax havens. Under the Agreements for the Avoidance of Double Taxation, business income (including capital gains) of foreign

enterprises which does not have a permanent establishment in a Contracting State shall be pay taxes only in the Contracting State of residence.

5. Discussion and Conclusion

From the above analysis, the article proposes the following solutions

Firstly, tax agencies should research to complete regulations on tax administration for capital transfer activities. Tax authorities need to strengthen measures to effectively implement tax policies for capital and asset transfer activities of foreign enterprises. It is necessary to promote international cooperation in preventing tax base erosion and profit transfer, and perfecting tax laws and policies for capital and asset transfer activities of foreign enterprises. In particular, it is necessary to supplement regulations and guidelines on business restructuring activities, mergers and acquisitions, joint ventures, alliances in the technology field, intangible asset transfer and cost-sharing agreements in research and development. Tax authorities should consider promulgating a new tax on revenue from transfer transactions in Vietnam of multinational corporations without a presence in Vietnam. at the same time, it is necessary to complete the provisions of the law on corporate income tax for capital transfer activities of foreign investors, ensure transparency, consistency and convenience, enhance training and improve the qualifications of tax officers in the field of tax fraud prevention

Secondly, the inspection of capital transfer cases related to M&A activities should be strengthened. Due to the lack of strict laws, the licensing agency has carried out procedures for changing capital contributors when organizations and individuals have not even fulfilled their tax obligations. There is no coordination mechanism between tax authorities and licensing agencies. Therefore, tax officials have not yet fully collected taxes arising from capital transfer activities. There is a common point that when the tax authority inspects the capital transfer, businesses delay the provision of documents, data explanations as well as data on capital transfer among members of the company. The current situation of tax avoidance from capital transfer activities along with the increasing trend of M&A will be a big challenge for tax inspectors. Therefore, the development of a legal framework on M&A needs to avoid loopholes for tax evasion, especially the issues of managing financial obligations of enterprises carrying out capital transfers.

Thirdly, tax management for individuals transferring share capital should be focused. Individuals are entitled to bring capital, property, real estate, including the right to use land, to contribute capital to establish an enterprise. According to the regulations on personal income tax, the transferred real estate must fulfill the tax obligation of 2% of the value of the real estate. Thus, when the enterprise is transferred, the value of the capital and assets will be returned to the investor. Land use rights of individuals who previously contributed to establish a business and are now transferred will be subject to personal income tax arrears. Similarly, dividends and after-tax profits are subject to personal income tax of 5% on the actual personal income received. If the enterprise uses after-tax profits to

increase capital and has not yet distributed it to individuals, tax has not yet been collected. Therefore, when transferring the capital or shares of the owner being an individual, the transferring enterprise needs to review the tax liability for the capital derived from dividends and profit after tax. Owners of capital or shares of the enterprise must fulfill personal income tax obligations. Personal income tax management needs to tighten and unify the management of deductions at source.

Fourthly, it is necessary to build a number of professional manuals to inspect and check capital transfer transactions. Capital transfer inspection is a complex business. In addition to training, in the coming time, tax authorities need to develop and soon issue an inspection manual for this activity. The development of the manual aims to: (1) ensure supplementing and standardizing the tax inspection process, detailing the process of carrying out an inspection, illustrating specific situations to make it easier for tax officials. easy to apply in the inspection process, contributing to improving the effectiveness and efficiency of tax administration activities and protecting the interests of the state; (2) assisting inspectors in their working process to be convenient, ensuring consistency, efficiency, and compliance with the law, improving the capacity of inspectors. Basically, the contents of the manual of inspection tools for transfer transactions are divided into 3 stages: before conducting the inspection (the basis for selecting the object of inspection, the work to be prepared, the development of a plan). tax inspection plan at the taxpayer's office); conduct inspection; handling inspection results (sanctions, arrears, dialogue, settlement of complaints and denunciations)

Finally, tax authorities need to continue to build and perfect the database to improve the efficiency of information management of capital transfer transactions. In order to ensure that there are enough internal sources of information for tax administration for capital transfer, the tax authority now integrates many sources of information such as the declaration of the transfer of exploited capital from the tax system. industry databases, information data of government agencies, commercial databases, reports of industry economic analysts, exchange of information under double taxation agreements. In the near future, tax authorities may collect information in the form of a survey. Tax officers can ask taxpayers to respond directly to a questionnaire prepared by the tax authority and make a memorandum of understanding. The survey will help tax authorities better understand the current situation of production and business activities of enterprises and have more specific information to assess risks in areas or subjects subject to inspection. Tax authorities need to accelerate the integration of data management applications. The permission to access, search and exploit taxpayer information nationwide needs to be empowered by local tax authorities.

To conclude, in order to effectively manage taxes on capital transfer, the solutions from the tax authorities are not enough. Government and ministries need support for tax authorities. The sense of responsibility of taxpayers needs to be enhanced

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OPPORTUNITIES AND CHALLENGES IN THE GROWTH OF VIETNAM'S EXPORT TURNOVER WHEN TAKING ADVANTAGE OF THE EFFECTIVENESS OF FREE TRADE AGREEMENTS

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Abstract

Intending to identify opportunities and challenges from the free trade agreement (FTA) in the growth of Vietnam's import and export turnover, through data collection, analysis, and synthesis methods, the research team submits Present the research results through 4 parts: Introduction, Method, Results, Discussion, and Conclusion. In the Introduction, the article gives a theoretical basis for export activities, export turnover, and FTA. From the results of analyzing relevant research documents, the article has found research gaps in import and export activities, opportunities, and challenges from FTA to Vietnam's turnover growth in the coming time. The research results also synthesize export data, trade surplus, export turnover growth rate over the years of Vietnam in the period 2012 to 2022, and export data of Vietnam with FTA members. From the overall picture of export activities, the research team identifies opportunities from the FTA to the economy, government, and export activities of enterprises such as affecting the improvement of policies and laws and enjoying preferential tariffs... However, with opportunities comes significant challenges such as ensuring commitments, treaties, and regulations in export activities from the signed FTA terms. In the discussion of the results, the research team proposed some solutions to increase export turnover for Vietnam in the coming time, such as: continuing to improve institutions, policies, and laws in export activities, and strengthening information and regulations on FTA for enterprises to have appropriate production and export orientation in the future. In addition, solutions such as increasing the effective use of FDI capital, helping to change production technology lines, and applying modern production management processes also help exporters to enhance product quality, optimize costs, and create competitiveness in the market and domestic products of the country signing an FTA with Vietnam.

Keywords: *challenges, Export turnover, FTA, opportunities, Vietnam*

1. Introduction

Export turnover is the total value of exports of all goods by a company or a country during a fixed period which can be a month, a quarter, or a year. This portion of the value is

converted and synchronized in a specific currency. Export turnover assesses the economic and financial situation of enterprises and the whole country's economy. The increase in export turnover shows that the financial situation of enterprises or countries is showing positive signs. On the contrary, if the export turnover is low, the amount of foreign currency earned decreases, and the financial economy of enterprises and the country is slow to develop. An FTA is an agreement between two or more countries that agree on specific commitments affecting trade in goods and services, and measures to protect businesses, investors, intellectual property rights, and other areas of the agreement. Under the FTA policy, goods and services can be bought and sold with foreign partners without tax or with very low preferential tax rates. Joining an FTA will reduce trade barriers such as quotas, subsidies, or government bans. In recent years, Vietnam has achieved many important achievements in economic development thanks to its efforts to open, integrate into the global economy, and actively participate in the network of FTAs. According to the WTO center, Vietnam has joined and is negotiating 17 FTAs, of which 15 FTAs have taken effect and fully implemented commitments, and 2 FTAs between Vietnam - EFTA and Vietnam - Israel is in the process of negotiation process [9]. Although FTA agreements bring many opportunities, they also come with significant challenges for the government, management agencies, and export businesses. The research team has synthesized the results of a few studies on economic integration and the impact of trade agreements on Vietnam.

Tra, P. (2022), the study refers to the content of international economic integration, challenges, and opportunities of Vietnamese enterprises in the implementation of FTA agreements. The author focuses on evaluating the positive effects brought by the new generation FTAs. Identify challenges in policy development, legislation, labor, and environmental issues. The author also believes that Vietnamese enterprises have not yet mastered the standards and quality of products from partner countries. However, besides that, the author also mentioned some opportunities for Vietnamese enterprises such as boosting exports to major markets and enjoying tax incentives under FTA agreements [5].

Trang, T.T., & Thanh, D.T.M. (2018), in studying the outstanding impacts of new-generation FTAs on Vietnam's economic growth, the author believes that participating in new-generation FTAs has helped the economy grow impressively, opening many opportunities for economic growth in Vietnam. The author analyzes the impacts of the new generation FTA on Vietnam, emphasizing the impact on promoting economic growth. The study makes several recommendations for businesses and the State to take advantage of the positive impacts to take advantage of tariff preferences in the import and export of goods; increasing the possibility of participating in the newly formed supply chain in the region or perfecting economic institutions and mechanisms, creating momentum to realize the dual goals in the development of economic growth and macro stability [6].

Trang, N.T.H., & Huong, N.T. (2020), Opportunities and challenges from EVFTA for Vietnamese businesses, the study identifies the importance of the EVFTA agreement for the Vietnamese economy and businesses. The study also shows the import and export results

between Vietnam and the EU during the period 2015-2019. Assessment of opportunities and challenges from EVFTA for Vietnamese enterprises [7].

Research by Khiem, T.T.K., et al, (2023) on Vietnam's economy when joining new generation FTAs and some directions for improvement. In this study, the authors identified the current context of Vietnam's economy. The author believes that when our country integrates into the global economy, actively promoting participation in new-generation FTAs will contribute to promoting the strong development of the economy, and at the same time, help Vietnamese businesses create offers great opportunities to bring people's products closer to the global market. Besides the positive aspects, joining the new generation FTAs also poses many challenges to the Vietnamese economy. The article analyzes and assesses the current situation of Vietnam's economy in participating in new-generation FTAs and identifies opportunities and challenges when participating in these agreements, thereby focusing on providing solutions to solve problems difficult [3].

The results of the above studies all have one thing in common, which is the assessment of the impact of the FTA on the Vietnamese economy. Research to identify opportunities and challenges for businesses and support solutions for businesses to overcome difficulties. However, from the synthesis of related studies, the research team also found that there is no specific study on the content of import and export turnover and a comprehensive picture of Vietnam's exports in the last ten years. In addition, the above studies mainly assess the impact of FTAs on businesses without identifying opportunities and difficulties for the government and economic policy when Vietnam joins FTA agreements. Therefore, the research team researches the opportunities and challenges in the growth of Vietnam's export turnover when taking advantage of the effectiveness of FTA agreements to fill the research gap in this issue, making a clear understanding of the opportunities and challenges that FTA brings to the state and businesses. From those challenges, the research team proposes several measures to help increase Vietnam's export turnover to the world market.

2. Method

The article uses two common methods in researching social issues, which are data collection methods and analysis and synthesis methods.

The method of data collection

With the research content Opportunities and challenges in the growth of Vietnam's export turnover when taking advantage of the effectiveness of FTAs, the research team has studied relevant studies on export turnover, data on Vietnam's exports from 2012 to 2022, the trade agreement from the new generation, the State's policies related to the negotiation and implementation of the trade agreement. Overview of research contents on import and export activities, the impact of FTA on Vietnam's exports, and opportunities and challenges for Vietnamese enterprises when participating in FTA agreements. From the contents of these documents, the group has collected information for the proposed research content and objectives.

Methods of Analysis and Synthesis

Summarizing the results of previous research authors on related content, the research team has found a gap to conduct the research and the goal to be achieved of the research.

From the data collected through the method of document research, the authors analyze the results of data on exports and trade surplus over the years, thereby serving as a basis for assessing the benefits of FTAs for activities. Vietnam's exports. Identify difficulties and opportunities for the Vietnamese economy, domestic production, and export enterprises in the coming time.

3. Results

3.1. Vietnam's export turnover

In recent years, there has been a shift in the structure of commodity exports among commodity groups and towards the core of industrialization. In early 2022, industrial products accounted for more than 80%, agricultural and seafood products accounted for over 10%, and fuel and mineral products accounted for just over 1% of total export turnover. The United States is Vietnam's largest export market, accounting for 28.6% of total exports and having the largest export growth rate (up 24.9% over the same period last year). In addition, the United States is also the market where Vietnam has the largest trade surplus with a trade surplus of \$81 billion [2].

Unit: Billion USD

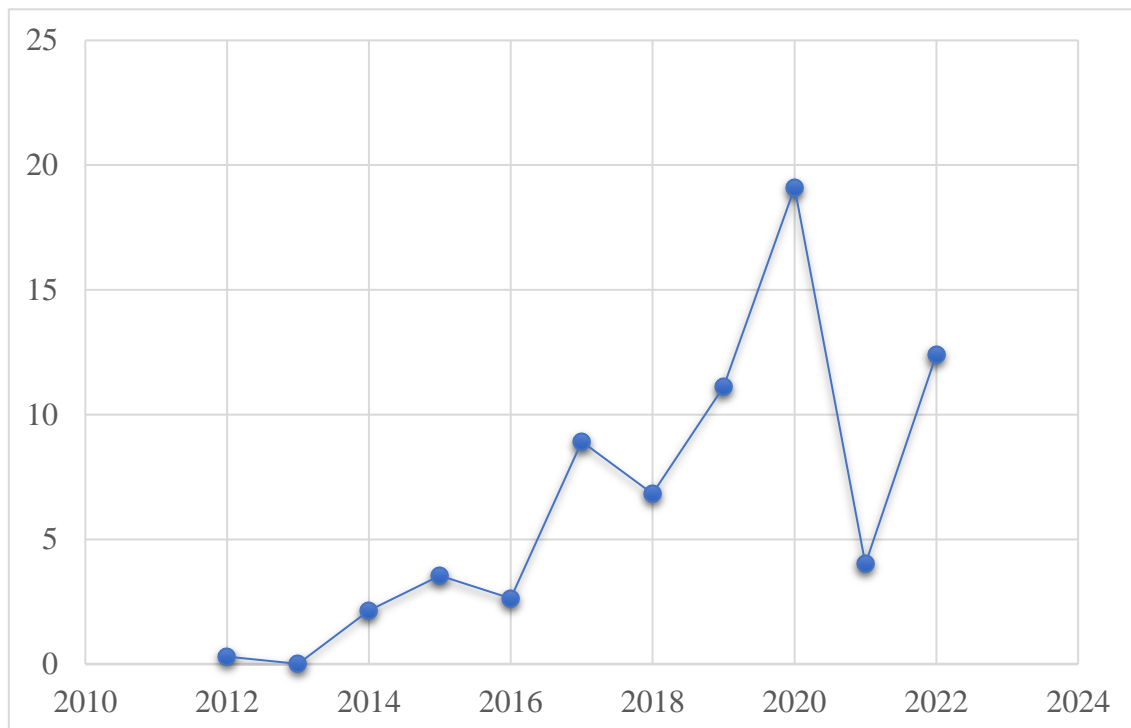


Figure 1. Vietnam's trade surplus in the period 2012-2022

Source: Synthesized data from the Socio-Economic Situation Report (2012-2022), General Statistics Office [1]

Since 1993, after nearly 20 years, Vietnam achieved a trade surplus of 0.3 billion USD in 2012 [1]. In the period from 2013 to 2016, export growth was in a period of decline due to difficulties in industrial production, the consequences of the financial crisis, and the European public debt crisis. At this point, the global economy has not fully recovered. Due to a corresponding decrease in export demand, the increase was smaller than the previous year. In the following years, under the influence of trade agreements that took effect, efforts to open markets, improve goods consumption promotion activities, and support export enterprises, Vietnam continuously achieved a trade surplus although not growing continuously, decreased insignificantly in 2016, and 2018. The highest trade surplus in this period was achieved in 2020 with a trade surplus of up to 19.1 billion USD [1]. However, in 2021, the trade surplus will decrease significantly due to the worldwide outbreak of covid - 19 with 4 billion USD [1]. In 2022, Vietnam's exports have almost recovered and achieved a higher-than-expected increase of 12.4 billion USD [1]. According to the General Statistics Office, Vietnam's exports show signs of recovery in 2022 as Vietnamese enterprises have controlled the Covid-19 epidemic and conducted production and business activities. At the same time, the increase in consumer demand in the export market has boosted Vietnam's export turnover higher than in the same period in 2021.

Table 1. Export turnover of Vietnam in the period 2012-2022

Unit: Billion USD

Year	Total exports and imports	Total exports	Export growth rate
2012	228.9	114.6	-
2013	264.26	132.135	15.4
2014	298.24	150.19	13.7
2015	327.76	165.65	12
2016	349.16	175.9	8.6
2017	425.12	217.02	23.3
2018	480.17	243.5	13.2
2019	517.26	264.19	8.4
2020	543.9	281.5	6.5
2021	668.5	336.25	19
2022	730.2	371.3	10.5

Source: General Statistics Office [1]

Calculating the data of total export turnover, the export growth rate in the period 2012-2022 averaged 15.1 %/year. In 2017, total export turnover increased the highest at USD 217.02 billion (up 23.3%) compared to 2016 at USD 175.9 billion [1].

Unit: Billion USD



Figure 2. Vietnam's export turnover in the period 2010-2021

Source: General Statistics Office

3.2. Results of Vietnam's export turnover with members in the free trade agreement

Vietnam has participated in the negotiation of 17 FTAs. FTAs have created favorable conditions for Vietnamese enterprises to expand access and establish trade relations with major economies in the world such as Korea, the EU, and the Pacific. Currently, there are four new generation FTA trade agreements with breakthroughs that help export turnover to increase rapidly, namely the Vietnam - Korea FTA Agreement (VKFTA) signed on May 5, 2015 and signed by the Republic of Korea on May 5, 2015. effective from December 20, 2015; The FTA Agreement between Vietnam and the Eurasian Economic Union (UN-EAEU FHA) was signed on May 29, 2015 and took effect from October 5, 2016; Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). Signed on September 3, 2018, Effective on December 30, 2018, In Vietnam, the CPTPP Agreement will take effect from January 14, 2019; The Vietnam - EU FTA Agreement (EVFTA) officially ended negotiations on December 2, 2015. This agreement takes effect on August 1, 2020 [9].

Statistics show that, despite the negative impact of the Covid-19 epidemic, Vietnam's export turnover to FTA markets will increase in 2021. Which, the Chinese market will grow by 15%. EU is 14%. South Korea increased by 15.8%. India increased by 21%. New Zealand increased by 42.5% ... By the end of 2019, the total import-export turnover between Vietnam and EU member countries (28 countries) reached US\$56.39 billion, accounting for 11%, according to the number latest data from the General Department of Customs [9]. Export turnover to the EU decreased by 1% compared to 2018, reaching 41.48 billion USD, but still accounted for 15.7% of the total export turnover of the country [11].

In the first five months of 2022, goods exports to the European Union (EU) reached 19.7 billion USD, up 21.7% over the same period; the trade surplus increased by nearly 47%, reaching 13.4 billion USD. In particular, export turnover to new markets with FTAs with Vietnam has grown very impressively. Specifically, export turnover to Canada increased by nearly 30%; Mexico increased by 21%; Peru by 12.2%; New Zealand increased by 24.7% [8].

Unit: Billion USD

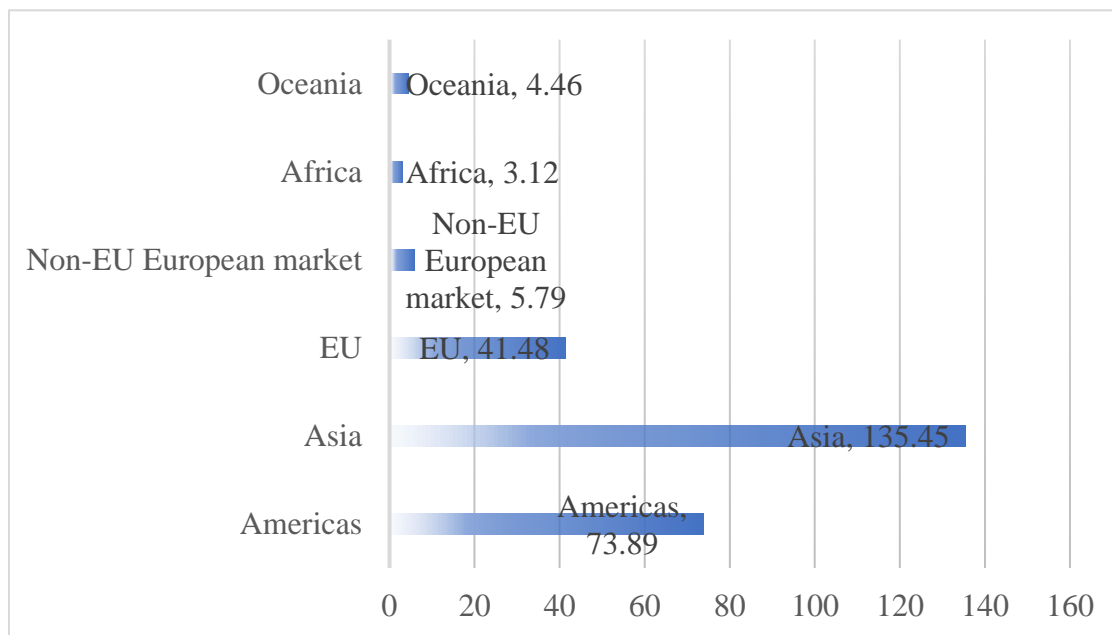


Figure 3. Export turnover to the EU and other regions in 2019

Source: WTO Center VCCI [10]

Thus, after FTA trade agreements such as VKFTA, UN-EAEU FHA, CPTPP, and EVFTA came into effect, the total export turnover to these regions increased continuously. Especially in the EU market, exports in 2022 will increase to a record compared to previous years.

3.3. Opportunities and challenges in the growth of Vietnam's export turnover when taking advantage of the effectiveness of FTAs

Opportunity

The signing and joining of a new generation FTA will have a significant impact on Vietnam's economy through the expansion of export markets, which will increase export turnover to partner countries, and consolidate and integrate traditional markets, opening many potential markets. As the basis for promoting relations with important strategic economic partners.

Firstly, the business environment: Participation in new-generation FTAs such as EVFTA and CPTPP creates a driving force for change and improvement of State institutions and legal policies towards transparency, convenience, and conformity with information international rate.

Second, attracting foreign investment (FDI): New-generation FTAs create opportunities for foreign investors to access the Vietnamese market faster. Changing technology and new production lines. Help improve product quality and meet export standards of major markets.

Third, promote export activities: Trade liberalization in general and new-generation FTAs, in particular, will affect export promotion. In the coming time, Vietnam's exports are expected to continue to grow strongly when the implementation of tariff reduction in FTAs enters a significant reduction phase.

Fourth, domestic production: Joining new generation FTAs will lower the cost of many goods as raw materials for domestic production, reduce production costs for businesses, and make goods prices more competitive compared to domestic production with imported goods, become a force and products are promoted domestically production for export.

Challenge

Besides the positive effects, the implementation of new-generation FTAs will bring many challenges to Vietnam's exports in the coming time.

The first is to perfect the system and create a healthy competitive environment. The process of implementing commitments to international integration has had far-reaching impacts on the Vietnamese economy. Institutions and decision-making have been gradually improved, bringing significant changes to the Vietnamese economy. However, compared with international practices, economic systems, and corporate investment, Vietnam still has a big gap. Without efforts to reform and perfect the market economy institution, it will become a hindrance to Vietnam's export growth in the future.

Second, the competitiveness of Vietnamese exporters is still weak. Although Vietnam's economy in general, the competitiveness of enterprises, and Vietnamese products in particular, has improved a lot compared to before, it is still very weak compared to other countries in the region and the world. Outdated technological lines, the origin of exported goods does not comply with the standards [4] and regulations of the FTAs. This is a big challenge for Vietnam when most of the raw materials for the production of goods are imported from China and other ASEAN countries. Besides, at present, many domestic enterprises are not interested in developing products in the direction of improving quality but only focusing on promoting sales and increasing product output.

Third, have not made effective use of FDI capital because the relationship between FDI enterprises and domestic enterprises is still weak. FDI enterprises mainly operate in the field of outsourcing and assembly, using cheap labor as an advantage and are less likely to create spillover effects in terms of technology, leading to goods that are not competitive in quality and price.

Fourth, the FTA legal regime is increasingly demanding with participating countries: The FTA includes strict regulations and rules on investment procedures, customs, trade facilitation, and technical standards, measures to quarantine animals and plants, intellectual property ... require Vietnamese enterprises to understand and apply flexibly and honestly according to regulations. Enterprises themselves have not yet fully grasped information about FTAs, so it is difficult to determine the direct impacts of FTAs on the export activities of enterprises. The lack of understanding of the necessary information makes businesses not have the best preparation in the process of joining the world economy.

4. Discussion and conclusion

Taking advantage of opportunities and removing challenges in the process of implementing the new generation FTA commitments toward the growth of export turnover in the coming time, the government, agencies, and businesses need to create linkages and implement a synergy set of solutions.

On the government side, it is necessary to continue building and perfecting the legal system and policies and fully implementing international commitments according to the roadmap. In amending and supplementing policies, it is necessary to ensure uniformity, and efficiency, and maintain a stable environment for investment and import-export activities. Review, amend and adjust regulations that are inconsistent with FTA commitments in order to fully fulfill obligations in bilateral and multilateral international treaties on import and export activities.

The functional departments strengthen the implementation of providing and consulting activities for businesses, directing businesses to focus on the quality of export products and fully grasp information about the new generation FTAs. Ensure compliance with high standards and requirements for products imported from the EU, as well as other European countries. Vietnamese businesses must be proactive in understanding and fully grasping information, requirements, and strict regulations on new-generation FTAs, as well as import and export regulations of partner countries.

On the export side, it is necessary to innovate corporate governance and information technology activities, improve product quality, and strengthen brand promotion; Along with that, actively develop business strategies, and develop products to be able to compete with goods from other countries in the region even in the domestic market and export market, research to meet the needs of customers criteria on rules of origin to enjoy tariff preferences.

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INCLUSIVE INSURANCE: A FINANCING TOOL TO NATURAL DISASTER RISKS IN VIETNAM

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Abstract

Disaster risk management and disaster resilience become more and more importance in the context of climate change in recently years. A financing strategy that enables an appropriate and timely response can reduce the overall human and financial costs incurred in the event of disasters. In which, inclusive insurance as a financial tool can improve Viet Nam's financial preparedness for future catastrophic events. The article uses qualitative analysis and in-depth interviews to clarify the reality of situation of inclusive insurance in Vietnam, its supply capacity and stakeholder needs for coverages. Interviewees are experts in the field of finance and insurance, agencies, representatives of socio-political organizations (representing women, farmers, cooperatives). Recommendations are proposed based on actual assessment of inclusive insurance in Vietnam, supply capacity and needs of stakeholders as well as the direction of the Government.

Keywords: *natural disaster risk, financing risk, inclusive insurance.*

1. Introduction

Viet Nam is located at one of five storm-prone areas in the Asia-Pacific region, the country often faces natural disasters of various types such as typhoons, floods, landslides, drought, and seawater intrusion. In recent years, natural disasters have continually occurred all over the country, causing vast losses to human life, property, and socio-economic and cultural infrastructure, as well as environmental degradation. According to UNDP (2020) natural disaster losses have reduced Viet Nam's GDP growth by more than 1% annually during last decades. World Bank figured that Viet Nam is likely to incur, on average, \$1.4 billion (VND 30.2 trillion) per year in direct damage due to floods, typhoons, and earthquakes. In the next 50 years, it has a 40 percent chance of experiencing economic loss due to these disasters exceeding \$6.7 billion (VND 141.2 trillion) and a 20 percent chance of experiencing loss exceeding \$8.1 billion (VND 171.2 trillion) (WB, 2016).

The insurance and risk financing against natural disasters is still evolving in Viet Nam, yet there are significant gaps to be filled. These gaps are also prevalent beyond disaster losses, resulting in increased expenditure on compensating the avoidable healthcare losses, property losses, and livelihood losses, and agriculture losses.

This study will assess significant areas including the insurance supply-side, demand-side, the gaps and opportunities in creating an enabling environment through government policy and regulatory environment, building regulatory capacities, and suggesting suitable approach towards developing new insurance solutions. The Study will not only highlight challenges and opportunities but will also highlight those areas to improve the enabling environment for inclusive insurance and risk financing and to develop specific solutions relevant to Viet Nam.

2. Method

The article uses qualitative analysis and in-depth interviews to clarify the reality of situation of inclusive insurance in Vietnam, its supply capacity and stakeholder needs for coverages. Interviewees are from stakeholders in the main actors in disaster risk, insurance and risk financing in Vietnam. In-depth interviews will be organized covering experts at the Association, insurance companies, agencies, and socio-political organizations, who are persons with vision, understanding and experience in the field. Interviews concentrate to get expert opinions and assessments on research issues. These will be materials serving for qualitative analysis to assess the development of the insurance agenda in Viet Nam, assess the disaster and climate risk insurance development during previous years, frame and analyze the insurance development priorities, facilitate the stakeholders' dialogue, and develop an action plan based on the findings.

Interviews were conducted from 27 August to 15 September 2021. Interviews were conducting both online and offline. Each day conducted two to three interviews. The questions also sent to some stakeholders and experts by email to interviewees, who will give answers from 27 August to 5 September 2021.

Beside interviews of stakeholders, data on disaster risks and losses, insured losses in construction and installation activities of public properties will be collected. However, this is great obstacle causing by lack of statistic.

3. Results

3.1. Overview of inclusive insurance in vietnam

Vietnam is in an area strongly affected by natural risks and climate change. Areas that are often heavily impacted by disaster risks include agricultural production, assets such as buildings/offices, schools, hospitals, cultural facilities, transportation infrastructures and other properties of state organizations, businesses, small and medium enterprises (SMEs). Those who are heavily affected by disaster risks include poor and rural households, agricultural households, SMEs (UNDP, 2022).

Risk finance and insurance are used as tools to deal with risk. However, in Vietnam, insurance products for disaster risks are very few. In addition to pilot insurance programs covering disaster risks, insurers in Vietnam basically do not have an independent insurance product to protect against natural disasters. Natural disaster coverage is included with property policies.

3.1.1. Agricultural Insurance

Agricultural Insurance Pilot Program under Decision 315/QD-TTg

Disaster risks affecting the agricultural production sector occur every year. The Vietnamese government has paid attention to this area and especially to the disadvantaged group. To ensure social security and protection for agricultural production, in 2011 the Vietnam Government started implementing the Agricultural Insurance Pilot Program under Decision 315/QD-TTg dated March 1st, 2011.

The pilot program was implemented in collaboration among the Ministry of Finance, the Ministry of Agriculture and Rural Development, and the People's Committees of the participating provinces/cities. Specifically, the Ministry of Finance promulgated product regulations, directing selected insurers to deploy the program (include Bao Viet and Bao Minh) to deploy products to the insured; In addition to product distribution, insurers were responsible for disseminating product guidelines to localities and insurance participants. The Ministry of Agriculture and Rural Development participated in the promulgation of farming and livestock production procedures; coordinate with the Ministry of Finance to propagate agricultural insurance to localities. People's Committees in 20 provinces/cities were the units that set up the steering committee, provided a list of pilot implementation locations, and identified participants; made statistics and provided information on risks, insurance value, rice yield for insurers to serve the calculation of insurance premiums and indemnities.

The program deploys three insurance products in different localities: (1) Index rice crop insurance: deployed in Dong Thap, Ha Tinh, Nam Dinh, Thai Binh, Binh Thuan. (2) Livestock insurance (cattle): deployed in Thanh Hoa, Dong Nai, Vinh Phuc, Hai Phong, Binh Dinh, Binh Duong. (3) Fisheries insurance (shrimp): deployed in Ca Mau, Bac Lieu, Soc Trang. Basically, insurance products were distributed to households through the local government system.

Table 1. Results of the Pilot Agriculture Insurance Program (2011-2013)

Criteria	Households by insured object			Sum
	Rice	livestock	shrimp	
Household	236,397	60,133	7,487	-
Insured Value (Bil. VND)	2,151	2,713.2	2,883,7	7,747.9
Written Premium Revenue (Mil. VND)	91,919 (23,33%)	83,906 (21,3%)	218,175 (55.37%)	394,000 (100%)
Indemnity (bil. VND)	19 (20.6%)	13.3 (15,9%)	669.5 (306%)	701.8* (100%)

Source: ISA, 2014

* Total indemnity amount up to June 20, 2014

The insurance pilot program under Decision 315/QD-TTg was evaluated by the participants as a success and a correct policy of the Vietnamese Government in ensuring social security, helping the weak population access to insurance services, dealing with natural risks and climate change. 233,361 poor households, 45,944 near-poor households are

insured. Compensation was 19 billion VND for loss of rice crop, 13.3 billion for loss of livestock, and 669.5 billion for loss of shrimp.

Issues arising from the implementation of the agricultural insurance pilot program under Decision 315/QĐ-TTg included: (1) Insurance products are not suitable for the needs of each locality; insurance products were complicated. (2) There is a shortage of staff with insurance expertise, they were inexperienced in products, these caused difficulties in distribution, risk assessment, inspection and loss adjusting. (3) Risks occurred on large areas; some risks were difficult to reinsure to abroad. (4) In some localities, the cooperation between the local government and insurers was not very close, leading to low results of implementation. (5) In some provinces, or regular households, people were not interested in insurance. The insured were mainly poor households (who were subsidized 100% of premiums), and near-poor households (subsidized by 70% of premiums). (6) The covered subject and areas were limited. Only 20 provinces of 64 provinces in the country are included in the pilot program. In each province, only one or several districts were selected. These lead to low covering, which made it difficult to ensure the principle of large number in insurance, especially in the field of agricultural insurance with frequent disaster risks and catastrophic losses.

The Agriculture Insurance under the Decree 58/2018/ND-CP

Following the success of the pilot program, the Government of Vietnam continues to implement the Agricultural Insurance policy according to Decree 58/2018/ND-CP. Agricultural insurance is carried out on the principle of voluntary agreement, without limiting the organizations and individuals participating in the insurance, the insured objects, the insured risks and the geographical scope. Government provides premium subsidy for some groups. For poor households and near-poor households, subsidy is 90% of premiums; Other households: subsidy is 20% of premium; Agricultural Organizations meet specific conditions for cooperation, alliance, and large-scale with application of technologies and advanced production processes towards clean agriculture, high-tech and eco-environmental: subsidy is 20% premium. The time to implement premium subsidy is from the effective date of Decision No. 22/2019/QĐ-TTg (June 26, 2019) to the end of December 31, 2020 and extending to December 31, 2021 by Decision No. 03/2021/QĐ-TTg.

Regarding the insured object receiving support for agricultural insurance premium: Crops: Rice, rubber, pepper, cashew, coffee, fruit trees, vegetables; Livestock: Buffalo, cow, pig, poultry; Aquaculture: Black tiger shrimp, white leg shrimp, pangasius.

Regarding the insured risks, agricultural insurance premiums are subsidized: For rice and cattle: disaster risks and some diseases; For black tiger shrimp, vannamei shrimp: disaster risks (Disasters and epidemics must be announced or certified by a competent state agency).

Areas where agricultural insurance premiums are subsidized: (1) For rice in 7 provinces (Thai Binh, Nam Dinh, Nghe An, Ha Tinh, Binh Thuan, An Giang, Dong Thap); (2) For cattle in 8 provinces and cities (Ha Giang, Vinh Phuc, Hanoi, Thanh Hoa, Nghe An, Binh Dinh, Dong Nai, Binh Duong); (3) For black tiger shrimp, vannamei shrimp in 5 provinces (Ben Tre, Tra Vinh, Soc Trang, Bac Lieu, Ca Mau).

There are three insurers, including Bao Viet Insurance Corporation, Bao Minh Corporation, and Military Insurance Corporation, which are approved by the Ministry of Finance to provide agriculture insurance in the program. The insurers deployed the program in the named provinces and cities.

At recently, Nghe An has implemented rice crop insurance in 102 communes (in total 246 communes of 8 districts were selected for support areas). There are 7,291 farmer households/production organizations participating in insurance (including 12.6% poor households, 53.4% near-poor households, 34% ordinary households). Total insured value is 39.1 billion VND. Total insurance premium was 2 billion VND. The insurers are completing claim assessment to pay compensation for the summer-autumn crop (UNDP, 2022).

Ha Giang, Binh Dinh have implemented cattle insurance in 36 communes and towns of 5 districts and towns selected. There are 1,863 farmer households/production organizations insurance participating insurance (including 1 ordinary household, the rest are poor and near-poor households); total insured value is VND 39.66 billion; total insurance premium is VND 1.46 billion.

Results of the current agricultural insurance policy is slow due to several reasons. Firstly, guidance of the implementation of Decree 58/2018/ND-CP is late. Secondly, the administrative procedures in confirming the insured are still complicated. Third, subsidy from the budget is slow. Fourth, household's awareness and understanding of insurance products is low, media work is still limited, collaboration among stakeholders is weak. Fifth, household's income is still low, so the budget list for insurance has not been taken seriously.

Recently, agricultural insurance has been implementing since 2018, according to Decree No. 58/2018/NĐ-CP. Covered objects are extended: Crops (rice, coffee, rubber, pepper, cashew, ...), livestock (pigs, chickens, cows), fishing (shrimp, ...). The government reduces the subsidy: for poor and near poor households, Government subsidizes 90% of premium for poor and near poor households, 20% of premium for others (with conditions). Reduction of premium subsidy resulted in farmers could not afford the premium. In other side, administrative procedures also are an obstacle in the performing process of agriculture insurance. To receive subsidy from Government, the list of poor and near poor households must be assessed by different levels: commune, district, and province. In addition, payment of premium from government budget is usually slow.

About indemnity, some people with losses do not understand the principle of insurance, the concept of buying insurance is to be compensated, so the dispute lasts. In addition, in many cases of natural disaster risk causing loss, the loss adjusting takes a long time because it needs confirmation from the local government.

Agriculture Insurance by Insurers

Agricultural insurance activities outside of the Government's Insurance Program are providing by 8 non-life insurers, including Bao Viet, Bao Minh, MIC, Bao Long, VBI, ABIC, BIC, PTU, PVI.

Most agricultural insurance contracts provided by the insurers to policyholders are distributed through banking channel and are associated with credit programs. The insured

objects include industrial plants in the form of property insurance policies, including coffee, rubber, cashew, pepper, etc.), Livestock (cattle).

According to data from the Vietnam Insurance Association¹, the primary agricultural insurance business is positive, but the growth rate of premium revenue is not significant. This shows that although the premium revenue is low, both insurers and policyholders are not too interested in agricultural insurance. In terms of primary compensation, the compensation amount is low (except in 2018 where the compensation amount is high due to adverse weather factors and risks during the year). However, the results of the general agricultural insurance business by net premium revenue and net indemnities are not positive, which is related to the inefficient receipt of reinsurance from the foreign insurance market.

3.1.2. Micro-insurance

Microinsurance by insurers

In Vietnam, there is no microinsurance for disaster risks in Vietnam, microinsurance products focus on life and personal accident insurance.

In 2008, the Ministry of Finance approved the microinsurance pilot program. There are three life insurers (including Manulife, Dai-ichi and Prudential) approved by the Ministry of Finance to provide micro-insurance products for low-income customers aged 18-55, who live in rural and isolated areas, and in industrial zones.

Under the pilot program, Manulife distributes to members of the Vietnam Women's Union between the ages of 20 and 50. Dai-ichi plans to deploy microinsurance through the distribution channel of Vietnam Farmers' Association for members who are low-income farmers and in industrial parks for workers aged 18- 55 years old. Prudential plans to launch this product for low-income people aged 18-55 years old. However, because there is no separate regulation for the implementation of microinsurance, Dai-ichi and Prudential have stopped deploying microinsurance.

Manulife started implementing microinsurance in September 2009 in Hai Phong and Tien Giang provinces. By the end of 2020, Manulife has expanded to 19 provinces and cities across the country. However, premium revenue is very low, by the end of the first 7 months of 2021, the number of valid micro-insurance contracts reached 14,805 contracts, and the premium revenue reached VND 1.6 billion. This was a very modest number compared to the number of poor and near-poor households in Vietnam.

Microinsurance Program by Socio-Political Organizations

The Community Finance Resource Center - CFRC (under Vietnam Learning Promotion Association) and the Vietnam Women's Union deployed microinsurance for the target group since 2008. In 2014 the Government issued Document No. 1981/VPCP-KTTH on the pilot program of microinsurance, officially allowed these organizations providing micro-insurance products to their members. The Ministry of Finance issued Instruction No. 10418/BTC-QLBH on July 29, 2014 guiding to implement microinsurance by CFRC and VWU.

¹ Vietnam Insurance Association (2021)

✓ *Microinsurance by the Community Finance Resource Center (CFRC)*

With CFRC, during the pilot implementation period from 2013 to the end of 2016, due to the realization of limited financial capacity and difficulties in expanding activities, the number of participating members was decreasing, do not ensure the principle of large number in insurance, the Government has stopped piloting this organization from 2017. As of December 31, 2016, CFRC has provided micro insurance products for two social funds and two microfinance projects, the number of members participating in microinsurance were 7,986 people; insurance premium revenue was VND 759 million; paying for 35 cases of death/total and permanent disability with an amount of VND 19.3 million, paying benefits to support hospital fees for 588 cases with an amount of VND 116.7 million and debt forgiveness for 7 cases with the amount of 75.5 million VND; the difference between revenue and expenditure is VND567 million, which is being accumulated at CFRC.

✓ *Micro-insurance by the Vietnam Women's Union (VWU)*

During 2014 to June 2016, VWU has only implemented the pilot program in 77 districts/towns of 12 provinces and cities across the country. Products were distributed by 18 branches and 40 transaction offices owned by VWU, providing micro-insurance products to 100% of TYM's loan members.

The number of members participating in microinsurance by 2019 was 161,254 people, an increase of more than 90,000 customers compared to the end of 2016. Insurance premium revenue increased from VND 4.71 billion (in 2016) to VND 14.4 billion (in 2019). Regarding payment of insurance benefits, from 2016 to 2019, the Association has paid for 296 cases with an amount of more than VND 6.7 billion.

In the first 6 months of 2021, the microinsurance policies reached 130,082 valid policies; insurance premium revenue reached more than VND 8.6 billion, benefits were paid to 52 cases with the payment amount of more than VND 1.8 billion.

To ensure a legal corridor and standardize for microinsurance activities, on July 15, 2021, the Government issued Resolution 77/NQ-CP on stopping the pilot implementation of microinsurance by the VWU, drafts the Decree on microinsurance in Vietnam for the next future.

3.1.3. Property Insurance

Vietnam's insurance market currently has 32 non-life insurers that provide property and casualty insurance policies. The insured objects are properties such as houses, offices, plants/factories, cultural works, construction/erection works, etc.

Insurers have essentially no disaster risk insurance products. Disaster risks are covered under property policies (all-risks or named perils policy including disaster risk) or covered by endorsement/rider of the fire insurance policy.

Customers of property and casualty insurance in Vietnam are mainly enterprises, and non-state organizations. Most of state organizations and properties managed by these organizations (offices, schools, hospitals, cultural facilities, etc.) are essentially uninsured against disaster risks.

3.2. Analyzing critical areas for developing inclusive insurance in vietnam

3.2.1. The Critical Areas

In Vietnam, despite locating in an area seriously affected by annual natural disaster risks, participating in insurance to deal with this risk has not yet been paid attention by individuals and organizations.

Through interviews with representatives of stakeholders, it can be seen that the areas most affected by natural disasters every year are the agricultural sector, small and medium-sized enterprises, and state-owned public assets such as offices, schools, infrastructure works, cultural works. Most of these objects are uninsured. The government as well as enterprises and households annually must spend large financial amount to recover from the risk. The interview results showed the following issues.

- Agriculture

In terms of critical areas for developing the agriculture insurance in Viet Nam, it is important to expand the scope of the coverage and include other high-value, main crops and livestock, like coffee, pepper, etc. Vietnam currently has 16 key fruit trees, including citrus fruit trees such as pomelo, orange, longan, litchi, durian, and mango. Regarding livestock, currently only buffaloes and cows are insured, while poultry and pigs are not yet insured. Currently, Vietnam has about 500 million poultry. Fisheries can extend insurance coverage to fishes beyond shrimps. Offering insurance beyond the simple rice crops will help in diversifying the insurance portfolio of the scheme, develop the market by making it large enough for efficient risk transfer.

- Public Property

For the natural disasters, public properties own by the government - is the group that is regularly impacted every year, which is out of covered from insurance. The government has issued regulations mentioning that they encourage the insurance for public assets. But how, and when, and list of public assets to be insured are still in discussion.

- SME

Only a very small part of SMEs is covered by property insurance policies (in which, natural disaster risk coverage is endorsements/riders), most of SMEs are not covered by insurance.

3.2.2. Affordability

- Agriculture sector

According to the interviewees, households in Vietnam can afford premiums; For the group of poor and near-poor households, it is still necessary to maintain government subsidies in the short term.

In the long term, there should be educational programs and raising people's awareness about insurance and its meaning. In fact, the insurance premium only accounts for 1 to 2% of the cost of agricultural production and if it is included in the cost, it is completely feasible. Of course, it should be associated with commodity production in the agricultural sector.

- Public Property

As mentioned, most public property is uninsured. However, the government can completely pay the insurance. If compared with the financial expenses for losses caused by natural disasters every year, the insurance premium is a negligible amount. For the purchase of insurance to protect against natural disasters, it is not possible or impossible to do because there is no suitable insurance product and there is no regulation on insurance expenditures in the budget plan, at both local and central levels.

- SMEs

Interviewees all believe that when there are suitable insurance products, insurance premiums are included in production costs, SMEs are fully able to pay the insurance premiums.

3.2.3. Participation

In the past, Vietnam has had different programs to educate and raise people's awareness about insurance under different programs (Ex: the pilot program in agriculture). Some insurers relied on authorities such as provincial authorities and community organizations. However, most of approaches in the past were not good.

Challenges and opportunities to increase the demand of insurance are followings:

Firstly, from the public sector, for example of the agriculture project, with the subsidy from the government up to 90% for poor and near poor households, it is still reluctant for farmers to buy. Of course, the main reason is that they do not event willing to pay 10%. There is limit in their budget.

Secondly, a net-cat policy can be issued to all SMEs and farmers. Insurance companies are trying to advocate and promote the government bodies to understand the situation, to promote the product. The product should be quite affordability to them.

Thirdly, another risk to the index or parametric product is the awareness of the farmers/people committee of city and provinces. From experts' experience in insurance, MoF or ISA cannot be the key tackle for education and awareness. People Committee in province level should be the first ones to be educated. Secondly the farmers, people committee in the commune.

4. Discussion and conclusion

Vietnam is one of the countries strongly affected by natural disasters and climate change. However, the action program has not been drastic; Measures to cope with natural disasters and climate change are still fragmented, lack of synchronization, many actions/solutions are carrying out in a passive position. The current financing risk solutions focus mainly on recovering the losses caused by risks. There is no program for risk management in general and insurance to actively deal with disaster risks and climate change. The Disaster Prevention Fund has been established under Document No. 04/VBHN-BNNPTNT merging Decree No. 83/2019/ND-CP dated November 12, 2019, and Decree No. 94/2014/ND-CP dated November 17/ October 2014 of the Government stipulating the establishment and management of the fund for natural disaster prevention and control. However, this legal document does not have regulations on insurance expense for public works and properties.

To develop microinsurance to low-income households and families in rural areas, WU is the unit with the most strengths due to its close connection with the community and households. Some insurance companies with a wide network will be very suitable in distributing these product groups such as Bao Viet, Bao Minh, PTI, ABIC. However, some insurance companies are also not interested in microinsurance.

For property insurance, the legal foundation for public property insurance is basically being gradually improved. Coordination between insurers and reinsurers is required in setting up an insurance plan with suitable index products and reunification plans between insurers and reinsurers. Insurers need to be supported in product design because index insurance products are still very new to the market.

Through the in-depth interviews with stakeholders, and situation of ‘disaster risks, insurance and financing risk’ of Vietnam, this report proposes to develop a comprehensive disaster risk management program. The government takes the lead and involvement of relevant ministries and agencies, advisory support from organizations international. The national program cannot be separated from the joint international effort because disaster risk and climate change are global issues, especially in the context of globalization and integration of current economies.

Regarding areas at high risk of being affected by natural disasters, in-depth discussions and interviews agree that the groups: public assets, agriculture, SMEs are the areas heavily affected by disaster risks. Therefore, Vietnam needs a national insurance program, specifically:

- For public property, local authorities need to determine the list of public works and properties at risk of loss due to natural disaster and put on the priority list of insurance. The cost of buying insurance should be specifically guided and included in the list of expenditures of state agencies.

- For the agricultural sector, it is still necessary to maintain the subsidy on agricultural insurance premiums for the disadvantaged groups for a while longer to create insurance habits and awareness. Technically, there should be clear guidance on index insurance products in the state document. The Government should play the role of guiding and instructing. There is no necessary for sponsor from the government budget in long-term. It must be a cooperation of suppliers, service provider and other intermediary logistic firms. It means that is necessary to develop a master plan along the logistics chain, in which insurance must be considered as a link/link of the supply chain as any other steps to ensure activities are run smoothly.

- The SME sector is assessed to be fully capable of paying insurance. The problem is that insurance awareness in this area is low or nonexistent. To get a sustainability of inclusive insurance, it is needed of different tools/solutions:

- Index-based insurance is the future trend; however, the applicability of this product relies on some factors including:

- It is needed to develop an independent natural catastrophe insurance product. It should be in index parameter product; It is also needed of three level protections: first is insurance companies, second is reinsurance market, and last one the government.

- The index must be (able to) used as the basis for determining the insurance value. Vietnam needs to build an index system, and the first task is build a database system.

- Index-based insurance products must be guided and instructed in policies, Decree.
- The insurance purchaser/buyer must be big enough in terms of production scale.
- Insured objects should be diversified.
- It is necessary to cooperate with organizations such as Farmers' Union, Cooperative Alliance, Women's Union in distributing insurance services to households, especially in rural areas, and agricultural production households.

- Education and training to raise awareness is extremely necessary. The training should be provided to agriculture officials, associations' staffs, they are persons directly having interactions with farmers.

For state management agencies, the Law on Insurance Business is being revised and submitted to the National Assembly. The change of the Law with regulations on insurance business move to management based on risk-based capital, or the change of the financial reporting regime under IFRS 17 are still new issues. Research is urgently needed on these issues.

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ATTRACTION OF HIGH-QUALITY FOREIGN DIRECT INVESTMENT FLOWS INTO VIETNAM

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Abstract

Vietnam is an increasingly integrated economy, and a significant contribution to this success is the role of the foreign direct investment (FDI) sector. FDI not only has direct contributions, but also has spillover effects on other factors of the economy, such as stimulating domestic investment resources, increasing competitiveness, innovation and technology transfer, improve production efficiency; develop supporting industries, create favorable conditions and environment for domestic enterprises to gradually participate in the global production value chain. These contributions over time have brought great achievements, however, there are still shortcomings that need to be overcome, typically the quality of FDI flows into enterprises in Vietnam. The article clarifies the concepts and characteristics of the quality of FDI flows, the advantages and disadvantages of high-quality FDI flows brings to Vietnamese enterprises, thereby proposing solutions to attract high-quality FDI flows into Vietnamese enterprises in the coming time.

Keywords: *Foreign direct investment, capital flows, high quality, Vietnam.*

1. Introduction

In the context of international economic integration and globalization in all fields, countries need to mobilize all resources for sustainable development. Therefore, attracting foreign investment as a prerequisite for economic development is inevitable for each country. Some studies support that foreign capital will bring benefits to both the investing and the receiving countries, through creating more jobs, cutting costs and improving the efficiency of the use of economic resources, thereby promoting national economic growth. Countries have had many policies to attract external capital sources, including foreign direct investment, foreign indirect investment, import and export of goods and services, remittances and export of labor, support from international organizations and developed countries (Nguyen, 2014).

Among these capital sources, foreign direct investment (FDI) is considered an important resource to help countries develop. Over the past 30 years, Vietnam has attracted billions of dollars of investment capital from many FDI enterprises and this capital source is accounting for an increasing proportion of total investment capital of the whole society (Do, 2017; Government, 2018). Competition to attract FDI takes place not only at the national

level but also among localities in the same country, leading to the fact that foreign enterprises enjoy a lot of incentives when conducting FDI projects. However, the quality of FDI inflows for economic growth has not been given due attention.

Up to the beginning of 2023, foreign investment capital in Vietnam has been disbursed about 2.55 billion USD, down nearly 5% compared to the same period in 2022. In terms of investment fields, this capital was disbursed for 17/21 economic sectors, led by the processing and manufacturing industry with a total investment of more than 2.17 billion USD, followed by real estate activities with a total investment of nearly 397 million USD. In terms of the number of new projects, the manufacturing industry is also the leading industry. Foreign investors are pouring capital into 39 provinces and cities with destinations namely Bac Giang, Ho Chi Minh City, Quang Ninh, and Dong Nai respectively... In 2022, foreign investors registered 27.72 billion USD to invest in Vietnam. The number of new projects increased, the adjusted investment capital also increased compared to the same period in 2021 with an increase of 12.2% in the amount of capital and 12.4% in the number of adjustments in the whole year of 2022 over the same period, according to the number of new projects. Data from the Foreign Investment Department under the Ministry of Planning and Investment (Dang, 2020). Notably, many projects of manufacturing and manufacturing electronic and high-tech products have received large-scale capital increases such as Samsung expanding production scale in Thai Nguyen or LEGO investing in a factory of more than \$1 billion in Binh Duong.

All have confirmed foreign investors' confidence in Vietnam's economy and investment environment. Typically, the Bac Lieu LNG Power project - Investor Delta Offshore Energy (Singapore), strategic partners Bechtel Corporation, General Electric and McDermott (USA) with a total investment of 50 billion USD in 25 years; the Southern Petrochemical Complex project invested by Long Son Refining and Petrochemical Company Limited (SCG Group of Thailand) with a total investment capital of more than 5.1 billion USD; Pegatron's project at Deep C Industrial Park in Hai Phong (Taiwan, China) includes 3 projects worth 1 billion USD; the real estate project LOGOS Bac Ninh Logistics Estate of Logos Vietnam Logistics Venture (Australia) has an investment capital of about 70 million USD, in the initial investment portfolio of the joint venture is about 350 million USD; Samsung's Research and Development Center has an investment of about 220 million USD. LEGO Group (Denmark) signed a memorandum of understanding to cooperate with Vietnam - Singapore Industrial Park Limited Company (VSIP) to build a new factory in Vietnam. This is LEGO's first carbon-neutral factory and has an investment in solar energy production, ensuring no environmental pollution, dust and waste. The project has an investment scale of more than 1 billion USD in a land area of 44 hectares, in Binh Duong province, bringing about 4,000 job opportunities in the next 15 years. It is expected that the factory will start construction in the second half of 2022 and operate in 2024. In addition to new projects, many projects of manufacturing and manufacturing electronic and high-tech products have been expanded with capital scale in the first 3 months of the year.

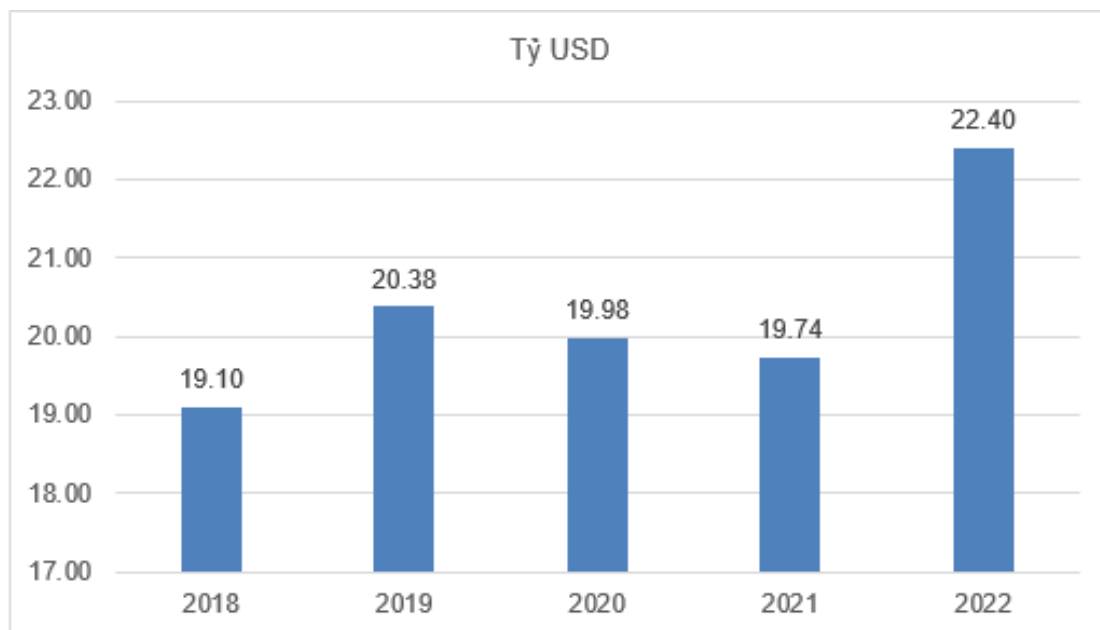


Figure 1. Foreign direct investment capital implemented in 12 months of 2018 - 2022

Source: VNeconomy, 2022

Vietnam's selective investment attraction policy in the direction of reducing quantity, increasing quality, eliminating small-scale projects with little added value has begun to take effect. The proportion of FDI in industries with high pollution risk and outdated technology such as textile dyeing has gradually decreased. Not only increasing in quantity, FDI inflows into Vietnam also appear high-quality projects, green trends, using renewable energy. High-quality FDI flows not only have high capital scale and technology content, bring about technology spillover effects, competitiveness and high added value of products, but also allow positioning of value supply chains. and a new position for the host country in the production network, technology, as well as financial investment opportunities, tourism, real estate and global services...

2. Literature review

FDI is regarded as the ownership or control of 10 percent or more of an enterprise's voting securities or the equivalent interest in an unincorporated business (Griffin & Pustay, 2015). Farrell (2008) defined FDI as a package of capital, technology, management, and entrepreneurship, which allows a firm to operate and provide goods and services in a foreign market. From a theoretical viewpoint, FDI can be divided into two categories: Horizontal and Vertical. Horizontal FDI (HFDI) is a type of investment which is in the same industry operating abroad as a firm operate, or offers the same services as it does at home, and tends to produce for local or original markets only without exporting much output to host country (Maskus, 2002; Haile & Assefa, 2006). It seeks to take advantages of a new large market, which is considered as traditional motive for FDI. It is widely used by Japanese MNE's in their international expansion because they believe that this model will help to reduce the risk and enable them to share experience, resources, and acknowledgment that already have developed at home (Botrić & Škuflić, 2006). In addition, Mariotti & Marzano (2021) stated

that FDI inflows to advanced countries are usually horizontal investments driven by market seeking strategies.

The International Monetary Fund (IMF, 1993) states that "FDI is a long-term investment whereby an investor directly derives long-term benefits from an enterprise located in another economy. The purpose of the investors is wanting to have a lot of influence in the management of businesses located in that other economy". OECD (1999) argues that FDI reflects the long-term benefits that an entity in an economy (direct investor) obtains through an economic establishment in an economy other than that of the investors (direct investment enterprises). Direct investment involves transactions first, followed by capital transactions between two closely linked entities. In particular, direct investors are understood as those holding control of 10% or more of the capital of an enterprise. UNCTD (2001) states that, FDI is an investment made to obtain long-term benefits in an enterprise operating outside of the investor's economy, the purpose of the investor is to gain an effective in the management of the business. According to the World Trade Organization (WTO), (1996): "Foreign direct investment occurs when an investor from one country (the host country) acquires an asset in another country (the receiving country) with the right to manage that asset". This concept emphasizes that FDI is an asset. The regulatory aspect is what distinguishes FDI from other financial instruments. In this case, the investor is often referred to as the "parent company" and the assets are referred to as the "subsidiary" or "subsidiary company".

High-quality foreign direct investment capital flow is to attract direct investment projects from foreign investors with high quality and efficiency. This type of investment brings many benefits to the host country, including advanced technology, professional management, job creation, production capacity improvement, and export enhancement. High-quality foreign direct investment flows usually have the following characteristics: (1) The interaction with the economy: High-quality FDI inflows often have a positive interaction with the local economy. They are not only an investment but also contribute to creating links, training human resources, transferring technology, and promoting the development of industries, especially the high-tech industry. (2) Quality and Performance: High-quality FDI flows are often accompanied by projects with advanced technology, modern production processes, and professional management. They can provide high-quality products and services, while creating high-paying jobs and career development opportunities for local workers. (3) Technology transfer: High-quality FDI inflows often have the ability to transfer high technology from the investment country to the receiving country. This enhances local competitiveness and technological innovation, and facilitates technological development and innovation in the economy. (4) Contribution to exports and trade balance: High-quality FDI inflows often make an important contribution to the exports of the host country. Foreign enterprises are often large in scale, capable of producing high-quality goods and services, which in turn generate significant exports and help balance the country's trade. (5) Create a spillover effect: High-quality FDI inflows often create a positive spillover effect on local businesses and industries. The investment of foreign companies often leads to an increase in production scale and expansion of infrastructure. This can promote the economic development and diversification of that country, while creating export opportunities and sustainable economic growth.

3. Results

3.1. Potentials to attract FDI inflows of Vietnam

Currently, Vietnam is on the path of strong reform and deeper integration into the world economy. Vietnam has become a middle-income country, with its position and prestige in the international arena constantly improving. The economic restructuring and growth model innovation has achieved initial results. The domestic private economic sector is increasingly developing, forming a number of large private economic groups. These are important factors that create a premise to attract and improve the quality and efficiency of FDI in the coming period.

Firstly, foreign investors highly appreciate the issue of socio-political stability as one of the important contributing factors to the implementation of economic development policies. The socio-political stability in Vietnam has created strong trust with domestic and foreign investors. Investors are willing to raise capital to increase investment and expand production. The infrastructure of industrial parks, export processing zones and economic zones throughout the country continues to be improved and upgraded. The Prime Minister has approved 19 coastal economic zones, with a total area of about 871 thousand hectares. In addition, achieving positive growth in 2020, despite the significant impact of Covid-19 on economic activities, Vietnam becomes a good candidate for value chain transformation in Asia.

Secondly, the quality of Vietnamese human resources has been increasingly improved in recent years due to the Government's focus on investment in public education. Employees are trained in culture, skills training, and professional qualifications have contributed to increasing labor productivity of Vietnam, this is also a competitive advantage in attracting foreign investment. FDI projects taking advantage of trade agreements that Vietnam has signed, promise to continue to enter Vietnam in the near future. To catch up with this wave, the Vietnamese Government has many special investment incentives and supports to encourage the implementation of a number of investment projects with great socio-economic impacts. In addition, Vietnam needs to continue to improve the legal framework, creating all favorable and equal business investment conditions for investors. Although the impact of the Covid-19 pandemic cannot be avoided, Vietnam is still considered a "good land" to attract high-quality FDI capital after the pandemic.

Thirdly, the innovation development speed of Vietnam is very fast, especially the technology market of Vietnam. With the growth rate over the past 10 years and in the coming time, Vietnam will have many opportunities from existing platforms, such as education, science and technology, infrastructure for technology, and processing industry. Some large global technology companies have come and established companies in Vietnam like Google, Intel, Amazone, Samsung... This creates development opportunities for the country, for businesses, for startups industry. Vietnam has a young, vibrant domestic market with great tech talent and constant innovation, making it an attractive destination for start-up investment in Southeast Asia.

Fourth, Vietnam has outstanding advantages, including: bilateral economic relations with more than 230 countries and territories, has joined and signed 17 free trade agreements

(FTAs); ratification of EVIPA - creating a solid legal basis and foundation for Vietnam to integrate deeply and widely into the world economy and join the global value chain... with its geographical position as a bridge between the two economic zones of the sea and the continental economy of Southeast Asian countries and Asian countries have helped Vietnam become a bright spot in attracting FDI inflows and have for the first time entered the group of 20 leading countries in terms of income. In addition, Vietnam holds a leading position in the race for FDI capital with potential rivals such as China, Indonesia, India, and Mexico and is one of the centers to welcome the wave of investment transformation from China. Moreover, the signing of new generation FTAs by Vietnam also creates opportunities for foreign investors to pay attention and interest in the Vietnamese market. FTAs will help them save on transportation costs of intermediate and final products between the parent company in the host country and its subsidiaries located in the receiving country. Develop a strategy to attract Vietnam's FDI from "at all costs" to "selective attraction"; move from "passive attraction" to "active attraction"; moving from "attraction based on financial performance and project size" to "attraction based on socio-economic - environmental performance" in order to increase the national production capacity, the spillover between the FDI sector and the domestic economic sector.

3.2. Barriers to attract FDI inflows of Vietnam

Despite adverse effects from the Covid-19 pandemic, foreign investors still put their faith in the economy and investment environment of Vietnam in the new normal and make investment decisions as well as expansion of existing investment. But there is still a lot of work to be done to accomplish the goal of attracting foreign direct investment (FDI) associated with sustainable development outlined in Vietnam's socio-economic development strategy in recent years.

First of all, attracting FDI into Vietnam faces many difficulties due to international geopolitical instability and domestic investment "barriers". In the international context, many adverse developments such as the Russia-Ukraine military conflict have reduced business confidence and investment, significantly affecting the recovery of global FDI. At the same time, increasing disruptions in production and trade, exacerbating inflation, which is already soaring globally due to the negative impact of the Covid-19 pandemic. In addition, many large economies tend to encourage and promote production and FDI flows back home. Typically, the US with policies such as reducing income tax from 25% to 21%, reforming investment licensing procedures, introducing more flexible standards to improve the competitiveness of some US industries (energy, automobile, aluminum, steel, etc.). The European Union (EU) also promotes economic "strategic autonomy" through controlling capital investment abroad. Even some countries like Germany and Italy have stricter regulations and controls on FDI in strategic industries. In Asia, Japan spends a budget of \$2.2 billion, including \$2 billion to support Japanese businesses to bring their production networks back from China, and \$200 million to support Japanese businesses moved the production network out of China to a third country with a number of priority industries such as medical equipment, auto parts, and electronics. Besides, the competition to attract FDI

among countries in Southeast Asia also gradually "heats up" when Indonesia has issued new preferential policies to welcome foreign investors, such as tax reduction. corporate income will drop to about 22-25% in 2020 and further decrease to 20% in 2022. In addition, the country spends an area of 4,000 ha to build many new industrial zones.

In the domestic context, foreign investors also face some "barriers". For example, the duration of a business visa for some countries is only about 15-20 days, which is not enough for investors to survey the investment and business environment in localities. In addition, the rapid growth of industrial land tax prices in recent years also affects the investment decisions of foreign investors. A CBRE statistic shows that the average industrial land rental price of tier-1 markets in the North is at \$120/m²/term at the end of 2022, an increase of 11% compared to 2021. Notably, Some IPs in Bac Ninh and Hung Yen significantly increased rents when occupancy improved, leading to the highest market rent growth over the past 5 years, when the increase was mainly around 6-7%./year. In the South, the average land rent in the tier 1 market increased by 8-13% year-on-year and reached \$166/m²/remaining lease term by the end of 2022, about 38% higher than the average in the Northern region.

Vietnam is lacking capital for research and development to meet the needs of FDI enterprises. In fact, in the tens of billions of dollars invested in Vietnam every year, it is mainly poured into manufacturing plants, possibly high-tech factories, but there is a shortage of FDI capital for innovative research. Over the years, Vietnam has always expected a new wave of quality investment from Europe, the US, and some developed countries, but the implementation of solutions to clear this flow has not been as expected. The number of high-tech projects entering Vietnam from developed economies is quite small, and the number of enterprises setting up research and development (R&D) centers is still insignificant. The number of projects with modern technology, source technology from the US and Europe only accounts for 5%, medium technology accounts for 80%, and outdated technology accounts for 15%. As for Samsung, when entering Vietnam, it has committed to establish a research and development center, but so far this center has only completed the construction of the rough part, corresponding to the 70% progress. It is not clear when this R&D center can go into operation. The consequence of the lack of creative research centers is the absence of "Made in Vietnam" copyrighted inventions. This results in FDI factories that are still labor-intensive, rather than developed, factories. However, the absence of R&D centers makes Vietnam's industry thrive only in a few areas serving foreign firms such as manufacturing microchips, screens, etc., but seriously lacking in mechanical industries.

One of the important bottlenecks of Vietnam's industrialization in general and the operation of high-quality FDI projects in particular is the lack of a skilled workforce, despite the large population and large workforce. According to the Ministry of Labour, Invalids and Social Affairs, Vietnam's labor market is having a surplus of low-skilled workers and a shortage of high-tech workers. Currently, there are only more than 26% of workers in the country who have been trained, have degrees and certificates, the rest lack professional skills and do not meet the needs of enterprises. The limitation of qualifications makes it difficult for Vietnamese workers to face major fluctuations such as the Covid-19 pandemic, the trend

of job relocation. If training and skills are not changed soon, Vietnam's labor market is at risk of losing its competitiveness. Vietnam is currently the third largest recipient of FDI in the region and is one of the few ASEAN countries that has maintained stable FDI inflow growth over the years. However, FDI enterprises always need high-quality human resources to apply new technologies and high labor productivity. Therefore, if it does not focus on improving the quality of human resources, in the coming time, Vietnam will gradually lose its attractiveness to attract foreign investment.

4. Solutions to attract quality FDI inflows into Vietnam in the coming time

Obviously, in investment activities and investment attraction, there are currently barriers besides advantages and prospects. If the inadequacies can be improved early, the investment attraction will be more quality and effective. In order for the prospect of attracting high-quality investment to become a reality, it is necessary to strengthen the consideration and resolution of many issues, which is to drastically improve soft infrastructure such as public administration, human resources or the business environment, along with many other fundamental issues... Although the scale of global FDI inflows is still difficult to avoid shrinking due to the inevitable influence of world developments since last year and continues to the present, including: geopolitical tensions, Inflationary pressures, falling global demand, recession risk, tightening financial conditions... All of these events put downward pressure on business expansion globally, making the business environment and global investment changed dramatically. In which, it should be repeated, investment - export - consumption is a three-horse carriage, a tripod, a driving force of the economy... Exports and consumption, if declining, will be difficult to attract investment and vice versa. This is not easy in the global context of many fluctuations and uncertainties, so it is necessary to have comprehensive and methodical strategies: At the macro level, it is coordination and direction, and at the enterprise, province, city level, industry is an action program with continuous innovation efforts.

In order for Vietnam to truly become an ideal destination for large enterprises in the wave of global investment displacement, investment policies need to focus on maximizing the benefits of foreign investment so that both attracting FDI helps to restore the economy, promote production and improve domestic capacity, while ensuring national interests, instead of maximizing the amount of capital attracting foreign investment, In addition, the application of Screening mechanisms can limit the presence of FDI in a country. Therefore, FDI inflows should only be prevented in certain sectors, usually those related to national security.

Secondly, it is necessary to synchronously develop criteria for high-quality FDI projects suitable to each stage of the country's development and world science and technology trends; focus on developing infrastructure and improving management of a number of key industrial parks dedicated to receiving important FDI projects. At the same time, review and timely adjust foreign investment policies to suit and keep up with fluctuations of the global economy and changes in strategies to attract FDI enterprises of countries around the world. It is necessary to upgrade policies to attract and use FDI with strong focus on green growth, digital transformation and supply chain connection of Vietnamese enterprises with FDI enterprises, especially transnational corporations. Along

with that, perfecting institutions and laws, including the internalization of the global minimum tax, well handling the relationship between internal and external forces; modernization of socio-economic infrastructure and speeding up national administrative reform... are the main solutions proposed to attract and improve the quality and efficiency of FDI inflows in 2023 and the coming years. At the same time, create a competitive and open business investment environment, remove difficulties and obstacles in policies to create the most favorable conditions for the operation of enterprises and investors.

Thirdly, build lists of projects and fields that need to attract high-quality FDI in the overall national plan; proactively develop and implement specialized, professional and highly specific investment promotion and mobilization plans to approach, invite and research to meet the needs and requirements of investors invest in high-quality FDI projects, especially in terms of intellectual property protection, anti-corruption, improvement of a fair competitive environment, tax incentives, land, labor, infrastructure and related management institutions... Develop supporting industry enterprises that have the potential to meet the needs of joining the production network of multinational companies that are about to invest in Vietnam. Actively building a private economic block with medium-sized enterprises, capable of accompanying FDI enterprises in the value chain. These two areas must go parallel to each other. Forming a strong private sector, especially enterprises in the supporting industry with enough quality to be able to participate in the production stages of foreign investors, make up for the shortage of components, and become an attractive business environment to attract and retain FDI inflows.

Fourth, in addition to promoting public investment projects to improve infrastructure, helping industrial parks to benefit in the long term, it is necessary to transform investment needs to expand and modernize infrastructure of Vietnam into an opportunity to attract high-quality FDI projects in this field. For many years, Vietnam has focused on investing in infrastructure and real estate in industrial zones. In particular, Vietnam has invested and put into use thousands of kilometers of inter-regional highways, helping to promote convenient economic and cultural exchanges between localities in the country.

Fifth, it is necessary to proactively overcome challenges in attracting high-quality FDI, such as the limitation of clean land fund and inadequate infrastructure - seaports, road and waterway transport systems, and water transport systems. warehouse system; the shortage in the number and structure of skilled and specialized labor resources; the increase in competitive pressure and the pressure to be acquired by domestic enterprises...In order not to miss the opportunity to attract high-quality FDI, it is necessary to have a new thinking, with a new way of doing things, to respond correctly, faster, and better. than required by large multinational corporations; Prioritize projects with advanced technology, new technology, high technology, clean technology, modern management, high added value, spillover effects, connection of global production and supply chains. demand and environmental friendliness; overcome projects with thin capital," transfer pricing, "underground and shadow" investment, low technology, and complicated domestic and international disputes and lawsuits.

Sixth, in order to effectively anticipate new FDI inflows, it is necessary to increase the ability to provide a qualified workforce. In the medium and long term, it is necessary to restructure and reorganize the form of training at upper secondary schools, intermediate schools and colleges. These are the levels of study with a large number of graduates, providing both quantity and quality for labor needs. In the era of technology 4.0, talking about middle-class workers and above, it is necessary to make them able to read English, use computers, and get used to accessing the internet. But that is just a basic competency, so training the workforce to add reasoning ability to analyze, solve problems, and have the culture to work responsibly and behave well with others.

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ENHANCING MEKONG FLOW MANAGEMENT: EXAMINING THE PRESENT SCENARIO AND CHALLENGES FACED BY MAINLAND SOUTHEAST ASIAN NATIONS

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Abstract

The management of the Mekong River's flow is crucial for mainland Southeast Asian nations, presenting both economic development opportunities and complex issues concerning security, cultural, societal, environmental resources, and sustainable development. However, the region faces escalating tensions due to China's unpredictable actions and the diverse political behaviors of ASEAN countries. China's growing assertiveness and the South China Sea dispute have emerged as major challenges for ASEAN, creating vulnerabilities within the region. Furthermore, Southeast Asia's power dynamics become evident not only in the South China Sea but also along other vital routes where global powers such as the US and China vie for influence.

While the Mekong River issue may not currently dominate the power play, it holds equal significance to the South China Sea issue and will become increasingly problematic in the long run. Losing control over the management and utilization of Mekong's water resources will have far-reaching consequences for the socio-economic and political security of Southeast Asian nations. While the immediate impacts may not be evident in the short term, their long-term ramifications will be severe.

By addressing these pressing concerns and taking proactive measures, Southeast Asian countries can strive for enhanced Mekong River flow management, safeguarding their interests, promoting sustainable development, and mitigating potential future challenges.

Keywords: *Flow management, Lancang-Mekong Cooperation, mainland Southeast Asian countries, Mekong sub-region*

1. Introduction

Spanning over 4,800km, the Mekong River stands as Southeast Asia's longest river and the twelfth largest globally. Encompassing Vietnam, Laos, Cambodia, Thailand, and Myanmar, the Mekong Sub-region boasts an expansive landmass of nearly 2 million square kilometers.¹

¹ Vietnam+ (October 2016), *Mekong Subregion and History of Cooperation Mechanisms ACMECS, CLMV*, <https://www.vietnamplus.vn/tieu-vung-mekong-va-lich-su-cac-co-che-hop-tac-acmecs-clmv/412150.vnp>

Blessed with the fertile lands nourished by the Mekong River and a favorable tropical climate, this sub-region possesses exceptional strengths in agricultural production, positioning itself as the world's largest granary. Additionally, the region's economic growth has been nothing short of remarkable. In 2015 alone, the average growth rate of the Mekong Sub-region stood at an impressive 6.1%, surpassing the global average of 2.5%. Over nearly three decades of development, from 1992 to 2020, the Mekong sub-region countries have achieved an average economic growth rate of 6.3%, accompanied by a 5% growth in GDP per capita².

The economic growth observed in the Mekong Sub-region extends beyond its agricultural prowess, fueled by a process of economic restructuring that drives industrialization and modernization. With a vibrant and youthful population, the Mekong Sub-region enjoys a significant advantage in terms of human resources and holds immense potential as a consumer market. Boasting a population of approximately 334 million, with 40% under the age of 25³, the Greater Mekong Sub-region emerges as a promising market for growth and development.

The Mekong Sub-region occupies a strategic geographical position, serving as a vital connection to dynamic economies and major markets in Asia, including China, India, and ASEAN member countries. This unique advantage positions the Mekong Sub-region to emerge as a production-consumption center within ASEAN and a significant link in the global value chain. Furthermore, it plays a pivotal role as a transportation, trade, and investment bridge, fostering closer ties among East Asian nations.

The region's development potential has garnered considerable attention from investors and development partners, recognizing the trend of regional and international integration. Various cooperation mechanisms have already been established within the Mekong region, forging strong partnerships between Mekong countries and key players such as the United States, Japan, Korea, India, China, and the European Union.

With sound policies and inherent strengths, the countries of the Mekong sub-region, often referred to as mainland Southeast Asian countries, embody a dynamic economic region that significantly contributes to the overall development of Southeast Asia. Of particular importance is the issue of flow management in the Mekong River basin, which profoundly impacts the economic, security-political, and socio-cultural development of these nations. While it presents opportunities, it also brings forth challenges that necessitate careful consideration and effective solutions.

2. Method

- Synthetic analytical methods
- Logical method - history
- Comparative method
- Systematization method

² Pham Thi Thanh Binh (12/2021), *Strategy of China and Japan in the Greater Mekong Sub-region and some problems for Vietnam*, The Front Magazine, <http://tapchimatran.vn/the-gioi/chien-luoc-cua-trung-quoc-va-nhat-ban-trong-khu-vuc-tieu-vung-song-mekong-mo-rong-va-mot-so-van-de-dat-ra-doi-voi-viet-nam-42309.html>

³ East - West Center (1/2020), *The Mekong Matters for America*, <https://www.jstor.org/stable/resrep25016>

3. Results

3.1. Collaborative Mechanisms for Effective Flow Management in the Mekong Sub-region

Within the Mekong region, a diverse array of 15 cooperation mechanisms currently exist, categorized into two groups: intra-regional mechanisms fostering collaboration among Mekong basin countries and mechanisms promoting cooperation between Mekong River Basin countries and external partners. These mechanisms play a crucial role in advancing regional integration and sustainable development.

Among the various cooperation mechanisms in the Mekong Sub-region, four notable intra-regional frameworks have been established, namely:

- 1) Mekong River Commission-MRC (1995).
- (2) Cambodia-Laos-Vietnam-CLV Development Triangle Cooperation (1999).
- (3) Cambodia-Laos-Myanmar-Vietnam-CLMV Cooperation (2003).
- (4) Ayeyawady-Chao Phraya-Mekong-ACMECS Economic Cooperation Strategy (2003).

The 9th Ayeyawady - Chao Phraya - Mekong Economic Cooperation Strategy Summit (ACMECS 9), the 10th Cambodia - Laos - Myanmar - Vietnam Cooperation Summit (CLMV 10) and the ASEAN Economic Community (CLMV 10). The 11th Cambodia-Laos Vietnam Development Triangle Area Summit (CLV 11) was held in 2020.

The objectives of the above intra-regional cooperation frameworks are to strengthen mutual and bilateral economic cooperation to exploit and promote comparative advantages among regions and member countries, improve competitiveness and narrow the gap of development between the countries.

3.1.1. Mekong River Commission (MRC)

The Mekong River Committee was established by the United Nations in 1957 with the four countries of Thailand, Laos, Cambodia and the Republic of Vietnam to jointly exploit the Mekong River. However, because of the war, the mining plan was put on hold.

On April 5, 1995, the Mekong River Commission was established with 4 members namely Laos, Cambodia, Thailand and Vietnam. sustainable development of the Mekong River”. The main objective of the Mekong River Commission is to promote cooperation among Member States in the sustainable use, development and protection of water and related resources, for the mutual benefit of the countries. membership and the well-being of the people in the basin. China and Myanmar are not members of the commission and only participate as dialogue partners.

Currently, the Mekong River Commission has achieved many positive results, contributing to promoting development in member countries, strengthening cooperation among member countries and expanding cooperation with the two upstream countries. China, Myanmar and many other international partners. Within the frameworks of

cooperation on the Mekong River basin, the MRC is the only organization with the function of developing legal frameworks, including those that are binding on member countries on equitable sharing, rationalize water resources and jointly protect the ecological environment of the river basin as well as promote joint development projects. The activities of the Commission are not only important to the economic, social development and environmental protection of the region, but also contribute to strengthening the friendly relations between countries in the region.

3.1.2. Cooperation in the Cambodia-Laos-Vietnam Development Triangle (CLV)

The development triangle in the border areas of Vietnam, Laos and Cambodia was established in 2004 by three Prime Ministers, including 10 provinces: Kon Tum, Gia Lai, Dak Lak and Dak Nong (Vietnam); Sekong, Attapeu, Saravan (Laos) and Stung Treng, Rattanak Kiri, Mondul Kiri (Cambodia). In 2009, the three countries agreed to add Binh Phuoc province (Vietnam), Kratie province (Cambodia) and Champasak province (Laos) to the CLV.

CLV's goal is to strengthen solidarity and cooperation of the three countries for socio-economic development, hunger eradication and poverty reduction, contributing to maintaining stability and security of the three countries. Cooperation focuses on the following fields: transportation, trade, electricity, tourism, human resource training and health.

In addition to the Summits, the three CLV countries agreed to establish the Development Triangle Joint Coordinating Committee, consisting of four sub-committees: economic, social-environmental, local, and security-foreign affairs. Each country appoints a Minister to be the Co-Chairman of the Committee and a member of the Coordination Committee consisting of representatives of relevant Ministries, branches and provinces in the Triangle. The Joint Coordinating Committee shall meet annually on a rotating basis. To date, CLV has organized 6 Summits and 7 Coordinating Committee Meetings.

3.1.3. Cooperation of four countries Cambodia, Laos, Myanmar and Vietnam (CLMV)

At the ASEAN-Japan Summit in December 2003, Tokyo, Japan, the leaders of Cambodia, Laos, Myanmar and Vietnam (CLMV) agreed to organize the first CLMV Summit. on the occasion of the 10th ASEAN Summit, at the end of November 2004 in Vientiane, Laos. The conference adopted the "Vientiane Declaration" on "Strengthening economic cooperation and integration among CLMV countries". The Vientiane Declaration affirms the determination of the CLMVs to strengthen economic cooperation with each other and integrate within the frameworks of cooperation in the Mekong sub-region, ASEAN and the region; at the same time, calling on countries and international organizations to strengthen their support to the four countries to narrow the development gap.

Areas of cooperation under the CLMV framework include trade, investment, agriculture, industry, transport, tourism and human resource development. CLMV encourages the participation of the private sector and businesses from all over the world.

CLMV currently has 7 specialized working groups coordinated by member countries, specifically Vietnam coordinates the working group on trade-investment, information

technology and human resource development; Cambodia coordinates the working group on tourism; Laos coordinates the traffic working group; Myanmar coordinates the agriculture and industry-energy working group.

3.1.4. Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy (ACMECS)

ACMECS is an economic cooperation framework consisting of five countries Cambodia, Laos, Myanmar, Thailand and Vietnam in order to strengthen joint and bilateral economic cooperation to exploit and promote comparative advantages among regions and member countries, improving competitiveness, narrowing the development gap. ACMECS was established in November 2003 at the Bagan Summit proposed by Thailand.

The ACMECS Summit is held every two years according to the alphabetical rotation of the country's names. Vietnam officially joined ACMECS at the 1st ACMECS Ministerial Conference in Thailand, November 2004.

Up to now, ACMECS has 7 cooperation areas including: (i) trade-investment; (ii) agriculture; (iii) industry - energy; (iv) traffic; (v) tourism; and (vi) human resource development; (vii) medical. ACMECS established 7 Working Groups corresponding to 7 areas of cooperation. Each ACMECS country coordinates at least one cooperation area, of which Thailand coordinates two areas: trade-investment and health; Vietnam coordinates two areas: human resource development and industry-energy; Cambodia coordinates tourism cooperation; Laos coordinates traffic cooperation; Myanmar coordinates agriculture.

3.2. Frameworks for cooperation in flow management between the countries of the Mekong sub-region and major powers

Cooperation mechanisms between Mekong countries and development partners include:

- (1) Greater Mekong Subregion Cooperation-GMS (1992),
- (2) Development Cooperation between ASEAN and the Mekong Basin-AMBDC (1996)
- (3) Ganges-Mekong River Cooperation-MGC (2000),
- (4) Mekong-Japan Cooperation (2007),
- (5) Lower Mekong Initiative (LMI) (2009),
- (6) Mekong-Korea Cooperation (2011),
- (7) Friends of Mekong-FLM (2011),
- (8) Mekong-Lancang Cooperation Lancang-Mekong Cooperation (2016).
- (9) Mekong-US Partnership (2020)

3.2.1. Greater Mekong Subregion Cooperation (GMS)

The Greater Mekong Subregion (GMS) Economic Cooperation Initiative was initiated in 1992 by the Asian Development Bank (ADB). The member countries of the Greater Mekong sub-region include Cambodia, Laos, Myanmar, Thailand, Vietnam, and China (with two representative provinces, Yunnan and Guangxi).

GMS cooperation aims to promote and create favorable conditions for mutually beneficial economic development cooperation between Cambodia, Laos, Myanmar, Thailand, Vietnam and the two provinces of Yunnan and Guangxi (China), turning the rapidly expanding Mekong sub-region into a fast-growing and prosperous region in Southeast Asia.

GMS cooperation is considered to be the most effective cooperation among the sub-regional cooperation mechanisms. Initiatives and activities in the GMS program focus on 9 main areas including: Transport, Energy, Environment, Tourism, Posts and Telecommunications, Trade, Investment, Human Resource Development, Agriculture and Rural Development.

The Greater Mekong Sub-region (GMS) is an important geo-economic, geo-political area in Southeast Asia, where the interests of many world powers intersect. Therefore, with the constant change of the regional and world situation, major countries, especially the United States, China and Japan, increasingly want to expand their influence in the region, especially mainland Southeast Asia.

3.2.2. Mekong - Japan Cooperation

At the 12th ASEAN Summit (Philippines, January 2007), Japan launched the Japan-Mekong Partnership Program for Common Prosperity. After that, the first Mekong-Japan Summit was held in November 2009 in Tokyo. Cooperation has been implemented in many fields such as socio-economic development, infrastructure construction, implementation of the Millennium Development Goals, environmental protection and water security of the Mekong River...

Leaders of the participating countries have approved the Tokyo Strategy, which includes three main cooperation pillars: (i) Strengthening connectivity within the Mekong sub-region and between the Mekong sub-region and the region and the world; (ii) Cooperation for mutual development between Mekong countries and Japan; (iii) Environmental protection and human security. In addition, Mekong-Japan cooperation is also implemented within the framework of the Mekong-Japan Economic and Industrial Cooperation Initiative, the "Green Mekong Decade" initiative and cultural and exchange programs.

3.2.3. Lower Mekong Initiative (LMI) and Mekong-US Partnership

Since its launch in 2009, the U.S. Secretary of State has held annual meetings with five Mekong regional counterparts through the Lower Mekong Initiative (LMI). Over the past decade, LMI's programs have helped Mekong countries better respond to transboundary challenges related to water security, smart hydropower, energy and infrastructure planning, as well as education. Projects under the LMI have brought tangible improvements to the lives of people in the Mekong region.

In September 2020, the United States officially launched the Mekong-U.S. Partnership, upgraded from the Lower Mekong Initiative LMI, reflecting the importance of the Mekong region to the United States. The United States' relationship with Mekong region

partners is an integral part of the Indo-Pacific vision, as is the United States' strategic partnership with ASEAN. With an initial investment of more than 150 million USD in programs in the Mekong region, on the basis of promoting the positive activities of the Lower Mekong Initiative, as well as from the support of 3.5 billion USD⁴ from United States for the region for the past 13 years.

3.2.4. Mekong - Lancang Cooperation LMC

In its approach to Southeast Asia, China aspires to “maintain a stable international environment to support economic modernization” and at the same time strives to “increase China's influence”⁵. Chinese leaders have always expressed the view that China and ASEAN countries should take advantage of their geographical proximity⁶ and complementary industries to promote a high degree of regional economic integration.⁷

A new multilateral cooperation mechanism called Mekong - Lancang (LMC) is shaping the economic and environmental future of Southeast Asia. Since 2016, LMC has been a project under the “Belt and Road” initiative directed by China, managing water resources in a sustainable way.

As soon as the LMC was established, the Chinese foreign minister emphasized the criterion that “countries participating in the LMC should resist the interference of external forces in their internal affairs”.

The LMC mechanism not only helps China improve relations with its neighbors in the lower Mekong, but also serves as a tool to counter the strategic influence of Japan and the United States, which are donors to the Commission of Mekong River Society (MRC).

3.3. Enhancing Flow Management in the Mekong Sub-region: Current Status and Critical Challenges

Among the intra-regional cooperation mechanisms among countries in the Mekong Sub-region, the Cambodia-Laos-Myanmar-Vietnam Cooperation (CLMV) and the Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy (ACMECS) were born with the aim of The main purpose is to narrow the development gap, improve competitiveness, promote the growth and economic integration of the sub-regional countries in ASEAN and in the international arena, and support the building of the ASEAN Community. After 20 years of operation, the cooperation between CLMV and ACMECS has achieved positive results, helping to promote economic, trade and investment cooperation

⁴ U.S. Embassy and Consulate in Vietnam (September 2020), *Press Statement by Michael R. Pompeo, Secretary of State of the United States*, <https://vn.usembassy.gov/vi/quan-he-doi-tac-mekong-hoa-ky-khu-vuc-mekong-xung-dang-co-duoc-nhung-doi-tac-tot/>

⁵ Phillip C. Saunders (2008), *China's Role in Asia*, in D. Shambaugh, & M. Yahuda (eds), *International Relations of Asia*, Rowman & Littlefield Publishers, Maryland, pp. 127-149.

⁶ Dinh Quang Hai (2019), *Land border relations between China and neighboring countries*, ISBN: 978-604-308-860-1, Social Science Publishing House, pp.151

⁷ 新华社, 更高水平开放合作助力中国东盟经贸发展迎新机遇, 中华人民共和国中央人民政府, http://www.gov.cn/xinwen/2021-10/27/content_5645095.htm

among the countries of the Greater Mekong Sub-region, narrowing the development gap in ASEAN, and at the same time narrowing the development gap in ASEAN. strengthen the voice of members in the process of regional and international integration.

In the new development phase of the Subregion, two cooperation mechanisms, CLMV and ACMECS, will play an important role in helping Subregional countries overcome common challenges, improve competitiveness, and seize new development opportunities. With such a vision, the cooperation between CLMV and ACMECS will focus on specific programs and projects in priority areas such as construction of transport infrastructure; harmonize processes and procedures for cross-border exchange of goods, services and capital; industrial-agricultural development; strengthen the development of culture-tourism and people-to-people exchanges; develop human resources through scholarship and vocational training programs; protect the environment and promote sustainable development. The ACMECS Master Plan 2019-2023 is being implemented on three pillars: comprehensive connectivity, towards building a dynamic and sustainable competitive economy⁸. Progress in the formation of the ACMECS Development Fund as an innovative financing mechanism will support the implementation of cooperative programs.

Flow management in the Mekong River region plays a very important role in smooth and harmonious connectivity in the sub-region for economic recovery. Controlling the Mekong also means controlling much of Southeast Asia's economy. Because this river flows through five Southeast Asian countries, the food security and livelihoods of more than 65 million people in the region depend directly on the Mekong River⁹. For example, fishing on the Mekong River contributes about 10% of Cambodia's gross national product. It is estimated that part of the income of more than 2 million people in Cambodia comes from fishing¹⁰. Freshwater fishing is not only an important economic activity but also a key factor in ensuring food security for Cambodia as fish is an essential source of protein for the majority of the country's population. Much of Cambodia's agriculture relies on the Mekong River because it serves the irrigation needs of many lands, and the silt produced by the river is rich in nutrients thanks to the deposition of sediments. This is partly true of Laos, Vietnam and Myanmar.

Strengthening cooperation and connectivity also helps raise the role and voice of Mekong countries in the process of regional and international integration. These two mechanisms will continue to be the foundation for Mekong countries to coordinate efforts, strengthen trust, and dialogue to find solutions to common challenges such as water resources, climate change, epidemics, etc. on the basis of harmonizing the interests of all parties.

In the East Asian region, “the Mekong sub-region can become an obstacle to regional integration, or it can also become an impetus for East Asian countries to gather forces to

⁸ VOV.VN (12/2020), *The Prime Minister attended and spoke at the ACMECS, CLMV and CLV Summits*, <https://vov.vn/chinh-tri/thu-tuong-du-va-phat-bieu-tai-hoi-nghi-cap-cao-acmecs-clmv-va-clv-823025.vov>

⁹ Youth Magazine (January 2018), *Mekong River will be the second East Sea?* Youth Magazine, 03/01/2018, <https://tuoitre.vn/song-mekong-se-la-bien-dong-thu-hai-20180103114226738.htm>

¹⁰ Vietnam News Agency (October 2020), *Cambodia plays with the US to benefit from China*, Special Reference, October 20, 2020, p.18

achieve their policy goals”¹¹. However, due to limited financial and human resources, in order for these two mechanisms to be fully effective, the immediate requirement is to improve the method and select the appropriate priority cooperation field. with the new context and development needs of the member countries, while strengthening coordination with other regional and sub-regional mechanisms. In recent years, although GMS cooperation has made significant progress, “the breakthrough speed has not been as expected”¹². The main reason is that the countries participating in the sub-regional cooperation mechanism (with the exception of the main external partners such as China, Japan, and the United States) have modest economic capacity and depend on external support. The implementation efficiency of some mechanisms, initiatives and projects is still low. In addition, there are too many overlapping and cooperation mechanisms in priority areas and contents.

At the Mekong - Lancang Cooperation (LMC) summit in August 2020, Chinese Premier Li Keqiang pledged to share water management data on the section of the Mekong River that flows through China for the whole year. China's change is welcomed by ASEAN countries in the lower Mekong. Especially after the severe drought in 2019 caused the water level in the Mekong River to drop to its lowest level in more than 100 years. Part of that is due to the impact of extreme weather factors, but the core is due to China's 11 hydroelectric dams on the upper Mekong, with 11 other mainstream dams in the lower Mekong and 120 dams on tributaries played a major role in exacerbating this water crisis in the two years from 2017¹³. The devastating impact of these dams on fisheries and rice crops in countries along the Mekong River has also been documented. A report by Fitch Solutions says that dam construction causes severe damage in two industries that are considered the main sources of livelihood for local people, fishing and farming¹⁴, which will force the ASEAN countries must depend on further increased food imports from China.

At the same time as the implementation of the dams, starting in 2017, China created a “superfast waterway” along the Mekong River¹⁵ by dredging and blasting¹⁶. That waterway made it easier to move commercial goods. This brings significant economic and political

¹¹ World Wide Fund for Nature (2021), *Climate change in the Greater Mekong*, World Wide Fund for Nature, https://greatermekong.panda.org/challenges_in_the_greater_mekong/climate_change_in_the_greater_mekong/

¹² Electronic Newspaper of the Ministry of Natural Resources and Environment (March 2021), *Sustainable energy development in the Mekong sub-region*, <https://baotainguyenmoitruong.vn/phat-trien-nang-luong-ben-vung-o-tieu-vung-song-mekong-321556.html>

¹³ Vietnam News Agency (October 2020), *ASEAN needs a new approach to the Mekong River issue*, Special Reference, 2/10/2020, page 3

¹⁴ Chen Chen Lee (9/2020), *Mekong power play - Asean must protect its interests*, The Straits Times, 30/9/2020, p.7

¹⁵ Vietnam News Agency (March 2017), *China upgraded the waterway on the Lancang River*, VNA/Vietnam+, 30/3/2017, <https://www.vietnamplus.vn/trung-quoc-nang-cap-tuyen-duong-thuy-tren-song-lan-thuong/438417.vnp>

¹⁶ Dat Viet Newspaper (April 2017), *China blew up the Mekong riverbed, Thailand gave the green light*, Dat Viet Newspaper 23/4/2017, <https://baodatviet.vn/khoa-hoc/su-kien/trung-quoc-cho-no-long-song-mekong-thai-lan-bat-den-xanh-3333718/>

benefits in transforming the Mekong River into an industrial water corridor connecting China and the ASEAN countries along the Mekong River. Besides, China's large trade and investment activities in ASEAN countries along the Mekong River and its commitment to support 300 million USD for the LMC Fund¹⁷ make it difficult for these countries to turn away from China. With more than 100 new hydroelectric plants on the Mekong region invested by China in Laos, Laos wants to become a source of hydropower and make a profit by selling clean energy¹⁸ to neighboring countries. However, although the above project has been implemented on the Mekong River sections in China, Myanmar and Laos. But it was met with strong opposition from the resident communities and environmental protection groups in Thailand¹⁹, culminating in the decision of the Bangkok Government to terminate this project in early 2020. Similarly, Cambodia also publicized the project, announced a 10-year ban on dam construction on the Mekong River²⁰.

The difficult problem for the Mekong River has been viewed through the lens of the environment, socio-economic perspective, and political and security considerations. Critics criticize China for narrowing the flow of the Mekong River through dams and reservoir projects upstream²¹. In particular, China has been criticized for applying the LMC mechanism to manage water in the upper Mekong River not only to serve its economic interests but also to implement its own national strategy. When dealing with its smaller neighbors on the Mekong, China often appears to be a generous partner. However, this does not change the fact that China mainly uses the water source upstream of the Mekong River for its own purposes. China's financing of massive dam projects in Laos has made the country increasingly dependent on China. Dam projects in Laos and China are affecting the agriculture and fisheries of downstream countries. This has repeatedly led to conflicts with the interests of downstream countries such as Cambodia and Vietnam in particular.

China actively increases aid to Southeast Asian countries, accompanied by the increase of new Chinese immigrants. Originating from the outward investment policy of Chinese enterprises, as well as the foreign policy of the Chinese government, the Third Wave

¹⁷ Online World Security Magazine (October 2020), *Concerns about Mekong River*, Online World Security Magazine, 13/10/2020, <http://antg.cand.com.vn/Kinh-te-Van-hoa-The-Thao/Tran-tro-song-Mekong-615304/>

¹⁸ Vietnam News Agency (June 2020), *The need for a mechanism to manage water resources in the Mekong River*, Special References, 8/6/2020, page 21

¹⁹ Thanh Nien Magazine (February 2020), *Thailand stops the Mekong River dredging project with China*, Thanh Nien Magazine, 05/02/2020, <https://thanhnien.vn/the-gioi/thai-lan-ngung-du-an-nao-vet-song-mekong-voi-trung-quoc-1179042.html>

²⁰ VTC News (March 3, 2020), *Cambodia stopped building hydropower dams on the Mekong River for 10 years*, VTC News, 18/3/2020, <https://vtc.vn/campuchia-dung-xay-dung-dap-thuy-dien-tren-song-mekong-trong-10-nam-ar534213.html>

²¹ Vietnam News Agency (June, 2020), *The need for a mechanism to manage water resources in the Mekong River*, Special Reference, June 8, 2020, p.19

of Migration to Southeast Asia began in the 21st century²², mainly to the regions. inland areas such as Northern Myanmar, Laos, Cambodia and Northern Thailand. Typical aid projects such as Lao National Palace of Culture, Wanrong II Cement Plant, Mekong River Embankment Project, Laos-China Friendship Hospital Luang Phrabang, the construction of 1/3 of the Kunming road- Bangkok, Nameng hydroelectric project, Pakse power transformer transmission project²³... Aid projects focus a lot on infrastructure such as roads, railways, ports and large public works. These projects are mainly undertaken by the Chinese with workers brought in from China.

Through forms such as financial aid, infrastructure construction, business, labor, and tourism development, China has skillfully built a large overseas Chinese community in Southeast Asia. subtly and comprehensively increases influence on multiple levels.

With the LMC, China has established an institution called multilateral but on the basis of bilateral agreements, separate negotiation agreements with each country. China deals with each country in the Mekong sub-region so that they cannot unite to deal with them as a regional organization. It is clear that this country is very keen to divide the division between the separate Mekong countries to easily attract into the orbit of influence from China. Similar in another context, the fact that China has made claims about its territorial sovereignty in the East Sea, on the one hand, China is friendly, on the other hand, separates ASEAN through separate negotiations. The way of thinking and behaving on the Mekong River issue with mainland countries, which has inherited the tactics that China has masterfully applied in the South China Sea, is not surprising.

In the context of increased engagement and cooperation, the Mekong-US Cooperation LMI will help fight transnational crimes and enhance water security for partner countries affected by China. China manipulates the Mekong River. Speaking at the Asia-Pacific Transboundary Water Governance Conference (October 2020), US Assistant Secretary of State for East Asian Affairs David Stilwell also condemned China's activities in the South China Sea. upstream of the Mekong River, directly condemning Beijing for “not being transparent,” “not sharing sufficient information about upstream dam activities, limiting the ability of Mekong governments to prepare for or mitigate damage from natural disasters”. Along with direct attacks at official forums, channel 2 mechanisms (sponsored by the US government) also continuously have reports, research and field projects (for example, the "Monitoring" report. monitoring the amount of water flowing through the upper Mekong basin under natural conditions” by Eyes on Earth and the Stimson Center Mekong Dam Monitoring project), press statements, scientific seminars by American scholars, etc.

²² VnEconomy (May 2009), *Chinese Migration to Southeast Asia: Migration and Policies from Local to National*, VnEconomy, 28/05/2009, <http://vneconomy.vn/the-gioi/di-dan-trung-quoc-qua-dong-nam-a-di-dan-va-chinh-sach-tu-dia-phuong-toi-quoc-gia-20090528105011431.htm>

²³ Fatherland Electronic Newspaper - Ministry of Culture, Sports and Tourism (September 2009), *China-Laos: Investment, Aid, Migration*, Fatherland Electronic Newspaper - Ministry of Culture, Sports and Tourism, 24/09/2009, <http://toquoc.vn/sites/vi-vn/details/8/o-cua-chau-a/93923/trung-quoc-lao-dau-tu-vien-tro-di-dan.aspx>

Both competition and mutual restraint among major countries in the Mekong sub-region are increasingly complicated, and it is likely that there will be direct and indirect competition between cooperation mechanisms.

4. Discussion and Conclusion

In the past few years, the Mekong sub-region has continuously witnessed unusual fluctuations in river water levels, seriously affecting fishing activities, agricultural production and people's lives. Despite the existence of many sub-regional cooperation mechanisms, in practice, water resources in the Mekong sub-region are still poorly managed and governed by energy and food goals, leading to a rapid decline. Among a series of water security challenges, hydropower dams, water diversion and waterway construction are among the activities that stand out and have the most profound impact on water management in the Mekong River.

Entering the 21st century, major countries have increased in both the number and scale of cooperation projects in the GMS region. The involvement of major countries such as China, Japan, the US, and India in the GMS is increasingly strategic competition. A series of cooperation mechanisms between GMS countries and partner countries have been formed, such as Mekong - Ganges Cooperation (2000), Mekong - Japan Cooperation (2008), Lower Mekong Cooperation The Mekong - US (in 2009) was upgraded to the Mekong - US Partnership (2020) and most recently the Mekong - Lancang Cooperation (2016).

Water governance policies and cooperation policies in the Mekong River region are highly valued in the regional policies of other large or mid-sized countries, making the mainland Southeast Asia increasingly becoming a strategic space for these countries to compete for development and influence. Therefore, cooperation mechanisms in the Mekong sub-region were born with the participation of external factors, mostly stemming from political reasons.

Thus, it can be seen that, although water resources have contributed greatly to the development of Mekong countries over the past decades, over-exploitation and unsustainable exploitation are increasingly evident and potentially pose serious challenges to the Sub-Region. These issues are all transnational issues associated with the common interests of all river basin countries, requiring coordination to resolve.

Up to now, most of the large and influential countries in the region have been present in the Mekong sub-region through cooperation mechanisms led by these countries. From a security perspective, the Mekong sub-region is increasingly becoming an area of direct strategic competition among influential countries in the region. This is shown first and foremost through the increased presence and direct confrontation between the US and China on Mekong issues. In particular, China's rapid establishment and implementation of the Mekong - Lancang cooperation mechanism (MLC) with the largest scale and depth of cooperation compared to other mechanisms is posing many security and developments problems for Vietnam and the sub-region in particular as well as for Southeast Asia in general. Meanwhile, other partners have supported and increased their presence in the region, expressing their strong commitment to support the development of the Mekong sub-region, but the actual level of implementation is still modest and ineffective.

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THE ROLE OF MYANMAR FOREIGN TRADE WITH GMS COUNTRIES

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Abstract

The Greater Mekong Subregion (GMS) program is the result of a 1992 economic cooperation and intergration agreement among Cambodia, the Lao People's Democratic Republic, Myanmar, Thailand, Vietnam and Yunnan province of the people's Republic of China. The GMS submit declaration issued by the GMS leaders in November 2002 enunciated a vision of freeing their people from poverty and providing sustainable development opportunities for all their citizen. The subregion a need to be increasingly intergrated to attain these goals and to compete in a globalized world. The GMS economies achieved the growth during 1992 - 2010 expect Thailand economy during the financial crisis period. Therefore, Myanmar and GMS trade are favorable condition. Myanmar government needs to recognize the significance of Myanmar national industrial development strategy. Part of trade is economic zones or border trade zone that can be established by the future implementation of projects that provide golden opportunities for trade and these projects can support such as East-West economic corridor.

Keywords: *Greater Mekong Subregion, Foreign Trade, Economic development*

1. Introduction

There Greater Mekong subregion (GMS) Assistance plan (GMS-AP) for 2001-2003 presents the strategic trusts and direction of the program of Economic cooperation in the GMS in eight (8) priority sectors, together with the lending and technical assistance pipeline for the period. It updates the Interim GMS-AP for the period 2000-2002 which was the first attempt at presenting in a comprehensive manner, the strategic thrusts of GMS program and priority subregional projects that support these thrusts of the GMS program and priority subregional project that support these thrusts as endorsed by the GMS Ministries conference. Growing bilateral trade raise the income levels of both countries then the countries become richer. The study intends to analyze development of bilateral trade sector of Myanmar by policies influencing trade sector, performance of trade sector and making contributions to trade development in point of view.

Regarding the object of the study, this study has the following objectives: (1) To study the roles markets and governments are being redefined and their economics are becoming more diversified and open; (2) To study volume of trade and balances of the trade of Myanmar with neighboring GMS countries; (3) To analysis trade promotion polices and

strategies of Myanmar with GMS countries; (4) To study the inhabitants may take full advantage of the opportunities that peace provides.

2. Method

This study is mainly based on simple descriptive methods with available statistical data and secondary data sources based on information published from relevant institutions, and research findings. As literature review, textbooks and publications of previous research have been studied, and facts and figures from which are synthesized in order to interpret the trends and historical events of trade relations.

3. Results

In this study Myanmar Foreign Trade with GMS countries, strategically located in the hear of Asia the GMS is a vital land bridge between the dynamic economics of East and South-East Asia. The main hypothesis of the research is that the participation in regional economic cooperation will improve Myanmar-ASEAN Trade, one that recognized in equal measures the public benefits of managing the GMS commons. Broad based economic cooperation and for mobilization of development resources GMS projects complement and amplify national projects. GMS has provided the opportunity for government to develop a shared vision for developing the subregion.

Trade and Investment Facilitation Action Plans of GMS

Background

At the mid-term SOM (Summit of Mekong) held in June 2002, People Republic of China proposed to formulate a plan to promote trade and investment in the Greater Mekong Sub-region. The purpose of the initiative is, through such measure as facilitation, information sharing and capacity building, to achieve the mutual advancement of and sound interaction between GMS economic cooperation and China-ASEAN Free Trade Area. The initiative was endorsed by the mid-term SOM and the 11th GMS Ministerial Conference. The first GMS Summit held in 2002 also called on GMS member states to work out an action plan in this regard. For the past two years, GMS members have made great efforts in trade and investment facilitation by streamlining customs procedures, increasing administrative efficiency and improving legal framework, among others. Progress has also been made in the area of information sharing and capacity building. However, due to the lack of a set of clear guidelines and an action plan, advancement in trade and investment facilitation in GMS countries varies. Greater efforts are therefore needed to tap the full potential of cooperation. Against this background, China proposes that a long-term and systematic action plan on trade and investment facilitation be developed to enable GMS members to reach their goal in a coordinated manner.

The Trade and Investment Facilitation Action Plan involves adopting and implementing concrete action steps in the areas of customs procedures, inspection and quarantine procedures, trade logistics, mobility of business, investment promotion and capacity building. The Action Plan aims at:

(1) Achieving common development and prosperity by creating favorable environment for trade and investment.

(2) Realizing a significant reduction in transaction cost by simplifying procedures and improving efficiencies.

(3) Enhancing the free movement of business people;

(4) Improving administration and management through capacity building.

Priority Areas for Action

(a) Customs procedures

Objective: To promote simplification, harmonization and transparency in customs procedures with a view to reducing trade barriers and minimizing transaction costs.

Actions:

- Align and harmonize the trade and custom laws/regulations with WTO and WCO standards;
- Increase the transparency of customs laws/regulations;
- Accelerate the application of one stop customs inspection;
- Promote the standardized and simplified documentation, including paperless systems;
- Collect and disseminate the information on rules of origin in respective GMS countries.

(b) Inspection and Quarantine Measures

Objective: To promote the utilization of the harmonized inspection and quarantine measures based on the international standards, guidelines and recommendations of relevant international organizations among GMS members, for the sake of the protection of the environment, the quality of export product, the life and health of human, animals and plants, and the prevention of fraud and the disguised restriction on regional trade.

- Enhance the communication and cooperation in the area of WTO TBT/SPS agreement among GMS members, as well as the alignment of the technical regulations, standards and conformity assessment procedures with TBT agreement, the sanitary and phytosanitary measures with SPS agreement among GMS members;

- Strengthen the communication and cooperation in the area of national border health quarantine and establish the regional declaration and monitoring network of epidemic diseases;

- Increase the transparency of inspection and quarantine laws and regulations;

- Strengthen the cooperation of relevant authorities in the area of the sharing and exchange of electronic inspection and quarantine information/data;

- Harmonize the inspection and quarantine clearance mode and simplify the clearance procedures so as to enhance the clearance efficiency;

- Explore the feasibility of one-stop inspection and quarantine mode at the border crossings of GMS members.

(c) Trade Logistics

Objective: To simplify and harmonize of the transport regulations/procedures so as to increase the efficiency in the delivery of goods and reduce transaction costs.

Actions:

- Accelerate the finalization and implementation of the Agreement for the Facilitation of Cross-Border Transport of Goods and People;
- Where appropriate, review and simplify the transport regulations/procedures;
- Improve the trade infrastructure in GMS member countries, such as navigation channels, ports and land roads, including opening temporary airline and railway transport to counter seasonal shortages, in order to establish a more convenient network of trade logistics.

(d) Mobility of businesspeople

Objective: To enhance the mobility of businesspeople who are engaged in the conduct of trade and investment activities in OMS

Actions:

- Streamline the formalities for business travel and temporary stay;
- Increase the transparency of relevant laws/regulations;
- Enhance the use of information and communication technology (ICT) to facilitate the movement of businesspeople across borders.

(e) Investment Promotion

Objective: To improve the GMS investment environment so as to enhance the investment flows.

Actions:

- Increase the transparency of investment laws/regulations;
- Promote investment flows by means of seminars, workshops and investment exhibitions, etc;
- Strengthen the coordination and information sharing between and among the agencies responsible for regulating in GMS member states;
- Encourage one-stop investment services. -

(f) Capacity building

Objective: To strengthen the technical assistance (TA) and improve the human resource development (HRD) with a view to upgrading the professional skills of concerned government officials in implementing trade and investment facilitation measures

Actions:

- Identify the special needs and determine the more appropriate measures for implementation;

- Develop the partnership with private sector, academic community, other international development organizations and interested donors;
- Conduct training programs and workshops to facilitate the sharing of best practices among the concerned officials and leverage their resource to enhance capacity building in trade and investment facilitation.

Framework for Implementation are-

1. The Action Plan was submitted for consideration at the 13th ministerial conference held in December 2004 and approved by the 2nd summit in 2005;
2. The implementation of the Action Plan has been reviewed annually and reported to the Summit biennially;
3. The GMS Trade Facilitation Working Group (TFWG) shall be responsible for the review and implementation of the action plan;
4. The Asian Development Bank has been working with TFWG in stimulating and coordination progress in the above priority areas.

Trade Promotion Policies and Strategies of Myanmar

In order to promote the activities of Foreign Trade, rules, regulations and procedures are essential measures in doing business of export and import with bordering nations. To meet this end, the former rules and regulations that banned the participations of private enterprises in foreign trade were withdrawn by notification No.1/88 released on 29th October 1988. Subsequently, the state allowed private enterprises and firms to participate in manufacturing goods as well as in service sectors. In addition, the state has being offered foreign enterprises and businessmen to invest in Myanmar in very potential sectors. Foreign Direct Investments are also being invited to participate in enhancement of production and marketing.

Myanmar is a signatory country of GMS in which participating actively. Myanmar trade promotion policies are also encouraging to promote trade with neighboring countries as well as with GMS members. Ministry of Commerce has set down three basic economic policies to achieve the economic objectives of Myanmar. They are

- (1) Trading activities must be done aiming at the welfare and benefit of Myanmar people;
- (2) Trading activities must not be burden for people;
- (3) Trading activities must be done to explore long-term sustainable development not for short-term benefit;

I. Basic Trade Objectives

The four basic trade objectives of Myanmar are as follows,

- (1) Both domestic trade and foreign trade must be one of the most reliable forces for the economic development of Myanmar;
- (2) Trade and business organizations must be the most efficient factors;
- (3) To improve value and item of export and to earn more foreign exchange (FE);
- (4) To supply necessary facilities for the private and co-operatives to able to participate in trade sector;

Exporting and importing are legally allowed by 1947 Act of Importing and Exporting. The export / import licenses are permitted to the following personnel and firms;

(1) All companies, joint-ventures, business organizations and enterprises are allowed to carry out importing and importing in accordance with the rules and regulations;

(2) All cooperatives registered by Myanmar Cooperative Act;

II. Procedures for Foreign Trade

Merchants and businessmen then who have export/import license can do exporting and importing legally. They have to submit permission to Ministry of Commerce to carry out exporting and importing. They can trade both through normal trade and border trade.

When they carry out trading activities, they have to abide following rules and regulations;

(1) License application for foreign trade has to be submitted to the Directorate of Trade, Ministry of Commerce;

(2) License application for Border trade has to be submitted to the Department of Border Trade, Ministry of Commerce;

(3) License application for normal trade which has to be done through border line has to be submitted to the Department of Border Trade, Ministry of Commerce;

In an export / import license, licensee is permitted to perform his business of foreign trade within three months. Exporters have to enjoy 100% benefit on exporting profits. The payment system must be done by letter of credit or telegraphic transfer. Shipment of Export is prescribed to do through FOB (Free on Board) system, CFR (Cost Freight Rate) system and CIF (Cost Insurance and Freight) system. The procedures for import are; doing through normal trade, CMP (Consignment Production) system, drawback system, transit trade, barter trade, counter trade, account trade, capital in kind, loan in kind, and many other means of trading.

III. Procedures for Border Trade

The procedures of border export and import are as follows:

- The numerous and large valued commodities must be exported or imported by means of the normal trade method through border. The currencies allowed for transaction are Euro and US dollar and Singapore dollar.

- The commodities for the local consumption and local products in border areas can be exported or imported by means of border trade method. Not only American Dollar but also the currencies of both bordered countries are allowed for the transactions.

- The 8 percent of commercial tax and 2 percent of income tax shall be payable for export.

- The proper customs duty, commercial tax, income tax, imports license fee and bank service charges must be paid for import.

The private sector is permitted to export all commodities except the following prohibited commodities through the border areas:

(a) Agricultural Products

Agricultural Products includes rice Products, white Sugar, red sugar, brown sugar, Ground Nut! Ground Nut Oil, Sesame Oil, Niger Oil, Mustards! Mustard Oil, Sunflower seeds! Sunflower oil, All Sorts of Oil seed Cakes and Cotton and Cotton Products (Cotton Yarn).

(b) Mine and Metals

Mine and Metals include Crude Oil, Precious Sorts of Oilseed Cakes³ Gold, Jade, Pearl, Diamond, Silver and Copper and not allowed metal from Ministry of Mine.

(c) Animals and Animal Products

Animals and Animal Products include Ivory, Buffalos, Cow & Ox, Elephant, Horse and All Rare Animals.

(d) Marine Products

Marine Products include Prawn Shell Dust.

(e) General Materials

General Materials include Arms and Ammunitions, Antiques.

(f) Forest Products

Forest Products include Teak.

The private sector is permitted to import all commodities except the following prohibited commodities through the border areas;

Seasoning Powder (MSG), Soft Drinks, Biscuits Assorted, Cakes, Wafer, Chocolate, Chewing Gum, Tinned Meats and Fruits, all sorts of Instant Noodles, Liquors, Beer, Cigarettes, Plastic Household goods, Restricted Products as par Existing Laws, Affecting products to the domestic Industries.

Encouraging Programs for Trade Promotion

Ministry of Commerce has implemented following steps for smooth flows of trade activities in order to promote volume of trade and to improve flow of goods;

- (1) Inspecting and giving permission export/import licenses;
- (2) Regulating and adjusting rules and regulations for export and import;
- (3) Releasing the information about exporting items through journals, magazines and on websites,
- (4) Facilitating merchants with reliable and updated information,
- (5) Encouraging merchants to produce high-quality value-added goods in order to gain competitive advantages in the international markets,
- (6) Implementing necessary measurements to initiate counter trade,
- (7) Participating in regional cooperation on trade and concluding bilateral trade agreements,
- (8) Encouraging private participation in international trade,
- (9) Organizing merchants and forming business related organizations (UMFCCI)

- (10) Supervising both normal trade and border trade to be the best service,
- (11) Educating the people all about e-commerce system,
- (12) Giving on-job training to the personnel concerned.

Cross-Border Trade with Neighboring Countries

Agreed programmatic economic cooperation among these three GMS countries that share land borders in terms of cross-border trade, investment, tourism, and labor cooperation has been occurred within nearly one decade. In general, cooperation in trade (formal and informal), labor cooperation (Legal and illegal), and tourism are impressive whereas cross-border investment has not yet existed.

Until 1988 when the SPDC took power, border trade was informal, illegal trade or smuggling. Sometime, that occurred as transit trade and barter trade. The Government tried to stop illegal trades and black market along border areas and began to launch legal trade along the border areas. The state leader guided strategies and tactics to implement legal border trade as prior national task⁴ According to the guidance of state leader, the Ministry of Commerce issued an order 1/88 which assigned Myanmar Export and Import Service (MEIS) to implement legal border trade and supervise border trade activities. This program was formalized when bilateral agreements were signed with the PRC and Thailand. Myanmar has since normalized, legalized, and further liberalized trade with these countries base on the provisions of these agreements as well as arrangements in GMS Programs.

The positive impact of cross-border trade for Myanmar has risen substantially in employment and income and improvements in security, transportation facilities, and the social sectors in border regions.

Myanmar's Trade with GMS countries

According to the Ministry of Commerce, during the period 2002-03 to 2011-12 the main trade partners for external trade of Myanmar are ASEAN members, EU members, PRC, Japan, Hong Kong, United States, India and Bangladesh. In the comparison of regions with which Myanmar deal in trade, South East Asia is the main and the largest market for export.

It can be said that the level of cooperation between GMS countries has been considered quit progressive compared to other regional groups. And even be said that it is a super power group in implementing the development of institutional arrangements to promote the border trade among the member countries. By cooperating in trade sector liberation, the region has achieved substantially in poverty alleviation for the Greater Mekong Subregion (GMS). Evidence suggests that carefully implemented trade liberalization could contribute significantly to pro-poor development (Winters, McCulloch, and McKay 2004). The positive impact of cross- border trade for Myanmar has been a rise in employment and income and improvements in security, transportation facilities, and the social sectors in the border region. Under the trade facilitation plan of GMS, trade between Myanmar and other GMS countries increased rather than that was in the past.

4. Conclusion

GMS countries have in different stages of economic developments and Myanmar can have trade cooperation with some of them in all product categories. Myanmar is the largest land area and Cambodia is the smallest area in GMS member countries. Vietnam has the largest population and Lao have the smallest population. Thailand has largest total Agricultural Area and Arable land for Agriculture than Myanmar. Myanmar is Agriculture Area as 17.7% and arable land as 15.7% of total land area. The GMS economics grew 5.3% per year on average during 1992-2010. Greater Mekong subregion will become the most successful and developing group in the world by achieving sustainable economic development in the subregion. The impact of border trade is occurred positively in the political, economic, and social development as substantial extent in poverty reduction as well. The legal border trade with GMS members as well as other neighbors has greatly impacted on the economic development of Myanmar.

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GLOBAL VALUE CHAIN AND THE PARTICIPATION OF TEXTILE ENTERPRISES IN VIET NAM

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Abstract

Since the covid 19 pandemic and its impact on the economy, the global value chain and supply chain have undergone significant changes to the economy around the world. Vietnam and the textile industry are no exception to this change and transformation, expectations of deeper participation in the supply chain of domestic enterprises are also affected by internal factors. and external factors such as institutions, foreign ownership rates, import value of raw materials...By qualitative and quantitative studies, the authors have verified the model and objectively assessed the participation and factors affecting the participation of Vietnamese textile and garment enterprises in the global value chain and then propose practical policies and solutions.

Keywords: *Global value chain, global supply chain, textile enterprise*

1. Introduction

Manufacture enterprise plays an important role of economic increase and bringing job in developing countries (Wang 2016). In Viet Nam, about 96% of the enterprise are SME. They bring about 47% of the employed labor and contribute 36% of the national value added (OECD 2021). SMEs accounting for 88% of enterprises export and about half of the output is exported. However, 70% export volume of SMEs in Vietnam comes from foreign capital SMEs, moving to Vietnam to be closer to large customers who are multinational companies (MNEs) (OECD 2021). In Vietnam, garment enterprises are gradually shifting their participation in the garment supply market from Cut – Make – Trim (CMT) to Free – on – Board (FOB) and ODM because the contribution to the value chain of textile enterprises is now being considered based on the supply of input materials of fabric, which is a limitation to reduce the competitiveness of enterprises. (Le 2017, Fullbright). Vietnam needs to engage in full-service production instead of outsourcing and to do that the Vietnamese textile and garment industry needs move to upstream in the textile value chain, holding the stages in the production segment raw materials and accessories, this is a long-term strategy to maintain and improve competitive advantage in export Vietnamese garment. (Gereffi 2003). However, 70% of textile enterprises in Vietnam are small and medium-sized, the remaining 30% are foreign-invested and large enterprises. So, if they want to participate more deeply in the value chain, SMEs will have to face great competition from the cost of input materials, product distribution as well as the application of technology. Therefore, they still have to consider the development direction of the business. In addition, ancillary enterprises may be put under threat of job loss if textile enterprises form an industrial cluster. To maintain the role and

impetus for enterprises in the economic development of the country, it is important to identify the factors that determine their sustainable development (Kotturu and Mahanty, 2016)

The policies on market opening in recent years in Vietnam have been very well implemented by the government leading to an increase in the participation of small and medium enterprises in the value chain. Despite the focus towards deeper participation and better value creation in production and supply networks, the connection between SMEs and GVCs is still quite low (OECD 2016). Up to now, there has been no research on the motivation for textile enterprises to participate in GVC, how to have the opportunity to participate in GVC as well as improve the competitiveness of textile enterprise in Vietnam, what factors promote SME and enterprises of VietNam can participate in GVC? This gives rise to questions on how to connect local enterprises to GVCs? What are the factors and their dynamics that influence competitiveness in becoming successful partners within GVCs?

As an SME ramps up its participation in the value chain, having to perform complex tasks with ongoing involvement facilitates improving their own capabilities and adding value.

This study was conducted using secondary data of enterprises in the textile and garment industry in Vietnam with using quantitative methods tried to find out the determinants that promote and play an important role to textile enterprise in participate and promote linkages with GVCs.

2. Literature review

2.1. The beginning of free trade area (FTA)

David Ricardo is an advocate of free trade based on comparative advantage. He followed in the footsteps of Adam Smith and contributed greatly to the development of the labor theory of value. His theories significantly influenced the economic thought of Karl Marx. David Ricardo is also a businessman, financial expert, speculator, he is considered to have amassed a large fortune. The formation of free trade zones and the narrowing of barriers between these regions as well as between economies have fueled the globalization of goods production processes. Corporations, multinational companies invest capital and open production facilities in the countries of each free trade area to take advantage of its incentives. Arvind (2002) “whether final or intermediate – be allowed to be traded freely. The proportion of domestic value added in final goods does not enter as a criterion in the rules of origin.”

Beside it, the competitive environment according to Michael Porter is born in a certain setting, like a four-pointed diamond. According to this theory, information, stimulating factors, competitive pressures, key enterprises, institutions, infrastructure, technological capabilities... all have a positive impact on improving productivity. of the national economy. Increasing productivity in a sustainable way requires that each country's economy itself be constantly upgraded. That means businesses must strive to improve productivity, by improving product quality, improving technology and lowering costs. Only in that way can enterprises enter the competitive market. Liberalized trade and investment markets have created productivity-enhancing opportunities for all countries, while also forcing companies to remain highly productive. Therefore, each country can focus on an

industry in which its firm has an advantage and import goods and services produced by foreign competitors if domestic production productivity is lower. . Porter has synthesized his research methods and built a theoretical model of four factors that play a key role initially for successful competition in an industry, which is a combination of factors of production, domestic demand, and competition. domestic competition and supporting industries. According to Porter, if domestic competition is fierce, international competition will be successful.

2.2. Global value chain (GVC)

With a new way of production and trade like today's approach, a finished product is no longer produced by one country. Companies through global production networks supply only part of the final product, but not all of it (Escaith and Inomata 2013). Therefore, when a product is exported and leaves a country, there will be tangible and intangible added values both at home and abroad that cannot be captured by previous trade statistics. Furthermore, the appearance of the Input - Output data table allows to see concrete numbers to measure value-added trade by capturing across bilateral exchanges worldwide. However, the scope of this data is limited to some details such as industry, up-to-date data. Furthermore, from previous studies, the absence of a uniform GVC measure has led to the use of different approaches to capture the concept of GVC entry at the firm level (Amador and Cabral). 2016

The term global production value chain developed by Gereffi (1999) – as distinct from the value chain concept introduced by Porter (1990) – has things in common with the concept of a global production network and is often referred to as a global production network. same. However, there are differences between them. The value chain implies all production activities from the first to the last stage, but the production network implies that there will be two or more value chains that share at least one member - the implication includes both vertically and horizontally linked (Sturgeon, 2000).

Gerrefi (1994) found that global industrialization was the result of system integration in production and trade, thereby clarifying the state's policy role in participating in the global trade chain, especially for with export-oriented countries.

Participating in the global market is one of the important factors, helping to promote economic growth, social progress as well as strengthen a country's position in the world. “When manufacturers of a specific country or regions are not able to embed into global markets, this could make negative impact on their overall economic situation which might be even worth before integration process have began (Ghemawat, 2001).

Value chain research focuses on the nature of the relationships among the various actors in- volved in the chain, and on their implications for development (Humphrey & Schmitz, 2002b)

2.3. How to measure the participation of Vietnamese textile enterprise into global value chain

To better understand the level of participation of enterprises and a country in the global value chain, we use scales to evaluate and have the most general view. In most studies,

assessing participation in global supply chains is often difficult to access as well as comprehensively accurate, but there are tools to help researchers through the stages. can capture and take measurements as a basis for an overview to create a premise for further studies.

Regarding the forms of GVC participation characterized by “vertical specialization,” Hummels et al. (2001) originally suggested the following two modalities: (a) using imported intermediate inputs to produce exports (called “backward participation”) and (b) exporting intermediate goods used as inputs by other countries to produce goods for export (called “forward participation”)

In a 2018 study by Yue Lu, the foreign rate of increase (FVAR) was used to measure participation in the value chain (GVC) and found that firm productivity and financial position will affect their participation in the supply chain. “We calculate the foreign value-added ratio (FVAR) to measure the global value chain (GVC) participation”

Similarly, in a study, two scales have been shown for the participation of a country or more specifically firms in the supply chain through the link before and after “Countries, or more specifically firms, participate”. in GVCs as 'buyers' (also known as backward participation) and/or 'sellers' (also known as forward participation)” where backward participation is the foreign value-added ratio.

With the researches, Foreign value-added content of exports corresponds to the value added of inputs that were imported in order to produce intermediate or final goods/services to be exported. It corresponds to the "Backward GVC participation". It is also referred to as "Vertical specialization" when expressed as a percentage of gross exports. The scale applied to GVC would be the value of imports to produce an export good in an economy which often called backward linkage.

Backward GVC participation refers to the ratio of the "Foreign value-added content of exports" (see definition in Section 1) to the economy's total gross exports. This is the "Buyer" perspective or sourcing side in GVCs, where an economy imports intermediates to produce its exports

2.4. Factor Affecting participation in Global value chain of enterprise in VietNam

Government mechanism and influence

In a country, to promote any activity in the economy or make a breakthrough difference, individual participants are not enough, it will need policy mechanisms suitable to the content. includes many different influences and influencing factors.

The concept of mechanism is explored in depth in studies of new institutions. As scholars will tend to focus on different aspects of this phenomenon, the definitions also represent different ideas. Mechanism is defined as a part of the economy that shows the interrelationship between institutions and actors (Veretennikova & Omonov, 2017); or as a set of rules that determine the player's strategy (Hurwitz, 1994; Veretennikova & Omonov, 2017). It ensures the formation, operation and development of the institutional system or institutional environment (Zaloznaya, 2006). Commons (2017) examines institutional

mechanisms through the lens of value-creating transactions. Kenneth Arrow (1974) presents the institutional mechanism as a framework for allocating resources based on Pareto efficiency. évenot (2007) defined institutional mechanism as a combination of actions occurring in the coherence of its elements to achieve economic equilibrium. Ménard (2014) considers this as the association of partners to establish businesses. According to North (1990), the institutional mechanism is more important than the economic one because it sets the rules of the game by which economic agents behave, and thus determines their behavior and outcomes.

Investment of research and Developmet

Ohno (2013) and Ye et al. (2015) suggests that firms can gain more benefits through GVCs by increasing productivity. However, one of the essential factors to decide to increase productivity and improve the competitiveness of enterprises is innovation. Maximizing the enhanced benefits from participation in GVCs requires domestic firms to enhance their innovation capacity for sustainable and competitive growth. According to the theory, innovation is the ultimate success tool in a highly competitive global market to map opportunities ahead (Rajapathirana & Hui 2018). Indeed, innovation drives productivity, job growth and sustainable business (Akcali & Sismanoglu 2015). Innovation has led to the survival, growth and development of small and medium enterprises (Minniti & Venturini 2017), micro firms (Baumann & Kritikos 2016), and the competitiveness of SMEs. and small (Sipa, Gorzen-Mitka, & Skibinski 2015)

Long-tearm investment in fixed asset

Investment in fixed assets and long-term investments are crucial for enterprises that aim to participate in the global value chain. These investments allow companies to build and expand their production capacity, develop new products and services, and enhance their competitiveness. Improved productivity and efficiency: Investing in fixed assets such as machinery, equipment, and infrastructure can improve productivity and efficiency, which can help companies reduce costs and improve their competitiveness. This can help them to produce high-quality products at a lower cost, making them more attractive to customers in the global market.

Capacity expansion: Long-term investments in fixed assets can also enable companies to expand their production capacity, which can help them to meet the growing demand from the global market. This can help them to increase their market share and revenue, and also reduce their dependence on a single market.

Innovation and new product development: Long-term investments can also help companies to innovate and develop new products and services. This can help them to differentiate themselves from their competitors and create a unique value proposition that can appeal to customers in the global market.

Access to global markets: Investing in fixed assets and long-term investments can also help companies to enter and succeed in global markets. By building a strong production base and investing in new technology, companies can produce high-quality products that meet the demands of customers in the global market.

Import value (Input of materials)

In Thomsen's study (2007), he showed that "barriers to enter the chain" are formed by economic - political factors in Vietnam and this affects market segmentation, access to state systems here, this affects the finding of raw materials for the export process of enterprises.

Labour

Labor and productivity is one of the factors that play an important role in promoting and changing the productivity of the industry, especially in labor-intensive fields such as the textile industry. However, in the textile value chain and supply chain in countries like Vietnam, most products are assessed through the skill level of the workers. Therefore, considering the labor factor through the number and productivity of labor reflected in the revenue can see the current situation of the textile industry today.

3. Method

The development of a framework to study the integration into GVCs requires an analysis of the internal factors in the enterprise combined with the promotion of the state, the determinants and the processes carried out by the enterprises with Various department are involved.

The approaches of previous studies are used to measure the level of participation and assess the factors of wanting to join the supply chain (WTO). These studies investigated cross-country evidence. Therefore, the aim of the present study is to identify the factors that determine the successful inclusion of Vietnamese textile and garment enterprises in GVC.

The significance and impact of factors that were part of the push into GVC were determined through linear regression. The extent of a country's participation in GVCs can be described using an index of the share of manufacturing in export value added, due to Ischuk (2018) or export value through FDI.

A multiple linear regression is constructed reflecting the reciprocal relationship between the share in export value added, which represents the degree of inclusion of Vietnam's textile and garment industry in GVC, and other indicators. reflect the impact on the dependent variable of the enterprise. The model is represented by the following equation

Where:

$$LN(\text{Export value}) = \beta_0 + \beta_1 \text{Foreign ownership} + \beta_2 LN(\text{labour capacity}) + \beta_3 LN(\text{import value}) + \beta_4 LN(\text{basic construction}) + \beta_5 LN(\text{Procurement of fixed assets})$$

The choice of variables can be explained as follows.

Helping businesses to participate in the global supply chain or production chain is recognized with a significant contribution of the role of the State. From factors such as policies, business environment and creating conditions to help enterprises overcome these difficulties and variables are shown in the enterprise survey to assess the level of difficulties faced by enterprises.

- Input import value is also an important factor to evaluate the contribution to GVC by backward linkage. To create final output products, textile enterprises in Vietnam still need to import input materials.

- From the scales, it can be shown that the participation of enterprises in GVC requires foreign capital because exports from Vietnam are supported by foreign enterprises in the form of joint ventures or FDI.

- Investment in fixed assets is one of the key factors because any production operation, whether in breadth or depth, requires essential materials, machinery and infrastructure equipment that will show how capable the business is in terms of materials and fixed capital. (World Bank 2020)

- The number of employees and productivity are indicators to evaluate the human resources of an enterprise. As mentioned in the OECD Skills Outlook (OECD, 2017), there is a bilateral dependence between labor and GVC participation. Correlations have shown that countries with higher productivity growth also significantly increase their presence in GVCs. At the same time, more fragmented industries such as manufacturing also benefit from participating in GVCs and increase productivity as other costs (transportation, packaging, etc.) are lower.

4. Results

Vietnam is leaving a lot of deep imprints in the process of international integration since the time after joining the WTO. By 2020, Vietnam has 30 strategic partners and comprehensive strategic partners; has diplomatic relations with 189/193 countries, has economic relations with 160 countries and 70 territories. However, the risk of falling behind is still possible when according to statistics by the end of 2021, Vietnam will only have more than 300 pure Vietnamese enterprises as suppliers to multinational corporations in Vietnam. The fact that Vietnamese enterprises cannot deeply participate in the production value chain of multinational corporations present in Vietnam poses many problems. and the reasons that can be mentioned when it is not possible to "squeeze" into these supply chains can be mentioned as follows: Firstly, most Vietnamese enterprises are small in scale and have very limited competitiveness. In the current Vietnamese economy, the small and medium-sized enterprise (SME) sector accounts for 98% of the total number of registered enterprises, generates about 60% of GDP, and creates more than 90% of jobs for workers. (white enterprise 2020). Secondly, not only is the TFP in the domestic enterprise sector low, but the growth rate of TFP is also not high. The growth rate of TFP is due to the impact of factors such as: technological innovation, production rationalization, management improvement, improvement of worker's labor skills, etc. Vietnam's enterprises in the sector are very inferior to FDI enterprises. Third, the linkages between enterprises in Vietnam are still limited, it can be said that it is still weak. Business psychology of domestic enterprises often focuses on individual interests. So, if it is possible to strengthen linkages in the value chain and even cross-link in existing industrial zones/clusters in Vietnam, then domestic enterprises will certainly have great benefits.

The results of OLS regression to test independent variable factors are shown as follows:

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	3.808	1.200		3.174	0.002		
Foreign ownership	0.126	0.059	0.112	2.137	0.036	0.971	1.029
Labor productivity	0.148	0.071	0.122	2.092	0.040	0.919	1.088
Import value	0.427	0.061	0.573	6.953	0.000	0.951	1.052
Basic construction	0.102	0.084	0.107	1.208	0.231	0.820	1.219
Fixed asset	0.319	0.076	0.377	4.181	0.000	0.792	1.263

a. Dependent Variable: Export value

Regression model with selected and explained variables has shown relatively clear results about the effects of factors on export value (Y). The standardized regression coefficient (Beta) allows to evaluate the level of impact of each factor on the dependent variable of export value, according to the results on the order of effects of the factors from strongest to weakest as: import value , fixed asset , labor productivity and foreign ownership.

Labor productivity shows a positive value showing that the workforce in the textile industry still plays an important role in these industries that do not need to use too much capital. In addition, other margins such as the purchase of fixed assets also have a positive impact on the value of exported goods because product quality and productivity depend in no small part on equipment and technology. of that device. and this also shows the financial capacity of the business in its development process with the procurement of equipment.

One of the values showing the scale of entry into the supply chain of those industries is the input material factor. In this study, the author shows by the value of imported raw materials for processing abroad of enterprises and this value is statistically significant at the 3* level, as a stronger proof that the product The output of domestic textile and garment is still highly dependent on imports (ADB). The actual data shows that the import value of raw materials is still at a high level, as can be seen from year-to-year comparisons. the import value of textile materials and accessories in the last 2 years is 4,133 million USD in 2021 and 4093 million USD in 2022 (Vitas). It can be seen that the bottleneck in the issue of raw materials has not been resolved, but to enjoy the FTA advantages, the first priority decisive is the development of raw materials. Therefore, the early synchronous development of supporting industries will bring higher efficiency to Vietnam's textile and garment industry. Up to now, the capacity of the supporting industry is still limited, not as expected.

According to data from the Import-Export Department (Ministry of Industry and Trade) in 2022, the textile and garment industry's export turnover will still reach an impressive figure of about 35 billion USD, up 21% over the same period in 2021. For

example, the current Nowadays, the textile and garment export industry is no longer dependent on only 5 traditional markets as before (USA, Europe, Japan, Korea, China) but started to shift to Russia and some other countries.

Especially, for the EU market, if in the past, Vietnam's textile and garment industry only focused on a few large countries such as Germany, France, Spain, and the UK, but now it has exported to 26/27 countries in the EU. Many businesses have actively shifted their vision and operating models to countries such as Africa, Mexico, etc.

Industry enterprises also adapt very quickly when shifting investment in technology and automation and adapt when the product structure changes.

In addition, when facing a decrease in orders, businesses have rearranged working hours, not organizing overtime or overtime, but only working within office hours or reducing the number of working days in the week to ensure stability for workers.

Besides internal factors of enterprises, external factors are also one of the important factors supporting growth momentum, integration and deeper integration into the supply chain. In many years of research, the authors have shown that the factor that has an indirect influence is from the Government. The World Bank's annual data report also assesses the influence of the government and ranks this index, Vietnam ranks 69th out of 192 countries participating in this ranking and this number also shows signs of increasing. annual period. but whether it accurately reflects the current problem or not. and what does this influence have to do with or support the textile industry in Vietnam and other industries. According to experts, the policy of industrial development to support the textile and garment industry needs to ensure the following issues: industrial parks focusing on the production of raw materials must have convenient roads, and at the same time be associated with seaport system; creating chain links in textile dyeing associated with garment factories in the region, thereby reducing transportation costs and product costs; There should be a financial mechanism and tax incentives for businesses to invest in wastewater treatment systems. In the policy, especially the industry development strategy, it is also necessary to clearly define the key regions and localities in the planning of industrial parks and wastewater treatment plants to call for secondary investors to invest in supply shortage...

5. Conclusion

In general, in order to promote the textile product market and the textile industry to deeply participate in the supply chain, it is necessary to combine many stakeholders. The most important thing is still coming from the inside of businesses, their capabilities, the rest from the outside will lie in the policies and impacts of the government. To be able to add value on the supply chain, the textile product itself will be a combination of factors from the raw material stage to the final product. The state needs to support domestic enterprises in the production of input materials and equipment for the product creation process, negotiate, discuss and take measures to protect the prices of Vietnamese textile and garment products on the international market.

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**SESSION 2:
BUSINESS ADMINISTRATION**

WHY DO SMALL FARM HOUSEHOLDS HESITATE TO PURCHASE INSURANCE TO COPE WITH SHOCKS? EMPIRICAL EVIDENCE FROM VIETNAM USING A SIMULTANEOUS APPROACH

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Abstract

To protect disadvantaged groups such as farmers and the poor from risks and improve the living standards of these groups, the government in developing countries has issued many subsidized insurance programs, including farmers insurance, free social insurance, and free health care insurance for the poor, among others. Although the importance of insurance in protecting households in general and farmers, in particular, to cope with risks, some types of insurance, such as farmer's and health insurance, fail to attract the participation of households. This paper investigates factors influencing rural households' decision to purchase insurance from a wide range simultaneously. The author uses the Viet Nam Access to Resources Household Survey (VARHS), which concludes a large amount of information about 2,669 households from 2012 to 2016. The multivariate probit regression model (mvprobit) was employed to explore the drivers of households' insurance choices from five types of insurance simultaneously. Empirical results show the significant impacts of natural disasters, income, credit, sources of information, social networks, savings, and insurance providers on the insurance participation of both small farm and non-farm households. Based on the results, some policy implications were suggested to attract the participation of households in the insurance market.

Keywords: *Credit, insurance, natural disasters, poverty, savings, small farm household*

1. Introduction

Poverty is considered negatively influence not only a variety of social and health outcomes (Currie and Stabile, 2003) but also the environment, thereby providing additional motivation for policymakers to lift households out of poverty (Martinez-Alier, 1995; Reardon and Vosti, 1995). Agricultural production is risky because it heavily depends on the weather, diseases, and market fluctuation. The poverty rate of farm households' poverty rate is higher than non-farm households (e.g., Jones et al., 2010; GSO, 2004 - 2014; Ba et al., 2021). To protect disadvantaged groups such as farmers and the poor from risks and improve the living standards of these groups, the government in developing countries has issued many subsidized insurance programs, including farmers' insurance, free social insurance, and free health care insurance, among others. Insurance effectively achieves government goals by separating payment time from health services, using time for buyers (Jütting, 2003). The poor who cannot afford high costs such as crop losses or health treatment costs is particularly

beneficial from insurance based on its mechanism for reallocating the premiums of the vast majority of participants at no risk and at-risk minority.

Although the importance of insurance in protecting households in general and farmers, in particular, to cope with risks, some types of insurance, such as farmer's and health insurance, fail to attract the participation of households (e.g., Cai and Song, 2017; Belanger et al., 2018; Ogundeji et al., 2019; Nguyen et al., 2021). Researchers have carried out many studies to explain insurance purchasing decisions. Knight and Coble (1997) review a series of research conducted on the Multiple Peril Crop Insurance (MPCI) program in the US from 1980 to 1997 and conclude that farm size and income risk increase participation in the MPCI program. Lofgren et al. (2008) find a positive effect of income on health insurance, while age negatively impacts health insurance participation in rural households. Vuong (2016) finds a positive effect of age and income on the willingness to participate in insurance programs. In contrast, Alhassan and Biekpe (2016) find a negative effect of income on the life insurance participation of households in Africa. Using panel data of 34,855 households in the Indian Household Development Survey for the periods of 2004-2005 and 2011-2012, Giri and Chatterjee (2021) find a positive correlation between income and insurance acquisition of both rural and urban households. Giné et al. (2008), based on a sample of 752 rural households drawn from 25 villages in two districts of India find that wealthier households are more likely to purchase insurance while households facing credit constraints are less likely to participate in an insurance program. Moreover, the authors also find a negative correlation between a low level of trust in the insurance provider and household insurance participation. This negative relationship is confirmed by Boyd et al. (2011). The authors analyze a sample of 220 farmers in the Inner Mongolia region of China and show that the higher trust in insurance companies, the higher probability of crop insurance purchases of farmers. Nguyen et al. (2021) analyze a sample of 315 shrimp-growing farmers and conclude that farmers familiar with insurance companies tend to refuse to pay a high insurance premium. In the case of rural commercial health insurance, Li et al. (2021) argue that the insurance industry's improvement obviously promotes the commercial health insurance purchases of rural households.

Although insurance may have more considerable benefits for the poor, they may not purchase insurance with limited financial resources if they cannot see the benefits from insurance that only appear when they suffer risks. For instance, individuals who less frequently experience natural disasters may not be willing to purchase insurance because they do not see benefits from insurance until disasters happen (Cai and Song, 2017). The argument of Cai and Song (2017) is supported by the study of Arshad et al. (2016) in Pakistan, which confirms the positive correlation between disaster experience and the willingness to pay for crop insurance. This is a common misunderstanding about insurance. Insurance should be seen as a tool to partially offset losses due to shocks rather than as a source of income. In other words, the compensation from insurance is unlikely to equal income if the shocks do not occur.

Boyd et al. (2011) find a significant positive correlation between the number of risks taken and crop insurance purchases of farmers. Further, the authors argue that the role of government in providing crop insurance information significantly promotes insurance purchases of farmers. Ginder et al. (2009) are among rare researchers who investigated

insurance choices of farmers following different types of crops (i.e., corn and soybean) and different types of crop insurance (i.e., revenue assurance, group risk income plan, actual production history, catastrophic, group risk plan, and income protection). The results from binary regression models reveal a positive effect of farmed acres on both corn and soybean insurance purchases. Corn-growing farmers prefer actual production history and group risk income plan insurance; meanwhile soybean growing farmers prefer revenue and group risk income plan insurance. Researchers also find significant correlations between the demographic characteristics of rural residents and insurance take-up. Based on a sample of 8,435 women in rural Kenya, Kimani et al. (2014) find that marriage and working in the formal sector are positively correlated with health insurance purchases. Using a randomized experiment, Cai et al. (2015) find a significant correlation between social networks and weather insurance adoption by the rural population in China.

Findings from the previous studies provide a meaningful explanation for insurance take-up decisions. However, those studies primarily focus on crop insurance and ignore other types of insurance available in rural areas (although limited) such as life insurance, education insurance, social insurance, and unemployment insurance, among others. I argue that the explanation for insurance participation in the rural market is incomplete when researchers tend to ignore the coexistence of different types of insurance in rural areas. For instance, the rural insurance market in Vietnam is characterized by the coexistence of subsidized insurance from the government (e.g., farmers insurance, health insurance for children) and insurance from domestic private or foreign companies (e.g., life insurance) (Viet Nam Access to Resources Household Survey - VARHS 2016). The availability of different types of insurance from private companies and subsidized insurance from the government place rural households in general and the poor in particular with limited financial resources in choosing among various insurance types. Therefore, analyzing the determinants of insurance purchases following the coexistence of different insurance types is a promising explanation for households' low insurance take-up rates. In this paper, I employ the data called VARHS and the multivariate probit regression (mvprobit) using the method of simulated maximum likelihood to investigate factors influencing the insurance choices of rural households. The findings are important to researchers and policymakers in understanding factors affecting insurance participation of households in general and rural households in particular and promoting the success of subsidized insurance programs.

2. Method

This paper uses Viet Nam Access to Resources Household Survey (VARHS) 2012, 2014 and 2016 for analysis. My target group is households involved in agricultural production, which consists of 2,015 households. I compare the subsample of households with farm income with the non-farm households subsample (654 households).

There are around ten different types of insurance in the VARHS, including farmers insurance, life insurance, fire insurance, health insurance, education insurance, and social insurance. To investigate determinants of households' insurance choices from a wide range of insurance types simultaneously, I use the multivariate probit approach (mvprobit). The

mvprobit estimates the number of probit models by the simulated maximum likelihood method (SML) (Greene, 2000). The approach uses the Geweke-Hajivassiliou-Keane (GHK) estimator to evaluate the multi-dimensional standard integrals in the likelihood function.

The estimation model is written as follows:

$$EI_i = \alpha_1 + \beta_1 X_i + \varepsilon_{1i} \quad (1)$$

$$LI_i = \alpha_2 + \beta_2 X_i + \varepsilon_{2i} \quad (2)$$

$$SI_i = \alpha_3 + \beta_3 X_i + \varepsilon_{3i} \quad (3)$$

$$HI_i = \alpha_4 + \beta_4 X_i + \varepsilon_{4i} \quad (4)$$

$$OI_i = \alpha_5 + \beta_5 X_i + \varepsilon_{5i} \quad (5)$$

$$\rho_{1i} = 1 \text{ if } EI_i > 0 \text{ and } 0 \text{ otherwise,}$$

$$\rho_{2i} = 1 \text{ if } LI_i > 0 \text{ and } 0 \text{ otherwise,}$$

$$\rho_{3i} = 1 \text{ if } SI_i > 0 \text{ and } 0 \text{ otherwise,}$$

$$\rho_{4i} = 1 \text{ if } HI_i > 0 \text{ and } 0 \text{ otherwise,}$$

$$\rho_{5i} = 1 \text{ if } OI_i > 0 \text{ and } 0 \text{ otherwise}$$

where X represents a matrix of independent and control variables, and ε_{mi} are error terms. ε_{mi} is assumed to follow a joint distribution with expected values are all zero and $\text{var}(\varepsilon_{1i}) = \text{var}(\varepsilon_{2i}) = \text{var}(\varepsilon_{3i}) = \text{var}(\varepsilon_{4i}) = \text{var}(\varepsilon_{5i}) = 1$.

3. Results

Tables 1 and 2 present the results of regression models investigating determinants of insurance choices of households having farm income and non-farm households, respectively. I drop variable farm size out of the estimating model for the non-farm group. Contrary to expectation and the finding of Knight and Coble (1997), farm size is positively and significantly correlated with other types of insurance purchases of households having farm income, meaning that the larger farm size, the higher probability a household purchases other types of insurance (e.g., crop insurance, fire insurance). The finding is consistent with the research result of Knight and Coble (1997). The income of households has a positive and significant correlation with life insurance and other types of insurance participation of both households having farm income and non-farm households. The finding is consistent with the findings of Giné et al. (2008), Vuong (2016), and Giri and Chatterjee (2021).

Table 1. Determinants of insurance choices of households having farm income

	Education insurance	Life insurance	Social insurance	Health insurance	Other types of insurance
	(1)	(2)	(3)	(4)	(5)
Gender	-0.149 (0.100)	-0.104 (0.201)	-0.161 (0.112)	-0.058 (0.103)	0.072 (0.101)
Marital status	-0.035 (0.091)	-0.191 (0.260)	-0.309*** (0.112)	-0.131 (0.096)	-0.049 (0.095)
Ln (Age)	-0.601***	0.047	0.654***	0.378***	-0.463***

	Education insurance	Life insurance	Social insurance	Health insurance	Other types of insurance
	(0.140)	(0.272)	(0.148)	(0.135)	(0.136)
Ln (Income)	0.022	0.085*	0.031	-0.044	0.171***
	(0.027)	(0.048)	(0.028)	(0.027)	(0.027)
Ln (Farm size)	-0.028	-0.081	-0.039	0.038	0.081***
	(0.030)	(0.057)	(0.032)	(0.029)	(0.029)
Shocks over the last 12 months	-0.186	-0.396	-0.312	0.273	-0.361*
	(0.198)	(0.327)	(0.213)	(0.190)	(0.197)
Ln number of days unable to work	-0.045*	-0.045	-0.031	0.060**	0.045*
	(0.025)	(0.056)	(0.028)	(0.025)	(0.025)
Served in the Vietnamese military	0.073	0.125	0.135*	-0.028	0.148**
	(0.072)	(0.147)	(0.079)	(0.072)	(0.070)
Members working in the formal sector	-0.308***	-0.091	-0.092	-0.084	-0.069
	(0.063)	(0.134)	(0.068)	(0.063)	(0.061)
Ln value of savings 12 months ago	0.000	0.050***	0.032***	0.010	-0.001
	(0.007)	(0.019)	(0.008)	(0.007)	(0.007)
Credit constrained	-0.052	0.249	-0.304	-0.137	0.655***
	(0.196)	(0.346)	(0.234)	(0.197)	(0.202)
Information from the formal sources	0.299	3.451***	0.477*	0.021	-0.181
	(0.221)	(0.111)	(0.251)	(0.193)	(0.196)
Information from internet	-0.027	0.246	0.763***	0.564***	-0.248*
	(0.137)	(0.232)	(0.136)	(0.149)	(0.136)
Information from the informal sources	0.454***	0.043	-0.224*	-0.337***	0.618***
	(0.145)	(0.264)	(0.132)	(0.130)	(0.138)
Ln amount lost due to shocks	0.036	0.025	0.006	-0.024	0.020
	(0.024)	(0.035)	(0.025)	(0.023)	(0.023)
Got insurance payment	-0.456	0.409	-0.359	-0.209	0.127
	(0.327)	(0.497)	(0.383)	(0.272)	(0.272)
Ever bought insurance	0.289*	-0.605**	0.121	0.229	0.020

	Education insurance	Life insurance	Social insurance	Health insurance	Other types of insurance
	(0.148)	(0.293)	(0.169)	(0.165)	(0.158)
Trust in an insurance agency	-0.017 (0.136)	0.541** (0.244)	0.253 (0.156)	0.043 (0.156)	0.029 (0.148)
Injury or death of a member	0.073 (0.563)	-3.199*** (0.194)	0.919 (0.565)	4.556*** (0.192)	-0.515 (0.653)
Constant	1.419** (0.687)	-5.710*** (1.279)	-3.185*** (0.735)	-0.635 (0.662)	-1.228* (0.664)
Correlation coefficients:					
atrho21: HI x OI	-0.068 (0.111)				
atrho31: SI x OI	0.170*** (0.040)				
atrho41: LI x OI	0.116*** (0.036)				
atrho51: EI x OI	-0.036 (0.036)				
atrho32: SI x HI	-0.004 (0.061)				
atrho42: LI x HI	-0.021 (0.057)				
atrho52: EI x HI	0.023 (0.055)				
atrho43: LI x SI	0.392*** (0.041)				
atrho53: EI x SI	0.093** (0.038)				
atrho54: EI x LI	-0.206*** (0.036)				
Observations	2,015	2,015	2,015	2,015	2,015

Robust standard errors in parentheses

The superscripts ***, ** and * correspond to statistical significance at the 1%, 5% and 10% levels, respectively.

Regarding the number of day the household head cannot perform normal activities and insurance participation, household heads with more days that cannot work normally are

less likely to purchase education and life insurance but are more likely to buy health and other types of insurance. When the head or any household member has a longer number of days unable to perform normal activities (e.g., because of illness), the household's income and savings will be eroded by the income lost and expenses for treatment. In this case, education, life, social insurance, or other types of insurance (e.g., farmers' insurance, fire insurance) are unlikely to be useful, but health insurance is. This may be why the household wants to buy health insurance afterward.

Households with member(s) serving in the military have a higher probability of owning social insurance. The positive correlation between military participation and other types of insurance purchasing is also found for non-farm households but is insignificant. Interestingly, my models show an insignificant negative correlation between health insurance purchasing and households having a member(s) working in the formal sector on households having farm income, but a positive and significant relationship on a non-farm group that is consistent with Kimani et al.'s finding. Most members who are working in the formal sector have compulsory health insurance. These members will have a positive impact in encouraging their households to buy health insurance. In addition, regulations on health insurance in Vietnam require that eligible individuals who want to buy voluntary health insurance must buy it for all members whose names are listed on the household registration book except those who already own compulsory health insurance. This could be the explanation for my finding.

Savings value at 12 months before the household was interviewed is positively and statistically significantly correlated with the life and social insurance ownership of households having farm income. High savings means that households have idle money to participate in high-value and long-term insurance such as life and social insurance. Surprisingly, my models reveal a positive and significant effect of credit constraint on other types of insurance participation of households with farm income that deviates from Giné et al. (2008). The difference may come from the definition of credit constraint in my research and Giné et al.'s research. Giné et al. define credit constraint as a household wanting to borrow one more loan but cannot. In other words, in the study by Giné et al. (2008), credit-constrained households do not have enough financial resources, and their need is not satisfied by borrowing.

In contrast, the credit-constrained households in my study are those who were able to borrow but at a rate lower than 100 per cent. Of the 768 households having farm income reported that they ever borrowed or are in debt, more than 94.4 per cent have a debt ratio greater than 90 per cent, and only about three per cent have a debt ratio of less than 80 per cent (not shown in the tables). In other words, the credit-constrained households in my study still have enough financial resources to support households' financial needs and purchase social insurance. In the non-farm household group, credit constraint has a negative and significant effect on the life insurance participation of households. The finding is not unexpected because life insurance is characterized by high value and long-term, usually longer than credit term. Thus, households may hesitate to finance life insurance by borrowing. I re-ran the households with farm income models, where I replaced the credit constraint variable with a credit ratio calculated by dividing the drawdown credit amount by

the applied credit amount. Households that do not have debt receive a ratio of zero. The correlation between credit and the probability of purchasing other types of insurance is still positive but insignificant.

Table 2. Determinants of insurance choices of non-farm households¹

	Education insurance	Life insurance	Social insurance	Health insurance	Other types of insurance
	(1)	(2)	(3)	(4)	(5)
Gender	0.122 (0.155)	-0.022 (0.256)	-0.079 (0.147)	-0.221 (0.139)	0.159 (0.138)
Marital status	-0.265 (0.161)	0.401* (0.237)	-0.052 (0.144)	-0.056 (0.140)	0.116 (0.137)
Ln (Age)	-1.314*** (0.260)	0.067 (0.420)	-0.737*** (0.236)	0.528** (0.240)	-1.125*** (0.240)
Ln (Income)	0.043 (0.032)	0.221*** (0.052)	-0.034 (0.029)	0.016 (0.032)	0.065** (0.031)
Shocks over the last 12 months	-0.218 (0.405)	1.175 (1.204)	-1.038** (0.466)	-0.326 (0.421)	-0.484 (0.470)
Ln number of days unable to work	0.004 (0.048)	-0.273*** (0.082)	-0.075 (0.046)	0.038 (0.044)	0.061 (0.043)
Served in the Vietnamese military	0.004 (0.149)	-0.291 (0.264)	0.233 (0.142)	0.220 (0.142)	-0.200 (0.137)
Members working in the formal sector	-0.142 (0.123)	-0.290 (0.207)	0.145 (0.123)	0.307*** (0.115)	-0.054 (0.112)
Ln value of savings 12 months ago	0.021 (0.013)	-0.005 (0.023)	0.016 (0.013)	0.003 (0.012)	0.008 (0.012)
Credit constrained	0.075 (0.830)	-3.425*** (0.464)	0.124 (0.680)	-0.308 (0.681)	0.415 (0.866)
Information from the formal sources	-0.288 (0.229)	-0.294 (0.388)	0.051 (0.206)	0.500*** (0.188)	-0.170 (0.198)
Information from internet	0.039 (0.187)	0.290 (0.299)	0.554*** (0.190)	0.609*** (0.224)	-0.165 (0.186)
Information from the informal sources	0.141 (0.193)	0.810** (0.406)	0.148 (0.168)	-0.087 (0.161)	0.310* (0.176)

¹ Variable injury or death of member was dropped because of collinearity. No value of 1 for the injury or death variable on this subsample.

	Education insurance	Life insurance	Social insurance	Health insurance	Other types of insurance
	(1)	(2)	(3)	(4)	(5)
Ln amount lost due to shocks	0.006 (0.043)	-0.136 (0.123)	0.082* (0.047)	0.039 (0.044)	0.047 (0.049)
Got insurance payment	-0.029 (0.526)	-3.558*** (0.379)	0.034 (0.497)	0.075 (0.486)	-0.639 (0.472)
Ever bought insurance	0.182 (0.287)	0.440 (0.621)	0.413 (0.257)	0.084 (0.300)	0.142 (0.268)
Trust in an insurance agency	0.139 (0.255)	-0.065 (0.558)	-0.147 (0.222)	0.043 (0.273)	0.019 (0.240)
Constant	4.488*** (1.103)	-5.622*** (1.979)	2.412** (1.007)	-2.341** (1.025)	2.971*** (1.007)
Correlation coefficients:					
atrho21: HI x OI	0.077 (0.119)				
atrho31: SI x OI	0.253*** (0.074)				
atrho41: LI x OI	-0.030 (0.074)				
atrho51: EI x OI	-0.018 (0.073)				
atrho32: SI x HI	0.068 (0.106)				
atrho42: LI x HI	-0.203** (0.096)				
atrho52: EI x HI	0.031 (0.091)				
atrho43: LI x SI	0.284*** (0.068)				
atrho53: EI x SI	0.244*** (0.066)				
atrho54: EI x LI	-0.159** (0.067)				
Observations	654	654	654	654	654

Robust standard errors in parentheses

The superscripts ***, ** and * correspond to statistical significance at the 1%, 5% and 10% levels, respectively.

Information access positively and significantly affects households' insurance purchasing decisions, regardless of information sources. Information from official sources (e.g., television, radio, loud community speaker, newspaper) and the internet have positive and significant effects on life, social, and health insurance participation. In contrast, informal information sources (e.g., relatives, friends, neighbours) have a positive and statistically significant correlation with the decision to purchase education insurance and other types of insurance. However, they have a negative and significant correlation with social and health insurance. My finding partly confirms the research result of Boyd et al. (2011) who also find a positive impact of governmental information on insurance participation of households. The negative and significant correlation between purchasing history and reimbursement and life insurance participation in households having farm income and non-farm households. The negative and significant correlation between purchasing history, reimbursement and life insurance participation of households having farm income and non-farm households, respectively, can be explained by the two features of life insurance (high value and long-term) that make this type of insurance less likely to be chosen by households if they have purchased or have expired contract. A positive and statistically significant correlation between trust in an insurance agency and life insurance indicates that households having farm income are more likely to choose foreign or private insurance providers than public insurance providers. This may be because the returns on life insurance policies provided by private and foreign insurance agencies are more attractive than those of public insurance providers.

Households whose member(s) have lost or been injured by natural disasters in the last 12 months are significantly and negatively correlated with the decision to participate in social insurance but are positively and significantly correlated with health insurance participation. The finding is inconsistent with the findings of Arshad et al. (2016) and Cai and Song (2017) who find a positive impact of disaster experience on crop insurance purchasing in households. A possible explanation for my finding is that other types of insurance do not show immediate benefits in the event of a household member's loss or injury to disasters. In contrast, health insurance plays an active role in this case. Cai and Song (2017) argue that households are less likely to buy insurance until they see its benefits when shocks occur.

4. Discussion and Conclusion

This article highlights the insurance market for households involved in agricultural production and non-farm households. The study estimates the factors affecting the decision to purchase household insurance simultaneously from various insurance types. To the best of my knowledge, this is the first-ever study investigating drivers of insurance participation of households simultaneously from different insurance types. Descriptive statistics show that households participate in many types of insurance. However, the percentage of ownership of protective and hedging insurance (e.g., life, fire, and farmers insurance) is deficient. Households mainly own low premium and compulsory insurance (e.g., vehicle insurance, health insurance). This can make households vulnerable and make it difficult to recover from significant shocks.

The empirical evidence highlights the role of income, credit, sources of information, social networks, shocks, savings, and insurance providers in the insurance participation of households. The positive and significant correlation between insurance participation and income is attributed to asymmetric information (Mulligan and Philipson, 2003; Giné et al., 2008). This finding and the positive effect of farm size and information on insurance choices of households, especially information from formal sources and the internet, implying that policymakers can utilize many different channels to disseminate knowledge and guide the role of insurance in preventing and responding to risks. Specifically, policymakers can use formal information channels such as television, newspapers, radio, and community loudspeakers to disseminate knowledge about the role and support policies on voluntary social insurance, voluntary health insurance, and other types of insurance to households. This can significantly reduce information asymmetric that impedes households' participation in insurance.

Injury or death of a member(s) due to natural disasters has a negative impact on participation in many types of insurance (except for health insurance) of households, partly confirming the argument of Cai and Song (2017) about a common mistake in households' perception of the role of insurance. In particular, insurance is attractive only regarding how the household receives its immediate benefits in the event of shocks (e.g., households with health insurance do not have to pay for medical expenses if a member is sick or injured). This again implies the role of information orientation about insurance for households. Moreover, the negative impact of experiencing shocks or natural disasters on insurance participation may be because households do not have the financial resources to cope with shocks. Therefore, they cannot buy insurance after experiencing shocks. Helping disadvantaged households to overcome the consequences of shocks and preferential policies to buy insurance can be effective in these cases.

Access to credit can increase the participation of households in short-term and low-premium insurance (e.g., crop insurance, fire insurance, vehicle insurance). Combining insurance contracts with a short-term loan can effectively encourage households with agricultural production to buy insurance (Giné et al., 2008; Giné and Yang, 2009). The positive and significant correlation between the probability of purchasing insurance and private or foreign insurance providers implies that the government should strengthen the insurance market management system while encouraging and facilitating private and foreign insurance providers' extensive access to households. At the same time, public insurance providers should diversify and design more favourable insurance products to attract households' insurance participation.

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FACTORS AFFECTING PURCHASE BEHAVIOUR TOWARDS PRODUCTS OF CIRCULAR BUSINESS MODELS OF HANOI CONSUMERS: EXAMINING IN TEXTILE INDUSTRY

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Abstract

The Vietnamese textile industry is facing challenges in terms of optimizing economic efficiency, improving productivity, and protecting the environment. Therefore, the adoption of circular business models in the textile industry is necessary, and consumers play a key role in this transformation. Based on the results of previous studies, the authors inherited and proposed a research model to identify and evaluate the impact of those factors affecting the purchase behaviour of consumers in Hanoi towards textile products of circular business models. The study used a combination of qualitative and quantitative research methods based on data collected from 358 consumers in Hanoi. The authors came to the conclusion that there are four groups of factors that directly and indirectly affect purchase behaviour towards textile products of circular business models, namely purchase intention, attitude, awareness, and perceived value. The study also proved that there is a difference in the purchase intention towards textile products of circular business models of people in different demographic groups. From there, the authors proposed a number of solutions for state organizations, textile businesses, and consumers to accelerate the purchase behaviour towards those products.

Keywords: *Circular Economy, Circular Business Model, Consumer Behaviour, Textile Products.*

1. Introduction

In recent years, the over-exploitation of resources along with the rise of consumerism has caused serious consequences including ecological imbalance, which negatively affects human life. In that situation, the circular economy model has been introduced as a solution to ensure the efficient use of resources, therefore maintaining the prosperity of the economy and businesses. According to Pearce & Turner (1990), the term circular economy is used to imply a new economic model based on the basic principle that

"everything is an input to something else". According to the Ellen MacArthur Foundation, a circular economy is "an economic model in which planning, sourcing, procurement, production, consumption, and reprocessing are designed and managed to maximise ecosystems functioning and human well-being". In other words, circular economy means turning the waste output of one industry into an input resource of another industry or circulating within an enterprise itself, which is considered as a solution to global problems such as pollution, climate change, and biodiversity loss.

To accelerate the transformation to a circular economy, the adoption of circular business models in enterprises is necessary. According to Frishammar & Parida (2019), "a circular business model is one in which a focal company, together with partners, uses innovation to create, capture, and deliver value to improve resource efficiency by extending the lifespan of products and parts, thereby realising environmental, social, and economic benefits". Simultaneously, the circular business model also "continuously maintains raw materials and products in their useful states, using waste to create new products, thereby providing environmental, social, and economic benefits".

Besides the undeniable benefits, the Vietnamese textile industry is one of the most dangerous culprits leading to serious environmental pollution. Therefore, businesses in the Vietnamese textile industry urgently need a transformation towards circular business models in order to minimise environmental impacts as well as ensure a sustainable and efficient future of the industry. Additionally, previous studies have proven that the complete transformation from a linear business model to a circular business model needs to be based on the needs of consumers (Hankammer et al., 2019) since their choices can support or hamper the circular economy and their decisions determine whether products are consumed through circular consumption processes.

There are various studies in the world that focus on the role of consumers in circular business models as well as their behaviours towards the products of those models. However, studies investigating the role of Vietnamese consumers in circular business models in the textile industry are still limited. Moreover, the existing studies on consumer behaviour towards textile products of circular business models are mainly carried out in developed countries, so it is difficult to apply them in Vietnam, a developing country with low level of awareness about these models. Therefore, the authors decided to choose the topic: *"Factors Affecting Purchase Behaviour towards Products of Circular Business Models of Hanoi Consumers: Examining in Textile Industry"*.

The authors have applied the Theory of Planned behaviour (TPB) of Ajzen (1991) together with extensive studies and the Dual-Processing Model of Chaiken & Maheswaran (1994) to build a model which aims at identifying the influencing factors as well as the relationship between them towards consumers' purchase behaviour.

The research paper is structured into four parts: (1) Introduction; (2) Methods; (3) Results and (4) Discussion, Conclusion and Recommendations.

2. Method

2.1. Proposed research model and hypotheses

Based on the related studies and the qualitative research results, the authors proposed a research model to investigate the influencing factors as shown in Figure 1 below:

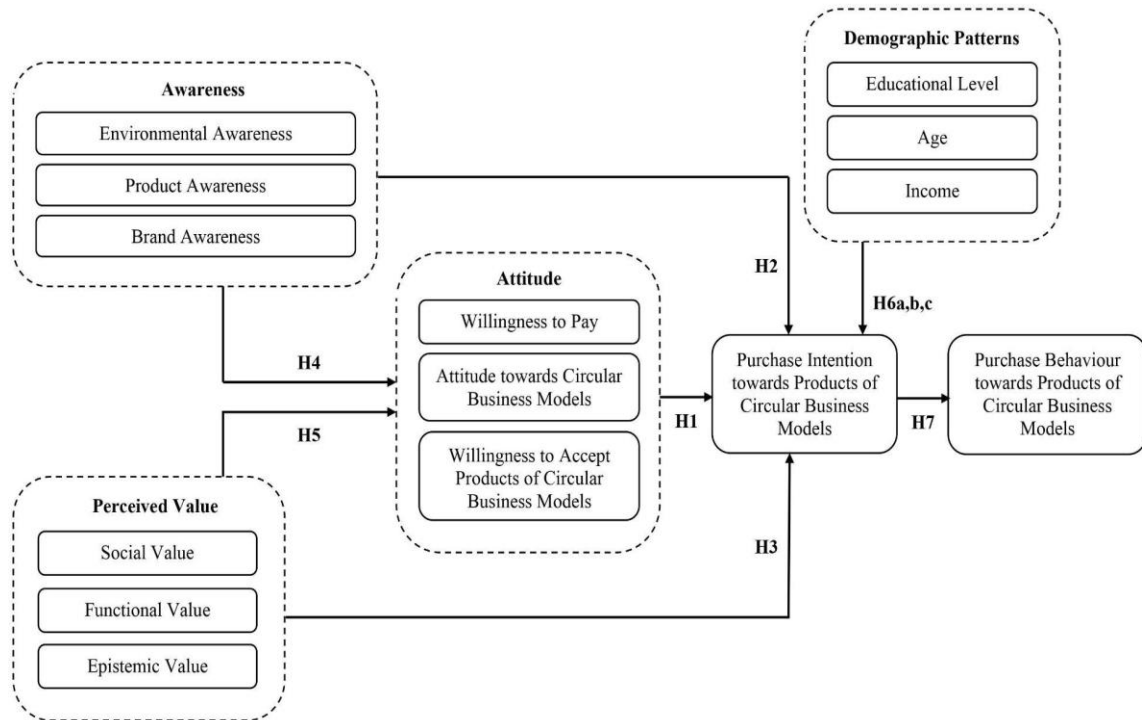


Figure 1. Proposed Research Model

Source: Authors' compilation

The study also proposes the following research hypotheses:

Attitude can be defined as an individual's beliefs or judgments about an outcome caused by a behaviour, or can also be defined as the degree to which an individual shows a particular liking or disliking of a specific behaviour (Ajzen, 1991; Brandão & da Costa, 2021; Fishbein & Ajzen, 1977). Attitude has been shown to affect the intention to perform circular behaviours, thereby indirectly affecting the performance of those behaviours (Muranko et al., 2018; Pisitsankkhakarn & Vassanadumrongdee, 2020).

H1. Consumers' attitude has an influence on the purchase intention towards textile products of circular business models.

Awareness is the collection of information that is collected, processed, and stored in human memory. Rausch & Kopplin (2021) discovered that environmental awareness has a positive impact on the purchase intention towards sustainable fashion products. In addition, brand image and brand credibility also influence circular shopping behaviour (Chamberlin & Boks, 2018).

H2. Consumers' perception has an influence on the purchase intention towards textile products of circular business models.

Zeithaml (1988) stated that perceived value indicates the consumers' total evaluation of a product's utility based on perceptions of what is received and given. Research by Jung & Jin (2016) has proven that consumers who perceive the value of sustainable fashion products have stronger purchase intention. Additionally, more and more people in China are changing their personal consumption behaviour because they have a feeling that purchasing and wearing eco-friendly products helps them to gain social approval and make a good impression on others (Chi, 2015).

H3. Consumers' perceived value has an influence on the purchase intention towards textile products of circular business models.

According to Chaiken & Maheswaran (1994), awareness is an antecedent of attitude. Research by Chen & Lee (2015) indicated that environmental awareness and brand awareness have an influence on consumers' attitudes, while Ko et al. (2013) stated that product awareness also influences them. In addition, many studies proved that consumers who have an understanding of the existence, characteristics or sustainable production methods of a product, even though they have not purchased it, are willing to pay a higher price (D'Amico et al., 2016; Lanfranchi et al., 2019).

H4. Consumers' awareness has an influence on consumers' attitudes towards purchasing textile products of circular business models.

D'Souza et al. (2007) discovered that consumers are willing to pay higher prices for eco-friendly products, as long as their quality is better than conventional products. Similarly, Jung & Jin (2016) also stated that consumers who perceive the value of sustainable fashion products are more willing to pay.

H5. Consumers' perceived value has an influence on consumers' attitudes towards purchasing textile products of circular business models.

Consumers' demographic patterns were also shown to be relevant to their purchase intention. Younger generations tend to pay more attention to the theories of sustainability and circular economy (Gazzola et al., 2020), and this age group is also knowledgeable about eco-friendly products as well as aware of their role in protecting the environment (de Aguiar Hugo et al., 2021). Education level is also a significant factor since research by Chekima et al. (2016) indicated that consumers with a high level of education tend to perform green buying behaviour. Finally, Nenckova et al. (2020) asserted that the high-income group tends to sort their textile waste more than other groups.

H6a. There is a difference in the purchase intention towards textile products of circular business models at different educational levels.

H6b. There is a difference in the purchase intention towards textile products of circular business models in different age groups.

H6c. There is a difference in the purchase intention towards textile products of circular business models in income groups.

Fishbein & Ajzen (1977) suggested that intention indicates the amount of effort an individual must exert to perform a behaviour as well as the degree of willingness to try it. Therefore, a high level of intention will positively influence the performance of circular behaviour (Muranko et al., 2018), which in this study is the purchase behaviour towards textile products of circular business models.

H7. Consumers' purchase intention has an influence on consumers' purchase behaviour towards textile products of circular business models.

2.2. Methods of collecting and analysing data

In qualitative research, the authors conducted in-depth interviews (n = 6) to adjust the factors as well as the scales used in the study. All of the selected subjects have heard about the concepts of circular economy and circular business model before. The qualitative research results show that the initial groups of factors and scales were appropriate and related. In addition, "Willingness to Accept Products of Circular Business Models" was proposed to be added to the Attitude factor and variables related to "Product Awareness" were also added.

The scales included in the quantitative research are (1) Awareness (12 variables), (2) Perceived Value (13 variables), (3) Attitude (10 variables), (4) Purchase Intention (3 variables), and (5) Purchase Behaviour (4 variables). A total of 42 observational variables belonging to 5 groups of factors are included in quantitative research.

In quantitative research, the authors used a survey to verify the model and hypotheses. After collecting data for official quantitative research, the authors selected a sample size of 358 to analyse after removing invalid answers from 363 answers.

Out of 358 respondents, women accounted for 60.1%, men accounted for 38.8% and 1.1% belonged to other gender groups. Results show that the respondents who were Gen Z (born from 1997 to 2012) accounted for the majority with 72.6%, Gen Y consumers (born from 1981 to 1996) accounted for 18.7% and Gen X ones (born from 1965 to 1980) accounted for 8.7%. In terms of education level, the majority of respondents have a university degree with 84.1%, followed by a group of respondents with a postgraduate degree with 8.7%. Respondents with a college degree accounted for 3.1%, and the remaining 4.2% belonged to the group of upper and lower secondary levels. In terms of income, the number of respondents with monthly income from 3 to less than 8 million VND and under 3 million VND accounted for 33.2% and 35.2% respectively. The number of respondents with monthly income from 8 to less than 15 million VND accounted for 17.9%. The

proportions of respondents with monthly income from 15 to under 30 million VND and over 30 million VND were 7.3% and 6.4% respectively. The results also revealed that 64% of respondents have heard of circular business models in the textile industry. Among the respondents who have heard of these circular business models, 171 respondents knew about these models from the mass media and 107 respondents knew about them from academic sources. 69 respondents said they heard of these models from relevant events and 67 respondents reported that they knew about them from reference groups.

The data was processed using SPSS 22.0 and AMOS 20. The data collected was analysed through the following steps: (1) Cronbach's Alpha Scale Reliability Testing, (2) EFA - Exploratory Factor Analysis, (3) CFA - Confirmatory Factor Analysis, (4) Model and Hypotheses Testing using SEM Model and (5) ANOVA Testing.

3. Results

The authors have conducted Cronbach's Alpha Reliability Test for 11 factors including 42 variables. The results show that all factors used in the study have Cronbach's Alpha coefficient greater than 0.7 satisfying reliability and a total variable correlation coefficient greater than 0.4. Thus, it is possible to identify the scales that ensure reliability and are suitable for use in further analysis.

The Exploratory Factor Analysis (EFA) show that $KMO = 0.907 > 0.5$ so the EFA is suitable for the data set. $Sig. (Bartlett's Test) = 0.000 < 0.05$ indicates that observational variables are correlated with each other. There are 9 factors extracted at Eigenvalues = 1.038 and the total variance of 67.161% $> 50\%$ indicating that the model was appropriate. The initial 11 factors were grouped into 9 factors, in which "Environmental Awareness", "Product Awareness", "Brand Awareness", "Social Value", "Functional Value", "Epistemic Value", "Purchase Intention" and "Purchase Behaviour" are preserved. "Willingness to Pay", "Willingness to Accept Products of Circular Business Models" and "Attitude towards Circular Business Models" are grouped into a single factor named "Attitude".

The results of the Confirmatory Factor Analysis (CFA) show that indicators such as $Chi-square/df = 1.778$, $CFI = 0.925$, $GFI = 0.854$, $AGFI = 0.831$, $RMSEA = 0.047$ are all acceptable. The research model could be considered a suitable model for the data set. In terms of quality, all variables have $p-value = 0.000 < 0.005$ and standardized regression weight greater than 0.5, proving that all variables are significant and appropriate. Composite Reliability (CR) > 0.7 , Average Variance Extracted (AVE) > 0.5 , Maximum Shared Variance (MSV) $<$ Average Variance Extracted (AVE) indicate that all variables are appropriate.

Then, the authors conducted SEM Analysis to verify the suitability of the research model. It is found that $Chi-square/df = 1.839$ and $RMSEA = 0.048$ satisfy the model with good fit. Indicators such as $CFI = 0.916$, $GFI = 0.84$, $AGFI = 0.827$ are all acceptable. Thus, the research model is proven suitable.

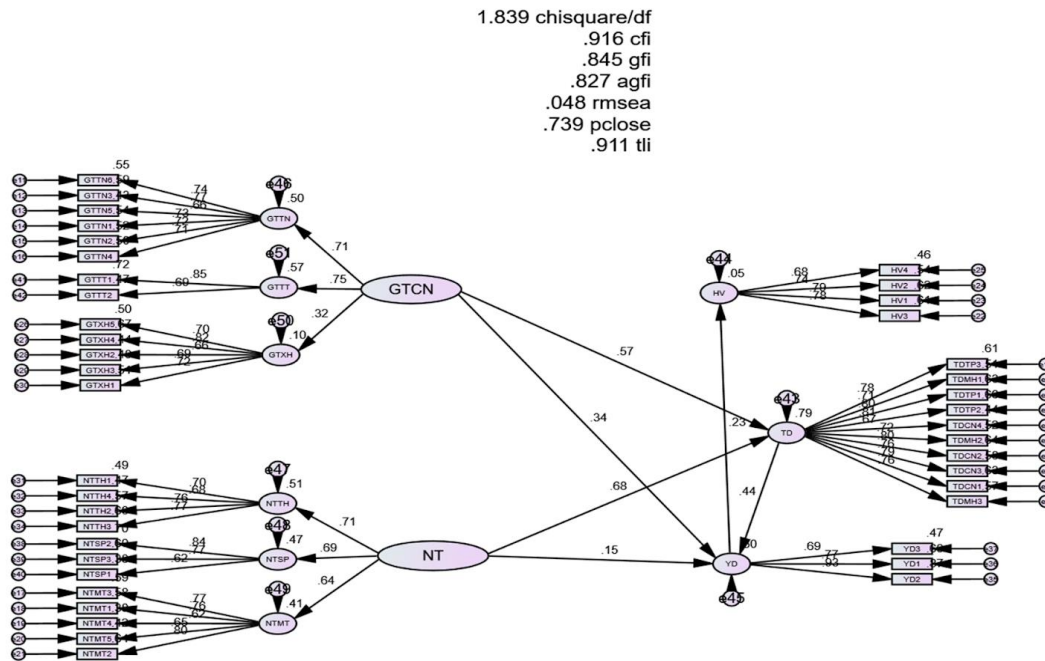


Figure 2. SEM Results of the Research Model

Source: Authors' compilation from primary data

The results show that the “Awareness” variable has no direct impact on the “Purchase Intention” variable (Sig. = 0.3 > 0.05). The remaining Sig. values are all less than 0.05, so the other relationships are significant. Thus, there are two variables that affect the intermediate variable “Attitude”, namely “Awareness” and “Perceived Value”. There are two variables that directly affect the intermediate variable “Purchase Intention”, namely “Attitude” and “Perceived Value”. The only variable that directly affects the dependent variable “Purchase Behaviour” is “Purchase Intention”. Therefore, hypothesis H2 is rejected and the remaining hypotheses are accepted. The accepted research model is shown in Figure 3 below:

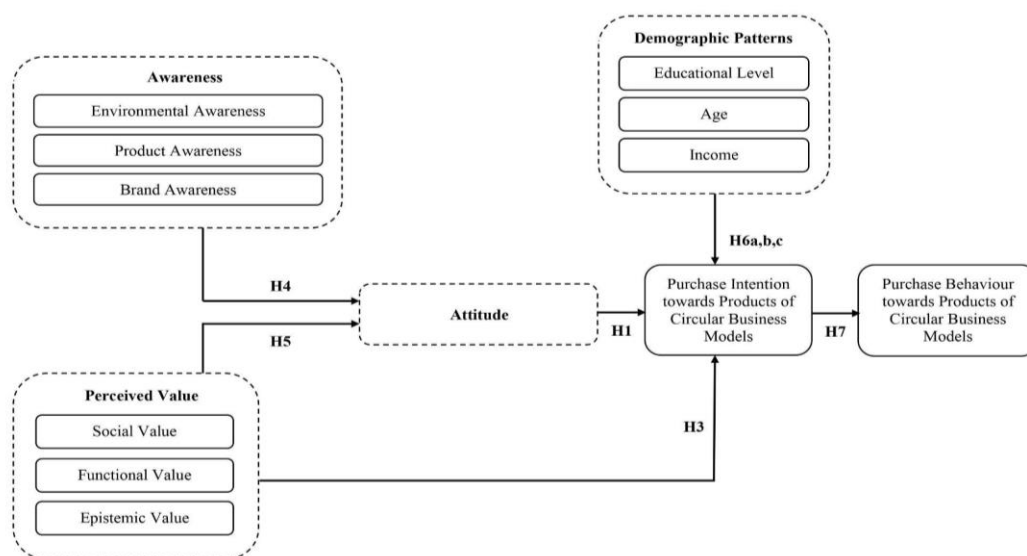


Figure 3. Accepted Research Model

Source: Authors' compilation from primary data

After analysing SEM results, the authors examine the level of influence that each variable have on the others. The results are shown in Table 1 below:

Table 1. Standardized Regression Weights

			Estimate
Attitude	←	Awareness	0.679
Attitude	←	Perceived Value	0.57
Purchase Intention	←	Attitude	0.443
Purchase Intention	←	Perceived Value	0.341
Purchase Behaviour	←	Purchase Intention	0.232

Source: Authors' compilation from primary data

The two factors affecting the intermediate variable “Attitude” in descending order are “Awareness” (0.679) and “Perceived Value” (0.57). The two factors directly affecting the intermediate variable “Purchase Intention” in descending order are “Attitude” (0.443) and “Perceived Value” (0.341). The factor directly affecting the dependent variable “Purchase Behaviour” is “Purchase Intention” (0.232).

Finally, the results of ANOVA testing show that there are differences in purchase intentions of consumers in different educational level groups, age groups, and income groups.

4. Discussion and Conclusion

4.1. Factors affecting purchase behaviour towards textile products of circular business models

After studying the directly and indirectly influencing factors, the authors draw the following conclusions:

Firstly, awareness has a strong impact on consumers' attitudes through three aspects, namely environmental awareness, product awareness, and brand awareness. Previous studies examining the roles of circular economy and circular business models have proposed their undeniable economic, social, and environmental advantages. Because of the apparent benefits and positive outlook that circular models bring to human life, consumers with a rudimentary awareness could form a positive attitude towards them.

Secondly, perceived value has an influence on attitude. If consumers feel that they get more value from the textile products of circular business models, they will form a positive attitude as well as become willing to pay. However, the effect of perceived value on attitude is weaker than that of awareness. This finding could be explained by the fact that perceived value is formed through direct and indirect experiences; however, in Vietnam, the concept of circular textile products is still new. In fact, Vietnamese consumers have already been familiar with a number of circular models in the textile industry such as renting clothes, buying second-hand clothes or re-wearing other people's clothes; but they have not fully recognised the value that these circular products bring to themselves.

Thirdly, perceived value and attitude are the two factors that affect the purchase intention towards circular textile products, while awareness has almost no direct impact on it. This is a noticeable aspect for future researchers to continue investigating. However, in Vietnam, the purchase and consumption behaviour towards circular textile products are still not too popular, so consumers have not really perceived much value from purchasing these products. Therefore, the impact of perceived value on purchase intention is not really strong. Furthermore, attitude has a stronger impact on purchase intention because attitude is a collection of emotions and beliefs of consumers. Studies on mental aspects in consumer behaviour show that consumers are often driven by emotion rather than rationality when forming purchase intentions.

4.2. Some policy implications from the study results

4.2.1. Recommendations to state organisations

Firstly, in terms of education, the Ministry of Education and Training should consider integrating knowledge related to the circular economy and circular business models in the textile industry into the school curriculum. Besides raising awareness, curricula need to educate students that the use of circular textile products is economically beneficial as well as appreciated by society.

Secondly, in terms of communication, state organisations need to develop communication programs about the adoption of circular business models in the textile industry and spread them through mass media such as newspapers, radio and television to improve public awareness. In addition, the government also needs to name and commend typical organizations and individuals that shift their production and consumption behaviour towards textile products of circular business models. Because of public commendations, people will be more motivated to change their behaviour towards purchasing textile products of these models.

4.2.2. Recommendations to Vietnamese enterprises in the textile industry

Firstly, enterprises need to proactively educate and increase consumer awareness of circular business models and their products. Companies could organize seminars as well as develop social marketing campaigns so that customers will have more understanding and knowledge about these models.

Secondly, enterprises need solutions to increase the consumers' perceived value towards textile products of circular business models. Companies could coordinate with state organisations to recognise and commend organizations and individuals that shift their consumption behaviour towards textile products of these models. They also need to provide interesting and useful information for consumers at every touchpoint, for example, by coordinating with influencers to promote the benefits of circular textiles products.

Thirdly, enterprises need to improve credibility, therefore enhancing consumers' accepting attitudes towards textiles products of circular business models. Companies could apply for a certificate from a reputable third party to increase their credibility. Moreover, they could also implement strategies to alleviate consumer concerns about quality and reliability. For example, they can inform consumers about how the product has been used in

the past and specific steps the remanufacturers have taken. Additionally, companies also need to communicate their missions and circular purposes through mass media because positive brand reputation and reliability could affect consumers' circular behaviour.

Fourthly, enterprises should flexibly apply policies as well as customer service activities such as investing in websites and software; organising community groups so that customers can freely exchange and share about products and product applications with other consumers. At the same time, it is necessary to regularly update new sustainable trends, thus increasing customers' acceptance and intention towards purchasing circular textiles products.

Fifthly, it is necessary to invest in modern equipment and facilities in order to bring customers high-quality products. Besides, enterprises also need to constantly update and adopt latest technology trends to produce textile products with "timeless" designs. Suppliers, packaging designers, and local authorities should work together to ensure packaging could be easily recycled.

4.2.3. Recommendations to consumers

For Gen X consumers, they should proactively listen and be open to sustainable development trends. Besides, they also need to make smarter long-term purchase and investment decisions, such as choosing to buy products that have long lifespans and could contribute to adding value even at the end of their life cycles.

For Gen Y consumers, they should proactively learn about sustainable development trends and share them with other family members. Gen Y consumers might also be the main decision-makers in young families, so they need to practice that sustainable lifestyle by purchasing products with reusable, recyclable materials or products with durable materials to prolong their lifespans.

For Gen Z consumers, they need to be more proactive in the process of transforming their shopping behaviour such as contributing new ideas and discussing with companies throughout the process. Moreover, Gen Z consumers should seek circular information through the Internet or by participating in workshops and contests about sustainability. Besides, they should also spread the benefits of using circular products to their parents, who have financial capability and long-term experience in making purchase decisions.

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INFLUENCE OF ACCOUNTING CONSERVATISM ON FIRM PERFORMANCE: EVIDENCE FROM LISTED COMPANIES ON HANOI STOCK EXCHANGE (HNX)

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Abstract

This study aims to assess the influence of accounting conservatism on firm performance of listed companies on the stock exchange HNX by testing multivariate regression model through software STATA. The study was completed based on survey results of 325 non-financial companies listed on HNX from 2019 to 2021. Ahmed & Duellman (2007) indicator is used as a benchmark for measuring accounting conservatism. The firm performance indicators used in this study are return on assets (ROA), return on equity (ROE) and return on sales (ROS). The results of the research show that accounting conservatism has a negative influence on firm performance, which indicates that these companies have not fully and properly applied accounting conservatism. Therefore, listed companies on the stock exchange HNX should take action to implement this important principle in the right way.

Keywords: *Accounting conservatism, firm performance, stock exchange HNX, listed companies*

1. Introduction

One of the most important principles in recognition and evaluation of items in accounting is conservatism. According to Vietnamese Accounting Standard No. 01, conservatism is the consideration and judgment necessary to make accounting estimates under conditions of uncertainty. Accounting conservatism requires that accountants do not

make too large provisions, do not overrecognize the value of assets and income, and do not underestimate the value of liabilities and expenses. Thus, conservatism helps investors assure that accounting estimates of the value of resources at a company are reasonable and not overstated. From a conservative perspective, profits will react to bad news more quickly than good news (*Basu, 1997*), meaning that unrealized losses will be recognized earlier than unrealized gains. This indicates that accounting conservatism will directly affect a company's earnings, profits and retained earnings (*Ahmed, 2000*). Therefore, understanding about the effects of accounting conservatism on firm performance become an essential requirement in preparing the financial reports of the companies.

In Vietnam, accounting conservatism is existing in the form of a relatively new concept with few research or studies. This leads to a question: How accounting conservatism influences firm performance of Vietnamese companies?

To answer this question, the authors conducted a study on the influence of accounting conservatism on firm performance of listed companies on HNX, a stock exchange in Vietnam. The article is divided into 5 parts: (i) Introduction, (ii) Research overview and theoretical basis, (iii) Research methodology, (iv) Research results and discussion, (v) Conclusion.

2. Literature Review and Theoretical Framework

2.1. Literature Review

Many previous studies demonstrate a significant correlation between accounting conservatism and firm performance. Charles (1980) showed that accounting conservatism can be a mechanism to balance the interests of management and shareholders and limit the effects of information asymmetry. The researchers also found no link between China's conservative accounting and public sector ownership. Additionally, the study did not find that companies controlled by the private sector produced more conservative reports than those controlled by the public sector.

Applied to Colombian firms, Stephenand finds that firms practice conservative accounting practices that affect the quality of results and form secret or declared reserves, and that conservative indicated that the accounting treatment referred to the Colombian company's reported income for the period from impact 1996-2002. In addition, conservatism influences shareholder expectations of stock returns. The study also shows misunderstandings among investors about how to prepare financial reports according to accounting conservatism, causing investors to question the earnings quality of reported earnings.

Penman & Zhang (2002) argue that companies that employ conservative accounting practices have an impact on the stated income and shareholders' expectations for stock returns. They support their claim with data from Colombian companies between 1996 and 2002. They also pointed out that generating conservative financial statements was misunderstood by investors, thus investors should be questioned about the need to prepare cautious financial statements, and therefore they should be questioned regarding the standard of their generated income.

Chan et al. (2006) looked into how future market returns for non-financial enterprises listed on the London Stock Exchange were affected by earnings quality, which focuses on

accruals accounting. They discovered a substantial negative correlation between accounting accruals and potential equity returns. According to Wang (2013), there is a connection between operational risk and the degree of cautious accounting. Conservatism can also be used to assess the risk of investments and provide more unbiased financial statements.

Biddle et al. (2011) showed that operational cash flows and conservative accounting have a negative relationship. They mentioned conservatism as an organizational tool for managing risks. According to Latridis (2011), conservatism in accounting results in British companies reporting unknown earnings and contractual loans with the lowest interest rates. It also suggested that managers could use conditional conservatism to their advantage.

Eqbal et al. (2014) indicated that Jordanian companies practice accounting conservatism policy when preparing financial reports, which leads to increased reliability of financial reports and related information. Researchers recommend that Jordanian companies continue to practice particularly conservative accounting practices when preparing financial reports - the impact of the global financial crisis is not over yet. Wang (2013) argued that as the level of accounting conservatism increases, the level of organizational operational risk decreases. It is also possible to use conservatism as a tool for analyzing investment risk, and accounting conservatism helps produce more balanced financial reporting.

Najjar (2014)'s study showed that the nature of the financial sector tends to exaggerate forming the provisions and allowances and then accumulating the secret provisions in this sector which increase the conservatism level. Also, conclude the positive effect of conservatism on the market shares value. Also, Jomely (2014) found that industrial companies committed to an accepted conservatism level and the commitment to the average level of conservatism reduces the financial failure risks.

Ramadan (2015) determines the variables affecting the earnings quality of manufacturing firms listed on the Amman Stock Exchange. The continuous independent variables utilized are leverage, corporate performance, investment decisions, accounting conservatism, firm size, and cash holding. The OLS cross-sectional regression model was applied to analyze data from 58 firms during the period 2000-2013. The results showed that corporate performance, leverage, and accounting conservatism significantly positively affect earnings quality.

Sana'a (2016) investigates the impact of accounting conservatism on financial performance indicators in Jordanian insurance firms. The ROA, EPS, and MV are used as performance proxies. Data from 12 Jordanian insurance firms were used for the period (2007-2014). The results showed that accounting conservatism has a significant positive impact on the three performance indicators of Jordanian insurance companies. The results of the study strengthen the necessity of adopting the appropriate procedures to encourage Jordanian insurance firms to commit to an acceptable conservative accounting level.

The relationship between accounting conservatism and bank performance in Nigeria is investigated by Aminu and Hassan (2017). They used panel regression to examine data from 10 banks over a 5-year period (2012-2016). Bank performance is proxied by the ROA. The findings revealed a substantial correlation between Nigerian bank performance and

accounting conservatism. Conservatism in conditional accounting is positively correlated with bank performance, but unconditional accounting has a detrimental effect on bank performance in Nigeria. According to the study, conditional conservatism should be used by bank managers in Nigeria to reduce information asymmetry in financial reporting.

The relationship between accounting conservatism and performance in Nigerian enterprises is examined by Ugwunta and Ugwuany (2019). Data from 12 consumer goods companies in Nigeria were used between 2005 and 2016. The analysis was conducted using a panel. The performance of a company is gauged using the net profit margin (NPM). The findings imply that accounting conservatism positively but negligibly affects company performance. This suggests that consumer goods companies in Nigeria are less likely to be conservative in financial reports that provide low financial reporting quality.

2.2. Theoretical framework

2.2.1. Accounting conservatism

Accounting conservatism is well-established financial reporting rules and practices which require companies to be careful to deal with conditions of uncertainty and risk (FASB 1980; IASC 1989). Basu (1997) explains that accounting conservatism requires a higher degree of verification to recognize positive rather than negative information in earnings. In the context of economic instability and difficulties, caution in accounting is necessary for the financial reporting process. Givoly & Hayn (2000) defined accounting conservatism as the choice of accounting principles that reduces accumulated income by delaying revenue recognition and speeding up expense recognition. Hendriksen (1982) pointed out that in terms of caution, there are more negatives than positives in the financial reporting process.

It is assumed that political expenses are consistent with the principle of accounting conservatism. The politics-related costs hypothesis suggests that firms are more likely to adopt accounting choices that reduce reported earnings to avoid political scrutiny (*Watts and Zimmerman, 1978*). Corporate tax is based on profit that is disproportionately reported and recognized in terms of loss and gain as a result of the prudential principle applied in the financial statements. Companies that already have earnings can reduce or defer taxes from reducing their profits by using accounting conservatism (*Watts, 2003*). García Lara (2009) finds that taxation, regulation, and politically motivated costs can also promote the conditional accounting conservatism. Holthausen & Watts (2001) found out that the regulations and disclosure requirements of the securities commissions enhance the degree of caution in accounting. Although many empirical studies have investigated accounting conservatism, its economic requirements are still under debate. It is noted that decreasing agency problems, strengthening contractual agreements, reducing litigation costs, making good decisions, and avoiding asymmetric information is the result of conservative reporting (*Ahmed & Duellman, 2007; Affes & Sardouk, 2016*). Therefore, in situations of economic uncertainty and difficulty, accounting conservatism is required for the financial reporting process.

2.2.2. Firm performance

2.2.2.1. Definition

Firm performance is a controversial issue among business researchers (*Barney, 1997*). Previous researchers had different opinions about it. For example, according to *Javier (2002)*, firm performance is equivalent to “3E” (economy, efficiency, and effectiveness) of a given program or activity. However, according to *Daft (2000)*, firm performance is the ability of a business to achieve its goals by using resources efficiently and effectively. Quite similar to *Daft (2000)*, *Richardo (2001)* defines firm performance as the ability of a firm to achieve its objectives.

Firm performance is not only a problem of definition, but also an issue of concept (*Hefferman and Flood, 2000*). The term “performance” is sometimes confused with “productivity”. According to *Ricardo (2001)*, there is a difference between performance and productivity. Productivity is a rate that describes the amount of work completed in a given period of time. Performance is a broader metric that can include productivity as well as quality, consistency, and other factors.

Another problem of firm performance is what factors determine the performance of a business. According to *Hansen and Wernerfelt (1989)*, there are two main streams of research on the determinants of firm performance. One draws on economic tradition, emphasizing the importance of external market factors in determining firm performance. Another line of research builds on behavioral and sociological modeling and considers corporate factors and their 'fit' to the environment as key determinants of success.

2.2.2.2. Factors to measure the performance of the business

Previous research has used many indices to measure firm performance. These indices include profitability, gross profit, return on assets (ROA), return on investment (ROI), return on equity (ROE), return on sales (ROS), revenue growth, market share, stock price, sales growth, export growth, liquidity and operational efficiency (*Snow & Hrebiniak, 1983; Segev, 1987; Smith, Guthrie & Chen, 1989; Parnell & Wright, 1993; Thomas & Ramaswamy, 1996; Gimenez, 2000*). There has been considerable debates on both the terminology and the conceptual basis for measuring firm performance (*Ford & Schellenberg, 1982*). No single measurement can fully explain all aspects of firm performance (*Snow & Hrebiniak, 1980*).

There is also an inconsistent measure of firm performance - although most researchers (*Kotter & Heskett, 1992; Marcoulides & Heck, 1993; Denison & Maishra, 1995; Peter & Crawford, 2004; Lee, 2005*) measured the performance of the business using quantitative data such as ROE, ROA, ROI, etc. The definition of performance has included both efficiency-related measurement, related to input/output relationships, and efficiency-related steps which address issues such as business growth and employee satisfaction. In addition, firm performance has also been evaluated by financial and non-financial measures from both objective and perceptual sources. Objective measures include secondary financial measures such as asset return, return on investment, and profit growth. These measures are unbiased and are particularly useful for single-sector studies because of the homogeneity of measurements among all firms in the sample (*Venkatraman & Ramunujam, 1986*).

In this research, the authors use three indicators to calculate firm performance: Return on asset (ROA), Return on equity (ROE) and Return on sales (ROS).

2.2.3. Research hypotheses

2.2.3.1. The relationship between accounting conservatism and firm performance

Many previous studies show a positive relationship between accounting conservatism and firm performance (Ugwunta and Ugwuany, 2019; Ademola and Moses, 2017; Aminu and Hassan, 2017; Sana'a, 2016; Ramadan, 2015). Therefore, the authors propose the following hypotheses:

H1: Accounting conservatism has a positive effect on return on asset (ROA)

H2: Accounting conservatism has a positive effect on return on equity (ROE)

H3: Accounting conservatism has a positive effect on return on sales (ROS).

2.2.3.2. The relationship between firm size and firm performance

Many studies have documented the relationship between firm size and profitability as negative (Goddard et al., 2005; Becker-Blease et al., 2010; Hatem, 2014; Shehata et al., 2017). Large firms often face inefficiency and less profitability due to high bureaucracy, agency costs and other costs associated with managing companies (Jensen and Meckling, 1976; Fama and Jensen, 1983; Goddard et al., 2005; Delcours, 2007; Jónsson, 2007; Ng et al., 2009; Becker-Blease et al., 2010; Pattitoni et al., 2014; Voulgaris and Lemonakis, 2014). Therefore, the authors propose the following hypotheses:

H4: Firm size has a negative effect on return on asset (ROA)

H5: Firm size has a negative effect on return on equity (ROE)

H6: Firm size has a negative effect on return on sales (ROS).

2.2.3.3. The relationship between financial leverage and firm performance

Financial leverage can be described as the degree to which a business or investor is using borrowed money. Many researchers find a positive relationship between financial leverage and firm financial performance (Taub, 1975; Roden and Lewellen, 1999; Champion, 1999; Ghosh and Jain, 2000; Hadlock and James, 2002; Berger and Bonaccorsi, 2006). It is argued that financial leverage has a positive effect on a firm's return on equity when the firm's earning capacity is greater than its interest expense (Hutchinson, 1995). In a study of the banking sector, Berger and Bonaccorsi (2006) demonstrate that high leverage leads to higher returns. Therefore, the authors propose the following hypotheses:

H7: Financial leverage has a positive effect on return on asset (ROA)

H8: Financial leverage has a positive effect on return on equity (ROE)

H9: Financial leverage has a positive effect on return on sales (ROS).

2.2.3.4. The relationship between sales growth and firm performance

Sales growth reflects the company's ability from time to time. The higher the sales growth rate, the more successful the business is in implementing its strategy. According to Fahmi (2016), sales growth is a growth rate that measures a business's ability to maintain its

position in the industry and overall economic development. Growth helps businesses accumulate capital and facilities to invest in expanding production, and at the same time build a reputation for customers as well as for suppliers and investors. According to Zeitun and Tian (2007), growth rate has a positive impact on firm performance. Therefore, the authors propose the following hypotheses:

H10: Sales growth has a positive effect on return on asset (ROA)

H11: Sales growth has a positive effect on return on equity (ROE)

H12: Sales growth has a positive effect on return on sales (ROS).

3. Method

3.1. Methods of data collection and study samples

In this research, the authors use data of non-financial companies listed on the stock exchange HNX from 2019 to 2021 to assess the influence of accounting conservatism on firm performance. The data used is secondary data, collected from the website vietstock.vn, the State Securities Commission and financial statements of these listed companies.

The sample construction in quantitative research is very important because the model will not be reliable if the sample size is not large enough. The minimum sample size to be achieved according to Gorsuch (1983) and Kline (1979) is 100. Meanwhile, Cattell (1978) suggests that the sample size should be 3 to 6 times the number of observed variables. Comrey and Lee (1992) gave a standard scale for sample size in factor analysis including: 100 - acceptable, 200 - moderate, 300 - good, 500 - very good, greater than or equal to 1000 - excellent. In this research, the sample size includes 325 non-financial companies for a period of 3 years (from 2019 to 2021), which is equivalent to 975 observation periods. This is in accordance with the minimum sample size requirement to use the multivariable linear regression model.

Table 1. Structure of observations of the study sample

Sector	Number of firms	Percentage (%)
Manufacturing	111	34.15
Mining	19	5.85
Services and Utilities	31	9.54
Construction and Real estate	79	24.31
Wholesale and Retail	34	10.46
Transportation and Warehouse	28	8.61
Technology and Communication	23	7.08

Source: Synthesized by research team

3.2. Model recommendation and description of research variables

Through approaching the methods used in previous studies, especially the research conducted by Hanaa A. El-Habashy (2019), and basing on the research hypotheses, the authors use multivariable linear model to test the influence of accounting conservatism on firm performance as follows:

$$(1) ROA_{it} = \beta_0i + \beta_1ACCCON_{it} + \beta_2SIZE_{it} + \beta_3LEV_{it} + \beta_4GROWTH_{it} + \epsilon_{it}$$

$$(2) ROE_{it} = \beta_0i + \beta_1ACCCON_{it} + \beta_2SIZE_{it} + \beta_3LEV_{it} + \beta_4GROWTH_{it} + \epsilon_{it}$$

$$(3) ROS_{it} = \beta_0i + \beta_1ACCCON_{it} + \beta_2SIZE_{it} + \beta_3LEV_{it} + \beta_4GROWTH_{it} + \epsilon_{it}$$

Table 2. Description of research variables

	Encryption	Variable	Measurement	Reference
Dependent variables	ROA	Return on asset	Net Income/Total Asset	Hanaa A. El-Habashy (2019)
	ROE	Return on equity	Net profit after tax/Total equity	Hanaa A. El-Habashy (2019)
	ROS	Return on sales	Earnings before interest and taxes/Net sales	Hanaa A. El-Habashy (2019)
Independent variable	ACCCON	Accounting conservatism	$ACCCON_{2019} = \frac{A_{2019} \times 2 + A_{2020}}{3} \times (-1)$ $ACCCON_{2020} = \frac{A_{2019} + A_{2020} + A_{2021}}{3} \times (-1)$ $ACCCON_{2021} = \frac{A_{2020} + A_{2021} \times 2}{3} \times (-1)$ <p>A = (Income before tax and extraordinary items + Depreciation expense - Operating cash flow)/Total Assets</p>	Ahmed & Duellman (2007)
Control variables	SIZE	Firm size	Total assets	Ahmed & Duellman (2007)
	LEV	Financial leverage	Total liabilities/Total assets	Ahmed & Duellman (2007); Mohammed et al. (2016)
	GROWTH	Sales growth	$\frac{\text{Net sales}(n) - \text{Net sales}(n - 1)}{\text{Net sales}(n - 1)}$	Zeitun and Tian (2007)

Source: Synthesized by research team

3.3. Data analysis method

This study uses a multivariable regression model, a widely used model in the fields of accounting. The authors analyzed the data according to the following steps: Descriptive statistics, Correlation analysis, Collinearity statistics, Test of normality of residual and Multivariable regression model analysis.

Step 1: Descriptive statistics: The authors analyze the basic characteristics and the implementation of accounting conservatism at listed companies on HNX through four values: Mean, Standard deviation, Minimum and Maximum.

Step 2: Analysis of regression assumptions: The authors test regression assumptions through the following stages: Analyzing correlation, Testing multicollinearity, Testing autocorrelation, Choosing the suitable regression model (OLS, FEM or REM), Testing heteroskedasticity

Step 3: Regression coefficients estimation: The authors use FGLS method to deal with the defects of the model. Then the authors draw conclusions about the influence of the independent variables on the dependent variables, at the same time compare the results with the proposed hypotheses.

4. Resulta

4.1. Descriptive statistics

Table 3. Results of descriptive statistics

Variables	Sample size	Mean	Std. Dev	Minimum	Maximum
ROS	325	8.551	135.874	-1,931.16	3,560
ROE	325	12.604	81.942	-130.76	1997
ROA	325	6.612	57.632	-22.98	1791
SIZE	325	1,156,673	2,717,969	67.35	26,279,277
LEV	325	0.587	3.288	0.011	102.778
GROWTH	325	0.508	3.549	-0.997	47.586
ACCCON	325	-0.175	0.798	-15.042	0.414

Source: STATA processing results, 2022

The Mean value of applying accounting conservatism at listed companies on is -0.175. This value in the study of Ahmed et al (2002) is -0.003, in the study of Ahmed and Duellman (2007) is 0.01. Compared with the above two studies, the mean value of ACCCON of listed companies on HNX is much lower, which indicates that these companies have not fully implemented accounting conservatism.

ROS, ROE and ROA variables have the mean value of 8.551; 12.604; 6.612, respectively; with high standard deviation (135.874, 81.942, 57.632). This shows the big difference in profitability of listed companies on HNX.

The control variables SIZE, LEV and GROWTH have the mean value of 1,156,673; 0.587; 0.508, respectively; with high standard deviation (2,717,969, 3.288, 3.549). This reflects the diversity in firm size, financial leverage and sales growth of listed companies on HNX.

4.2. Analysis of regression assumptions

4.2.1. Correlation analysis

Table 4. Correlation matrix

	ACCCON	SIZE	LEV	GROWTH
ACCCON	1.000			
SIZE	0.061	1.000		
LEV	0.007	0.001	1.000	
GROWTH	-0.107	-0.014	-0.004	1.000

Source: STATA processing results, 2022

After performing the correlation test between the variables in the model, the authors found that there is no strong correlation between the independent variables (no pair has the coefficient greater than 0.5), which avoids the situation that two independent variables have the same effect on the dependent variables.

4.2.2. Test of multicollinearity

Table 5. Results of collinearity analysis

Variables	VIF
SIZE	1.00
LEV	1.00
GROWTH	1.01
ACCCON	1.02

Source: STATA processing results, 2022

The results show that the VIF coefficients of the independent variables are all less than 10, so the model does not have a serious multicollinearity problem.

4.2.3. Test of autocorrelation

Table 6. Results of autocorrelation analysis

Model	p-value
(1)	0.0711
(2)	0.4896
(3)	0.0006

Source: STATA processing results, 2022

The authors used Wooldridge test to investigate autocorrelation in 3 models. It can be seen that p-values of model (1) and (2) are greater than 0.5, so these models do not have autocorrelation among variables. However, p-value of model (3) is smaller than 0.5, showing that autocorrelation exist in the model.

4.2.4. Choosing a suitable regression model

Table 7. Choosing a suitable regression model

Model	Pooled OLS or FEM (F test)		FEM or REM (Hausman test)		Conclusion
	p-value	Chosen model	p-value	Chosen model	
(1)	0.0000	FEM	0.0553	REM	REM
(2)	0.0000	FEM	0.0000	FEM	FEM
(3)	0.0000	FEM	0.0000	FEM	FEM

Source: STATA processing results, 2022

The authors used F test to choose between Pooled OLS and FEM (Fixed Effects Model); then used Hausman test to choose between FEM and REM (Random Effects Model). If p-value of F test is smaller than 0.05, FEM will be chosen instead of Pooled OLS. After that, if p-value of Hausman test is smaller than 0, the authors will opt for FEM rather than REM. The results show that the best regression model for (1) is REM, while FEM is more suitable for (2) and (3).

4.2.5. Test of heteroskedasticity

To test the phenomenon of heteroskedasticity, the authors used Breusch and Pagan Lagrangian Multiplier test for model (1), Wald test for model (2) and (3). It can be seen that p-values of 3 models are all smaller than 0, so these models have heteroskedasticity.

Table 8. Test of heteroskedasticity

Model	Name of test	p-value
(1)	Breusch and Pagan Lagrangian Multiplier	0.0000
(2)	Wald	0.0000
(3)	Wald	0.0000

Source: STATA processing results, 2022

4.3. Regression coefficients estimation

Table 9. Results of regression coefficients estimation

Hypothesis	Dependent variable	Independent variables	Expected impact	Coefficient	p-value	Accepted/Not accepted hypothesis
H1	ROA	ACCCON	+	-0.614	0.025	Not accepted
H4		SIZE	-	-0.000000404	0.000	Accepted
H7		LEV	+	16.734	0.000	Accepted
H10		GROWTH	+	-0.004	0.915	Not accepted
		Cons		-3.128	0.000	
H2	ROE	ACCCON	+	-0.246	0.441	Not accepted
H5		SIZE	-	-0.000000239	0.000	Accepted
H8		LEV	+	14.231	0.000	Accepted
H11		GROWTH	+	-0.096	0.001	Not accepted
		Cons		3.033	0.000	
H3	ROS	ACCCON	+	-10.511	0.000	Not accepted
H6		SIZE	-	0.000000326	0.000	Not accepted
H9		LEV	+	2.653	0.256	Not accepted
H12		GROWTH	+	0.936	0.000	Accepted
		Cons		-12.013	0.000	

Source: STATA processing results, 2022

Contrary to expectations, accounting conservatism has a negative effect on ROA and ROS; has no effect on ROE but the coefficient is also smaller than 0. Therefore, it can be concluded that accounting conservatism negatively influences firm performance of listed companies on HNX. This may be because these companies have not fully and properly applied accounting conservatism. Although this result does not meet the expectations of the authors, it supports some previous researchers such as Chan et al. (2006), Biddle et al. (2011).

Firm size has a negative effect on ROA and ROE; has a positive effect on ROS. The author cannot conclude about the influence of this variable on firm performance of listed companies on HNX.

Financial leverage has a positive effect on ROA and ROE; has no effect on ROS but the coefficient is also greater than 0. Therefore, it can be concluded that financial leverage has a positive influence on firm performance of listed companies on HNX. The results agree with Taub (1975), Roden and Lewellen (1999), Champion (1999).

Sales growth has no effect on ROA, a negative effect on ROE, and a positive effect on ROS. The author cannot conclude about the effects of this variable on firm performance of listed companies on HNX.

5. Conclusion

Research with the aim of evaluating the influence of accounting conservatism on firm performance at of listed companies on the stock exchange HNX has shown a number of remarkable results.

The results detected that the level of accounting conservatism has a negative influence on firm performance of listed companies on HNX. This shows that these companies have not fully and properly applied accounting conservatism. Therefore, the article suggests that more policies and regulations need to be set for listed companies on HNX so that accounting conservatism levels will be promoted. This will help companies create a competitive position and have profitability for sustainable growth, which is very important in a global and constantly moving economy.

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STUDY OF FACTORS AFFECTING THE QUALITY OF FINANCIAL REPORTING INFORMATION OF SMALL AND MEDIUM ENTERPRISES IN HANOI CITY

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Abstract

This study was conducted to assess the influence of factors on the quality of financial reporting information of small and medium enterprises in Hanoi city. Data collected from the questionnaire was sent to 182 accountants, chief accountants and managers working at small and medium-sized enterprises in Hanoi. Based on quantitative research with quantitative techniques, the results show that there are 5 major factors that affect the quality of financial reporting information in a decreasing order, including: Profit management behavior of business owners; Internal control; Capacity of accounting staff; Application of accounting technology and software; and Independent auditing. Based on the research results, a number of recommendations have been made to stakeholders to improve the quality of financial reporting information for small and medium enterprises in Hanoi in the coming time.

Keywords: *Quality of financial reporting information, financial statements, small and medium enterprises.*

1. Introduction

Quality of financial statements information (QFSI) is used by many interested parties to make economic decisions. However, due to various reasons and the impact of asymmetric information, many businesses disclose untruthful, incomplete and timely financial statements as prescribed. High-quality financial statements reduce information asymmetry (Biddle et al., 2009). On the other hand, when increasing the quality of financial statements, financial activities in enterprises will improve (Nanyondo, 2014).

Small and medium-sized enterprises (SMEs) are enterprises that do not have large scale in terms of capital and labor. According to data published by the General Statistics Office in 2022, the proportion of SMEs classified by labor size accounts for about 97.3% of the total number of enterprises registered for business. SMEs play a very important role in the economy, contributing significantly to the total national output, creating jobs for workers, mobilizing social resources for development investment, contributing to poverty reduction in localities.

However, at present, SMEs in Vietnam are facing many difficulties. In particular, the most important concern is the difficulty in accessing capital of SMEs. In order to attract investment capital or in other words, to borrow capital, businesses must prove a healthy financial situation, ensure the ability to use capital effectively and repay debt on time.

Meanwhile, SMEs often fail to provide verifiable financial information, one of the main causes of the above situation is that the QFSI of these enterprises is limited.

There have been a number of domestic and foreign studies related to QFSI. For example, the study by Maines & Wahlen (2006) states that an auditor's report with a view to full acceptance is a necessary condition to identify reliable or truthful financial accounting information. In addition, Chalaki et al., (2012) conducted a study on the influence of corporate governance attributes on QFSI in companies listed on the Tehran Stock Exchange. The results of the study show that QFSI is not influenced by corporate governance attributes. Or the research of Vo Van Nhi & Tran Thi Thanh Hai (2013) through the research method of synthesizing theory and summarizing from practice, identifying factors that affect the quality of accounting information on the financial statements, such as the organization of management and accountants. However, the QFSI of SMEs as well as the research on factors affecting the QFSI of this business object in Vietnam in general and in provinces and cities in particular, has not received much attention. In particular, Hanoi city is the economic, political and cultural center of the whole country, where there are many SMEs, while the research on the QFSI of SMEs seems to be very limited.

Therefore, this study was conducted as an attempt to compensate for the previous research gap, and at the same time provide empirical evidence in Hanoi city on this issue. The research results contribute to increasing the understanding of the factors and the influence of each factor on the QFSI of SMEs. From there, help these businesses have practical solutions to improve their QFSI. Thereby, meeting the expectations of investors, regulators and other stakeholders.

2. Theoretical basis and Literature review

2.1. Theoretical basis

2.1.1. Small and medium enterprises

In Vietnam, SMEs are defined as enterprises with a small number of employees and a small capital size or limited revenue that meet one of the following criteria: The total number of employees participating in social insurance in the year is not more than 200 employees, the total capital is not more than 100 billion VND or the total revenue of the previous year is not more than 300 billion VND. SMEs are classified by size, including microenterprises, small businesses and medium enterprises determined by the fields of agriculture, forestry and fisheries; industry and construction; trade and services. This study identifies SMEs based on the number of employees and according to Decree No. 39/2018 ND-CP of the Government dated March 11, 2018.

2.1.2. Quality of financial statement information

According to Baltzan (2012), information is of good quality if it is considered to be consistent with the requirements of the information user including: Accurate, complete, relevant, timely and consistent. In addition, the concept of QFSI is very specifically regulated in the form of templates by regulatory organizations such as FASB, IASB... In

addition, QFSI in each country will have its own regulations. In our country, QFSI regulations are also mentioned in Vietnamese accounting laws and standards.

In the FASB's view, QFSI is the attributes that make information useful for business and economic decisions (FASB, 1980). In the IASB perspective, QFSI are attributes that make financial reporting information useful for the decision-making of current and potential investors, lenders, and other creditors (IASB, 2010). Many fundamentalist researchers have also come up with various concepts of QFSI. In particular, Jonas & Blanchet (2000), argue that QFSI manifests itself in the full and clear provision of financial information, avoiding confusing or changing the decisions of users. Vietnamese accountants stipulate that the information presented in the financial statements must meet the following requirements: Honest, reasonable, appropriate, complete, verifiable, timely, understandable, consistent and comparable (Ministry of Finance, 2002). Therefore, in order to suit the research conditions in Vietnam and the research object is the QFSI of SMEs in Hanoi, this study uses the viewpoint according to Vietnam Accounting Standards No. 01 as a basis for evaluating the QFSI of SMEs.

2.2. Factors affecting the quality of financial reporting information of SMEs

Domestic and foreign studies have confirmed the direct or indirect influence of factors on the QFSI of SMEs, specifically as follows:

2.2.1. Accounting staff capacity

Accounting staff competence is an important factor affecting QFSI, because accountants are the people who directly operate accounting at the unit. If the capacity of the accounting staff does not meet the requirements, it will adversely affect the QFSI. According to Setiyawati (2013), accounting staff competence is a factor that is significantly related to QFSI. Vo Van Nhi (2013) through the research method of synthesizing theory and summarizing from practice, determining the factors that affect QFSI belong to the capacity of the accountant. In addition, Chen & Xie (2014) considered the impact of accounting staff capacity on financial reporting fraud, the results of the study showed that more qualified accounting staff are associated with a lower likelihood of financial reporting fraud. The authors concluded that investing in training and development of accounting staff can improve QFSI. Sawalha & Alrawadieh (2019) reviewed financial reporting practices of SMEs in Jordan, focusing on factors affecting QFSI. Research shows that SMEs in Jordan often lack the financial resources and expertise needed to create high-quality financial statements. SMEs prioritize growth and innovation over QFSI, resulting in inadequate or unreliable financial reporting. Therefore, the author argues that:

H1: There is a positive relationship between the capacity of accounting staff and the QFSI of SMEs

2.2.2. Application of accounting technology and software

Information technology and accounting software are important factors contributing to improving the efficiency of accounting work. The use of accounting software will solve

the problems of vouchers, accounting books, and at the same time, accounting software also helps businesses in the preparation and presentation of financial statements. Modern technology ensures technical requirements; accounting software is built in accordance with the operating characteristics of the unit; updated software, less error, user-friendly interface are the decisive criteria to QFSI. Adu (2017) compared financial reporting practices of SMEs in Ghana and South Africa, focusing on factors affecting QFSI. The study shows that SMEs in both countries have limited financial resources for the application of technologies such as modern accounting software to enhance QFSI. The study also shows that the regulatory environment in each country can affect QFSI, with SMEs in South Africa having stricter reporting requirements than SMEs in Ghana. In line with the above studies, similar conclusions have been confirmed in the research of Dechow et al., (2007); Hajiha (2011); Ghasemi et al., (2011) have argued about the relationship between information technology factors and QFSI. Thus, the second hypothesis is formulated as follows:

H2: There exists a directional relationship between the application of technology and accounting software with the QFSI of SMEs.

2.2.3. Internal control

Internal control is an important factor affecting QFSI. Internal control of operations to ensure the reliability of accounting information, ensure the appropriate size and development of the business, serve the information needs of administrators.

Djama (2010) and Iatridis (2011) argue that accounting information is considered a lever of power for managers and can cause damage to partners within the framework of contractual relationships. Through accounting policies, managers can influence the processing of accounting information to provide information that is not true to the reality of the business. So, managers can exploit accounting information to meet the constraints in contracts with investors. However, the exploitation of accounting tools for self-interested behavior on the part of leaders will be limited by the implementation of a monitoring mechanism from inside and outside the business. Based on the above argument, the author argues that the role of internal control has a relationship with QFSI. Thereby, the next hypothesis is given:

H3: There exists a directional relationship between Internal Control and SME QFSI

2.2.4. Independent audit

Bell & Carcello (2000), Ambler & Neely (2007), Djama (2010) argue that the resolution of conflicts of interest of stakeholders in the enterprise has led to the establishment of control systems from inside and outside the enterprise as a mechanism to frame the actions of managers and reduce the costs arising from these conflicts. This is reflected in the role of external supervisors such as independent auditors in ensuring the truthfulness of accounting information. Some studies have also shown that investors have greater confidence in financial statements that have been audited by international auditing firms (Teoh & Wong

1993). In addition, research by Chalaki et al., (2012) showed that auditing is a factor that has a significant impact on QFSI. So, the author assumes:

H4: There exists a directional relationship between the Independent Auditor and the SME QFSI.

2.2.5. Profit management behavior of business owners

The behavior of profit management is stated by Vidal (2008): "The ability of the administrator to direct the information published in favor of himself or for the benefit of the business". Wang & Han (2017) examine the relationship between profit management behavior of corporate managers and QFSI. Research shows that income management behavior negatively affects QFSI. Specifically, QFSI decreases as managers become involved in the management of earnings, resulting in a reduction in the usefulness and reliability of financial reporting. Zheng & Lee (2019) examine the influence of corporate governance on the relationship between corporate managers' profit management behavior and QFSI. The results of the study show that independent boards and audit committees play an important role in monitoring the behavior of managers and impairing their ability to manage income. In addition, research shows that the presence of independent board members and audit committees is associated with higher quality financial reporting information. In addition, the study of Pham Quoc Thuan (2016) said that the profit management behavior of managers in enterprises has an important influence on the QFSI of enterprises. Therefore, the hypothesis is given as follows:

H5: There exists an opposite relationship between the profit management behavior of the enterprise and the QFSI of the SME.

2.2.6. Pressure from taxes

Tax pressure is understood as tax pressure leading to enterprises having to apply tax regulations when processing information presented in financial statements (Pham Quoc Thuan, 2016). Barth et al., (2008) investigate the impact of tax policy on QFSI. They argued that tax policies could provide incentives for regulators to manipulate financial statements in order to reduce their tax liabilities. In addition, Tang et al., (2019) investigated the impact of tax policy on QFSI in a multinational context. The authors argue that tax policies can affect QFSI differently in different countries due to differences in institutional environments and accounting standards. Using a sample of companies from 39 countries, the authors found that companies in countries with higher tax rates had lower QFSI. Furthermore, they found that the impact of tax policies on financial reporting quality was more pronounced in countries with weaker institutional environments and less transparent accounting standards. On the other hand, Vietnamese enterprises when handling accounting work are still under a lot of pressure from tax managers and this hinders the compliance with accounting principles and standards of enterprises and reduces the quality of financial statements (Pham Quoc Thuan, 2016). Therefore, the sixth hypothesis proposed by the author is as follows:

H6: There exists a positive relationship between tax pressure to QFSI of SMEs.

3. Research Method

3.1. Research models and hypotheses

From the above hypotheses, the author proposes a formal research model as follows:

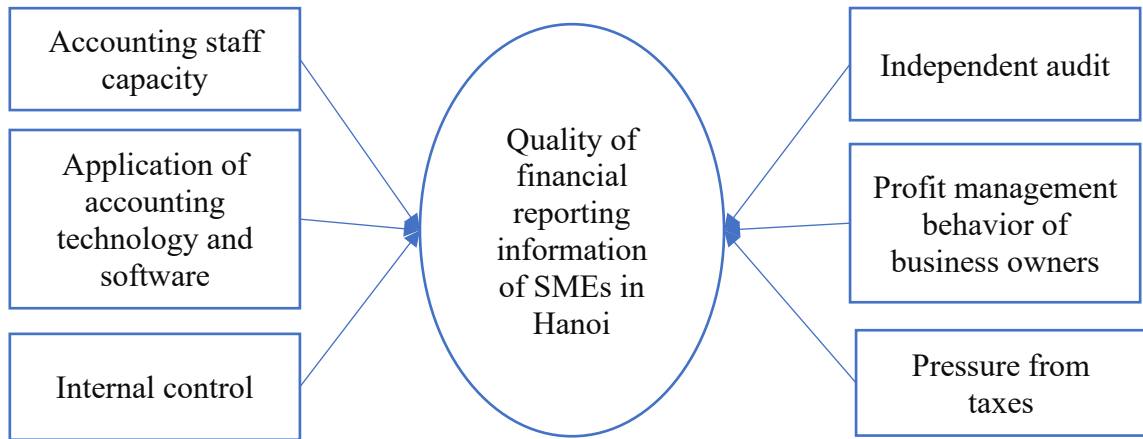


Figure 1. The proposed research models

Source: Suggested Author

With multiple linear regression model as follows:

$$CL = \beta_0 + \beta_1*HV + \beta_2*KS + \beta_3*NL + \beta_4*CN + \beta_5*KiT + \varepsilon$$

In which:

$\beta_1, \beta_2...$ are regression coefficients, β_0 are intercepts, ε are residues.

Dependent variable

CL: Quality of financial reporting information of small and medium enterprises

Independent variable

HV: Profitable Management Behaviour of Business Owners

KS: Internal control

NL: Accounting staff capacity

CN: Application of accounting technology and software

KiT: Independent audit

AL: Pressure from taxation

3.2. Data collection and processing

The author collects data through the use of questionnaires to collect the opinions of accountants, chief accountants, managers in SMEs in Hanoi on the level of influence of factors on QFSI.

Through the literature review process, to evaluate the QFSI of SMEs (dependent variables), the author uses the Likert scale of 5 levels of agreement, from: (1) Strongly disagree to (5) Strongly agree. Evaluating the independent variables, the author uses the Likert scale of 5 levels of influence, from: (1). Very low to (5). Very. The number of measurement scales of variables is presented in **Appendix 1**.

The questionnaire is checked and corrected by sending to 02 people (01 is a senior lecturer, Institute of Accounting and Auditing, National Economics University; the other 01 is the director of SMEs) to assess the level of conformity with research objectives. In addition, to ensure the study sample size, based on the minimum sample size requirement for EFA analysis and regression, in the view of Bollen (1989), the sample size is calculated according to the formula $n = 5 * i$ (i is the number of variables observed in the model).

The author uses a convenient sampling method through sending and receiving questionnaires via Google Doc tool and Email to accountants, chief accountants and managers in SMEs in Hanoi city, from December 2022 to March 2023. With 370 votes sent to 152 SMEs, 190 votes were collected, of which 182 valid votes were included in the research model. Based on the collected data, the author uses quantitative techniques such as checking the reliability of the scale, analyzing the discovery factor, testing the difference in the effectiveness of internal auditing... with the use of SPSS software.²⁵ to summarize and present the basic results of the study.

4. Results and Discussion

Regarding working positions: out of 182 valid answers, 123 came from accountants, accounting for 67.58%; 42 came from chief accountants, accounting for 23.07%; 17 came from managers of SMEs, accounting for 9.35%.

Regarding the field of operation: 68 answers came from SMEs in the field of trade and services, accounting for 37.36%; 34 answers came from SMEs in the field of production, accounting for 18.68%. 22 responses to four SMEs in the field of industry, construction, accounted for 12.08%; The remaining 58 responses came from SMEs doing multi-industry business, accounting for 31.86%.

Regarding the number of employees in the enterprise: 42 answer sheets came from SMEs with less than 10 employees, accounting for 27.63%; 97 answer sheets came from enterprises with the number of employees from 11 to 100 people, accounting for 53.29%; 13 answer sheets came from enterprises with the number of employees from 101 to 300 people, accounting for 19.08%; and none came from enterprises with the number of employees greater than 300 people.

The sample surveyed belongs to many different subjects in terms of working position, field of operation, size of personnel, and quite even distribution. As such, it is possible to ensure the answers are reliable and of quality. The statistical results describing the scale show that the mean of QFSI = 3.71. This shows that the survey subjects have evaluated the QFSI factor with characteristic variables at the level of agreement. The mean of the given independent variables is greater than 3.0. This shows that the effect of the independent variables given is reasonable.

4.1. Quality control results of the scale

Cronbach's Alpha test results:

Quality control results of QFSI scale with 8 observation variables and quality of the scale of factors affecting QFSI (6 scales with 24 observation variables) by SPSS25.0 software are as follows:

Table 1. Results of testing the reliability of the scale of factors in the model

TT	Factor	Cronbach's Alpha	N
1	Accounting staff capacity	0.850	4
2	Application of accounting technology and software	0.863	6
3	Internal control	0.863	4
4	Independent audit	0.903	2
5	Profit management behavior of business owners	0.880	4
6	Pressure from taxes.	0.879	4
7	<i>Quality of financial reporting information of small and medium enterprises</i>	0.734	8

Source: Results of data analysis on SPSS 25

The total variable correlation coefficients of the observed variables are all greater than 0.3. Thus, the variables given are satisfactory. The Cronbach's Alpha coefficient is greater than 0.6. Cronbach's Alpha coefficients of the scales do not have any coefficients that are too large (about 0.95 or more) so there is no duplication of the scales. Cronbach's Alpha coefficient if the type of variables observed is less than the total Cronbach's Alpha coefficient. The model retains 6 scales representing factors affecting QFSI and 01 scale representing QFSI with 32 characteristic variables.

4.2. Explore factor analysis EFA

The EFA exploratory factor analysis process is carried out separately for 02 groups of independent variables and dependent variables by the method of full-angle rotation. The results obtained are as follows:

Results of EFA analysis for independent variable:

Table 2. Table of KMO and Bartlett test results for independent variables

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.785	
Bartlett's Test of Sphericity	Approx. Chi-Square	10006.806
	df	1186
	Sig.	0.000

Source: Results of data analysis on SPSS 25

The KMO value = 0.785 satisfies the condition $0.5 \leq KMO \leq 1$ so EFA analysis is appropriate for the actual data. Test the correlation between observed variables in Sig scales. (Bartlett's Test) = 0.000 (Sig. < 0.05) showed that the observed variables are correlated with each other in general and that the data used for EFA analysis are appropriate.

Testing the level of interpretation of observed variables with factors: Percent variance = 72.526% > 50% means that the 6 factors extracted in EFA reflect 72.526% of the variation of the data. The Eigenvalue = 1.48 is greater than 1, so the factors are retained in the analysis model.

The rotating factor matrix table will be considered to see what these 6 groups of factors include, and whether the order of the observed variables is disturbed compared to the scale built initially. The results show that the observed variables have a factor load factor greater than 0.5. There is no case of simultaneously uploading two elements with a close load factor. There are 6 factors representing the factors affecting QFSI with 24 characteristic variables arranged as the original model. Based on the results of the rotational matrix table of factors, the research model is maintained.

Results of EFA analysis for dependent variable:

KMO coefficient = 0.887 > 0.5 and Barlett test has Sig.= .000 < .05) shows that EFA analysis is appropriate. The Sig. = 0.000 satisfies the Sig condition. ≤ 0.05 so this test is statistically significant and the observed variables are correlated with each other in the whole, proving that the data used in the analysis is appropriate. Analysis of the total variance extracted for the dependent variable shows that the total variance percentage value of the entire Percentage of variance = 56.234% > 50%, the Eigenvalue value = 3.527 > 1, so the model is eligible for exploratory factor analysis and the load factor of the observed variables is greater than 0.5 so the observed variables are of practical significance. So the dependent variable is between the original independent variable and there are 6 observed variables.

4.3. Results of regression analysis

Pearson Correlation Analysis:

Table 3. Pearson Correlation Analysis Results

		Correlations						
		HV	KS	NL	CN	KiT	AL	CL
HV	Pearson Correlation	1						
	Sig. (2-tailed)							
	N	182						
KS	Pearson Correlation	-.025	1					
	Sig. (2-tailed)	.715						
	N	182	182					
NL	Pearson Correlation	.021	.289**	1				
	Sig. (2-tailed)	.759	.000					

Correlations								
		HV	KS	NL	CN	KiT	AL	CL
	N	182	182	182				
CN	Pearson Correlation	.136*	-.014	-.106	1			
	Sig. (2-tailed)	.036	.844	.103				
	N	182	182	182	182			
KiT	Pearson Correlation	-.049	-.023	-.023	-.069	1		
	Sig. (2-tailed)	.459	.727	.727	.288			
	N	182	182	182	182	182		
AL	Pearson Correlation	-.052	.000	.093	.026	-.059	1	
	Sig. (2-tailed)	.426	1.000	.152	.697	.366		
	N	182	182	182	182	182	182	
CL	Pearson Correlation	-.575**	.500**	.353**	.146*	.195**	-.099	1
	Sig. (2-tailed)	.000	.000	.000	.024	.023	.126	
	N	182	182	182	182	182	182	182

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Source: Analysis results from SPSS 25

Looking at the result in the last row in the correlation matrix table, we see that independent variables are correlated with dependent variables, Sig. values in other variables are < 0.05 . Particularly, the variable "Pressure from taxation" has a Sig. value of $0.126 > 0.05$. Thus, we see that the independent variable "AL" has no correlation with the dependent variable "CL", so this type of variable when analyzing regression. The elimination of the "AL" variable can be explained by the following reasons: (i) SMEs often do not have large funds to create complex tax strategies, so they are not under too much pressure from tax policies; (ii) SMEs often have simple, uncomplicated size and business operations, so there is no need to make too many tax reports, minimizing pressure from tax regulations and policies; and (iii) SMEs often do not have too many business partners, so compliance with tax regulations is not too complicated.

After removing the variable "AL", re-run analysis of the correlation matrix table, we see all Sig. < 0.05 . Thus, the independent variables HV, KS, NL, CN, KiT are correlated with the dependent variable "CL".

Regression analysis:

Based on the results of the EFA analysis, the regression analysis between the dependent variable "CL" and the independent variables: HV, KS, NL, CN, KiT is conducted. The tables below show the regression results, specifically:

Table 4. Linear regression results

Coefficients ^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	Constant	-.025	.283		-.086	.934		
	HV	-.499	.300	-.528	-17.259	.000	.979	1.023
	KS	.484	.044	.386	11.346	.000	.916	1.094
	NL	.333	.044	.278	7.766	.000	.905	1.107
	CN	.294	.039	.268	7.819	.000	.967	1.037
	KiT	.163	.032	.184	5.347	.000	.993	1.009

a. Dependent Variable: CL

Source: Analysis results from SPSS 25

Table 5: Summary table of model^b

Model	R	R Square	Adjusted R Square	Durbin-Watson
1	0.798 ^a	0.712	0.634	2.166

a. Predictors: (Constant), HV, KS, NL, CN, KiT.

b. Dependent Variable: CL

Source: Analysis results from SPSS 25

Table 6: ANOVA^a model analysis table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	109.738	5	21.9476	122.650	.000 ^b
	Residual	44.378	240	.185		
	Total	154.116	245			

a. Dependent Variable: CL

b. Predictors: (Constant), HV, KS, NL, CN, KiT.

Source: Analysis results from SPSS 25

Test the relevance of the model:

Testing for multicollinearity phenomenon: The variance magnification factor (VIF) of all independent variables is less than 10, so the multicollinearity phenomenon in the model is assessed as not serious. The Durbin-Watson coefficient used to test the correlation of the residues shows that the model does not violate when using the multiple regression method, because the Durbin-Watson value is reached at 2,166 (in the range of 1 to 3). In other words,

the model does not have the correlation phenomenon of residual parts. The assessment of model suitability is based on the variance analysis table. Results of ANOVA testing with Sig significance level. = 0.000 shows that the multiple linear regression model has been built in accordance with the data set and can be used, or in other words, this model is meaningful to deduce for the whole.

Evaluate the level of interpretation by independent variables in the model:

The corrected R^2 coefficient = 0.634 > 0.5 means that the independent variables explain 63.4% of the change of the “CL” dependent variable, while 36.6% is due to random errors or other factors outside the model.

The results of the regression coefficient determination shown in Table 4 show that the independent variables included in the model have a linear relationship with the dependent variable “CL”, Sig. in the t test are all less than 0.05. So the regression model is statistically significant. The independent variables “KS”; “NL”; “CN”; “KiT” with coefficients $\beta > 0$ prove to have a positive influence on the dependent variable “CL”. Particularly, the independent variable “HV” has a coefficient of $\beta < 0$, proving that the factor “HV” has the opposite effect on the dependent variable. Thus, accept the original hypothesis (H1, H2, H3, H4 and H5), which are independent variables linearly related to the dependent variable and fully consistent with the model. From there, we have a regression equation with a normalized beta as follows:

$$CL = -0.528*HV + 0.386*KS + 0.278*NL + 0.268*CN + 0.184*KiT$$

The results of this study are consistent, consistent with previous studies, specifically:

The factor "Profit management behavior of business owners" significantly and inversely affects QFSI, this result is similar to the results of Wang & Han (2017); Zheng & Lee (2019); Pham Quoc Thuan (2016). The more effective the “Internal Control” factor of SMEs, the higher the QFSI, this result is similar to many previous studies, such as Djama (2010); Iatridis (2011); Pham Quoc Thuan (2016). The factor "Capacity of accounting staff" has a favorable influence on the QFSI of SMEs, the results of this study are similar to the research results of Pham Quoc Thuan (2016); Setiyawati (2013). The factor "Application of accounting technology and software" has the same impact as QFSI, which implies that, when SMEs apply modern technology and quality accounting software, the QFSI of SMEs will be increased, this result is consistent with the results of Pham Quoc Thuan (2016), Dechow et al., (2007); Hajiha (2011); Ghasemi et al., (2011). The factor "Independent Audit" has the same impact on the QFSI of SMEs. Expressing the control role from outside the enterprise to help limit the risks of wrongdoing, the survey results show that SMEs in Hanoi city have a low level of interest in independent auditing. This result is consistent with the results of previous studies, such as: Chalaki et al., (2012).

5. Discussion and Conclusion

Through analysis of 182 survey samples from 152 SMEs in Hanoi city. Regression results show that factors that have a positive influence on the QFSI of SMEs in descending order are: Profit management behavior of business owners; Internal control; Capacity of accounting staff; Application of accounting technology and software; and Independent audit.

The findings from the experimental study are the basis for the author to make some recommendations, specifically as follows:

Profit management behavior of business owners

Profit adjustment behavior is a serious problem for businesses in general and SMEs in particular. In order to limit profit adjustment behavior, SMEs need to implement the following measures: (i) Build an internal control system is one of the most important measures to ensure accuracy and transparency in the accounting and financial statements of the enterprise; (ii) strengthen external independent audits to evaluate the effectiveness of existing accounting policies and processes; (iii) The State needs to have many policies to reduce tax pressures for enterprises, contributing to limiting profit adjustment behavior in practice.

Internal control

Research results show that internal control is the second strongest factor affecting the QFSI of SMEs. In order to promote the role and effectiveness of internal controls, SMEs need to take a number of steps, including: (i) SMEs need to implement appropriate controls to protect their assets and ensure that financial transactions are recorded honestly and adequately. This includes implementing division of duties, which means dividing financial responsibilities among multiple employees to prevent any individual from having too much control over financial activities; (ii) developing an internal control policy that articulates the responsibilities of different employees, control measures to be implemented, and procedures to be followed to ensure compliance with applicable laws and regulations. This policy should be communicated to all employees and reviewed regularly to ensure that it remains appropriate and effective. (iii) SMEs should establish a code of conduct outlining the ethical standards that employees must adhere to, as well as a whistleblower policy to encourage employees to report any suspected misconduct. (iv) SMEs should provide training to employees to ensure that they understand the importance of internal controls and are equipped with the knowledge and skills to implement and maintain effective controls.

Qualifications of accountants

This is the third most powerful of the factors in the standardized regression equation. Therefore, in order to improve the QFSI, SMEs need to recruit accountants with sufficient qualifications, expertise and experience suitable for the job position. Strengthen training to create conditions for accounting staff to participate in training sessions related to accounting, auditing and tax declaration. SMEs can invest in courses, train accountants or hire accounting professionals to train employees. At the same time, SMEs need to ensure that training programs are tailored to the needs and qualifications of their employees. On the other hand, accountants (including external tax accountants) need to cultivate professional knowledge and legal regulations on accounting to actively update fully and promptly.

Application of accounting technology and software

Applying accounting technology and software is a factor that has a significant and similar influence on the QFSI of SMEs. Proposals to increase the application of accounting

technology and software are given as follows: (i) SMEs need to develop plans to develop information systems and apply advanced information technology in the operation, inspection and monitoring of information systems. In addition, enterprises also need to pay attention to training, improving professional skills for employees, selecting accounting software in accordance with the operating characteristics of the unit; (ii) SMEs need to apply information technology such as organizing accounting software to be able to quickly process collected information as well as provide timely responsibility reports and ensure the usefulness of the information; (iii) Choose to use quality accounting software and have it inspected by competent agencies; (iv) for SMEs who regularly use external accounting services, it is necessary to pay attention to choosing reputable services, providing sufficient documents, regularly monitoring and monitoring accounting work for their units, making the most of the support of the service.

Independent audit

In most studies, independent auditing is a factor that affects the QFSI of SMEs in the same direction. Therefore, SMEs in Hanoi city need to be properly aware of the role of independent auditors in improving the financial capacity of enterprises, carrying out periodic audits and selecting reputable auditing services.

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Appendix 1:
Attribute coding of factors affecting financial reporting information of SMEs

TT	Encryption	Attribute _name	Source
Dependent variable			
Quality of financial reporting information of SMEs in Hanoi city (In view of VAS01)			VAS 01
1	CL1	The accounting information of the enterprise is recorded and reported on the basis of complete and truthful evidence.	
2	CL2	Corporate accounting information is recorded and reported in accordance with reality without bias.	
3	CL3	All economic transactions arising in the accounting period are fully recorded and reported by the enterprise.	
4	CL4	Information on complex issues in the financial statements is clearly explained by the enterprise in the notes.	
5	CL5	Enterprises consistently use accounting methods and policies over the accounting periods.	
6	CL6	The accounting information of the business can be compared between this period and the previous period.	
7	CL7	The financial statements of the enterprise are presented in the prescribed form.	
8	CL8	The financial statements of the enterprise are submitted to the authorities on time.	
Independent variable			
<i>H1: Accounting staff capacity</i>			Setiyawati (2013); Chen & Xie (2014); Sawalha & Alrawadieh (2019).
9	NL1	The accounting staff of the business master the professional knowledge and legal regulations on accounting.	
10	NL2	The accounting staff of the enterprise always fully and promptly updates the changes in the accounting regime.	
11	NL3	The accounting staff of the enterprise is knowledgeable about the business and financial situation of the enterprise.	
12	NL4	The accounting staff of the enterprise complies with the standards of professional ethics of accounting and auditing.	

TT	Encryption	Attribute_name	Source
<i>H2: Application of accounting technology and software</i>			Dechow et al., (2007); Hajiha (2011); Ghasemi et al., (2011).
13	CN1	Information technology systems at enterprises meet the needs of transmission, storage, processing... information.	
14	CN2	Accounting software ensures compliance with accounting standards and regulations.	
15	CN3	Accounting software is suitable for production and business characteristics at the unit.	
16	CN4	Accounting software always ensures to provide honest and reasonable accounting information.	
17	CN5	All adjustments to accounting books are recorded in the accounting software.	
18	CN6	Accounting software that stores enough information to allow for visitor tracking.	
<i>H3: Internal control</i>			Djama (2010); Iatridis (2011); Pham Quoc Thuan (2016).
19	KS1	The unit has established regulations and control procedures to ensure that the business complies with the law.	
20	KS2	Internal controls at the unit help effectively prevent fraud and errors.	
21	KS3	Internal control at the unit regularly supervises the operation of the accounting information system.	
22	KS4	Internal control always checks and supervises the quality assurance of accounting information.	
<i>H4: Independent audit</i>			Chalaki et al., (2012).
23	KiT1	Enterprises have invited independent auditors to periodically audit.	
24	KiT2	The independent auditing company conducting the audit is a reputable company.	
<i>H5: Profit management behavior of business owners</i>			Wang & Han (2017); Zheng & Lee (2019); Pham Quoc
25	HV1	The will of the business owner has an influence on the handling and presentation of financial statements.	
26	HV2	Business owners often require the processing of accounting information at their discretion.	

TT	Encryption	Attribute_name	Source
27	HV3	The orientation of the business owner has an impact on the selection of accounting methods	Thuan (2016).
28	HV4	Business owners often influence the accounting work at the unit	
<i>H6: Pressure from taxation</i>			Barth et al., (2008); Tang et al., (2019).
29	AL1	The current tax policies are really relevant for businesses.	
30	AL2	Businesses tend to minimize the amount of taxes to be paid.	
31	A13	Tax policies affect and govern the recording and preparation of financial statements of enterprises.	
32	AL4	Enterprises often have to adjust accounting data according to recommendations of tax authorities.	

(Source: author group)

THE INDEPENDENCE OF BOARD OF DIRECTORS AND FINANCIAL PERFORMANCE: AN EMPIRICAL EVIDENCE OF PHARMACEUTICAL ENTERPRISES IN VIETNAM

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Abstract

The Board of Directors is the heart of the enterprise in order to implement the strategic management approved by the general meeting of shareholders. A study on the independence of the Board of Directors on corporate financial performance is conducted through 30 pharmaceutical companies on the Vietnamese stock exchange. Research results confirm that increasing the board independence is consistent with a greater contribution to the corporate profitability. The study also shows that businesses that depend on debt are often less effective while businesses that operate on their charter capital are often more effective. The study also argues that state ownership plays a significant role in promoting business efficiency. From this study, pharmaceutical companies should improve the efficiency of Board of Directors to greatly enhance its financial performance.

Keywords: *Firm, independence, capital, profit.*

1. Introduction

The equitization process involves capital contributions from individuals, organizations and economic sectors to the enterprise and thereby increase the contribution of the enterprise to the economy of most countries. In particular, the board of directors is considered as the heart of joint-stock companies and demonstrates its leadership role in developing the business through orienting development directions, promulgating policies, and leading the business for the purpose of the owner, shareholders and investors, thereby bringing practical benefits to employees, suppliers, society and the country.

According to Vietnamese enterprise law, the board of directors is a group with the number of members ranging from 3 to 11. The Board of Directors that is the management body of the company, has full power on behalf of the company to decide, exercise the rights and obligations of the company, and except for the rights and obligations of the general meeting of shareholders. Normally, the number of members on the board of directors is regulated by the company's charter. In which, the term of the board members is not more than 5 years and can be re-elected at the end of the term, so the members of the board of directors are usually people with their understanding regarding knowledge, the operation of the business, and to make practical contributions to the development of the business. However, some joint stock companies may have more independent members in order to

increase the critical voice of board members. At the same time, the principle of corporate governance always requires that the BOD structure should be in the direction of balance and harmony between the interests of shareholders and investors and managers (Fuji et al., 2016).

According to the agency theory, the business always exists asymmetric information between the agent and the principal, because each party is running after its own interests and can affect the interests of others. It sets out for managers who are always looking for ways to reduce information asymmetry in order to increase the operational efficiency of the business. Moreover, the current development requires businesses to receive more voices, not only from investors and shareholders, but also independent individuals who have a voice to contribute to the business development.

Research on the independence of the board of directors and the financial performance of the business has been carried out by a number of recent studies such as Fuji et al. (2016), Le et al. (2022), most of the research results showed that there is a positive relationship of the independence of the board of directors on corporate financial performance. However, the socio-economic context has changed in recent years due to the rapid technological revolution, and the country has just been affected by the COVID-19 pandemic, but the pharmaceutical industry still achieves a high level of business results. That is the reason why we conducted the objective of this study as well as the independence of the board of directors on the profitability of pharmaceutical enterprises. Moreover, in this study, we also evaluate the dependent relationship between variables in the industry, usually in the same industry, businesses often have a close correlation with each other, which is the novelty of this study. save this.

This study is divided into 5 main parts. In addition to the problem statement, part 2 discusses previous studies, part 3 discusses data sources and research methods. In sections 4 and 5, the study results and conclusions are discussed.

2. Theoretical Framework and Literature Review

2.1. Theoretical Framework

According to the Cobb-Douglas production function, the output of a firm can be written as:

$$Y = A * K^{\alpha} * L^{\beta}$$

Where,

A represents for the output of the enterprise, or further represents for the business performance as well as the ability to achieve profit in the enterprise.

The coefficient K is a proxy for the business capital. The coefficient L represents for the labour force and is expressed through the number of employees and the qualifications, skills, and working attitudes of the employees.

According to the Cobb-Douglas production function, improving the business performance of the company should be considered, it is possible to improve the quality of employees, for example, labour skills, management skills, and coordination among workers in order to optimize production activities.

2.2. Literature Review

Enterprises play an important role in contributing to the output of the economy in countries. Governments are always looking for ways to improve the investment environment in order to develop the business community and thereby increase the contribution of businesses to the economy. Improving the business can come from improving the board's effectiveness, increasing the board's independence in corporate governance. According to Fuzi et al. (2016), the board of directors is a collective body that should act in the interests of shareholders, investors and the development of the business. As a result, the board of directors is often a mix of executive and non-executive manager in order to maximize firm value and shareholder benefits.

Fernandes (2008) evaluated governance factors on firm performance at the Portuguese Stock Exchange. The governance factor is reflected in the executives and their remuneration and Fernandes (2008) evaluates how the policy implementation process for the board of directors affects firm performance. As the case of Portugal, the board structure is quite similar to other countries in Europe, it is a single-tier system and does not have its own supervisory board. This board includes the chief executive officer, other executive managers, and non-executive directors. In which, the non-executive board members are regulated to protect the interests of shareholders in doing important decisions of the company and they are responsible for conveying the company's activities between shareholders and the management board. Research results in the Portuguese stock market suggest that the effectiveness of independent directors is low. Companies with more non-executive directors pay more for their executives. In contrast, companies without non-executive directors have agency problems and achieve better alignment between shareholder and management interests.

Research by Le et al. (2022) studied at the top 500 listed firms in Australia in the period 2004 to 2019 and found that the firm performance has a positive relationship when the independent director considers their position as reputable board member; vice versa, the relationship is negative when the independent director considers their position as a member of the Board of Directors to be less prestigious. Research confirms that increasing the presence of independent supervisors on a company's board of directors is not necessarily factor to help the firm perform better. In contrast, reputable independent BOD members should be maintained to protect shareholders' interests.

Another possibility, Balz et al. (2023) used data of 383 European portfolio companies to assess the impact of independent investor on firm and firm performance. The authors argued that the heterogeneity of venture capital funds causes a significant decline in performance for venture capital-backed ventures. In contrast, as venture capital independence increased, there was no significant difference in yield compared with ventures receiving independent venture capital backing. However, Thi and Hung (2022) suggested that the independence of the board of directors has not had a positive impact

on the profitability of the enterprise. According to the authors' explanation, if the independence of the Board of Directors is low, the independent voice of the members of the Board of Directors is often of little value, or in some companies, the members of the Board of Directors are not ready to exchange and share the independent voice of the Board of Directors in the meetings of the Board of Directors, therefore, the independence of the Board of Directors has not really brought positive effects to the business activities of the enterprise.

The research of Reguera-Alvarado & Bravo (2017) analysed the tenure and number of independent directors on the performance on listed companies in the United States in the period 2008 to 2012, The authors believed that the independence of the Board of Directors has a positive impact on the performance of the company, however, this relationship only exists during the period of the director's tenure and the positions of external directors. Therefore, the results of this study reflect the personal characteristics of the members of the Board of Directors that affect the decisions, strategies and results of the company and are the basis for selecting members of the Board of Directors to help the Board of Directors operate effectively.

Fuzi et al. (2016) on a study and argued that executives on the board of directors cannot perform their duties effectively if they do not have independence from management so that they cannot make objective business judgments. At the same time, independence helps businesses reduce agency costs. Fuzi et al. (2016) also confirmed that there is a mixed relationship between the proportion of independent BOD members and the company's performance. Therefore, the existence of independent BOD members in the Board of Directors should be monitored to bring positive value to shareholders, because a high number of independent directors does not completely guarantee improving operational efficiency of the company.

Research by Junus et al. (2022) studied on the Indonesian stock exchange in the period 2010 to 2017 to evaluate the relationship between politically connected independent directors and independent directors on firm performance. Research has demonstrated that politically affiliated independents have no impact on firm performance, but politically affiliated independents have a negative impact on firm performance. The study results are explained that the appointment of independent trustees and independent directors based not on expertise and knowledge in the financial sector but solely on previous work experience may adversely affect the firm performance. This research provides public companies and regulators to avoid misunderstandings in the decision-making process of company owners.

3. Method

3.1. Data source

In this study, we evaluate the independence of the Board of Directors and the performance of the company through the data of 30 pharmaceutical companies listed on the

Ho Chi Minh City and Hanoi stock exchanges. The data collection period is from 2010 to 2021. The data is collected from the Audited Financial Statements and the Annual Report which are published annually.

3.2. Research Methodology

Based on previous studies, especially Junus et al. (2022), the proposed regression equation can be written as follows:

$$PROFIT_{it} = \beta_0 + \beta_1 INDEPENDENT_{it} + \beta_2 BOARD_{it} + \beta_3 MEETING_{it} + \beta_4 DEBT_{it} + \beta_5 GOV_{it} + \mu$$

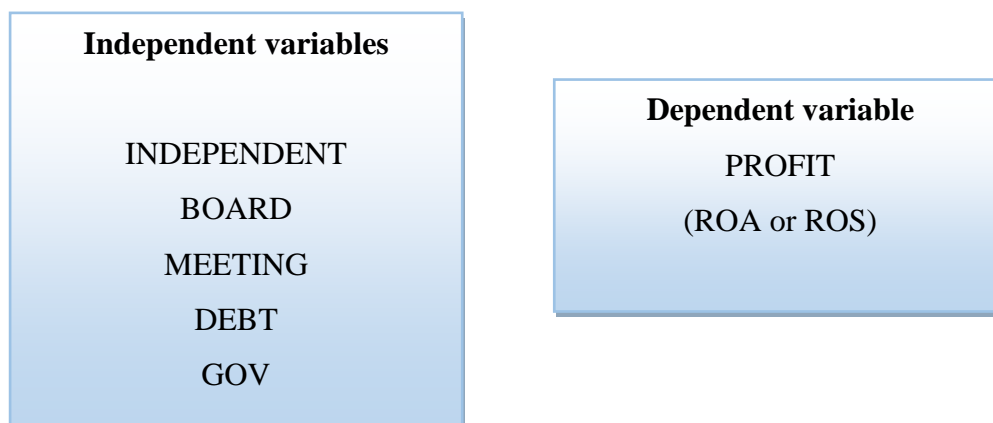


Figure 1. Variables used in the study

Where,

$PROFIT_{it}$, is a parameter representing the profit of firm i , at year t , measured through ROA or ROS;

$INDEPENDENT_{it}$, is the independent variable, represents the independence of the board of directors of firm i , at year t , measured by the number of independent members compared to the total number of members in the board of directors;

$BOARD_{it}$, as an independent variable, represents the size of the board of directors of firm i , at year t , measured by the total number of members in the board of directors compared to the maximum 11 members of the board of directors as required by law;

$MEETING_{it}$, being the independent variable, represents the average number of monthly meetings of the Board of Directors of firm i , at year t ;

$DEBT_{it}$, as the independent variable, represents the capital structure of firm i , at year t , and is measured by total debt to total assets;

GOV_{it} , is the independent variable, represents state ownership in firm i , at year t ;

The study uses the panel data analysis, first evaluates the cross-section dependence test, if this occurs, the panel corrected standard errors should be performed when this method is suitable for these series and T is short and capable of handling defects in the model. In

addition, PCSE regression is capable of handling multicollinearity and variable variance problems which are common defects in regression.

i, t , are respectively firm, and time

4. Results

4.1. Descriptive statistics

Table 1. Descriptive statistics of research variables

Variable	Obs.	Mean	Std. Dev	Min	Max
ROA	349	.0785035	.0711571	-.364934	.3367818
ROS	349	.0875121	.1575914	-2.205607	.603157
INDPENDENT	332	.1355039	.2079429	0	1.0
BOARD	360	.4818182	.1828031	0	1.0
MEETING	360	.5328704	.5627244	0	3
DEBT	349	.4886112	.2246942	.092188	.9706116
GOV	330	.2337335	.2530772	0	.976053

Source: Authors' analysis

Table 1 presents descriptive statistics of the variables used in the regression model. According to the results, we have the financial performance of the business shown in ROA and ROS. For ROA, this index has an average value of 7.85% and there is a large difference between the maximum and minimum values. For ROS, this index has an average value of 8.75% and also has a big difference, which shows that the financial performance of pharmaceutical enterprises is very different. Regarding the independence of the Board of Directors, this index reached 0.135, indicating that 13.5% of BOD members are independent and this ratio is relatively low. Regarding capital structure, 48.8% of corporate capital is financed by debt, the rest 51.2% is equity.

Regarding the size of the board of directors, most enterprises have nearly 6 members in the board of directors, only a few enterprises have a maximum of 11 members as prescribed by the law on enterprises. Regarding the frequency of meetings in the Board of Directors, it shows that the average monthly meeting frequency is 0.53 meetings, however, there are enterprises with a meeting frequency of 3 times / month, and there are also enterprises that do not have any meetings throughout the year, which reflects the extent to which board meetings are maintained, which varies widely across businesses. Regarding state ownership in pharmaceutical enterprises, this ratio is about 23.3% on average, and the rest is non-state capital, accounting for 76.7% on average.

4.2. Correlation Matrix and VIF

Table 2. Correlation matrix between variables

Item	INDPENDENT	BOARD	MEETING	DEBT	GOV
INDPENDENT	1.0000				
BOARD	-0.0491 (0.3729)	1.0000			
MEETING	0.1119** (0.0416)	0.2538*** (0.000)	1.000		
DEBT	-0.0848 (0.1232)	-0.2989*** (0.000)	-0.1726*** (0.0012)	1.000	
GOV	0.0615 (0.2695)	0.0352 (0.5238)	-0.0941* (0.0879)	-0.0081 (0.8829)	1.0000

Source: Authors' analysis

Table 3. The test of VIF

Variable	VIF	1/VIF
DEBT	1.08	0.930131
BOARD	1.07	0.938179
MEETING	1.04	0.965708
INDPENDENT	1.03	0.972546
GOV	1.02	0.982742
Mean VIF	1.04	

Source: Authors' analysis

The correlation analysis in Table 2 shows that the pairs of variables have low correlation, while the VIF analysis in Table 3 shows that the VIF values are all less than 10, which is an indicator for the possibility of the phenomenon occurring the multicollinearity of the regression model. From the above results, we can conclude that there is no possibility of multicollinearity in the regression model.

4.3. Regression results and discussions

Table 4. Cross-section dependence test

Variable	CD - test	p-value
ROA	-0.10	0.917
ROS	0.89	0.374
DEBT	5.23	0.000

Source: Authors' analysis

Table 5. Regression results

Variable	Regression results			
	PCSE ROA	PCSE ROA	PCSE ROS	PCSE ROS
INDEPENDENT	0.0268** (0.026)	0.0087 (0.423)	0.1440*** (0.000)	0.1186*** (0.000)
BOARD		0.0995*** (0.001)		0.0717 (0.144)
MEETING		-0.0022 (0.673)		0.0320*** (0.001)
DEBT		-0.1754*** (0.000)		-0.1255*** (0.000)
GOV		0.0496*** (0.000)		0.1391*** (0.000)
_cons	0.0762*** (0.000)	0.1011*** (0.000)	0.0675*** (0.000)	0.0413 (0.346)
Prob	0.0000	0.0000	0.0000	0.0000
Adj R-squared	0.0060	0.3961	0.0353	0.1348

Note: **,*** with significance level 5%, 1%. Values in brackets are p-value

Source: Authors' analysis

Table 3 presents the cross-section dependence test and shows that there is a possibility of interdependence among firms in the industry, therefore, the panel corrected standard errors (PCSE) is suitable and should be performed for the estimation because the PCSE regression is suitable for a small T.

Through PCSE regression in Table 5, it shows that the variable INDEPENDENT has regression coefficients for positive values and most of them are statistically significant. Regression coefficients BOARD and MEETING give unclear results. While, the DEBT regression coefficient has negative sign and is statistically significant. The regression coefficient of GOV has a positive sign and is statistically significant. From the results of this regression, the study has the following assessment:

Firstly, the independence of the board of directors has a positive impact on the financial performance of pharmaceutical enterprises. That is, a company in the pharmaceutical industry with a high degree of independence means a higher profit of the business and thus can confirm a higher efficiency of the business. The results of this study confirm the participation role of independent members in the Board of Directors and these members have participated in governance decisions that are beneficial to the development of the business and beneficial to shareholders and investors. This finding is supported by Junus et al. (2022) when the authors argued that the Board of Directors has the ability to

select independent members with high competence, experience and intelligence, it can improve the performance of the Board of Directors and thus contribute to the development of the enterprise, which has the potential to improve returns for shareholders and investors.

Second, the research results confirm that pharmaceutical enterprises operating with external funding have poor business performance, conversely, pharmaceutical enterprises operating with their own capital have good business performance. This confirms that enterprises should consider using equity to finance investment and production activities, especially in the case of pharmaceutical enterprises with large working capital, they should use capital from within the business. This research result is consistent with the pecking order theory when it says that enterprises should prioritize the selection of internal capital before using external capital in production and business activities, thereby helping enterprises to ability to manage risk and increase independence in management decisions. According to the agency theory, there is a difference in information between enterprises and creditors, so enterprises choose equity sources that can help them easily access financial resources than debt sources, especially in the case of high economic growth and stock market growth.

Third, the study confirms that enterprises with a high proportion of state capital operate more effectively, confirming the efficiency of state capital flows in pharmaceutical enterprises. The pharmaceutical industry often requires large investment capital and is an industry that plays an important role in the social economy in ensuring the people's health care tasks. Therefore, effective use of state property resources helps to improve the ability to carry out the health care mission. This suggests for policymakers to continue to improve the efficiency of using upfront capital in pharmaceutical businesses to help pharmaceutical businesses the ability to develop more and more contributions to people's health care.

5. Conclusion

The Board of Directors is considered as the heart of the enterprise and plays an important role in the operation of the enterprise. The Board of Directors represents the enterprise to make governance decisions according to the orientation, strategy and requirements approved by the general meeting of shareholders. Research on the independence of the Board of Directors on business performance through a survey of 30 companies operating in the pharmaceutical industry on the Vietnamese stock exchange. Research results confirm that increased BOD independence will improve corporate profitability, thereby reflecting the effectiveness of independent members on the BOD. The study also shows that enterprises that depend on debt are often less effective, while businesses that operate on the charter capital often bring higher efficiency. The study also confirms the role of state capital in the enhancement the profitability of pharmaceutical enterprises.

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THE FINTECH WAVES AND ITS IMPACT ON THE OPERATIONAL EFFICIENCY OF COMMERCIAL BANKS IN VIETNAM

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Abstract

The research was conducted with the goal of analyzing the changes and challenges that FinTech technologies are creating for the bank's operations, including financial, customer and risk management activities. The article uses secondary data, research methods to synthesize, analyze and compare to evaluate the impact of factors in financial statements on the performance of banks. Research results show that 4 factors affect the research object, including: FinTech, ROA, ROE, NIM. From there, the article identifies the potential for development and proposes solutions to contribute to promoting the financial inclusion of FinTech in Viet Nam.

Keywords: *Commercial banks, FinTech, Impact, Operational efficiency, Viet Nam*

1. Introduction

Financial markets around the world were profoundly impacted by the internet revolution of the early 1990s. Technological advancements driven by the internet have had a profound impact on the banking and finance industry. Given its time-sensitive, information-intensive nature, it is clear that virtually every component of the value chain in a bank's operations benefits from the innovative use of web technologies. In Vietnam, with a young population and widespread use of smart devices, consumers are excited about this innovation. This is a ripe time for the rise of Fintech, which is having unprecedented impacts on the banking and financial industry worldwide. Research articles are being written to help consumers understand this new concept, and the Fintech industry is spreading globally with analysis and praise. The research team has compiled in-depth papers on Fintech from authors in many different countries, and the overview process can be divided into domestic and foreign groups. However, the Fintech industry has taken advantage of technology to launch internet platforms and may have direct competition with traditional financial institutions like

banks. This can be considered a matter of concern when many people mistakenly believe that Fintech only brings positive things to banks in general. Although there have been many studies on the relationship between Fintech and the financial-banking industry, most of them talk about the development of Fintech and the relationship between Fintech and banks.

Fintech is concluded that most are in the field of lending, risk management, consulting for robots and cryptocurrencies (Siddiqui, Z., & Rivera, C.A., 2022). Furthermore, some researchers have identified Fintech as a disruptive innovation, while some have identified it as an industry convergence and others have argued that Fintech is both. Based on these considerations, the authors researched and showed that FinTech's profile is more in line with the disruptive innovation model. In addition, because it is developed on the basis of information technology and telecommunications systems without the need for a wide network of branches and transaction offices like banks, the products and services provided by Fintech enterprises have been attracting more and more attention from a large number of customers (Hoang, H., 2020). The author has suggested that worries about the potential negative impact of banks on FinTech startups have gradually subsided and banks are now actively looking for opportunities to partner with FinTech startups. It can be seen that Fintech really has a strong impact on traditional banks, making a clear difference. Therefore, banks are now having policies to change and develop cooperation with Fintech companies.

However, whether Fintech has a positive or negative impact on the bank's performance, so far, there have been very few studies on this issue. Most studies focus on the Fintech wave and its factors that benefit the world. Therefore, this study was conducted to examine the relationship between Fintech and the performance of commercial banks. From there, making proposals and recommendations for the long-term cooperation and development of the two sides to promote the financial-banking industry of Vietnam.

2. Literature review

2.1. FinTech

FinTech is a company that is using technology to provide financial solutions using the internet and automated processing of information (Gabor & Brooks, 2017; Milian, Spinola, & de Carvalho, 2019; Zavolokina et al., 2016; Alt, Beck, & Smits, 2018; Gomber, Kauffman, Parker, & Weber, 2018; Puschmann, 2017). This innovation in the financial industry has led to cost reduction, high efficiency, rapidity, innovation, flexibility and improvement in the business processes (Zavolokina et al., 2016; Lee & Shin, 2018; Thakor, 2020).

FinTech also embeds innovations in financial education and literacy, investments, retail banking and cryptocurrencies (Gomber et al., 2018). The business models have transformed to provide customized services to the consumers without geographic or time-zone barriers as most of the services are automated. In addition, FinTech has helped in disintermediation (Thakor, 2020) and provided online platforms for trading, lending (crowdfunding and peer-to-peer, P2P) and asset management, for instance, robo-advising (Gomber et al., 2018; Alt et al., 2018; Lee & Shin, 2018; Puschmann, 2017). This intermediation is also achieved by infrastructure development, data analytics, big data and mobile devices (Lee & Shin, 2018)

2.2. Impact of FinTech businesses on banking business

The strong development of FinTech businesses that are existing competitors of commercial banks, the banking business is gradually shrinking along with the explosion of start-up activities in the financial sector. The question is “How does the presence of FinTech businesses affect the banking business?”. Recently, there have been a number of studies looking for answers, in which the study of Phan et al (2019) is noteworthy. By inheriting Consumer Theory and Breakthrough Innovation Theory as well as using quantitative models to assess the impact of FinTech activities on banking business, Phan et al. The analytical framework used to evaluate the impact of FinTech enterprises on the operation of commercial banks is the number of FinTech enterprises participating in the market (the natural logarithm of the number of FinTech enterprises present in the year). And the impact on the operational indicators of commercial banks such as NIM (Net Interest Margin), ROA (return on total assets), ROE (Return on equity). This study shows that the activities of FinTech enterprises have a negative effect on the business performance of commercial banks. Specifically, Aaker & Keller's (1990) Consumer Theory suggests that new services (such as those provided by FinTech businesses) that meet the same consumer needs may replace old services (such as those provided by traditional commercial banks). This theory states that the general attitude of customers towards service expansion is a dependent variable and depends on: The perception of quality is higher for the parent brand when the brand expands its service offerings; the ability to convert values that can be performed between two compatible products; compatibility between the two products; the difficulty of product development. Christensen's disruptive innovation or disruptive innovation theory (1997) suggests that new entrants who apply innovative technology to provide more accessible and cost-effective products and services can generate competition in the market. This theory asserts that disruptive innovation often begins with a product that does not perform as well as the current product, but after a period of improvement, the other product creates a rapid shift in the market. school. There are four stages of disruptive innovation: (1) Disruption; (2) Evolution; (3) Convergence and (4) Regeneration.

The impact of FinTech activities on the characteristics of banking business is not the same between different types of commercial banks (in terms of market value, operating time and ownership nature). Specifically: Firstly, FinTech has a stronger impact on large commercial banks than small commercial banks. The reason is that small-scale commercial banks adapt to technological innovation faster than large commercial banks; secondly, FinTech has a stronger impact on commercial banks that have been operating for a long time than young commercial banks; Third, FinTech affects state-owned banks more strongly than privately owned banks.

2.3. The relationship between FinTech businesses and banking businesses in Viet Nam today

In Viet Nam, the first FinTech enterprises have been licensed by the state bank to operate since 2008, but only operate mainly in the field of payment and money transfer. Although newly appearing, FinTech businesses are growing very quickly in number and

scale. According to the Payment Department - State Bank, the number of FinTech enterprises participating in providing services in the Viet Nameese market has increased by nearly four times, from 40 at the end of 2016 to the end of 2021, has grown to more than 150 businesses, spread across many different fields, however, accounting for a large proportion is in the payment segment (60.526% compared to all areas of operation of FinTech enterprises), followed by are crowdfunding (accounting for 10,526%), Bitcoin/Blockchain (7.895%), POS/mPOS (5,263%), data management (5,263%), personal finance (5,263%), money lending (2,632%) and online price comparison (2,632%).

In addition, as of November 16, 2021, 46 non-banking organizations have been licensed by the State Bank to provide payment intermediary services, including financial switching, electronic clearing, payment gateway, support remittance, support collection/payment, e-wallet.

3. Method

3.1. Data collection

The data in this research includes 25 banks, including state-owned commercial banks and joint-stock commercial banks in Viet Nam. The data for the research is mainly a secondary data Author's Compilation based on audited consolidated financial statements of 25 commercial banks and was selected from official websites. Because the consolidated financial statements summarise the entire financial and business position of the bank. In addition, the research team selected data from 2018 to 2022, the period when FinTech started a strong growth chain.

3.2. Hypotheses

Based on the literature review and theoretical framework relating to the research topic, some hypotheses are designed as below:

Hypothesis 1: FinTech is the opposite of ROA.

Hypothesis 2: There exists a negative relationship between ROE and FinTech.

Hypothesis 3: If FinTech increases, NIM decreases.

2.3. Research model

The research model of the relationship between FinTech and the operational efficiency of commercial banks: $BP_{it} = \beta_0 + \beta_1 FinTech_t + \beta_2 + X_{it} + \beta_3 Z_{it} + u_i + v_t + \varepsilon_{it}$ (1)

In there:

BP: measures the performance of goods, with the bank's representative variables ROA, ROE and NIM.

FinTech: Natural logarithm of the number of FinTech companies present in the year t

X: includes bank-specific variables.

Z: group of macro variables.

U_i is a business performance component that varies across banks and has not been included in the model.

vt is a time-varying component affecting business performance that has not been included in the model and a random error component.

2.4. Research Approaches

According to Thai Van Dai and Tran Viet Thank Tru (2018), there are three basic econometric models commonly used to analyze data tables, including: (1) Pooled Ordinary Least Squares (Pooled OLS), (2) FEM (Fixed Effect Model) and (3) REM(Random Effects Model).

The OLS regression method is commonly used in econometrics because its outstanding advantage is that it is not too complicated but effective. With some initial assumptions, this method will easily determine efficient, unbiased, and robust estimates. The test results are good if they have the following characteristics: (1) the variables are endogenous and do not have multicollinearity; (2) the residuals have no constant variance and are not autocorrelated.

The researchers used panel data, which is a combination of cross-sectional and time-series data, in their study. As a result, some OLS assumptions will violate many sequences. One of the major disadvantages of OLS being too tight on the cross units is that the test results obtained will be distorted and using this result for analysis is a mistake. Therefore, the research team used the fixed effect model FEM (fixed effect model) and the random effect model REM (random effect model) to overcome the shortcomings of the OLS model. A popular panel data model is the fixed-effects model (FEM).

The Random Effects Model (REM) assumes that the model's intercept is a random factor, implying that controlling for each characteristic varies across banks but has no correlation. Model residuals and independent variables are discussed. In this study, a regression equation was built to evaluate the influence of these variables on the bank's performance in order to detect the relationship between independent and dependent variables. The following step is to put the concept to the test. The autocorrelation test computes mean and coefficients in the above equation for each hypothesis.

4. Results

4.1. The impact of FinTech on return on assets (ROA)

We use Hausman testing to compare the FEM and REM. Based on this result, we continue to test the suitability of the OLS and REM model by using Breusch and Pagan Lagrangian multiplier testing.

Table 1. Results of choosing the most suitable model for regression analysis

Test	OLS	REM	FEM
Hausman		Prob>chi2 = 0.2404	
Breusch and Pagan Lagrangian multiplier	Prob > chibar2 = 0.2532		

Source: Author's Compilation

The model using ROA as variable, when comparing the suitability of the FEM and REM model, the Hausman test will be used with the null hypothesis: The preferred model is REM. The value of $\text{Prob} > \chi^2 = 0.2404 > 0.05$, then H_0 is accepted, or the REM model is chosen.

Next, Breusch and Pagan Lagrangian multiplier testing verifies the appropriateness of H_0 : The more suitable model is OLS. The result of $\text{Prob} > \chi^2 = 0.2532 > 0.05$ indicates that the Pooled OLS model is the one to be chosen.

As POOLED OLS is the test to be chosen, the number of errors in the regression model can be less than using FEM and REM to analyse. There are multicollinearity and autocorrelation phenomena

Table 2. Results of multicollinearity and autocorrelation phenomenon

Phenomenon	ROA	
	Multicollinearity	VIF = 6.86
Autocorrelation	Prob > F = 0.0002	Have autocorrelation

Source: Author's Compilation

Table 2 reveals that the model has an autocorrelation phenomenon. To overcome the model's defects, the Feasible General Least Squares (FGLS) estimator will be employed.

Table 3. FGLS regression model

Independent variables	Dependent variable	
	ROA	
	Coefficient	p-value
FINTECH	-0.010025 ***	0.000
SIZE	0.0008889 ***	0.000
LOAN	0.0896977 ***	0.000
LLP	0.0083379 ***	0.000
EQUITY	0.0748911 ***	0.000
COST	-0.0081674 ***	0.000
DEPOSIT	-0.0108168 ***	0.000
INCDIV	0.7400288 ***	0.000
HHI	0.0086964 ***	0.000
GGDP	0.0980576 ***	0.000
SFML	-0.0083343 ***	0.000
Cons	0.0056071 *	0.073

Source: Author's Compilation

*****and * represent statistical significance at the 1% and 10% levels, respectively.**

The equation about the impact of FinTech on return on assets using

$$ROA = 0.0056071 - 0.010025 \text{ FinTech} + 0.0008889 \text{ SIZE} + 0.0896977 \text{ LOAN} + 0.0083379 \text{ LLP} + 0.0748911 \text{ EQUITY} - 0.0081674 \text{ COST} - 0.0108168 \text{ DEPOSIT} + 0.7400288 \text{ INCDIV} + 0.0086964 \text{ HHI} + 0.0980576 \text{ GGDP} - 0.0083343 \text{ SFML}$$

According to Table 3, independent variables have considerable impacts on *return on assets (ROA)* at the statistically significant level of 1%. The results point out that there is a negative correlation between FinTech and ROA; COST and ROA; DEPOSIT and ROA; and SFML and ROA. The negative correlation between FinTech and ROA indicates that commercial banks in Viet Nam are being competed by FinTech companies.

There is a positive correlation of SIZE, LOAN and EQUITY with ROA in statistical significance. Research suggests that banks that use less debt will have lower returns because of the risk-reward relationship, lower risk leads to lower returns.

With the group of variables of bank characteristics, there is a positive correlation of SIZE, LOAN and EQUITY with ROA in statistical significance. Research suggests that banks that use less debt will have lower returns because of the risk-reward relationship, lower risk leads to lower returns.

4.2. The impact of FinTech on return on equity (ROE)

Similar to the model above, the authors continue to choose the most suitable model for the regression analysis. By comparing the FEM and REM model and REM and POOLED OLS model.

Table 4. Results of choosing the most suitable model for regression analysis

Test	OLS	REM	FEM
Hausman		Prob>chi2 = 0.6747	
Breusch and Pagan Lagrangian multiplier	Prob > chibar2 = 1.0000		

The model using ROE as variable, when comparing the suitability of the FEM and REM model, the Hausman test will be used with the null hypothesis: The preferred model is REM. The value of Prob>chi2 = 0.6747 > 0.05, then H0 is accepted, or the REM model is chosen.

Next, Breusch and Pagan Lagrangian multiplier testing verifies the appropriateness of H0: The more suitable model is OLS. The result of Prob>chi2 = 1.0000 > 0.05 indicates that the Pooled OLS model is the one to be chosen.

Table 5. Results of multicollinearity, autocorrelation and heteroskedasticity phenomenon

Phenomenon	ROE	
Multicollinearity	VIF = 3.61	No multicollinearity
Autocorrelation	Prob > F = 0.0059	Have autocorrelation

Source: Author's Compilation

Table 5 reveals that the model has autocorrelation. To overcome the model's defects, the Feasible General Least Squares (FGLS) estimator will be employed.

Table 6. FGLS regression model

Independent variables	Dependent variable	
	ROE	
	Coefficient	p-value
FINTECH	-0.0131265 **	0.023
SIZE	0.0020089 ***	0.000
LOAN	0.2351934 ***	0.000
LLP	0.0198848 ***	0.000
EQUITY	-0.342351 ***	0.000
COST	-0.0188455 ***	0.000
DEPOSIT	-0.0298587 ***	0.000
INCDIV	2.351794 ***	0.000
HHI	-0.0246217 ***	0.000
GGDP	0.2277552 ***	0.000
SFML	-0.0226014 ***	0.000
Cons	-0.0025759	0.837

Source: Author's Compilation

***** and ** represent statistical significance at the 1% and 5% levels, respectively.**

The equation about the impact of FinTech on return on equity using

$$ROE = -0.0025759 - 0.0131265 \text{ FinTech} + 0.0020089 \text{ SIZE} + 0.2351934 \text{ LOAN} + 0.0198848 \text{ LLP} - 0.342351 \text{ EQUITY} - 0.0188455 \text{ COST} - 0.0298587 \text{ DEPOSIT} + 2.351794 \text{ INCDIV} - 0.0246217 \text{ HHI} + 0.2277552 \text{ GGDP} - 0.0226014 \text{ SFML}$$

According to Table 6, all independent variables have considerable impacts on return on equity (ROE) at the statistically significant level of 1% and 5%. The results point out that the negative correlation between FinTech and ROE is 0.0131265 that means the increase of FinTech companies affects ROE. This puts great pressure on the bank managers in maintaining the effective return on investment of shareholders. In Viet Nam. Commercial banks are in the process of restructuring, so there is a high demand in

raising capital and the appearance of FinTech companies can create strong competition not only between FinTech companies and banks but also between FinTech companies and banks. and between banks.

With the effect of the group of bank characteristics, SIZE, LOAN, LLP and INCDIV have a positive relationship with ROE at 1% significance level. In contrast to ROA, the relationship between EQUITY and ROE is inverse. In addition, we also find DEPOSIT and COST have a negative relationship with ROE.

The impact of the group of macro variables on ROE is seen in the experimental results in Table 6 showing that the variable HHI and SFML are negatively correlated with ROE and GGDP has a positive relationship with ROE. All these relationships are statistically significant.

4.3. The impact of FinTech on net interest margin (NIM)

Similar to the model above, the authors continue to choose the most suitable model for the regression analysis. By comparing the FEM and REM model and REM and POOLED OLS model.

Table 7. Results of choosing the most suitable model for regression analysis

Test	OLS	REM	FEM
Hausman		Prob>chi2 = 0.9884	
Breusch and Pagan Lagrangian multiplier	Prob > chibar2 = 0.3499		

Source: Author's Compilation

The model using ROE as variable, when comparing the suitability of the FEM and REM model, the Hausman test will be used with the null hypothesis: The preferred model is REM. The value of Prob>chi2 = 0.9884 > 0.05, then H0 is accepted, or the REM model is chosen.

Next, Breusch and Pagan Lagrangian multiplier testing verifies the appropriateness of H0: The more suitable model is OLS. The result of Prob>chi2 = 0.3499 > 0.05 indicates that the Pooled OLS model is the one to be chosen.

Table 8. Results of multicollinearity and autocorrelation phenomenon

Phenomenon	NIM	
Multicollinearity	VIF = 3.12	No multicollinearity
Autocorrelation	Prob > F = 0.3248	No autocorrelation

Source: Author's Compilation

Table 8 shows that the model has no autocorrelation and no multicollinearity phenomenon. So, based on the research results above, we decide to choose the Pooled OLS as the best suitable model.

Table 9. POOLED OLS regression model

Independent variables	Dependent variable	
	NIM	
	Coefficient	p-value
FINTECH	-0.0049173 ***	0.009
SIZE	0.0006383 ***	0.000
LOAN	0.0649434 ***	0.000
LLP	0.0070191 ***	0.000
EQUITY	0.0934895 ***	0.000
COST	0.0063971 ***	0.000
DEPOSIT	-0.009622 ***	0.000
INCDIV	-0.5128778 ***	0.000
HHI	-0.0066449 ***	0.000
GGDP	-0.0499287 ***	0.000
SFML	-0.0055651 ***	0.002
Cons	-0.0007077	0.861

Source: Author's Compilation

*** represent statistical significance at the 1%.

Results from Table 9 illustrate that the reasonable relationships between all of the independent variables and the dependent one NIM are at the statistically significant level of 1% and 5%.

The negative correlation coefficient between FinTech and NIM is 0.0049173. Compared to ROA and ROE, the impact of FinTech on NIM is less.

The effect of the group of bank characteristics on NIM is shown in Table 9 that DEPOSIT and INCDIV have a negative relationship with NIM. This is completely reasonable, banks diversify products to increase income and banks can reduce interest rates to increase competition in the credit market, so profit margins are lower. SIZE, LOAN, LLP, EQUITY and COST have a positive relationship with NIM at the statistical significance level.

The experimental results in Table 9 show that all three variables in the group of macro variables have a negative relationship with NIM.

5. Discussion and Conclusion

FinTech is a new field with strong growth potential in the future thanks to the universal financial needs of each country. The boom of FinTech has been attracting great attention from financial institutions and regulatory agencies around the world, and Viet Nam is also in that trend. With its preeminent features, FinTech will be an effective tool to help our country move towards the goal of providing comprehensive finance to the people, contributing to national construction.

FinTech is a rapidly growing financial technology field, bringing many opportunities and challenges for banks. To adapt to the development of FinTech, banks can apply some of the following solutions:

First, create a flexible and dynamic working environment: FinTech often has a very fast development speed, so banks need to ensure a flexible and dynamic working environment, to be able to adapt to the changing environment. rapid changes and new product development.

Second, cooperation with FinTech startups: Banks can cooperate with FinTech startups to develop new products and services, helping to strengthen their competitiveness and reposition their position in the market.

Third, create an open technology platform: Banks can create an open technology platform, helping to connect different applications and services, creating favourable conditions for customers to use products. and services of FinTechs.

Fourth, strengthening information security: FinTech is gradually becoming an attack target of hackers and hackers, so banks need to strengthen information security, ensure the safety of customer data and bank.

Fifth, focus on customer experience: Customer experience is an important factor to make a difference and compete in the market. Banks need to focus on customer experience, ensuring convenience and simplicity in using their products and services.

Sixth, developing new products and services: Banks need to develop new products and services, taking advantage of new technologies such as blockchain, artificial intelligence (AI) and data mining (big data) to provide smarter and more efficient financial solutions to customers.

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AWARENESS OF ACCOUNTANTS AND AUDITORS ON THE APPLICATION OF BLOCKCHAIN TECHNOLOGY IN VIETNAM

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Abstracts

In the context of the stormy development of technology, Blockchain Technology (BC) is considered as a key and influential technology in many fields including accounting and auditing which require accuracy and agility. With the aim of discovering the factors affecting the adoption of Blockchain Technology by accountants and auditors in Vietnam, in this study, we investigate the adoption of BC by accountants and auditors. The importance of BC features and their task needs are the first things we consider. We believe these factors influence BC's adoption in a favorable direction. We also evaluate accounting and auditing knowledge. A survey was conducted by sending questionnaires to accountants and auditors about their feelings about the acceptance of BC and 126 valid questionnaires were obtained. The research results show that both the importance of BC features and task needs-two prerequisites leading to the intention to use BC have a positive influence. Accounting and auditing knowledge directly affect the above two variables.

Keywords: *Accountants, Accounting, Auditing, Auditors, Blockchain Technology, Features, Task needs*

1. Introduction

The increasing automation of accounting information makes it imperative for auditors to collaborate with organizations in the design and implementation of BC-based solutions to facilitate self-actualization and self-monitor business transactions (Dai and Vasarhelyi, 2017; Nehmer and Appelbaum, 2020; Liu, Wu, and Xu, 2019; Fuller and Markelevich, 2020). Unlike centralized databases, BC allows direct transactions between parties (called nodes), eliminating the need for reconciliation, instant asset tracking, fast settlement of

transactions, and translation (Lacity, 2018). It provides a secure infrastructure for transactions between strangers with no central authority. This can reduce transaction costs, speed up payments, improve the audibility of transactions, and increase monitoring efficiency (Dai and Vasarhelyi, 2017; Liu et al., 2019). Other BC features (e.g., data integrity, instant information sharing, and programmable and automated control of processes) facilitate the development of new accounting systems to strengthen internal control and avoid fraud (Dai and Vasarhelyi, 2017; Carlin, 2019; Cai, 2021; Ruckeshauser, 2017). BC can fundamentally change accounting and auditing practices (Kokina, Mancha, and Pachamanova, 2017; Sheldon, 2019; Liu et al., 2019; Moll and Yigitbasioglu, 2019).

Currently, BC must overcome certain challenges to become the mainstream technology in accounting and auditing (Thompson, 2018; Fuller and Markelevich, 2020). As an infrastructure technology, it can be used for specific solutions such as three-item accounting systems or smart contracts (Dai and Vasarhelyi, 2017; Sheldon, 2019; Rozario and Thomas, 2019). However, many solutions are still at the concept stage and important design features have not been validated.

At present, studies on the applications of BC in accounting and auditing focus on the exploration of its technical capabilities, but seldom address how accountants and auditors may adopt this technology. This leaves a gap in the literature as knowledge of the determinants of its adoption may interpret how auditors can use BC. This study addresses the gap by answering the research question: What factors influence the intention of an accountant and auditor to adopt BC?

The adoption of new technology would be influenced by a person's knowledge and experience about it, as well as the context in which it is used, from the standpoint of rational decision-making. As a result, in this study, we examine accountants' and auditors' accounting and auditing knowledge. We consider two factors that directly affect the intention to use BC, which are the importance of BC's features, and the task needs of accountants and auditors. At the same time, we also consider the relationship between these two factors.

2. Literature review and Theoretical basis

2.1. Literature review

We followed the structured approach of Webster and Watson (2002) to guide the review of the literature. First, we set the research scope to the field of accounting and auditing, and use the keywords accounting, auditing, BC, and apply to search documents from databases such as EBSCO Business Source Complete, Science Direct, Wiley Online Library, and American Accounting Association of Electronic Library. Based on the search results, we used forward and backward references (Webster and Watson, 2002) to find additional articles. Next, we conducted a structured review of the articles and used an author-centered approach to summarize the literature by bringing together the diverse factors analyzed in each study. In a thematic study, Dai and Vasarhelyi (2017) use the TOE framework to examine challenges to the adoption and use of BC by accountants and auditors. The highlight of this paper is that the application of BC in accounting and auditing has been

hampered by technical complexity, financial resources and time, difficulty in scaling other partners, and the need to change processes and business when applying technology.

In another article, Woodside et al. (2017) study the main drivers and drawbacks of BC, such as transparency, regulation, cost, volatility, user control, and quality technique. Besides, when designing a BC-based transaction processing system, Wang and Kogan (2018) argue that the trade-off between security and transparency is a major barrier to adoption. In the report of Tang and Tang (2019), they argue that regulatory barriers and global value for emissions subsidies are two challenges to BC solution adoption. Prewett et al. (2020) also conceptually analyze some of the barriers to BC adoption, such as scalability, lack of standardization, and regulatory uncertainty.

The literature provides little justification of blockchain's value to accountants and auditors (Coyne and McMickle, 2017), which limits the application of blockchain in accounting and auditing. Besides, past research has more or less relied on the TOE framework (Tornatzky, Fleischer, and Chakrabarti, 1990) to study factors important to adoption decisions. Although the TOE framework is broad and flexible to accommodate multiple factors, further development is needed. In particular, individual factors and task characteristics should be considered for their impact on innovation adoption (Baker, 2011).

Most of the studies mentioned above are conceptual in nature and they explore a range of factors in the use of BC technology. Therefore, we conduct research on the topic **“Awareness of accountants and auditors on the application of Blockchain Technology in Vietnam”** to learn more about this topic as well as overcome the shortcomings of previous studies.

2.2. Theoretical basis

The theory of task-technology fit (TTF): Task-Technology Fit theory (TTF) (Goodhue and Thompson, 1995; Goodhue, 1998) is the degree of fit between everyday tasks and perceptions with the use of technology. This theory holds that the characteristics and functions of technology will determine the performance of individual tasks and meet the individual requirements of technology users to support the performance of tasks. Since these studies were introduced, TTF theory has been widely applied to understanding how information systems (ISs) are used and the consequences of their use in a variety of personal and professional contexts. The literature suggests that TTF can be conceptualized as a mediating effect (Hoehle and Huff, 2012), that is, consistent with a mediating role (Parker and van Witteloostuijn, 2010; Yu, Chavez, Jacobs, and Wong, 2020). According to Venkatraman (1989), this approach suggests the existence of an intervening (or indirect) effect between a premise and its consequence. For example, when studying the impact of innovative ideas and lean practices on operational performance, Yu et al. (2020) find that innovative ideas affect performance indirectly through the mediation of lean practices, but the regulatory impact of lean practices is not supported. In other words, innovative ideas must align with lean practices to have a significant impact on performance. Likewise, Zhang et al. (2011) suggest the fit between task attributes and technical characteristics as the link between these two factors and they develop a matching matrix to represent the concordance between task attributes.

2.3. Research Model

Based on TTF theory, the authors study the influence of BC features and task needs with the intention to use this technology of accountants and auditors. BC possesses a diverse set of features but not all these features are suitable for accounting and auditing. Before using, accountants and auditors should check those features against their task needs. Grover et al. (2019) have put together a list of 13 BC features, ranging from decentralization and immutability to data integrity and efficiency. Based on this list, we remove some overlapping items (e.g., data integrity, testability, shareability, reliability) and controversial items (e.g., performance efficiency and lack of intermediaries may not be true due to current developments in the BC), and we use the phrase “solution to double spend” to better reflect the audit landscape.

First, a timestamped data structure distinguishes BC from other data storage technologies such as relational databases. One benefit of this structure is to provide a documented timeline of an asset or contract (Tang and Tang, 2019). In addition, the transaction sequence indicates a change in asset ownership or the performance of a contract, such as mortgage payments (Appelbaum and Nehmer, 2017). Auditors can use these timestamps to verify assets and transactions.

Second, data protection refers to the use of hash functions to generate hashes to encrypt and protect data. A hash function has several unique features: (a) it is short and of fixed length; (b) its value is unpredictable, unchangeable, and unique; and (c) it can be combined with other transaction data to create a new hash function (Kokina et al., 2017). These features enhance trust in data and can drive accountants' and auditors' acceptance of the BC.

Third, data immutability adds another layer of protection to data by linking blocks of transactions together, making data only dependable and irreversible. After a block is prepared, hashed, and embedded in the next block, transactions in the block cannot be modified without altering subsequent blocks (theoretically impossible since it is a decentralized and public ledger). This can increase trust in the data. Although efficiency is sacrificed, this problem can be mitigated by using permissioned blockchains and less complex algorithms (Dai and Vasarhelyi, 2017).

Fourth, the decentralized ledger is another important feature of BC. A challenge to traditional auditing is also a single point of failure (Peters and Panayi, 2016): Data can be compromised if the centralized ledger is compromised from the outside or tampered with from the inside (e.g., management violation). The decentralized ledger helps to mitigate this risk as any data tampering would require the collusion of the majority of participants (i.e., an attack of 51% or more participants) (Sheldon, 2019), which is extremely difficult. In addition, the distributed ledger provides an opportunity to check transactions continuously in near real-time (Moll and Yigitbasioglu, 2019), thereby increasing the trust and confidence of the auditors (Kokina et al., 2017). In certain cases, the testing process can be automated using smart contracts (Rozario and Thomas, 2019).

Fifth, user anonymity can be achieved by using the public keys of the transaction participants. One concern about distributed public ledgers is the loss of business secrets and the security of financial data (Wang and Kogan, 2018). In addition to creating a private BC that can enhance tamper resistance, participants can use their public key as a token for transactions to protect some measure of security.

Finally, BC offers a solution to double-spending. Double spending occurs when a company doubles and thus inflates its assets (e.g., selling a product without adjusting its inventory). BC effectively solves this problem by adding traceability and data audibility, providing a double-spend solution, and preventing fraudulent transactions (Moll and Yigitbasioglu, 2019). This characteristic is very important for auditors.

Accountants' and Auditors' acceptance of BC at work is shaped by all of the features discussed above. However, each feature cannot be certain if stand alone. Usually, these features always come together, a blockchain-based solution cannot be developed with only one or some of the above features. In addition, these features reinforce each other. For example, timestamps support traceability and the ability to check data. Anyone trying to interfere with a previously validated transaction must control (control, manipulate) all subsequent blocks in the chain. Meanwhile, the decentralized ledger requires significant computing power to form on the blockchain system. This is not likely to happen so it can reduce the risk of tampering. From a configuration theory perspective (Meyer, Tsui, and Hinings, 1993), these distinct features appear together to form a set that creates synergies for problem-solving. Therefore, we predict that the accountants' and auditors' intention to use BC is generally influenced by them. We hypothesize that:

H1: Accountants' and Auditors' perception of the importance of BC features is positively related to their intention to use.

H2: Accountants' and Auditors' perceived task need is positively related to their intention to use BC.

Many of the promising features that BC offers also pose challenges (Coyne and McMickle, 2017). For example, the fact that BC is essentially a bookkeeping technology, it does not guarantee real-world transactions and still requires manual intervention by accountants and auditors (Schmitz and Leoni, 2019). In addition, not all business transactions must be recorded on the BC: The transactions that are most relevant to the BC are those related to payments and receipts; the remaining transactions must continue to be processed using an existing system such as an Enterprise Resource Planning (ERP) system (Schmitz and Leoni, 2019; Fuller and Markelevich, 2020).

Moreover, it requires the knowledge and expertise of accountants and auditors in the development of blockchain-based solutions such as three-entry systems and smart contracts (Dai and Vasarhelyi, 2017), so its role is growing rather than disappearing. Therefore, the individual, separate features of the BC are not meant to motivate the decision to apply it in work, but instead, how those features meet the needs and tasks of accounting and auditing. of the organization is also a factor that can be relied on to make decisions.

H3: Accountants' and Auditors' perceived the importance of BC features to be positively related to their task needs.

H4 (Settling): The influence of the perceived importance of blockchain features on the intention to use them is mediated by the task needs of the accountants and auditors.

Knowledge and perception of auditors: We study the perceived premise of BC features and how mission-critical needs are. Specifically, accountants' and auditors' knowledge and awareness are key factors for raising their awareness and providing an appreciation for the dynamics, needs, and specifics of new technology (Dinev and Hu, 2007; Bulgurcu et al., 2010). Dai and Vasarhelyi (2017) raised the question of what knowledge managers, accountants and auditors should collect and receive to prepare for the use of ISs blockchain-based accounting? From the innovation diffusion point of view (Rogers, 1995), we argue that accountants' and auditors' knowledge and perceptions regarding new technology influence their intention to apply in their work.

H5a: Accountants' and Auditors' accounting knowledge is positively related to the perceived importance of blockchain features.

H5b: Accountants' and Auditors' accounting knowledge has a positive relationship with perception of task needs.

In addition, we have investigated several factors such as demographics as a control variable, including gender, age, education, professional qualifications, professional experience and preliminary understanding of BC. According to Venkatesh, Morris, Davis, and Davis (2003), the BC adoption literature shows that these factors can influence the intention to use new technology.

The research model is shown in figure 1.

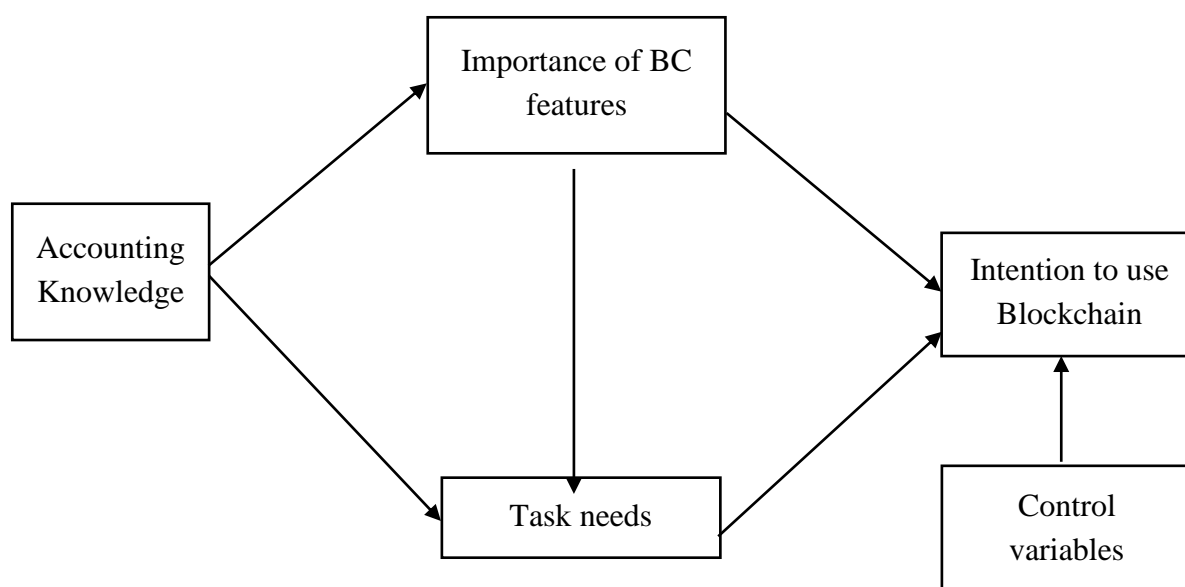


Figure 1. Theoretical model of factors affecting Awareness of accountants and auditors on the application of Blockchain Technology in Vietnam

Source: The research team

3. Method

The study uses qualitative and quantitative method and divided into two processes: Stage 1: Qualitative research: interviewing, collecting expert opinions.

Stage 2: Quantitative research: information collected from questionnaires, analysing, data processing and model testing.

The questionnaire was designed based on the content of the TTF theory mentioned above, as well as consulting from previous studies. Since then, the authors have revised it to suit the Vietnamese context. At the same time, the questionnaire was checked with information from the opinion of the science instructor of the National Economics University and auditor manager and CFO of a manufacturer. The reliability of the survey instrument was tested by statistical methods and partial least squares method PLS (Gefen, Rigdon and Straub, 2011). The PLS method, a component-based structural method model, is more suitable for data analysis. Besides, the purpose of this study is to discover new relationships between the structures, so the PLS method is a suitable choice to explore. The authors used SmartPLS 4 (Ringle, Wende and Becker, 2015) to perform the test.

4. Results

4.1. Reliability and validity test

First, we examined the psychometric properties of the measurements. Reliability was tested using Cronbach alpha and composite reliability, and convergent value was tested using Average Variance Extracted (AVE). The discriminant validity was tested based on the comparison of the square roots of the AVE of the constructs and their correlation with other constructs. The results are shown in Table 1, showing that the psychometric properties of the measurements are appropriate because the reliability is greater than 0.7 except for the control variables whose cronbach alpha is less than 7 and the AVE is above 0.5. Next, we tested the quality of the variables by looking at the load factor and found that there were some variables of poor quality and should be removed from the model. After the removal, noticing any problems, we confirmed the discriminant validity.

In general, the target audience recognizes the need for BC in their work because they believe that their work can be more effective if they adopt BC.

A positive sign is that the mean value of intention to use BC is 51.8%, which indicates that in general the subjects perceive the need for BC.

Table 6: Construct reliability and validity

	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Accounting knowledge	0.912	0.939	0.794
Control variables	0.907	0.953	0.911
Task needs	0.932	0.945	0.711
Importance of BC features	0.907	0.928	0.683
Intention to use BC	0.780	0.844	0.536

Source: The research team

4.2. Test the hypothesis

The sample size collected by the authors is $n = 126$, so we used the partial least squares (PLS) method to test the hypotheses. We used SmartPLS 4 software with a warm-up procedure performed with 5000 samples to check the significance of the coefficients. After running the data, the results show that both the importance of BC features and task needs-two preconditions for intention to use BC have a positive influence. The significance of BC features ($\beta = 0.486$, $p = 0.000 < 0.05$) has a significant impact on intention to use BC, thereby accepting hypothesis H1. The task needs of accountants and auditors also has a significant influence ($\beta = 0.246$, $p = 0.026 < 0.05$), so hypothesis H2 is accepted. The association between the importance of BC features and task demand is positive with $\beta = 0.398$, $p = 0.000$), accepting the drop of H3.

Next, we test the intermediate effect (hypothesis H4). From the output of SmartPLS, the authors derive an indirect effect of the importance of BC features on intention to use. The indirect effect is significant, thereby accepting hypothesis H4. In addition, we follow the Baron-Kenny method (Baron and Kenny, 1986) to check whether this is complete or partial reconciliation. If there is no mission need, the importance of BC's features has little impact on intention to use. This suggests that the task needs to completely mediate the impact of technology features on blockchain intentions. This analysis answers RQ1: The technological features of the blockchain have an indirect impact on the intention to use, which is entirely dependent on the needs of the task. In other words, BC features must match the mission needs to drive adoption of the technology.

For indirect variables, accounting knowledge has a positive effect on both the importance of BC features ($\beta = 0.676$, $p = 0.000 < 0.05$) and task needs ($\beta = 0.545$, $p = 0.000 < 0.05$). This result accepts both H5a and H5b.

The result is shown in Figure 2.

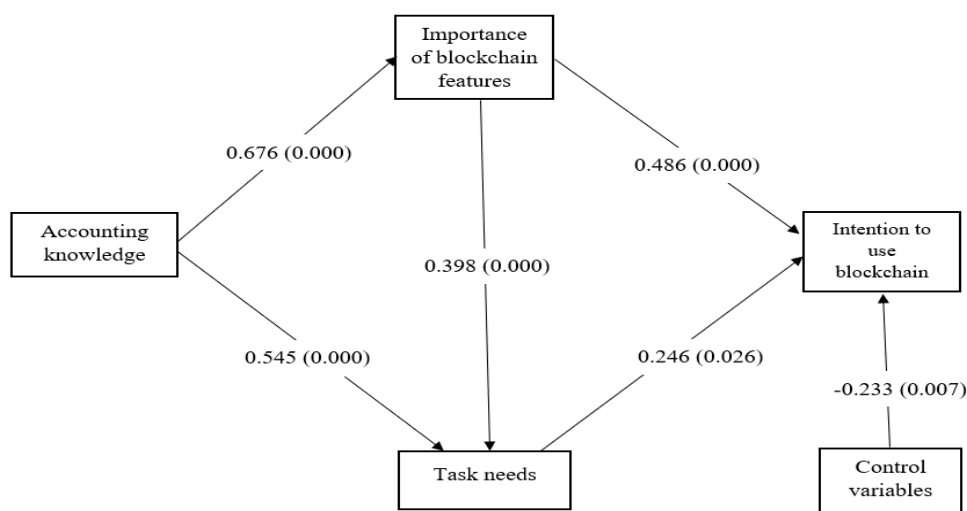


Figure 2. Test of the research model

Source: The research team

4.3. Discussing research results

In this study, we conduct an empirical test on the factors affecting the intention to use BC of accountants and auditors from the perspective of TTF. We find that the task needs of accountants and auditors have a direct influence on their intention to use BC (H2) and the importance of BC features to have an impact indirectly through the mediating role of task needs (H4). This confirms our conjecture about the fit-as-mediation in the use of BC and highlights the importance of using BC to support accounting and auditing tasks. In addition, accountants' and auditors' knowledge of accounting also affects their perception of the importance of BC features and task needs (H5a, H5b), which confirms the importance of accounting knowledge in promoting the intention to use BC.

The importance of the features of BC has the same direction and has the strongest impact on the intention to use BC ($\beta = 0.486$, $p = 0.000$), thereby accepting hypothesis H1. The research team's results are consistent with those of Yuan Li and Ahmad H. Juma'h (2020). This can be easily understood because before putting new technology into use, accountants and auditors must carefully understand its characteristics, features, advantages, and disadvantages, thereby considering whether it is suitable for the environment, conditions, and applications in their work or not. BC features can greatly increase work efficiency and effectiveness.

Task needs has a positive effect on Intent to use BC ($\beta = 0.232$, $p = 0.032$), thus accepting hypothesis H2, but the effect is not as strong as the Importance of BC characteristics. A technology with many outstanding features and characteristics but without suitable performance in work, the application level will also be lower. BC has many features that are applied not only to the Accounting - Auditing industry but also to the Finance - Banking industry, ... Therefore, accountants and auditors must also learn about BC to make a suitable decision for BC with its job needs. In addition, the consideration of job needs also depends on the environment and conditions of the company or business. There are many places that are not eligible to train as well as apply BC in work because of extra costs. If it is not required and necessary, companies and businesses will not adopt it. In Vietnam, many accountants and auditors are still not familiar with the application of new technology, which leads to less influence of task needs to Intention to use BC. However, BC has a great influence and meets many needs in accounting and auditing work, so the task needs factor still has a positive and direct impact on the intention to use BC.

As detailed research results above (including hypothesis H5a, H5b - Accounting knowledge of accountants), auditors have a positive relationship with the importance of BC features with $\beta = 0.473$, $p = 0.000$ and task needs with $\beta = 0.391$, $p = 0.000$). This result is also similar to the research results of Yuan Li and Ahmad H. Juma'h (2020) and Handoko et al. (2020). Reality has proven that to be able to apply any new technology to work, each accountant and auditor must equip themselves with a solid foundation of professional knowledge, to be able to decide for themselves flexibly and define and apply standards in a

reasonable manner. This can assess whether accountants and auditors are really proactive, absorbing new solutions, and applying based on available background knowledge to maximize their professional strengths. The relationship between accounting knowledge is closely related to the importance of BC features and task needs.

5. Solution and conclusion

5.1. Solution

The government needs to finalize legal documents to guide the use of BC technology. In the near future, it is possible to sign a treaty with the governments of other countries regarding the comprehensive innovation of national information technology, thereby contributing to promoting new technologies as well as BC technologies to be strongly developed and applied in more organizations and businesses.

For Ministry of Finance, Ministry of Science and Technology, and Ministry of Information and Communications: Soon finalize legal documents to guide the use of BC technology for businesses as well as accountants and auditors to comply. Besides, after completing the legal institutions related to BC technology, the Ministries can organize training courses on the application of BC in accounting and auditing; thereby, helping businesses, organizations, accountants, and auditors themselves consolidate their knowledge of technology and software, especially BC technology.

For accounting and auditing companies: First of all, those charged with governance, boards of directors and managers of organizations and businesses need to recognize that the application of BC technology in their work will bring great benefits in saving costs and storing and securing information and data. Therefore, accounting and auditing companies need to actively research, learn and understand BC technology, to be able to calculate the costs and benefits of applying this technology in their work. From the analysis results of the research team, it is found that the importance of BC features has a strong impact on the intention to use BC, so businesses need to help accountants and auditors members understand the features of BC in detail. For this to achieve high results, businesses can hire experts to disseminate and train knowledge about BC first for business leaders, then accountants and auditors. They should be aware that BC brings a lot of distinct benefits to businesses. In addition to the importance of BC features, task needs are also a factor that directly affects the intention to use BC. The use of new technology in any business will face many difficulties in the beginning. Therefore, to increase the application of BC in a feasible way, businesses can use KPIs including evaluation criteria for the use and completion of work when applying BC. To be able to apply effectively, the use of BC in enterprises should be considered mandatory for accountants and auditors, therefore, if any individual violates, the enterprise needs to sanction, so that the technology was soon used widely.

For universities: Awareness can be developed from educational and training programs to help accountants and auditors familiar with BC and its application into work. Universities and training institutions should understand the importance and future

applicability of BC and add appropriate educational programs to their curriculum. Although there have been some attempts in academia to provide practical illustrations of BC applications in accounting and auditing, it is not enough. Future accountants and auditors, if they want to apply it in their work, need to prepare themselves with a lot of knowledge, understanding and skills. New educational programs also need to put more emphasis on the features of BC and the main task needs that BC can meet for accountants and auditors. In addition, the school can help students to prepare well before graduation by regularly organizing forums and seminars to give students the opportunity to exchange and understand more about the development of BC and how it will affect the economy.

For Accountants and auditors: They need to be more aware of the importance and meaning that BC brings to work. Since then, accountants and auditors must improve themselves with the requirements of professional knowledge, and knowledge of new technologies in order to thoroughly understand BC technology, in order to use BC effectively and feasible at work.

5.2. Conclusion

BC technology will bring a lot of benefits to the accounting and auditing profession and the country's economic development goals. Therefore, we have investigated and studied the factors affecting the intention to use BC in the work of accountants and auditors in Vietnam based on the task-technology fit perspective, so that they can help accountants and auditors gain a deeper understanding of BC features and consider them suitable for their task needs. And the results we collect are that the importance of BC features and task needs directly affect the intention to use BC of accountants and auditors.

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IMPACT OF IDENTITY THEFT ON ONLINE PURCHASE INTENTION IN VIETNAM

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Abstract

The development of social media channels and the trend of e-commerce are changing the consumption habits of customers. In Vietnam, online shopping is gradually becoming a popular choice for consumers, but it also brings about online identity theft. The study discusses the impact of this behavior on the online purchase intention of Vietnamese consumers based on the Technology Acceptance Model theory. Questionnaires were sent directly to the respondents and through the Internet. After 2 months of collection, 368 valid responses were included in the analysis. The data is analyzed according to the process from factor analysis to testing the reliability and fit of the model. The results show that there are 4 main factors that include (1) usefulness, (2) attitude, (3) perceived risk of online identity theft and (4) faith influences online purchase intention. In particular, risk perception has a negative effect on the online purchase intention of consumers. The conclusions and recommendations are proposed to contribute to promoting the business activities of businesses/retailers and raising consumer awareness about the risks of online identity theft.

Keywords: *Purchase intention, perceived risk, online purchase, identity theft.*

1. Introduction

Over the past decade, the dramatic development of information technology and social networks has had a profound impact on the use of technology in almost every aspect of people's daily lives, such as transactions banking, entertainment, merchandising and online shopping or online shopping (Cai et al., 2017; Park and Lee, 2011). Online shopping has become a popular and growing shopping method in the world (Ramachandran et al., 2011; Wu et al., 2011). According to the Department of E-commerce

and Digital Economy, over the past years, Vietnam has continuously recorded a strong growth in both the percentage of people using the Internet as well as the number of consumers shopping online and the shopping value. Besides the positive effects of online purchases, cybersecurity risks and challenges have become a top concern for consumers, especially not to mention identity theft. online. This increase has made consumers worried about online identity theft (Acoca, 2007; Reisig et al., 2009; Wall, 2008). Online identity theft affects not only consumers when shopping online, but also enterprises and the government. Therefore, recognizing the impact of this behavior on online shopping intention is very important and necessary.

With the goal of determining the impact of online identity theft on the intention to participate in online shopping of consumers in Vietnam, especially consumers in big cities such as Ho Chi Minh City, Hanoi, and Da Nang because of the high population density, high shopping demand and high level of Internet usage. The study was conducted from October 2022 to February 2023. Through this study, the author determines the impact of risk perception and factors affecting the online shopping intention of consumers in Vietnam, thereby making suggestions for the government and enterprises involved in e-commerce activities to recognize the influencing factors, in order to have appropriate and effective business strategies.

2. Method

2.1. Participants

The full set of questionnaires was completed by a total of 429 participants. After removing the answer sheets that are missing information, the researchers have made 368 final questionnaires that were used to bring the results into data analysis.

Out of a total of 368 observations, 153 (41.6%) were male and 215 (58.4%) were female. By age, 24 people (6.5%) were under 18 years old, 179 people (48.6%) were 18-25 years old, 76 people (20.7%) were 25-35 years old, 52 people (14 years old) .1% are in the age group of 35-45 and 37 people (10.1%) are over 45 years old. According to the education level of the respondents: 167 people (45.4%) are university students, 106 people (28.8%) are unskilled workers, 71 people (19.3%) are post-graduates. University graduated from vocational secondary school, 24 people (6.5%) are still in high school. By frequency of online purchases, there are 30 people (8.2%) never, 131 people (35.6%) sometimes, 138 people (37.5%) and 69 people (18.7%) very often shop online. According to current place of residence, 183 people (49.7%) live in Hanoi, 48 people (13.1%) live in Hai Phong, 61 people (16.6%) live in Ho Chi Minh City, 21 people (5.7%) live in Da Nang and 55 people (14.9%) live in other provinces and cities.

2.2. Instruments

In order to analyze 11 variables, the authors have referred to 11 different scales from a variety of researchers from Vietnam and different countries.

For “Perceived Usefulness”, there are 3 variables referred from Lin’s scale (2007) and 2 variables referred from Ha’s scale (2015). The scale was used for measuring the consumers’ feeling of the online website’s usefulness.

For “Perceived Ease of Use”, there are 2 variables referred from Lin’s scale (2007). The scale was used for measuring the consumers’ feeling of the online website’s ease of use.

For “Fear of financial losses”, there are 3 variables referred from Hille et al’s scale (2015). The scale was used for measuring the consumers’ fear of losing money while doing online transactions on the E-commerce trading floor.

For “Fear of information being abused”, there are 3 variables referred from Hille et al’s scale (2015) and 1 variable referred from Bui’s scale (2013). The scale was used for measuring the consumers’ fear of information being abused by others when their online data was revealed.

For “Fear of mental damage”, there is 1 variable referred from Yuan et al (2019) and 1 variable referred from Jordan and Lékovar’s scale (2018). The scale was used for measuring the consumers’ fear of mental damage after shopping online.

For “Perceived risk of online identity theft”, there are 3 variables referred from Bui’s scale (2013) and Corbitt’s scale (2003). The scale was used for measuring the consumers’ perception of their information being stolen when shopping online.

For “Faith”, there are 3 variables which are referred from McKnight et al (2002), Ribbink et al (2004), Gefen et al (2003b). The scale was used for measuring the consumers’ belief in the website they are shopping.

For “Popularity”, there are 3 variables referred from Jarvenpaa et al’s scale (2000) and 4 variables referred from Ghada et al’s scale (2018). The scale was used for measuring the consumers’ feeling about the website’s popularity.

For “Scale”, there are 3 variables referred from Ghada et al’s scale (2018) and 1 variable from Doney and Cannon’s scale (1997). The scale was used for measuring the consumers’ feeling about the scale of the website they are shopping.

For “Attitude”, there are 4 variables referred from Pavlou and Fygenson’s scale (2006). The scale was used for measuring the consumers’ attitude towards online shopping.

For “Purchase intention”, there are 3 variables referred from Bui’s scale (2013). The scale was used for measuring the consumers’ possibility of shopping online in the future.

2.3. Suggested model

On the basis of theoretical models and studies related to research object, the authors propose a research model

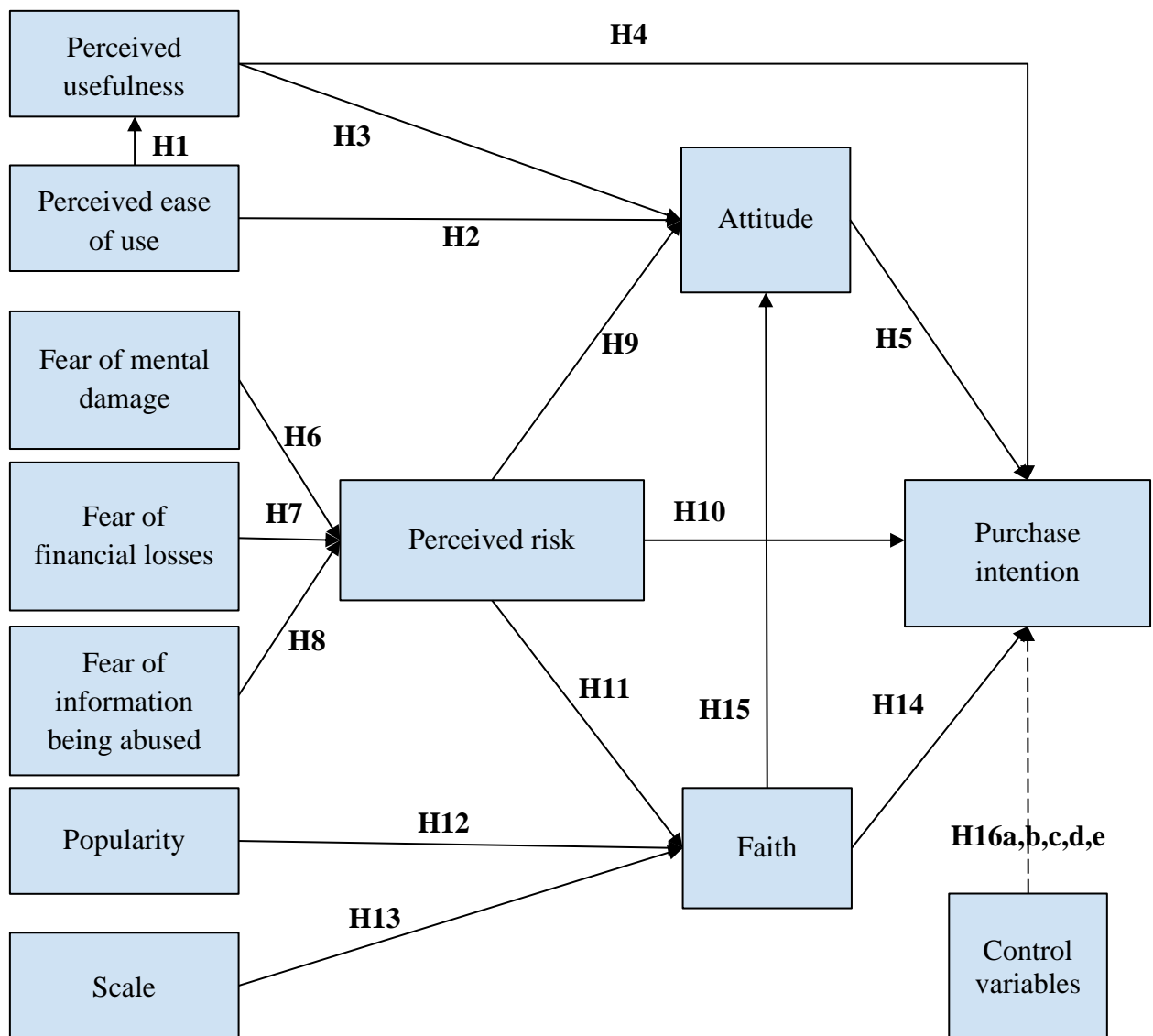


Figure 1. Research Model

Source: Authors' compilations

H1: Perceived ease of use has a positive effect on perceived usefulness

H2: Perceived ease of use has a positive effect on attitude

Perceived ease of use: a construct tied to an individual's assessment of the effort involved in the process of using the system (Davis, 1989). For online purchases, perceived ease of use saves time in purchasing, increases product search engine efficiency, and enhances user awareness. Perceived ease of use helps users have a positive attitude towards the service, thereby increasing the intention to use

H3: Perceived usefulness has a positive impact on attitude

Perceived Usefulness (PU): the degree to which individuals believe that using a particular system will improve their performance (Davis, 1985). When consumers perceive the usefulness of new technological services, their intention to use is greater and vice versa.

H4: Perceived usefulness has a positive impact on consumers' intention to participate in online purchases.

Since behavioral intention depends on perceived choice, a potential Internet shopper may respond positively or negatively to engaging in an online purchase.

H5: Attitude have a positive impact on their online purchase intention.

Attitude: the reactions toward an object or a situation, positive or negative. In terms of online purchasing behavior, attitudes refer to consumers' positive or negative assessments of using the Internet to purchase goods or services from websites.

H6: Fear of mental damage has a negative impact on risk perception of online identity theft.

The fear of mental damage: an emotional response to the perceived threats and distress of victims of online identity theft (Hille et al., 2015). The severity of being an online identity theft victim can remain ambiguous, and victims still rely on fear of psychological harm to make decisions about what to do.

H7: Fear of financial loss has a positive effect on risk perception of online identity theft.

The fear of financial losses: the fear of being appropriated or unethical by an unauthorized entity and using personal and financial data for financial gain (Hille et al., 2015). The financial loss after identity theft contributed significantly to the victim's perception of the risk of this behavior.

H8: Fear of information misuse has a positive effect on risk perception of online identity theft.

The fear of misuse of personal information: the fear of misuse of illegally obtained personal data for the purpose of impersonation that may damage the victim's reputation (Hille et al., 2015).

H9: Perceived risk of online identity theft negatively affects attitude.

H10: Perceived risk of online identity theft negatively affects consumers' online shopping intention.

Risk perception: an influential tool for explaining consumer behavior as they often strive to avoid mistakes rather than maximize efficiency in purchasing (Mitchell, 1999). Most empirical studies show that perceived risk has a negative impact on purchase intention.

H11: Perceived risk has a negative impact on faith when buying online.

Perceived risk: the customer's perception of the potential gain and loss in e-commerce transaction results (Yang et al., 2015). When consumers take the risk of trusting a sales website, they are more likely to become distrustful when things go wrong.

H12: Scale has a positive effect on faith.

H13: Popularity has a positive impact on faith.

Faith in online purchases is directly influenced by the characteristics of the sale, especially the popularity and scale of the seller. Customers' faith in sellers with greater popularity and scale is higher and vice versa.

H14: Consumer faith has a positive impact on online purchase intention.

H15: Consumer faith has a positive impact on consumer attitudes.

Faith: the expectation of individuals or companies that through interaction will behave ethically, reliably, in accordance with social norms, and will deliver on commitments. Faith has a positive relationship with the online purchase intention of customers, the more faith customers have for online shopping sites, the more obvious the customer's purchase intention becomes.

H16a: There is a difference in online shopping intention of Vietnamese consumers of different genders.

H16b: There is a difference in online shopping intention of consumers in Vietnam of different ages.

H16c: There are differences in online shopping intention of consumers in Vietnam at different educational levels

H16d: There is a difference in online shopping intention of consumers in Vietnam at different purchase frequencies.

H16e: There is a difference in online shopping intention of consumers in Vietnam in different current places of residence.

Gender, age, education level, purchase frequency and current place of residence are 5 demographic factors recognized by Tran Thi Thang (2015) as relevant and significant to the intention behavior of humans. Specifically, different levels of the above factors cause differences in behavioral intention.

2.4. Data collection

The empirical research was performed by survey method. To obtain data, the research team designed a questionnaire and survey in two ways: face-to-face and online. After conducting the online research, the primary data was controlled and edited. For processing and analyzing data, the authors have used IBM SPSS 20 and IBM AMOS 20.

3. Results

3.1. Cronbach's Alpha reliability test

After conducting Cronbach's Alpha analysis, the result illustrates that all 11 variables of a model have Alpha coefficient which is greater than 0.7, this justifies that the scale of all variables ensures about the coefficient. Of those, a scale of Perceived Ease of Use factor has the greatest Cronbach's Alpha value (0.886) and fear of mental damage factor has the lowest value (0.732). With each of the scales, the research group realizes that none of the values of Corrected Item - Total Correlation less than 0.3. Therefore, all 41 observed variables on a table of the notions such as the influence of the perceived usefulness, perceived ease of use,

fear of mental damage, fear of financial losses, fear of information being abused, popularity, scale, attitude, perceived risk of online identity theft, faith, purchase intention reach a requirement and continue to be used for analyzing Exploratory factor analysis EFA.

3.2. Exploratory factor analysis EFA

EFA result:

Table 1. KMO Coefficient and Bartlett test

KMO Measure of Sampling Adequacy.		0.831
Bartlett's Test of Sphericity	Approx. Chi-Square	7208.752
	Df	820
	Sig.	0.000

Source: Authors' compilations

According to the result, KMO is equal to 0.831 (satisfying $0.5 \leq \text{KMO} \leq 1$) which indicates the results of analyzing factors that are suitable with the research data. Bartlett's Test of Sphericity has Sig as equal to 0.000 less than 0.05 which illustrates observed variables have a correlation with each other in the whole. Cumulative of variance reaches 68.676%, satisfyingly higher than 50% that justifies the EFA model is appropriate. Besides, the Eigenvalues value of seven factors is 1.051, higher than 1 so all factors are detained.

After researching, the conclusion is all variables have Factor Loading greater than 0.5 on all factors, so this ensures discriminant value. Thus, the authors keep 41 observed variables and continue to be used for analyzing Confirmatory Factor Analysis CFA.

3.3. Confirmatory Factor Analysis CFA

Accordingly, CFA results of the research model gives information about reliability, unidirectional, convergent validity, discriminant validity.

Firstly, Chi-square/df = 1.789 < 2, TLI = 0.903 > 0.9, CFI = 0.915 > 0.9 and RMSEA = 0.046 < 0.08, it is supposed that the model research suits the market data.

Table 2. Model fit result

CMIN/DF	CFI	TLI	RMSEA
1.789	0.915	0.903	0.046

Source: Authors' compilations

Secondly, standardized factor loading are all greater than 0.5, which ranges from 0.597 to 0.932, in addition, the values in the P-value column of the observed variables representing the factors have a valuation equal $0.000 < 0.05$. Hence, the observed variables are confirmed to have good ability to demonstrate factors in the CFA model.

Thirdly, the factors that all have composite reliability (CR) are greater than 0.7 and average variance extracted (AVE) are higher than 0.5 from 0.505 to 0.798. Moreover, when analyzing 11 variables, the maximum shared variance (MSV) valuation are all smaller than the AVE values. All the figures are proving that 11 variables reach the unidirectional, convergent validity, discriminant validity.

Table 3. Model Validity Measures

	CR	AVE	MSV	MaR (H)	DT	TD	HI	TT	RR	NT	QM	TC	YD	TL	SD
DT	0.88	0.51	0.35	0.90	0.71										
TD	0.86	0.60	0.42	0.86	0.37 ***	0.77									
HI	0.87	0.57	0.35	0.87	0.59 ***	0.30 ***	0.75								
TT	0.82	0.53	0.24	0.82	-0.11 †	-0.21 **	-0.17 **	0.73							
RR	0.82	0.54	0.20	0.83	-0.28 ***	-0.43 ***	-0.17 **	0.36 ***	0.73						
NT	0.79	0.56	0.42	0.80	0.37 ***	0.65 ***	0.33 ***	-0.14 *	-0.34 ***	0.75					
QM	0.80	0.51	0.04	0.85	-0.03	0.20 **	-0.06	-0.04	0.03	0.16 *	0.71				
TC	0.78	0.55	0.24	0.80	-0.04	-0.07	-0.09	0.50 ***	0.39 ***	-0.15 *	0.02	0.74			
YD	0.76	0.51	0.31	0.77	0.55 ***	0.56 ***	0.44 ***	-0.13 *	-0.40 ***	0.50 ***	0.07	-0.13 †	0.71		
TL	0.73	0.58	0.21	0.73	0.07	0.25 ***	0.03	-0.46 ***	-0.45 ***	0.22 **	-0.08	-0.38 ***	0.15 *	0.76	
SD	0.89	0.80	0.01	0.90	-0.00	0.11	0.11	-0.09	0.05	-0.00	0.06	0.07	-0.07	0.12†	0.89

Source: Authors' compilations

Finally, the result shows the CFA model is accepted and appropriate. The authors use this to test the hypothesis, evaluate the relationship between the factors affecting the online purchase intention of consumers and continue to be used for analyzing Structural Equation Modeling SEM.

3.4. Structural Equation Modeling SEM

When evaluating structural equation modeling, the result shows that the research model is consistent with market data. CMIN/df = 2.146; GFI = 0.829; CFI = 0.869; TLI = 0.859; RMSEA = 0.056.

In 15 valuations of the P-value, having 13 values are all less than 5%, so that 13 hypotheses are accepted with 4 hypotheses H6, H9, H10, H11 have negative effects and 8 hypotheses H2, H4, H5, H7, H8, H12, H13, H14, H15 act in positive impacts.

Table 4. Result of Structural Equation Model

			Unstandardized estimate	Standardized estimate	SE	P-value
RR	<---	TT	0.123	0.169	0.045	0.006
RR	<---	TL	-0.273	-0.334	0.064	***
RR	<---	TC	0.164	0.243	0.043	***
NT	<---	QM	0.179	0.199	0.053	***
NT	<---	DT	0.275	0.345	0.047	***
HI	<---	SD	0.124	0.104	0.071	0.082
NT	<---	RR	-0.329	-0.252	0.083	***
TD	<---	HI	0.095	0.092	0.052	0.067
TD	<---	SD	0.145	0.118	0.062	0.019
TD	<---	RR	-0.303	-0.228	0.076	***
TD	<---	NT	0.586	0.572	0.067	***
YD	<---	TD	0.241	0.264	0.081	0.003
YD	<---	HI	0.262	0.278	0.057	***
YD	<---	NT	0.213	0.227	0.081	0.008
YD	<---	RR	-0.195	-0.16	0.08	0.014

Source: Authors' compilations

This research found that perceived ease of use, attitude and faith have a positive effect on purchase intention. On the other hand, perceived risk does affect purchase intention in a considerable negative way. Especially, perceived ease of use owns a significant positive impact on purchase intention.

4. Discussion and Conclusion

4.1. Discussion

Online purchases are increasing, but there are still doubts and restraints among potential customers. We have therefore explored perceptions of customers and potential customers on which opinions are based. With proposed hypotheses, which were based upon previous research and in-depth study of relevant literature, we have tested the relations between online identity theft and online purchase intention.

The empirical contribution of our research is reflected in the conceptual model. Variables such as perceived ease of use, perceived usefulness positively affect online purchase intention through attitude. Popularity and scale positively affect online purchase intention through faith while faith positively affects attitude. The two constructs representing the fear of financial losses and fear of information being abused are positively and statistically significantly related to perceived risk, as hypothesized, which means that when they increase, so does the perceived risk. In contrast, the fear of mental damage negatively affects the perceived risk, which means that the more it increases, the less customers will purchase online. On the other hand, are the constructs of perceived risk and online purchase intention negatively and statistically significantly related, which means that lower perceptions of risk increase online purchase intentions. Perceived risk also negatively affects faith and attitude, which means that the more perceived risk consumers feel, the less positive their faith and attitude are.

4.2. Conclusion

Online shopping has become a popular and growing shopping method in the world as well as in Vietnam. Because the process is done through the Internet, buying online offers many advantages over traditional purchases. However, this method of shopping also brings a few risks, among them being identity theft when participating in online purchases. Buying online means that consumers have to use their information to make purchases smoothly and in the right order. As the COVID-19 pandemic hit, online shopping has become the preferred method of shopping. Making online purchases on different e-commerce platforms on a more frequent basis leads to a higher likelihood of personal information being stolen.

With these findings, the study provides retailers and related organizations some insights about the impact of identity theft on consumers' online purchase intention to make informed decisions, then it gives several potential ideas to improve security to enhance customer purchase intention. Moreover, the research interest in the impact of identity theft will contribute to stabilizing consumer psychology, thereby building faith and motivating consumers to choose shopping online more often.

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EFFECT OF THE RISK GOVERNANCE STRUCTURES ON BANK RISK-TAKING IN VIETNAM

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Abstract

This study was carried out with the aim of discovering the influence of risk governance structure and effectiveness on bank risk-taking. This study examines three aspects of risk faced by banks: insolvency risk, credit risk and operational risk. The analysis results collected on a dataset from 20 commercial banks within the territory of Vietnam (excluding Vietnam Development Bank, Bank for Social Policies, Joint venture banks and foreign banks) from 2011-2021. This study expands on previous studies by examining other aspects of the bank's risk governance structure, including the structure of audit committee, a stand-alone risk committee and the external audit. This study also analyses the relationship between the overall effectiveness of the risk governance mechanism and bank risk taking. Based on the findings in the study, some implications are proposed to build a risk governance structure suitable to the specific characteristics and environment of banks in order to improve the risk governance efficiency of banks in Vietnam

Key words: *Risk governance, Bank risk-taking, Risk governance structure.*

1. Introduction

In the situation that regulators around the world are generally trying to provide guidelines for banks to improve their risk management mechanism to ensure more effective operation after the financial crisis in 2008, the study of governance structure related to bank risk supervision and its effectiveness has become increasingly important.

Although corporate governance is very important to the banking industry in Vietnam, research on this issue is still limited. To address this research gap, the objective of this study

is to examine the impact of corporate governance factors on the performance of listed and unlisted banks in Vietnam. Although Vietnam's banking system has a short history (Cochran et al., 2018), over the past few years, there has been an expansion in the number, size and quality of services. In addition, competition in the banking industry is increasing, so Vietnamese banks must find ways to increase operational efficiency (Waal, Duong, & Ton, 2014). Taken together, the results of this study suggest that there is a link between audit quality, leverage, state ownership ratio and bank life expectancy and bank performance in the long run. In the Vietnamese context, this has important implications for the corporate governance of banks in emerging economies.

Regarding bank risk, we can see from previous studies that corporate governance plays a particularly important role because the risk-taking behavior of banks affects economic fragility and finance (Calomiris and Mason, 2003; Keeley, 1990). Many regulators, international organizations and academics have argued that excessive risk-taking by banks and inadequate corporate governance are among the main causes of the financial crisis year 2007-2008 (BCBS, 2015; Kirkpatrick, 2009). After that, more and more research on corporate governance was carried out in order to find an appropriate governance mechanism to control risks and maintain the stability of the bank. The discussions in the study are meaningful for bank managers in formulating appropriate risk management strategies to gain competitive advantage in the context of the industry's business environment. That is the problem that runs through the research topic "*Effect of the risk governance structures on bank risk-taking in VietNam*"

2. Method

2.1. Theoretical basis

2.1.1. Structure of risk management and risk acceptance

Galai and Masulis (1976) state that "shareholders actually hold the call options on the firm's value and the exercise price is the total amount of debt outstanding. If the interest rate/deposit rate is not properly priced to reflect this risk, the bank shareholders have an incentive to gain from this call option by increasing the bank's asset risk. Especially, it is more likely to be the case for banks (due to deposit insurance and regulatory rescue)."

Agency theory implies that an individual's behavior is always aimed at maximizing their own expected utility (McCullers et al., 1982). Therefore, in the enterprise there exists a conflict of interest between managers and shareholders as well as with related parties. Bank shareholders always urge managers to accept high risks. Unlike shareholders with diversified investments, managers' value is mainly concentrated in the companies they manage (Jensen & Meckling, 1976). However, bank managers may also have an incentive to take on more risk if their ownership increases, through shares or stock options (Hubbard & Palia, 1995).

Stakeholders theory indicates that a bank's corporate governance mechanisms should rely more on the stakeholder view since banks have a special stakeholder group comprised of regulators, bondholders, depositors, and other stakeholders.

2.1.2. Effective risk management and risk acceptance

According to agency theory, as discussed in Section 3.2, a tight monitoring system prevents managers from making decisions that harm shareholders and stakeholders. Risk management is the most important mechanism for banks to control their risk taking (Aebi et al., 2012; Pathan, 2009; Sun and Liu, 2014). Therefore, we expect that effective risk management can better limit risk taking.

2.2. Research hypothesis

H1A: Audit committee size is positively associated with bank risk-taking.

H1B: Audit committee independence is negatively associated with bank risk-taking.

H1C: Proportion of accounting and financial experts in audit committee is negatively associated with bank risk-taking.

H1D: Audit committee meeting frequency is negatively associated with bank risk-taking.

H1E: Stand-alone risk committee existence is negatively associated with bank risk-taking

H1F: External audit quality is negatively associated with bank risk-taking.

H2: Risk governance effectiveness is negatively associated with bank risk-taking.

2.3. Research Methodology

2.3.1. Research data

The data of this research consists of 30 listed and unlisted banks during the 12 years of 2010 to 2021 quarterly. This research uses this period because corporate governance was paid attention and developed after the financial crisis 2007-2008. Most of the financial data was taken from audited financial statements (including statement of cash flows, balance sheet, income statement and notes to the financial statements) and from other sources published by banks. If any information was missing, we collected it from the database of FiinPro Platform. Corporate governance information was collected manually from annual reports and from other documents published by banks as well as the stock exchanges of the subject countries. However, during the research period, there are several firms with negative business performance and are warned or delisted on HOSE and HNX. Additionally, the financial statements of some corporations are not published continuously and completely leading to insufficient or unrepresentative observations that will be excluded from the sample. Due to the conditions above, the results obtained were 30 listed and unlisted banks with 1440 observations

2.3.2. Research Model

Variable measures and definition is reported in Table 3.1

Table 1. Summary of Definitions, Predicted Sign of Variables for Equations 3.1

Variables	Definitions
Panel A: Dependent variable (risk-taking)	
1. Insolvency risk (<i>Z-score</i>)	$Z\text{-score} = [\text{ROA} + (\text{E}/\text{A})]/\text{Std.}(\text{ROA})$
2. Credit risk (<i>NPLS</i>)	The ratio of nonperforming loans to total loans
3. Operational risk (<i>DROA</i>)	Standard deviation of ROA
Panel B: Risk governance structure and its effectiveness	
1. Audit committee size (<i>ACS</i>)	The total number of member on bank audit committee
2. Audit committee independence (<i>ACI</i>)	The number of independent directors as percentage of the total number of member on audit committee
3. Financial and accounting experts on audit committee (<i>FAE</i>)	The number of financial or accounting experts as percentage of the total number of member on audit committee
4. Audit committee meetings frequency (<i>AMF</i>)	The number of Audit committee meeting in a year
5. Stand-alone risk committee (<i>SRC</i>)	A dummy variable which is 1 if the bank has stand-alone risk committee and 0 otherwise.
6. External audit quality (<i>BIG4</i>)	A dummy variable which is 1 if the bank use external audit service form Big 4 audit companies
7. Risk governance effectiveness (<i>RGDEX</i>)	The total number of 9 characteristics of bank risk governance structure
Panel C: Other control variables	
1. Bank size (<i>SIZE</i>)	The natural logarithm of total assets
2. Diversification index (<i>DIV</i>)	A diversification index
3. Assets quality (<i>ASQ</i>)	The ratio of loan loss provisions to total assets
4. Net interest margin (<i>NIM</i>)	The accounting value of the bank's net interest revenue as a share of its average interest-bearing (total earning) assets
5. Stated-ownership (<i>SOW</i>)	The proportion of state shares to total shares
6. Foreign ownership (<i>FOW</i>)	The proportion of foreign shares to total shares
7. Cash flow right (<i>CFR</i>)	A dummy variable which equals 1 for banks having at least one shareholder which holds a 10% share or more and otherwise is equal to 0

To test hypotheses H1A-H1F and H2, we estimated Equation 3.1 by the System GMM method for seven risk governance structure and risk governance effectiveness variable

$$RISK_{it} = \beta_0 + \beta_1 RISK_{it-1} + \beta_i \sum_{i=2}^7 RGV_{it} + \beta_8 SOWN_{it} + \beta_9 FOWN_{it} + \beta_{10} CFR_{it} + \beta_{11} SIZE_{it} + \beta_{12} DIV_{it} + \beta_{13} ASQ_{it} + \beta_{14} NIM_{it} + \varepsilon_{it}$$

(Equation 3.1)

Where RISK is the vector of the dependent variable—bank risk-taking—including credit, operational, and insolvency risks. RGV is the vector of the variables as a proxy of risk governance structure and its effectiveness (including ACS, ACI, FAE, AMF, SRC, BIG4, and RGDEX)

3. Results

3.1. Descriptive statistics

For bank risk variables, the mean Z-score of 117.88 is much higher with 19.74 for the US samples (Pathan, 2009) or 9.24 for the sub-Saharan African samples (Dwumfour, 2017). That means banks in Vietnam are less risky than banks in some other regions. However, the standard deviation as well as the distance of the minimum and maximum values of the Z-score are higher. The standard deviation (minimum and maximum) of the Z-score in Vietnam is 99.72 (7.50 and 707.97). While that is 14.43 (2.24 and 211.31) in the United States and 6.53 (-12.02 and 43.74) in sub-Saharan Africa. The mean of credit risk as measured by bad debt (NPLS) and operational risk as measured by DROA are 0.021 (2.1%) and 0.11 respectively, and the standard deviations of these two variables are also high.

3.2. Bank risk governance and insolvency risk

The coefficient of ACS is negative and significant at the 10% level with the Z score, showing that the audit committee size has a positive relationship with bank insolvency risk. The sign of this coefficient does not change in regression 8 and remains statistically significant at the 5% level. We find that the results are consistent with studies showing that size reduces the Z-score.

The coefficient of ACI is positive and statistically significant at the 5% level with Z-score, shown in regression 2 showing that a high proportion of independent directors on an audit committee can reduce bank insolvency risk. In other words, audit committee independence has a negative relationship with the bank risk-taking. Similarly, this coefficient remains positive and statistically significant in regression 8.

Regarding hypothesis H1C, the results of regression 3 and regression 8 report that the coefficients of FAE are both positive with Z-score. Therefore, we have evidence that financial and accounting professionals in audit committee can reduce bank insolvency risk.

The results in regression 4 and 8 both show that the coefficient of AMF is negative and not statistically significant. Therefore, we have no evidence that the frequency of meetings of the audit committee can reduce the bank insolvency risk.

Regression 5 shows that the coefficient of SRC is positive and statistically significant at the 1% level in regression 5. This indicates that the existence of a stand-alone risk committee may limit risk-taking. However, the sign of this coefficient does not change and is not statistically significant in regression 8.

The coefficient of BIG4 is positive with Z-score but not significant in both regression 6 and regression 8. This means that the quality of external audit may not reduce the bank insolvency risk. One possible explanation is that external auditors do not play a direct role in the management of the bank.

Similarly, the negative but not statistically significant coefficient of RGDEX (-0.042) with Z score in regression 7 on Table 4.2, after controlling for other governance, bank characteristics could not confirm the relationship between risk governance effectiveness and bank insolvency risk. Thus, hypothesis H2 cannot be tested in this case.

For the SGMM estimation method, the diagnostic tests at the end of Table 4.2 show that the eight models fit well with statistically insignificant test statistics for both Hansen J-statistics of over-identifying restrictions and second-order autocorrelations in second differences (AR2). Accordingly, the results show statistically insignificant AR2 for all bank risk-taking measures. Likewise, the Hansen J-statistics test the null instrument validity, and all the p-values are higher than 10%. This means that the statistically insignificant Hansen J-statistics at the 10% level or lower for all specifications indicates that the instruments are valid in the respective estimations. Overall, the diagnostics tests in Table 4.2 show—as indicated by the Arellano-Bond test, AR (2), and the Hansen J tests—that all the regressions are valid. Finally, the number of instruments used in the model is lower than that in the panel, which makes the Hansen’s J statistics more reliable.

Table 2. System GMM Regression Results for Risk Governance and Insolvency Risk

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	zscore	zscore	zscore	zscore	zscore	zscore	zscore	zscore
Acs	-3.103*							1.006**
	(-0.38)							(-0.11)
Aci		2.395**						2.735*
		(1.29)						(1.31)
Fae			2.200*					2.993*
			(0.32)					(0.42)
Amf				-0.244				-0.473
				(-1.24)				(-1.82)
Src					19.974*			23.128
					(0.71)			(0.78)
big4						0.557		0.861
						(0.156)		(0.25)
Rgdex							-0.042	0.106*
							(-0.06)	(0.13)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	zscore	zscore	zscore	zscore	zscore	zscore	zscore	zscore
L.zscore	0.878*** (84.14)	0.876*** (86.4)	0.878*** (85.24)	0.878*** (85.19)	0.878*** (84.67)	0.878*** (84.94)	0.878*** (0.010)	0.878*** (85.07)
Size	-0.678 (-0.62)	-0.937 (-0.84)	-0.721 (-0.64)	-0.757 (-0.66)	-0.706 (-0.63)	-0.763 (-0.62)	-0.725 (-0.64)	-1.047 (-0.89)
Div	2.221 (0.81)	2.225 (-0.98)	2.223 (0.8)	2.251 (0.81)	2.185 (0.79)	2.227 (0.81)	2.229 (0.81)	2.2 (0.8)
Asq	-87.326 (-0.83)	-88.761 (-0.85)	-85.667 (-0.84)	-86.604 (-0.84)	-86.082 (-0.83)	-85.605 (-0.83)	-85.561 (-0.83)	-92.62 (-0.88)
Nim	-15.167*** (-2.47)	-15.582*** (-2.73)	-15.440*** (-2.69)	-15.807*** (-2.71)	-15.419*** (-2.69)	-15.558*** (-2.75)	-15.506*** (-2.69)	-15.952*** (-2.54)
Sown	1.030 (0.37)	1.955 (0.69)	1.770 (0.6)	1.316 (0.45)	1.501 (0.52)	1.518 (0.51)	1.456 (0.51)	2.193 (0.71)
Fown	-13.473* (-1.77)	-16.400* (-1.93)	-14.288 (-1.57)	-12.537 (-1.64)	-13.450* (-1.76)	-13.616* (-1.71)	-13.463* (-1.76)	-16.37* (-1.57)
Cfr	2.177 (1.13)	2.229 (1.14)	2.203 (1.12)	2.124* (1.09)	2.171 (1.12)	2.178 (1.13)	2.172 (1.12)	2.198 (1.94)
Constant	35.801 (1.02)	35.637 (1.04)	35.491 (0.99)	37.681 (1.04)	16.089* (0.4)	37.242 (0.99)	36.567 (1.02)	13.279 (0.33)
Obs	1277	1277	1277	1277	1277	1277	1277	1277
AR(2)	0.507	0.510	0.508	0.508	0.489	0.506	0.508	0.508
Hansen	1	1	1	1	1	1	1	1
Number of Instruments	952	952	952	952	952	952	952	952

Source: Author's calculation

3.3. Bank risk governance and credit risk

The ACS coefficient is positive and statistically significant at 5% in regression 1 and 10% in regression 8, showing that the audit committee size increases credit risk. As expected, the audit committee size has a positive relationship with the bank risk-taking.

Regarding hypotheses H1B and H1E, Table 4.3 also shows that the coefficients of ACI and SRC are negative and statistically significant at the 5% or higher level in regressions 2 and 5, as well as in regression 8. Audit committee independence has a negative relationship with credit risk, and again it is found that it is an important factor in limiting the bank risk-taking. At the same time, the existence of a stand-alone risk committee may constrain the bank's risk taking.

The coefficients at regression 4 and 8 of AMF are also negative but not statistically significant. Therefore, we have no evidence that the frequency of meetings of the audit committee can reduce the credit risk of banks.

Regression 3 and 6 report the relationship between finance and accounting professionals in audit committee and the quality of external audits. The coefficients of FAE and AMF are both positive but insignificant. Similar results are also found in regression 8. This indicates that accounting and finance professionals in audit committee and external audit quality have no role in constraining bank credit risk-taking.

As expected, the coefficient of RGDEX is negative and statistically significant at the 5% level. It shows that the risk governance effectiveness is negatively associated with bank credit risk-taking. The result provides strong evidence that risk governance plays an important role in the oversight of bank risk-taking. Generally, hypothesis H2 is well-supported

Table 3. System GMM Regression Results for Risk Governance and Credit Risk

VARIABLES	(1) NPLS	(2) NPLS	(3) NPLS	(4) NPLS	(5) NPLS	(6) NPLS	(7) NPLS	(8) NPLS
Acs	0.001** (0.58)							0.008* (0.76)
Aci		-0.006** (-0.68)						-0.000*** (-0.17)
Fae			0.005 (-1.13)					0.008 (1.08)
Amf				-0.000 (-1.15)				-0.001 (-1.1)
Src					-0.001** (-0.24)			-0.001** (-0.1)
big4						0.003** (0.66)		0.004 (0.77)
Rgdex							-0.000* (-0.89)	-0.000 (-0.68)
L.Npls	0.004* (0.38)	0.004*** (0.37)	0.003 (0.33)	0.004 (0.35)	0.004 (0.38)	0.003* (0.35)	0.004*** (0.38)	0.002 (0.19)
Size	-0.002 (-1.49)	-0.002 (-1.55)	-0.002* (-1.53)	-0.002* (-1.50)	-0.002 (-1.51)	-0.002 (-1.44)	-0.002 (-1.51)	-0.002 (-1.54)
Div	0.001** (2.14)	0.001** (2.13)	0.001** (2.02)	0.001** (2.2)	0.001** (2.2)	0.001** (2.25)	0.001** (2.19)	0.001* (1.93)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	NPLS	NPLS	NPLS	NPLS	NPLS	NPLS	NPLS	NPLS
Asq	-0.009 (-0.36)	-0.011 (-0.42)	-0.008 (-0.36)	-0.009** (-0.38)	-0.008 (-0.33)	-0.008 (-0.33)	-0.008 (-0.33)	-0.015 (-0.6)
Nim	-0.000 (-0.01)	0.001 (0.08)	0.000 (0.03)	-0.000 (-0.07)	-0.000 (-0.02)	-0.000 (-0.07)	-0.000* (-0.02)	0.000 (0.05)
Sown	-0.003 (-1.18)	-0.004 (-1.38)	-0.002 (-0.85)	-0.003 (-1.27)	-0.003* (-1.22)	-0.002 (-0.96)	-0.003 (-1.22)	-0.003 (-0.93)
Fown	0.019 (0.87)	0.020 (0.86)	0.018 (0.85)	0.021 (0.89)	0.020 (0.87)	0.019 (0.87)	0.020 (0.87)	0.018 (0.84)
Cfr	0.003 (1.09)	0.003 (1.09)	0.004 (1.1)	0.003 (1.09)	0.003 (1.09)	0.003 (1.09)	0.003 (1.09)	0.004 (1.1)
Constant	0.091* (1.94)	0.091* (1.96)	0.089** (1.94)	0.093* (1.91)	0.091** (1.09)	0.096* (1.86)	0.092* (1.92)	0.091** (2.15)
Observations	1,278	1,278	1,278	1,278	1,278	1,278	1,278	1,278
AR(2)	0.885	0.886	0.861	0.878	0.884	0.873	0.884	0.833
Hansen	1	1	1	1	1	1	1	1
Number of Instruments	952	952	952	952	952	952	952	952

Source: Author's calculation

3.4. Bank risk governance and operational risk

The final type of risk used as a proxy for bank's risk taking is operational risk. The first result shown in regression 1 shows a significantly positive relationship ($p < 0.1$) between ACS and DROA. In regression 8, the coefficient sign is constant and significant. This result again provides strong evidence that the audit committee size increases bank risk-taking.

Regression 2 shows a negative relationship between the audit committee independence and operational risk. The ACI coefficient is negative and significant 10% in regression 2 but turns positive and not significant in regression 8. These results do not support hypothesis H1B very well. The audit committee independence may limit the bank's acceptance of operational risks.

Regression results on regression 3 and regression 5 show that the coefficients on FAE and SRC are positive for DROA and not statistically significant on both regressions 3, 5 and 8. This indicates that the results do not support hypotheses H1C and H1E when risk-taking is measured by DROA.

Another important finding, the relationship between the audit committee meeting frequency (AMF) and the banks' operational risk is negative (DROA). The coefficient of AMF is negative and significant at 10% level with DROA in regression 4 and remains negative and significant at 5% level in regression 8. Audit committee meeting frequency reveals the intensity of the labor of the audit committee. This may help banks operate more stably and reduce operational risk.

The coefficient on BIG4 here is negative for DROA and statistically significant at 10% and 1%, respectively reported in regression 6 and regression 8. This result strongly supports the H1F hypothesis. High quality of external audit can make banks reduce operational risk, as well as help them to operate more stably.

Finally, as expected, risk governance plays an important role in limiting a bank's risk-taking. The coefficient of RGDEX reporting regression 7 is negative and statistically significant at the 5% level. This indicates that risk governance effectiveness is negatively associated with operational risk.

Table 4. System GMM Regression Results for Risk Governance and Operational Risk

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	DROA	DROA	DROA	DROA	DROA	DROA	DROA	DROA
acs	0.039* (1.29)							-0.025** (-0.89)
aci		-0.035* (-1.08)						0.038 (0.27)
fae			0.062 (0.38)					0.071 (0.42)
amf				-0.003* (-0.38)				-0.002** (-0.25)
src					0.060 (0.77)			-0.009 (-0.07)
big4						-0.011* (-0.39)		-0.025*** (-0.7)
rgdex							-0.013** (-1.23)	-0.013 (-1.31)
L.Droa	0.007*** (0.49)	0.006*** (0.35)	0.007*** (0.42)	0.007** (0.5)	0.008*** (0.5)	0.008*** (0.49)	0.008*** (0.5)	0.005 (0.26)
size	0.018* (1.39)	0.020 (1.37)	0.019 (1.60)	0.018 (1.44)	0.018 (1.46)	0.017 (1.45)	0.018* (1.45)	0.020 (1.45)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	DROA	DROA	DROA	DROA	DROA	DROA	DROA	DROA
div	0.035 (1.22)	0.035 (1.24)	0.034 (1.12)	0.035 (1.23)	0.035 (1.22)	0.035 (1.22)	0.035 (1.22)	0.034 (1.14)
asq	0.186 (0.148)	0.215 (0.138)	0.154 (0.154)	0.146 (0.150)	0.157 (0.136)	0.159 (0.139)	0.159 (0.138)	0.190 (0.180)
nim	0.254* (0.75)	0.261 (0.78)	0.258 (0.80)	0.259 (0.78)	0.261 (0.78)	0.259 (0.78)	0.260 (0.78)	0.258 (0.78)
sown	-0.030 (-0.40)	-0.038** (-0.47)	-0.026 (-0.34)	-0.036 (-0.47)	-0.034 (-0.45)	-0.033 (-0.44)	-0.034 (-0.45)	-0.029 (-0.36)
fown	0.021 (0.17)	0.058* (0.41)	-0.005 (-0.06)	0.023 (0.2)	0.017 (0.14)	0.013 (0.10)	0.017 (0.14)	0.028 (0.78)
cfr	-0.007 (-0.20)	-0.009* (-0.24)	-0.006** (-0.19)	-0.007 (-0.21)	-0.007* (-0.20)	-0.007 (-0.19)	-0.007 (-0.20)	-0.008 (-0.23)
Constant	-0.55* (-1.35)	-0.496* (-1.20)	-0.628 (-1.54)	-0.559* (-1.38)	-0.625 (-1.51)	-0.548 (-1.40)	-0.562* (-1.40)	-0.529 (-1.41)
Obs	999	999	999	999	999	999	999	999
AR(2)	0.927	0.955	0.903	0.956	0.926	0.926	0.926	0.958
Hansen	1	1	1	1	1	1	1	1
Number of Instruments	732	732	732	732	732	732	732	732

Source: Author's calculation

4. Discussion and Conclusion

4.1. Discussion

4.1.1. Government

First, there are policies to support increasing charter capital for Vietnamese banks to strengthen financial capacity.

Second, government may have a policy on an appropriate salary mechanism to ensure the attraction of highly qualified human resources to work at Vietnamese banks.

Finally, there should be a regular review of legal documents, regulations and guidelines related to the operation of banks to grasp the difficulties and obstacles when applying, thereby making timely corrections and creating favorable conditions for banks to

operate more effectively in corporate governance and risk contributing to the steady development of the economy.

4.1.2. State Bank

First, they should complete exchange rate and interest rate policy

Second, they should complete the legal framework and regulations on risk measurement and management of banks

Third, they should provide banks with standard risk management practices, support banks in training professional staff

4.1.2. Banks

First, they should advise the SBV to form a legal framework for risk management activities of banks

Second, realizing the impact from “Audit committee size” and “Proportion of accounting and finance experts in audit committee”, we suggest that it is necessary to focus on human resource consolidation. The human factor is very important; it always plays a key role in the sustainable development of businesses. Especially in the context of increasingly improved banking standards, we can see the need for staff to have a deep understanding and understanding of practices, thereby implementing new and innovative solutions.

Third, banks can have seminars, discuss and share knowledge and experience in the process of finding partners, researching and implementing risk management systems.

Fourth, banks study and research the implementation of risk management activities in countries around the world

Fifth, data quality and IT systems are mandatory requirements for risk management in the current digital transformation period. Decision 2655/QD-NHNN 2019 required banks to promptly seize the opportunities of the Industrial Revolution 4.0 (Industry 4.0) to renovate their organizational structure, improve processes and improve the quality of human resources, towards a banking system operating on a modern technology platform, highly adaptable to the fast development speed of the digital economy.

4.2. Conclusion

Our final conclusions are: H1A and H1B and H2 are strongly supported; H1C, H1D and H1E are relatively supported; H1F does not support our conclusion that the risk management structure is found to be related to the bank's risk taking. In addition, as initially expected, the effectiveness of the risk management mechanism has the main function of limiting the bank's risk-taking. In general, with the results of testing the above hypotheses, the answer is “Yes”, there is strong evidence that the bank risk governance structure and its effectiveness affect the bank risk-taking.

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EFFECTS OF ESG PRACTICES ON THE OPERATIONAL EFFICIENCY OF TEXTILE ENTERPRISES IN THE PERIOD OF 2017 - 2022

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Abstract

In recent years, there are many textile and garment enterprises in Vietnam who have been interested in understanding the business performance relevance of ESG practices, especially those related to operational efficiency of the enterprise. The article is researched with the aim of analyzing the relationship between ESG practice and the performance of the textile industry. Particularly, the authors used the intermediate variable is firm value to analyze “The influence of ESG practice on the performance of textile enterprises in the period 2017 - 2022”. The results show a positive influence between ESG practice and business performance through factors such as customer loyalty, corporate reputation and corporate culture. Through these findings, we propose several policy recommendations for enterprises in the textile and garment industry to practice ESG well and make good use of ESG factors to increase business efficiency in the future.

Keywords: *ESG, Textile, Performance, Environment.*

1. Introduction

Today, consumers, domestic and international investors are looking for businesses that uphold the ESG index as a core value in their business operations, paying special attention to issues such as: related to employees, community, customers... Enterprises have a pioneering board of directors and management to apply regulations on ESG information disclosure, integrating ESG into strategic plans to increase operational efficiency, better manage risk, while bringing value to shareholders and increasing the resilience of the business in the context of today's volatile world.

In Vietnam, the textile and garment industry is on track to reduce resource use and pollution, strengthen worker protection and protect the interests of customers. Vietnam's textile and garment industry in recent years has been making efforts to realize green production and emission reduction goals in order to contribute to the implementation of the Government's commitment to net zero emissions by 2050 at the Conference of the Parties. 26th United Nations Climate Change. In the future, the sustainable development of this industry depends entirely on the use of resources, involving water, soil and oil, and recycling of products to reduce waste. That requires the textile industry to operate based on the practice of ESG criteria.

Recognizing the above situation as well as to meet the mentioned objectives, in this study, the authors study the influence of ESG practice on the performance of textile enterprises in Vietnam. The authors choose to use intermediary factors: customer loyalty, corporate reputation, corporate culture to examine the influence of ESG practices on the performance of Vietnamese textile and garment enterprises. On that basis, we propose some recommendations for suitable solutions for textile enterprises in particular and enterprises operating in Vietnam in general.

2. Literature Reviews and Theoretical Frameworks

2.1. Literature Reviews

2.1.1. Water Research outside about ESG

It can be seen that the risks and opportunities that ESG affects and brings to businesses have made ESG an important issue in the business activities of companies globally today.

A research report on ESG factors is " *From the stockholder to the stakeholder* " - Clark, Feiner and Viehs (2015) studied more than 200 articles, books, studies on ESG and came up with the following results: there are more 90% of enterprises that deeply apply ESG reduce capital costs, 88% of enterprises that apply ESG notice an improvement in operational efficiency, and 80% of research indicates that the application of ESG has an impact positive for stock prices. Therefore, it is possible to see the correlation between businesses with sustainable development indexes and the profits received by shareholders. In addition, ESG reporting affects both the financial and environmental performance of a company. Besides, the factors of human rights, social as well as production responsibility also show a positive relationship with return on capital efficiency (Chen, Feldmann and Tang, 2015).

Ali Fatemi, Martin Glaum, Stefanie Kaiser (2017) studied the relationship between Performance and Firm Value: The Moderating Role of Disclosure, they found that ESG strengths add value company.

Research by Almeyda and Darmansyah (2019) shows a significant positive relationship between ESG disclosure and company performance, through the company's ROA and ROC. Research shows a significant positive relationship between environmental

factors according to ROC and stock price. Therefore, research has demonstrated that ESG information transparency can improve financial performance. This result encourages investors, corporate governance and industry regulators to consider the importance of ESG disclosure. In the same vein, Russo and Fouts (1997) also demonstrate that ESG practices are a source of sustainable competitive advantage for firms, so examining issues in ESG may be a consideration for the board. manage a company. Supporting this view are also studies by Lo and Kwan (2017); Ameer and Othman (2012); Choi, Kwak and Choe (2010); Mishra and Suar (2010).

The team of authors Ting-Ting Li, Kai Wang, Toshiyuki Sueyoshi and Derek D. Wang conducted a study on the topic " *ESG: Research Progress and Future Prospects* " (2021) showing that ESG, as a integrated framework and concept of environmental, social and governance factors, demonstrating the interrelationship between its aspects, and much research focusing on the interaction between environmental factors (E), social (S) and governance (G) factors have emerged. In addition, environmental, social and governance factors play an important role in measuring the future financial performance and social impact of an enterprise. Therefore, as an investment principle that integrates environmental, social and governance factors, ESG is an important driving force activating the sustainable development of enterprises and the interrelationship between these three factors as well. is a key point worthy of attention. In order to promote an increasingly high-quality global economy and society, this paper systematically reviews ESG research and looks forward to the future direction of ESG research.

Ganlin Pu (2022) assessed the non-linearity between ESG activities and company performance in the case of emerging markets, namely China. Findings from an analysis of 232 Chinese listed companies show a positive association between ESG activities and corporate performance. However, the relationship is non-linear. In other words, the relationship between ESG activities and firm performance is inverted U-shaped. This shows that the relationship is positive up to a certain threshold and when ESG activities cross that threshold it starts to have a negative effect. In addition, Rupamanjari Sinha Ray (2022) empirically investigates the impact of ESG scores on financial variables that can affect the performance of firms in the Indian context. The results show the fact that the ESG score is an emerging indicator for shaping future financial performance and risk mitigation strategies and is therefore of considerable importance from a policy perspective.

However, research by Ullman (1985) and Lin, Yang and Liou (2009) gives mixed opinions. ESG practices incur costs, which in turn have a negative impact on financial performance leading to reduced competitiveness compared to companies with few ESG practices. Lamberton (2005) points out that companies with an environmental impact can change the information provided to stakeholders, for example, businesses transfer environmental taxes to consumers to partially offset the low prices. of goods and services excluding environmental and social costs at market prices. Several recent studies have

argued in favor of no relationship between ESG activities and firm performance (for example, see Friede et al., 2015; Shakil et al., 2019).

2.1.2. Domestic studies on ESG

Author Phan Hang (2018) affirmed that ESG policies and activities are one of the important factors creating long-term value of enterprises. Integrating ESG into business activities not only helps businesses strengthen and strengthen cooperative relationships with stakeholders, but also helps businesses improve business risk management, improve adaptability and effective competition. This is also the main reason why professional institutional investors look to and ESG quickly becomes a trend, especially when there are studies showing that good corporate governance is related to operating results. Good.

In Vietnam, Phung Thi Thuy (2022) in the study of ESG with the sustainable development of Vietnamese enterprises showed that the ESG indexes evaluate and rank the sustainable development of enterprises. In particular, the ESG indicators and reports of enterprises are very important, are the basis for the selection of financial investors, business partners and are a competitive tool of enterprises in the market to meet customer expectations in modern society.

A recent PwC Vietnam study (2022) surveyed 325 investors from around the world, mainly asset managers and analysts from investment companies, investment banks or brokerage company. Most investors show a commitment to ESG goals as a top priority in the businesses they invest in. For them, businesses with high ESG performance have been shown to have lower risk, higher returns, and better resilience to crises.

Although there have been many studies related to the ESG index and enterprises, there has not been any research that delves into the impact of ESG practices on the performance of textile enterprises. Meanwhile, the textile industry in Vietnam is now generating more and more different types of products, which means an increase in the amount of waste discharged into the environment, and the practice of ESG is extremely necessary. for the activities of these textile enterprises.

2.2. Theoretical Frameworks

2.2.1. ESG - concept

The term ESG first appeared in the United Nations (UN) report, Global Compact (2004) Who Cares Wins. Since the first appearance of the term ESG, many individuals and businesses have come up with concepts in their own way. Song ESG is an acronym for Environmental, Social & (Corporate) Governance, roughly translated as Environment, Society & Corporate Governance. It is a set of standards to measure factors related to sustainable development and the impact of businesses on the community.

Before that, in 1953, the American economist Howard Bowen published a publication, in which he initially introduced the concept of ESG appearing in the form of CSR (Corporate Social Responsibility) - a term for only corporate social responsibility.

However, according to PwC, if sustainable development is a term that covers all efforts of society as a whole to minimize negative impacts on the world around, then ESG (sustainable governance) emphasizes the factors. The most important factors for business today include: environmental, social and governance.

According to the newspaper “*Market Business News*”, they argue that ESG is to measure the sustainability and ethical impact of an investment in a business or company. In addition, the three factors Environmental, Social and Governance are a subset of non-financial performance indicators that cover ethical, sustainability and corporate government issues, such as ensuring systems in place to ensure accountability and manage the company's carbon footprint.

Kyle Peterdy argues that ESG is a framework to help stakeholders understand how an organization is managing risks and opportunities in relation to its three criteria. In addition, ESG takes a holistic view that sustainability goes beyond environmental issues. Although the term is often used in an investment context, those interested in it include not only the investment community but also customers, suppliers, and employees, all of whom increasingly concerned with the sustainability of an organization's operations.

Based on the points mentioned above, the authors believe that ESG is a measure of business performance of companies. This index represents the assessment and concern of enterprises on environmental, social and governance aspects during their operation. In addition, ESG is also used to manage risks and find opportunities for investors, and it also plays an important role in creating a sustainable business world.

2.2.2. Key elements of ESG

At its most basic level, ESG stands for Environmental, Social, and Governance, and it is the disclosure of environmental, social and governance data, which increases stakeholder transparency to mitigate risks and identify opportunities. ESG covers a wide range of business aspects that financial analysts may not traditionally consider but are often relevant to finance for businesses. Failure to measure ESG risk can result in significant financial loss.

ESG standards cover a wide range of issues, originating from international law, local law or agreements and principles in each country. To implement ESG, businesses need to meet 3 main focuses with dozens of specific criteria.

2.2.2.1. Environment

The first aspect is E - Environmental, which measures the extent to which businesses affect the environment and natural resources throughout the process of production, operation, management... Specifically, the organization will be considered for:

Climate Change

Climate change criteria will be assessed based on international and domestic commitments, national policies and local regulations. For Vietnam, at the United Nations Summit in 2021 (COP 26), Prime Minister Pham Minh Chinh made an impression with his announcement of his commitment to responding to climate change.

- Set a target of a total national emissions reduction of 43.5% by 2030, and zero carbon emissions by 2050.
- Reduce methane emissions by at least 30% by 2020, 40% by 2030.

With a pioneering role in creating ESG policies, the government will promote Vietnamese businesses to have a clearer motivation and basis when striving to achieve commitments related to ESG goals.

Energy

Enterprises implementing ESG must ensure efficient exploitation and use of energy resources. In addition to optimization, infinite alternative energies are encouraged such as solar energy, natural wind, etc. This will help the environment to avoid energy depletion, and organizations can also operate anywhere, time without depending on limited resources, speeding up the production process.

Natural resources

Resources here include land, water, trees, minerals, air, etc. To achieve a high ESG score in this section, businesses must ensure that they have full licensing documents when using any resource. In addition, many organizations also score points when actively/contributing to the renovation and restoration of polluted areas.

In particular, instead of minimizing, a part of businesses growing in the 4.0 era also researches and deploys new technologies that can create their own resources, without any impact on the environment.

Waste treatment and recycling

To treat waste to meet ESG standards, businesses need to make statistics and detailed lists of types and volumes of hazardous waste. Then proceed to collect, classify them and store them in a separate place to ensure no pollution. According to the policies, the organization can move and take them to the appropriate disposal site as authorized. If possible, the company can recycle, reuse to reduce waste to the environment, optimize energy.

Businesses can invent their own or use recycling services to ensure waste is disposed of properly. Some substances have ratios and specifications that are, or even regulated, by law.

2.2.2.2. Society

The second aspect in ESG is S - Social, which helps businesses evaluate social-related factors such as the company's business relationship with customers and partners; Working conditions of employees is also known as Labor law in Vietnam.

Privacy and security

As an important criterion, the regulations and laws about them are quite new in our country. The current security law in Vietnam is applied based on the Civil Code, Cybersecurity, Information Technology...

To implement ESG, businesses need permission from their owners before collecting, using, or doing anything with their data. In particular, it is absolutely forbidden to disclose personal information, and must commit to data protection measures.

Diversity, equity and inclusion

The Labor Law will be the basis for evaluating ESG scores in this section. By law, organizations cannot discriminate against employees regardless of their sex, color, race, religion, or any other social or organizational class. Male and female personnel need to be fair in all aspects: work, promotion opportunities, salary and bonus...

Safe working environment

The workplace should ensure occupational safety and health. ESG strictly prohibits cases of forced labor, ill-treatment, exploitation, harassment... Of course, the standard is also strict in the use of human resources under the age of 18, the organization needs to do it on time as well as the public nature. permitted by Labor law.

Working conditions

ESG will follow the provisions of Vietnamese law to consider scores for businesses such as salary, working hours, health check, insurance policy, etc.

2.2.2.3. Corporate governance

The final aspect of ESG is G - Governance, a review group concerned with the organization's activities ensuring efficiency, transparency, business ethics and compliance with local regulations.

Publication of the ESG report

Vietnamese law stipulates that enterprises implementing ESG must disclose information, annual performance results such as resource exploitation and consumption, labor policies, financial statements, contributions to the community, etc. This information needs to be submitted to the State Securities Commission of Vietnam and the Stock Exchange in a public manner.

Anti-bribery and corruption

This is a factor of great concern in governance, which will be assessed in accordance with the Anti-bribery & Corruption Law - Criminal Law of Vietnam.

Diversity and inclusion of the board of directors

This ESG criterion assesses the diversity of backgrounds of board members in terms of gender and background. According to Vietnamese law, in some cases, it is still required to have an independent board of directors, for example, 1/5 of the board members of an unlisted public company must be independent.

Above is a list of criteria that businesses need to meet when implementing ESG. In order to keep up with the trend and successfully complete this set of standards, leaders need

to have an in-depth understanding of ESG and how to properly govern the legal frameworks and current ESG practices.

2. 2.3. Benefits of practicing ESG

Using an ESG framework can bring tangible benefits to both businesses and investors. For businesses, it opens up a pool of capital and promotes a stronger brand identity, and investors can enjoy the low-risk investments associated with an ESG-centric brand. heart.

Some of the benefits of ESG include:

ESG brings competitive advantage

Companies participating in ESG are gaining a competitive advantage. A recent survey by GreenPrint concluded that 64% of Americans are willing to spend extra money to buy from businesses that promote sustainable products.

ESG metrics are also important to consumers, employees, lenders and regulators. Company leaders who strive to improve working conditions, promote diversity, give back to the community, and take a stance on socioeconomic issues play a key role in strengthening the company's brand. company.

Attract investors and lenders

The inclusion of ESG reports in the income statement is a trend of businesses. Investors and lenders are becoming highly attractive to institutions investing in ESGs and using ESG disclosures to shed light on their sustainability efforts. A recent Gallup study found that 48% of investors are interested in sustainable mutual funds.

Public concerns due to the pandemic, climate change and natural resource abuse are forcing lenders to shift their lenses to sustainable businesses and weed out those with outdated practices. - such as unfair wages, investment in fossil fuels, unsustainable agricultural methods and production. of non-recyclable products. By providing a holistic view of their practices, businesses that offer sustainable investments in ESG can influence a lender's decision to choose a competitor that offers a sustainable future. with low risk profile.

Improve financial performance

ESG not only facilitates business for lenders but can also improve the overall financial performance of a business. Even small efforts towards sustainability such as going paperless, recycling or energy-efficient upgrades can improve a business' profits and ROI.

To keep up with ESG programs, companies must track key metrics, such as energy consumption, raw material usage, and waste disposal, which ultimately lead to reduced energy bills and Cut the cost. ESG compliant companies face fewer fines, risks and penalties, which positively affects their bottom line.

In 2020, Nestlé announced it would invest up to \$2.1 billion by 2025 to transition from plastic to food-grade and recycled plastics. This change is expected to help Nestlé reduce its carbon footprint and cut compliance costs, especially in regions with stricter laws on the use of plastic packaging.

Build customer loyalty

In a 2021 survey conducted by Accenture of more than 25,000 consumers across 22 countries, 50% said they have rearranged priorities when shopping for luxury goods due to the COVID-19 pandemic. These consumers are willing to pay more for brands that align with their values and are more loyal to brands that treat people well. Today's socially conscious consumers want to know what the businesses they support are doing for the greater good.

Helping the company operate sustainably

Companies investing in ESG can sustain and adapt to the ever-changing landscape. While ESG is only required for publicly traded companies in some jurisdictions, it appears to be moving in that direction for the rest of the corporate world as well. Companies that choose to ignore ESG policies now may have to deal with them later, in the form of legal, regulatory, reputational, and compliance issues.

Businesses that properly integrate ESG principles to their core identify cost-saving opportunities and enjoy low energy consumption, reduced resource waste, and reduced total operating costs.

2.2.3. Enterprise value

Enterprise values are the values that enterprises achieve when implementing ESG, and thereby help businesses improve their operational efficiency. (The author's point of view).

Enterprise value is a standard measure of value used in business valuation. PMBOK defines enterprise value as the total value of an enterprise; sum of all tangible and intangible elements. Examples of tangible elements include monetary assets, shareholder equity, furniture, and utilities. Examples of intangibles include branding, recognition, goodwill, public interest, and branding.

There are many previous studies that have mentioned the "value of the enterprise" when doing ESG studies. These values are studied and understood from many different aspects such as: improving employee quality and increasing employee loyalty (Tuzzolino & Armani, 1981; Trevino & Nelson, 2004; Valentine & Fleischman, 2008), income improvement (Chih et al., 2008; Hong & Andersen, 2011), customer satisfaction (Nguyen Ngoc Hien, Nguyen Trong Minh Tai, 2018); brand value (Mai Thi Kim Anh, 2015; Nguyen Thi Van, Nguyen Van Phu, Mai Phu Hop, 2018; Le Phuoc Huong, Luu Tien Thuan, 2019; Tran Nguyen Khanh Hai, 2019);...

From the above basis, the authors conduct an analysis of the value of the business on 4 aspects including: customer loyalty, business reputation, corporate culture and size of the business. The concept of these four factors is summarized by the authors as follows:

Customer Loyalty (KH): Customer loyalty is a measure of how likely a customer is to do repeat business with a company or brand. It is the result of customer satisfaction, positive customer experiences, and the overall value of goods or services that customers receive from a business.

Reputation of the enterprise (DT): It is the image of the enterprise in the hearts of customers and employees in terms of product quality, working style, and ability for sustainable development (Roberts and Dowling, (2002)).

Corporate culture (VH): is the values, beliefs, and forms that everyone in an enterprise recognizes and thinks, speaks, and acts as a habit, like the spiritual life and personality of a company and is a decisive part of the long-term success or failure of the business.

The components of corporate culture include 4 main parts: vision, mission and core values, business philosophy. The expression of corporate culture is expressed through two main factors: tangible: Uniforms, slogans, rituals, regulations, company soundtracks, internal journals, activities and intangible: Thai attitudes, styles, habits, and ways of thinking of people in the organization.

2.2.4. The relationship between ESG implementation and business performance

ESG analysis looks at an entity's interactions with the natural and social world, along with the quality of its governance, S&P Global Ratings believes ESG analysis provides a comprehensive view of potential areas hidden environmental and social risks as well as opportunities for companies in rapidly developing markets.

Companies that focus on ESG issues have achieved their goals of reducing costs, improving worker productivity, mitigating potential risks, and creating revenue-generating opportunities. These are just some of the ways that ESG can enhance corporate profitability and long-term sustainability.

But within the scope of this research paper, the authors want to emphasize the relationship between ESG and corporate performance through the intermediary factor of firm value.

a. ESG influences through customer loyalty

This is a factor of strategic significance and a goal that textile enterprises in particular and in all other fields in general always aim for.

The research works that use the customer loyalty factor have shown that a business with high customer satisfaction will lead to increased customer loyalty, thereby helping businesses achieve high performance (Matzler and Hinterhuber. (1998); Anderson, Fornell and Rust (1997); Cronin, Brady and Hult (2000)).

b. ESG influences through corporate reputation

A reputable business is one that achieves high recognition from stakeholders for the quality of services, products provided or working methods, financial transparency, ... (Fombrun (Fombrun (Fombrun) 1996); Deephouse (2000)).

Many studies have shown a positive association between ESG activities and corporate reputation (Fombrun and Shanley (1990); Lai et al (2010); Stanaland, Lwin and Murphy (2011). This will lead to improved sales and profits in the long run.

c. ESG influences through corporate culture

A company's culture is all about a shared vision and ethos - it's about what's done, how it's done, and why; and this is on both formal and informal levels.

The formal changes brought about by the ESG will have a major impact on policies, strategies and developments. Some of these changes may be mandatory, such as new standards, laws and guidelines introduced by third parties and government initiatives; others may be voluntary in the sense that a business is not required to do them - but still necessary due to pressure from industry leaders and consumer expectations.

Culture is something that can be difficult to measure and quantify but can have a powerful impact on the performance of a business. Usman Ali, an ESG partner and analyst at MCP (Mobius Capital Partners is an emerging market asset management firm specializing in ESG), emphasizes the importance of corporate culture to profitability by citing the fact that a portfolio of companies listed on Glassdoor's 2009 Best Places to Work list "have significantly outperformed the S&P 500 with returns in excess of 265%".

3. Method

3.1. Research design and sample

The objective of the qualitative research is to understand the perception and benefits of ESG practice for Vietnamese enterprises in general and Vietnamese textile and garment enterprises in particular, thereby assessing the impact of ESG on performance of a particular business through case studies.

From the above research objectives, the authors conducted the following research:

Stage 1: Get an overview of ESG.

Stage 2: Learn about ESG awareness and practice of Vietnamese enterprises in general and Vietnamese textile and garment enterprises in particular

In the process of implementation, the authors have conducted research and inherited the scientific values of previous articles and research articles that are relevant to the topic, in order to have the most objective view and overall assessment. on the concept of ESG of enterprises, thereby serving as a basis for building an appropriate research model on the influence of ESG practice on corporate performance in Vietnam.

The research team identifies, the research subjects are senior leaders who directly consult on issues related to operational strategies and corporate social responsibility activities such as directors, deputy directors. , chief accountant and staff of the social responsibility department. These officers may belong to enterprises or departments of the Government, large organizations related to Vietnam's textile and garment industry, such as the Vietnam Textile and Apparel Association (VITAS).

3.2. Data collection

The authors collect data on the basis of 5 main contents:

Firstly, the content of certifications related to ESG practices and the relationship between ESG and business performance (Textiles)

Second, the content of ESG implementation (practice) of Vietnamese enterprises

Third, the content related to the perception of the Government and businesses, especially Vietnamese textile and garment enterprises.

Fourth, the benefits of implementing ESG of Vietnamese textile and garment enterprises.

3.3. Data analysis

Based on the results obtained from the data collection, the research team makes objective judgments on the following issues: (1) The results of the perception of ESG practices of enterprises in general and the textile enterprises in particular, (2) The influence of ESG on business performance, and (3) Case study on the influence of ESG practice on the performance of a particular enterprise.

4. Results

Textile enterprises in Vietnam have focused on improving environmental and social standards in their production activities. Large companies such as Vinatex, TNG, May 10, Saitex and countless other textile and garment enterprises are applying standards of environmental management, especially energy and resource saving, waste reduction and harmful emissions.

Faced with increasingly high and mandatory global requirements, many domestic enterprises have begun to transform production in the direction of "greening". Thanh Cong Textile and Garment Investment Trading Joint Stock Company (code TCM) has invested in a Lab to research green materials and apply research to fashion products in the most effective way. Besides, Thanh Cong also established a research and business development center to develop 3 main product lines, including eco-friendly products, seasonal feature products and convenient product lines for daily life. living. According to Thanh Cong's report, in 2020, this business saved more than 8.4 million kWh of electricity and reduced CO₂ emissions by up to 17,428 tons. This group has sponsored 3 billion VND for the program "Green trees for Ho Chi Minh City" to contribute to building a green - clean - beautiful living environment for the community. Thanh Cong Group has invested more than 400 billion VND for waste water and gas treatment works at its textile and garment factories. In particular, these works have reduced more than 90% of SO₂ emissions and more than 70% of NO_x of the plant.

By the end of 2020, Viet Tan Group, one of the largest textile and garment groups in Vietnam, has funded more than 30 billion VND for education, health and other community development activities. Viet Tan Group has invested more than 300 billion VND in improving the quality of wastewater from its textile factory. Especially, from 2015 to now, Viet Tan has reduced more than 90% of COD and more than 70% of BOD in wastewater of the plant.

Vinatex Group has issued specific policies such as: Using reused water and treated wastewater to minimize the impact on the environment, using renewable energy such as sun and wind to reduce CO₂ emissions. , implementing programs to reduce waste, save fuel and optimize the production process, ensure labor protection regimes, including fair wages, ensure labor safety, and ensure health and insurance coverage for employees. According to a report by Vinatex, in 2020, this business used more than 2 million cubic meters of reused

water and reduced at least 19,765 tons of CO₂ emissions. By the end of 2020, Vinatex Group has had 20 projects on community development, including medical support, education and training, agricultural support, construction of roads and bridges, and school equipment. with a total cost of more than 25 billion VND.

However, the application of ESG standards is still a challenge for textile enterprises in Vietnam. The textile and garment industry in Vietnam is facing many challenges from economic and environmental aspects to technology and human resource management. To overcome these challenges, businesses need to invest in improving production skills, increasing the use of technology and effectively managing human resources. Therefore, increasing awareness and practice of ESG will be an important requirement in the future to ensure the sustainability of Vietnam's textile and garment industry.

5. Discussion and Conclusions

5.1. Conclude

The research results of the article show a positive relationship between ESG practice and corporate performance through the role of corporate values: customer loyalty, corporate reputation, corporate culture, etc. Karma. In which, it refers to the positive relationship of ESG practice to corporate reputation, customer loyalty, and corporate culture, and assesses that these three factors all have a positive impact on operational efficiency. enterprise action. Thus, it can be seen that practicing ESG, building customer loyalty, reputation and good corporate culture will lead to positive innovation and thereby increase operational efficiency in each business. enterprises, especially for Vietnamese textile and garment enterprises.

5.2. Propose

Based on the views given and analyzed about ESG above, our research paper makes some recommendations for businesses about ESG implementation as follows:

Firstly, businesses need to be properly aware of ESG as well as the importance and necessity of ESG in the current trend of globalization and international integration to be able to participate in the global supply chain and for the sake of effective operation towards sustainable development.

Secondly, enterprises need to arrange and improve the capacity of personnel specialized in ESG, focusing on and improving production management skills, value chain management and customers; effectively develop and implement the Human Resource Development Support Program in the textile and garment sector, focusing on new and necessary skills in the context of the industrial revolution 4.0.

Third, develop and publish annual regulations and policies of the company on ESG. At the same time, it is necessary to promptly amend and supplement those policies so that they are reasonable with the environmental and social circumstances and bring into full play the positive impact of ESG on economic consequences.

Fourth, businesses need to make efforts to transform, catch up with market trends, invest in machinery and technology, green transformation to adapt to the requirements of brands, and enhance many solutions for development.

Fifth, it is necessary to attract foreign investment selectively, giving priority to investment projects in advanced textile dyeing technology that do not cause adverse impacts on the environment.

Sixth, connecting with domestic garment enterprises, forming linkages throughout the value chain, jointly offering solutions on science - technology to green the textile industry... towards development. sustainable development, while meeting the requirements of major markets in the world.

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THE IMPACT OF FINANCIAL LITERACY ON THE INTENTION TO ADOPT FINTECH SERVICES IN HANOI, VIETNAM

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Abstract

This study focuses on the impact of financial literacy on behavioral intention towards using FinTech services of residents in Hanoi, Vietnam. Structural equation modeling (SEM) results on the dataset collected from 501 survey results show that financial knowledge and financial attitude are closely correlated with the intention to use FinTech. In which, financial knowledge is the factor that has the greatest influence on the intention to use FinTech services. The study also showed that demographic factors such as age, occupation, and education level affect the intention to use FinTech services. Combining Theory of Reasonable Action (TRA) and Technology Acceptance Model (TAM), the study shows that perceived usefulness and perceived ease of use both have a positive influence on attitude towards using FinTech services. Based on these research results, we suggest some solutions for the Vietnam Government, FinTech businesses and residents to improve financial literacy and the adoption of FinTech services.

Keywords: *Financial Literacy, FinTech, Behavioral intention towards FinTech, TAM Model, TRA.*

1. Introduction

FinTech is a term that refers to the application of advanced technologies to improve and enhance the quality of traditional methods of providing financial services (McAuley, 2014). FinTech applications such as mobile banking, e-wallet, and online securities trading services help users easily access financial services without the need for traditional transaction methods. Since 2020, the FinTech sector in Vietnam has not only increased in

the number of companies but also diversified regarding types of services. However, the level of access to FinTech in Vietnam is still uneven, with lower access rates in rural, remote, and isolated areas (Trinh Thi Phan Lan, 2022). There is still very little research that connects financial literacy and the use of FinTech. Those existing studies only consider the direct impact of financial literacy on the intention to use FinTech or only apply the Technology Acceptance Model (TAM) to the study of behavioral intention to use FinTech. Meanwhile, comprehensive research on the impact of financial literacy combined with the TAM model on the intention to use FinTech is currently quite lacking. Therefore, the purpose of the study is to examine the impact of financial literacy, and factors in the TAM model on the intention to use FinTech or the level of user acceptance of FinTech.

The aim of this study is to: Firstly, researching the factors in the model affecting the adoption of FinTech through financial literacy level: Financial Knowledge, Financial Attitude, Financial Behavior, Perceived Usefulness, Perceived Ease of Use, Demographic Factors, Attitudes Towards Using FinTech and Behavioral Intention to Use FinTech; Secondly, building and validating the scale of impact factors suitable to the Vietnamese market context; Thirdly, based on the research results in theory and survey, suggesting strategies and solutions for the government and businesses on increasing the acceptance of FinTech in Vietnam.

2. Literature Review

2.1. FinTech

Chuang, Liu, and Kao (2016) conducted a study to understand the action intention of consumers in using FinTech services, and the results showed that: Brand and service trust, Perceived usefulness, Perceived ease of use, and Attitude toward usage had a significant positive impact on intention behavior. This result has somewhat the same indications as the research of Hang et.al (2018) about online payment in Vietnam. In research about the Innovation of FinTech in Germany, Steward and Jurien (2017) showed that Data Security, Trust, and User interface design influence FinTech adoption.

Covid-19 pandemic is a good lever to access FinTech services, helping users realize the usefulness of the service (Le, 2021). FinTech services have increased user numbers during the COVID-19 lockdown. In the research of Le (2021), during the COVID-19 pandemic, trust, data security and privacy, and especially employee services are factors that enhance intention to use through perceived usefulness. Moreover, also investigating FinTech applications during Covid-19, the finding of Al Nawayseh (2020) states that perceptions of risks did not affect customers' intention to use FinTech applications but it affected their trust in the service. At the same time, users will become loyal to FinTech services because of the usefulness of this service to which they have been applied due to the mandatory condition of the Covid-19 lockdown.

2.2. Financial Literacy

Lusardi and Mitchell (2011a) analyzed financial literacy of people in 8 countries (Germany, the Netherlands, Sweden, Japan, Italy, New Zealand, the United States, and

Russia). They concluded that in most countries, financial literacy of women is lower than men and the figure for more educated people is also higher than those who do not. They also found evidence that ethnic, racial, and regional differences have a significant impact on financial literacy.

Atkinson and Messy (2011) report a questionnaire by the OECD International Network on financial education that is being piloted in 12 countries which takes into account awareness, behavior, and attitudes related to personal finance, in order to assess financial literacy. There is a positive association between financial attitudes and behavior and financial knowledge and behavior. That could infer knowledge leading to more active participation in financial markets and more positive behavior.

2.3. Theory

2.3.1. Studies on financial literacy

Research results of Junger and Mietzner (2019) indicate that the group of subjects with high financial literacy scores tends to accept the use of FinTech. Some prominent studies on the relationship between “Financial Literacy” and “FinTech adoption” also give similar results (Pavlou, 2003; Li et al., 2020; Liébana-Cabanillas et al., 2014; Wu & Wang, 2005; Yeo & Fisher, 2017). From there, the research team proposes the following hypothesis:

H1: “Financial Knowledge” has a positive effect on “Behavioral Intention to Use FinTech”.

H2: “Financial Attitude” has a positive effect on “Behavioral Intention to Use FinTech”.

H3: “Financial Behavior” has a positive effect on “Behavioral Intention to Use FinTech”.

Junger and Mietzner (2019) showed that the group of people who have used financial products will have a positive attitude to use FinTech, reflected in their willingness to evaluate and compare products to choose a superior product, bringing the best results. high performance during use. Agreeing with this view, Elsinger et al. (2018) believe that in order to improve their attitude to use FinTech, users need knowledge to understand the quality and risks of new financial products. From there, the research team proposes the following hypothesis:

H4: “Financial Knowledge” has a positive effect on “Attitude Towards Using FinTech”.

H5: “Financial Attitude” has a positive effect on “Attitude Towards Using FinTech”.

H6: “Financial Behavior” has a positive effect on “Attitude Towards Using FinTech”.

2.3.2. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989), is one of the most influential research models in the study of information systems determinants to investigate the intention to use and adopt technological services of individuals. Two important factors in the TAM model are perceived ease of use and perceived usefulness.

Perceived usefulness is defined as the degree to which a person believes that using a particular system will improve job performance (Davis, 1989). Users will believe that the system is useful if it provides some benefit (e.g. less time and financial loss to increase

efficiency and productivity) to them, thereby increasing their adoption intention (Chong et al., 2010). Some of the features that are considered useful in the adoption of online banking are transaction speed, user-friendliness, and accuracy (Liao & Cheung, 2002). By aggregating the results of TAM theory and previous studies, a hypothesis is suggested as:

H7: “Perceived Usefulness” has a positive effect on “Attitude Towards Using FinTech”.

Perceived ease of use is the degree to which a user believes that in order to use a new system or technology, they need not exert too much effort (Davis et al., 1989). This perception of ease of use is believed to have a strong impact on customer attitudes when shopping in online stores (Palvia, 2009). From these perspectives, the research team suggest a hypothesis:

H8: “Perceived Ease of Use” has a positive effect on “Attitude Towards Using FinTech”.

Pikkarainen et al. (2004) applied TAM in the study in Finland and they found that usefulness is considered as a determinant of customer intention to use, improving trust and readiness, which encourages users to use banks with technology. Many other studies also show positive results between perceived usefulness and intention to use of customers such as Jahangir, N., & Begum, N. (2008), Moses et al. (2013). Hence, by combining the above theories, a hypothesis is put forth:

H9: “Perceived Usefulness” has a positive effect on “Behavioral Intention to Use FinTech”.

2.3.3. Theory of Reasoned Action (TRA)

Davis (1989) defined The Theory of Reasoned Action (TRA) as “Behavior” is determined by a person's intention to perform and the influence of their environment. Empirical studies related to the diffusion of technological innovation have extended the use of the TAM model to include attitudes as defined by the Theory of Rational Action (Davis et al., 1989; Jayawardhena & Foley, 2000; Karjaluoto et al., 2002). Understanding the determinants of consumer attitudes, it is argued that this attitude has a strong, direct, and positive impact on consumers' intention to actually use a new technology or system. (Hernandez & Mazzon, 2007; Jaruwachirathanakul & Fink, 2005; Bobbitt & Dabholkar, 2001).

In addition, this study also confirmed the relationship between attitude and intention to use. From that, the research group came up with the following hypothesis:

H10: “Attitude Towards Using FinTech” has a positive effect on “Behavioral Intention to Use FinTech”.

2.3.4. Studies on demographic factors

Education level

Morgan and Trinh (2020) showed the relationship between education level and behavioral intention to use FinTech, with the target group with a university degree and above accounting for the highest percentage of FinTech usage. The study of Li et al. (2020) and Nguyen Thi Anh Nhu (2022) reached similar conclusions.

Income

The influence of income on the intention to use FinTech has been mentioned in many studies. Morgan and Trinh (2020) indicated that high-income people are more likely to use FinTech than low-income people. The study by Li et al. (2020) also suggests the same result, claiming that high-income households have a high rate of FinTech usage.

Occupation

When studying the influence of occupation factors on the intention to use FinTech, Yoshino et al. (2020) showed that the intention to use FinTech of the employed group is higher than that of the unemployed group, the highest is in students, company employees, government employees, part-time employees, and teachers. Nguyen Thi Anh Nhu (2022) compared FinTech usage trends in two groups of people working in the public sector and the private sector, showing that the intention to use FinTech among people in the public sector is higher than people in the private sector.

Age

The impact of age on FinTech adoption has been found in many studies (Morgan & Trinh, 2020; Nguyen Thi Anh Nhu, 2022; Yoshino et al., 2020). Choudrie & Vyas (2014), Choudrie et al. (2018) concluded that the prevalence of using mobile applications to support electronic transactions among older adults is low.

Gender

Li et al. (2020) argued that there is a difference in FinTech usage between men and women, with a higher proportion of men using mobile payments. Morgan and Trinh (2020), Yoshino et al. (2020) showed the results: men tend to use e-banking services and electronic payments higher than women.

From there, the research team proposes the following hypotheses:

H11a: "Educational level" affects "Behavioral intention to use FinTech".

H11b: "Income" affects "Behavioral intention to use FinTech".

H11c: "Occupation" affects "Behavioral intention to use FinTech".

H11d: "Age" affects "Behavioral intention to use FinTech".

H11e: "Gender" affects "Behavioral intention to use FinTech".

2.4. Framework

Synthesized from the above hypotheses, we propose the following model:

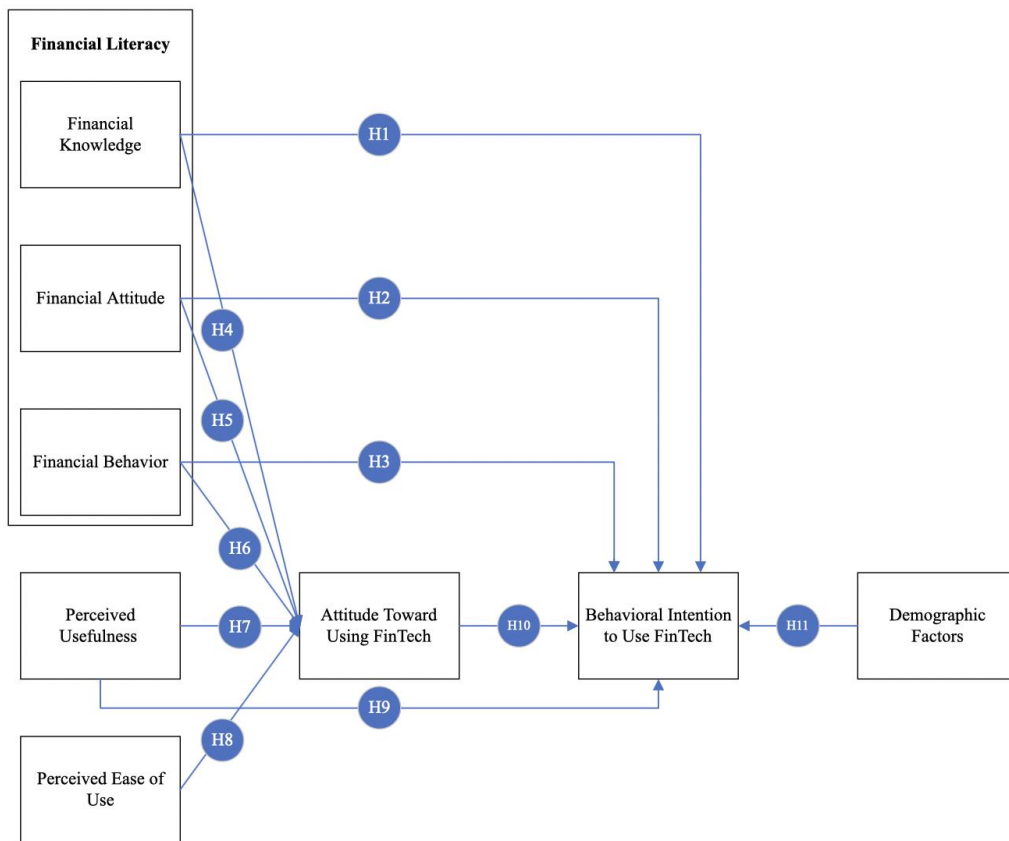


Figure 1. Research Model

Source: Author's proposal

3. Method

3.1. Dataset and Sample Selection

We collected data by sending out online questionnaires. The subjects of this study are people who are living, studying and working in Hanoi. There are 8 career areas we want to research: industry, training, engineering, agriculture, administrative management, finance and banking, healthcare and business. The survey period is from January 2023 to February 2023. After 1 month of conducting the online survey, we had collected 538 surveyed questionnaires. After filtering and removing invalid questionnaires due to unreasonable answers, the final sample number was 501.

3.2. Measurement Variables

In this study, the research scales are constructed by adjusting the questionnaire drawn from previous studies of OECD (2013); OECD (2015); Li-Min Chuang, Chun-Chu Liu and Hsiao-Kuang Kao (2016). The questionnaire is designed on a 5-point Likert scale with meanings ranging from 1 - Totally disagree to 5 - Totally agree.

Behavioral intention to use FinTech services (BI) is a dependent variable, measured by 6 observed variables. The independent variable consists of financial knowledge (K), financial attitude (A), financial behavior (B), perceived usefulness (PU), perceived ease of use (PE) and attitude toward using FinTech (AT). The measurement scale of each variable

includes 3; 4; 5; 4; 3; 5 observed variables, respectively. Control variables are composed of education level, income, occupation, age, and gender. Preliminary quantitative test results show that all items in the questionnaire are statistically significant and fit the model.

4. Results

4.1. Descriptive Results

The total number of samples collected was 501 observations, including 154 males (30.7%) and 344 females (69.3%). The sample concentrated on the age group 18 - 29, accounting for 74.85%, and the age group 30 - 44 accounted for 10.98%. The majority of surveyed subjects are students, so their income is mainly from 0 - 5 million VND a month (63.67%) and 5 - 10 million VND a month (14.17%), the rest are those with income from 10 million VND or more. Regarding employment, students accounted for the highest percentage (59.08%), followed by people with jobs in the field of finance and banking (20.76%), then administrative management, educational and technical fields. In addition, since the study was carried out in Hanoi, the percentage of survey respondents with college and university education was the highest (79.44%), followed by those who have completed a general education program (12.18%), the rest have postgraduate education.

4.2. Confirmatory Factor Analysis Results

Table 1. Composite Reliability, Convergent Validity, and Discriminant Validity Assessment Results

	CR	AVE	MSV	MaxR(H)	PE	A	B	AT	BI	PU	K
PE	0.892	0.735	0.036	0.911	0.857						
A	0.896	0.684	0.062	0.905	-0.056	0.0827					
B	0.909	0.667	0.050	0.910	-0.013	-0.133**	0.816				
AT	0.919	0.694	0.391	0.919	0.189***	0.204***	0.223***	0.833			
BI	0.938	0.714	0.391	0.938	0.085*	0.249***	0.186***	0.625***	0.845		
PU	0.851	0.588	0.328	0.856	0.151**	0.180***	0.080	0.573***		0.767	
K	0.833	0.624	0.334	0.834	-0.031	0.069	0.160**	0.273***		0.139*	0.790

Source: Author's calculation

Confirmatory Factor Analysis (CFA) was used to test the reliability of the research scale. The results show that the measurement model has a value of $\chi^2/df = 1.786 (<3)$; GFI = 0.913 (>0.8), CFI = 0.971; TLI = 0.967; (>0.9); RMSEA = 0.040 (<0.08); PCLOSE =

1.000 (>0.05). The values meet the thresholds suggested by Bagozzi and Yi (1988); Hair et al. (2010).

Hair et al. (2010) used three indicators Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Variance (MSV) to evaluate the reliability, convergence and discriminant of the scale. Based on summary results in Table 1, AVE value of each latent variable is greater than 0.5 and CR value is greater than 0.7, so the convergence and reliability are at a good threshold. AVE values are also larger than MSV values and the square root value of AVE is larger than the correlation coefficients between variables in the model. Thus, the discriminant is guaranteed.

4.3. Structural Equation Modeling Results

Table 2. Hypothesis Testing and Impact Analysis Results

Hypothesis			r	β	S.E.	C.R.	P	Result
BI	←	K	0.438	0.560	0.055	10.266	***	Accepted
BI	←	A	0.115	0.101	0.032	3.183	0.001	Accepted
BI	←	B	0.034	0.034	0.036	0.961	0.337	Rejected
AT	←	K	0.172	0.248	0.063	3.937	***	Accepted
AT	←	A	0.135	0.134	0.042	3.191	0.001	Accepted
AT	←	B	0.176	0.197	0.047	4.189	***	Accepted
AT	←	PU	0.491	0.637	0.065	9.775	***	Accepted
AT	←	PE	0.130	0.167	0.053	3.175	0.001	Accepted
BI	←	PU	0.180	0.207	0.053	3.930	***	Accepted
BI	←	AT	0.371	0.329	0.043	7.625	***	Accepted

Source: Author's calculation

To test the hypotheses of the research, we used Structural Equation Modeling (SEM). The results show that, based on the fit threshold proposed by Hu and Bentler (1999), Hair et al. (2010), the values are from good to very good and are in perfect agreement with the observed data. Specifically, $\chi^2/df = 1.782 (<3)$, GFI = 0.913 (>0.8), CFI = 0.971 (>0.95), TLI = 0.967 (>0.9), RMSEA = 0.040 (<0.06) and PCLOSE = 1.000 (>0.05).

With statistical significance < 0.05 and correlation coefficient > 0, hypotheses H1, H2, H4, H5, H6, H7, H8, H9, H10 are accepted, hypothesis H3 is rejected. In particular, the major contributing factor to promoting the intention to use FinTech is financial knowledge. Moreover, attitudes towards using are significantly influenced by perceived usefulness and financial behavior. Financial behavior does not affect behavioral intention to use FinTech (P = 0.337). Therefore, H3 is rejected. Lastly, the independent variables explain 60.6%

and 41.9% of the variation of attitude and intention to use FinTech services, respectively. Therefore, the explanatory power of the independent variables in the research model is at a good level.

4.4. One - way ANOVA Results

To test the mean difference in behavioral intention to use FinTech of demographic factors, we used Levene's test. Three Sig-values are lower than 0.05, with heterogeneous variance corresponding to three factors: education level (Sig.=0.000), income (Sig.=0.001), age (Sig.=0.000). Continuing with Welch's test, the Sig-value of education level is Sig.=0,000 (<0.05), age is Sig.=0.002 (<0.05) and income is Sig.=0.528 (>0.05). Therefore, we accept hypotheses H11a, H11d and reject hypothesis H11b. Two factors, employment and gender, under Levene's test have Sig.=0.085 and Sig.=0.398, respectively, greater than 0.05, so there is a uniform variance. Continuing with ANOVA test, employment has Sig.=0.036 (<0.05) and gender has Sig.=0,692 (>0.05). Therefore, we accept hypothesis H11c and reject hypothesis H11e. For three accepted hypotheses H11a, H11c, H11d, those who have college or university degree, those who are students and the age group 18 - 29 have the highest behavioral intention to use FinTech.

5. Discussion and Conclusion

Research has verified the relationship between factors of financial literacy; perceived ease of use and perceived usefulness affect attitudes and behavioral intentions to use FinTech. Through empirical research in this paper, it is found that:

Firstly, financial literacy has a strong relationship with the intention to use FinTech services. Specifically, knowledge plays the most important role in increasing intention to use. Individuals with high Financial knowledge scores have a high tendency to want to use FinTech services. Simultaneously, the financial attitude also has a positive correlation with the intention to use. This result is consistent with previous empirical research of Junger & Mietzner (2019); Nguyen Thi Anh Nhu (2022). However, the data shows that the intention to use is not affected by financial behavior. This may be because the FinTech industry in Vietnam is still young and the legal corridor is loose. Therefore, some individuals will be concerned about security when accepting those types of services.

Secondly, three factors inherent in financial literacy have a positive influence on the attitude toward using FinTech, in which financial behavior has the largest impact on the attitude of people to use FinTech in Hanoi. This result is consistent with the research of Junger & Mietzner (2019), which shows that a group of people with experience in using financial products often decide to use a new financial product through the process of evaluation and comparison.

Third, perceived usefulness and perceived ease of use both positively influence attitudes toward using FinTech. This means: the more useful and easy a user feels a FinTech service is to use, the more determined they are to use it. This result is similar to Palvia (2009) when studying online shopping stores, Liao & Cheung (2002) in studying online payment

on banking applications. In addition, the positive effect of perceived usefulness on behavioral intention to use FinTech is also inferred from the research results. This shows that the greater the awareness of the benefits of FinTech services, the higher the intention to use these services.

Fourth, demographic factors such as age, occupation, and education levels affect the behavior intention to use FinTech. This result is consistent with previous research by Nguyen Thi Anh Nhu (2022), so we can conclude that the people who intend to use FinTech in Hanoi are mostly young and well-educated. However, the analysis data shows that there is no statistically significant difference between gender and income, which goes against the study of Morgan & Trinh (2020) or Li et al (2020). In fact, Vietnam nowadays is less affected by gender inequality than previous generations, women have more voice and status in society, more opportunities to cultivate knowledge and more chances to participate in social and financial investment activities than before. Concurrently, some high-income people may be used to traditional financial services and have little interest in price, so they have no intention of using FinTech. Meanwhile, some low-income people intend to use FinTech to reduce costs and increase convenience.

From the research results, some proposed solutions to improve financial literacy and intention to use FinTech are as follows:

Firstly, for the Government, the development of the digital economy is considered as one of the main driving forces that will allow Vietnam to achieve its goal of becoming a high-income economy by 2045. The trend of digitalization or digital transformation is really strong in all fields, especially in the financial sector. FinTech was born as a powerful technology segment of Digital Finance. In such a context, raising financial literacy by the development of a national curriculum framework on financial education aims to popularize basic financial literacy (financial knowledge, behavior, attitudes) are needed. In particular, the Government should concurrently complete the Financial Technology test mechanism in the banking sector and issue new decrees, supporting policies to help create a healthier operating environment and encourage businesses to actively innovate. In general, in order for the FinTech industry in Vietnam to develop further and reach more users, there needs to be a harmonious combination between raising financial literacy and promoting the FinTech ecosystem.

Secondly, for FinTech businesses, because the majority are start-ups, FinTech businesses in Vietnam need to improve the quality of human resources, accumulate skills and business experience. Moreover, FinTech businesses need to promote links with commercial banks to provide products and services and build a FinTech ecosystem towards the convenience of users. Thereby, businesses can maintain stable operations, improve their reputation and brand with users. They can also create incentives to stimulate use for consumers, while keeping up with the general trend of society and attracting more people to use the financial services they provide.

Third, for residents, each person needs to actively learn, accumulate knowledge and participate in financial teaching programs to improve their financial knowledge. Residents

should also regularly update market trends, catch up with news on Government and Enterprise regulations to use selective FinTech services. Behavioral intentions to use FinTech often require a higher level of risk tolerance than traditional financial products. Therefore, users also need to pay attention to the risks that may be encountered when trading by updating information about policies and programs from official media channels. For users who value safety and want to limit the risks, they are encouraged to choose FinTech applications that have a privacy policy that helps protect their interests when making transaction decisions.

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THE IMPACT OF GREEN SKEPTICISM ON GREEN CONSUMER GOODS' PURCHASE INTENTION AMONG GENERATION Z IN HANOI

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Abstract

Currently, the trend of "greenwash" has generated green skepticism among consumers - skepticism about the green consumer products they have access to. The purpose is to investigate the influence of the "Green skepticism" on the intention to buy green consumer goods of Generation Z in Hanoi. The application of Attitude - Behavior - Context theory is the background for this research. The study was implemented in two phases: preliminary qualitative research and formal quantitative research. The main findings indicated that green skepticism has a direct negative impact on the intention to buy green consumer products and also an indirect influence through environmental concerns. As the result, in order to reduce green skepticism, policies should be in place to help manage and evaluate quality to provide transparency in the information of green consumer products.

Keywords: *Green purchase intention, Green skepticism, Generation Z.*

1. Introduction

Currently, environmental pollution is an existential threat to human and planetary health. Along with that is the maturity of Generation Z which shows a high interest in social issues such as environmental matters. Environmental campaigns are widely deployed and supported; however, some companies have taken advantage of this to adjust their green business strategies by using the idea "greenwashing". The trend of "greenwashing" has aroused skepticism in the consumer community about the green advertising they are exposed to.

With the availability of information on the internet, today's consumers begin to understand how their choices can have a significant impact on the environment. Therefore, in Vietnam, green consumption is becoming more and more popular. Gen Z - the adaptable and changeable generation are the pioneers in responding to the green consumer lifestyle. It can be seen that green skepticism and its influence on the intention to purchase green consumer goods of Generation Z in Vietnam is a critical global issue in today's world, where environmental concern is always at the forefront of public debate.

Therefore, we conduct a study to investigate the relationship between green skepticism, environmental knowledge and environmental concern and the green consumer goods purchase intention of Generation Z in Vietnam. Through a literature review and empirical research on the attitudes and behaviors of this demographic group, it hopes to shed light on the underlying motives and factors affecting green consumer goods purchase intention.

The paper is organized as follows. The research starts with the framework of Attitude - Behavior - Context theory. Then the research presents the Research hypotheses and main findings. It concludes with some managerial implication for state agencies, enterprises and consumers.

2. Literature Reviews and Research hypotheses

Attitude - Behavior - Context theory

Attitude - Behavior - Context theory is a theory of human behavior in which external factors (context) can prevent a person from carrying out their intentions (Guagnano et al., 1995). There is a gap between attitude and behavior, and attitude does not always lead to corresponding behavior; instead, external factors may prevent an individual from carrying out their intentions. This theory proposes that contextual or situational factors must also be considered when trying to understand consumer behavior.

Green Consumers Goods Purchase Intention

In green consumption, green purchase intention refers to the probability and the willingness of the person to give preference to environmentally friendly products compared with conventional products in their considerations of purchase (Nik Abdul et al., 2009). In other words, green purchase intention is the possibility of consumers wishing to purchase environmentally friendly products (Chen and Chang, 2012).

Environmental concern is defined as the degree to which people are aware of problems regarding the environment and support efforts to solve them and/or willingness to contribute personally to their solution (Dunlap et al., 2002). Lavuri, R. et al (2021) indicated a correlation between environmental concerns and green purchase intentions of Generation Y and Z consumers. Eddy S. Yusuf et al. (2021) confirmed that there are direct and indirect effects of environmental concern on environmental purchase intentions. In Vietnam, Hoang Trong Hung et al. (2018) pointed out that environmental concern is one of two main factors affecting green consumption intentions, thereby indirectly affecting sustainable consumer behavior. Therefore, we suggest the first hypothesis:

H1: Environmental Concern has a positive impact on Green Consumer Products Purchase Intention.

Environmental knowledge can be defined as an individual's ability to identify various symbols, concepts and behavior patterns related to environmental protection (Laroche et al., 2001). What consumers know about the environment, perceptions of environmental issues, emotions involved, and the consequences of actions on the environment (Paço and Raposo, 2009; Zhao et al., 2014; Eles, 2017; Yadav and Pathak, 2016). An individual's environmental knowledge is closely related to consumer buying behavior (Bazoche et al., 2008). Other studies also confirmed this result that there is a direct and positive relationship between knowledge and intention (Goh and Balaji, 2016; Joshi and Rahman, 2015; Aman et al., 2012). Therefore, we suggest the second hypothesis:

H2: Environmental Knowledge has a positive impact on Green Consumer Products Purchase Intention.

Consumer skepticism is the tendency toward disbelief of advertising claims (Obermiller and Spangenberg 1998). Green skepticism is defined as a consumer's state of mind, or in other words, a tendency to doubt the environmental claims or related environmental performance of green products (Kwong and Balaji, 2016). Waskito, J., and Wahyono, W. (2017) showed that skepticism has an insignificant influence on green purchase behavior. Similarly, Luo et al. (2020) showed that skepticism towards green advertising has no direct impact on green product purchase intention. While in Vietnam (Nguyen et al., 2019) proved that green skepticism has a direct negative impact on green purchase intention. Therefore, we suggest the third hypothesis:

H3: Green Skepticism has a negative impact on Green Consumer Products Purchase Intention.

Pagiaslis and Krontalis (2014) observed that environmental concerns have direct and indirect effects through knowledge and beliefs on willingness to pay and use biofuels. In addition, Bamberg (2003) demonstrated that customers who are highly concerned about the environment are more informed about green products and green technologies and are more conscious about purchasing products that are harmful to the environment. Therefore, we suggest the fourth hypothesis:

H4: Environmental Knowledge mediates the relationship between Environmental Concern and Green Consumer Products Purchase Intention.

Goh See Kwong and M.S. Balaji (2016) aimed to investigate the role of skepticism in green purchase behaviors. The results showed that environmental concern fully mediates the relationship between green skepticism and green purchase intention. However, the study of Jati Waskito, Wahyono (2017) on consumer green purchase behavior in Indonesia showed that environmental concern did not mediate skepticism and green buying behavior. Therefore, we suggest the fifth hypothesis:

H5: Environmental Concern mediates the relationship between Green Skepticism and Green Consumer Products Purchase Intention.

Goh (2016) found that consumers with a high degree of skepticism tend to ignore information about green claims and thereby affect green purchase intentions. Masayu and

Rifelly (2021) indicated that the indirect effect of green skepticism is more significant than the direct negative effect of green skepticism on green purchase intention. However, this result is in contrast to (Leonidou and Skarmas, 2017) that consumers who are uncertain about eco-friendly labels have the tendency to seek more information to confirm their skepticism, then consider buying or not. Therefore, we suggest the sixth hypothesis:

H6: Environmental Knowledge mediates the relationship between Green Skepticism and Green Consumer Products Purchase Intention.

3. Methods

This research utilizes the qualitative research method combined with a quantitative research method. Qualitative research was used to explore the perspectives and perspectives of Gen Z consumers on the intention to buy green consumer products. Quantitative research to determine the factors affecting the intention to buy green consumer products have been mentioned: Green skepticism, Environmental concerns, and Environmental knowledge.

Research Instruments

For qualitative research, the observation method was used to form relationships between related factors and build initial theoretical models. In-depth interviews are also used to approach interviewees thoroughly and effectively in order to deepen the research topic.

For quantitative research, the survey was conducted through a questionnaire. The questionnaire consists of four parts, with the scale used as a 5-point Likert scale (level 1 corresponds to "strongly disagree" and level 5 corresponds to "strongly agree") to measure the following factors: Green Skepticism, Environmental Concerns, Environmental Knowledge, and Green Purchase Intention.

Research Participants

Generation Z is defined as people who were born between 1995 and 2010 (McCordle và Wolfinger, 2010); between 1996 and 2012 (Schwieger và Ladwig, 2018) or 1997 - 2013 (Schroth, 2019). In this study, we focused on people born between 1997 and 2008. Survey participants are young people, people of Gen Z, from 15 to 26 years old, who are living in Hanoi.

Data Collection and Sample

Method of collecting secondary data: Secondary data was collected based on domestic and foreign articles, available documents, research papers related to the topic, and reliable websites serving for searching and filtering information. Data was collected from October 2022 to December 2022

Method of collecting primary data: Data was collected by distributing online surveys through social networks to Generation Z living in Hanoi using Google Forms. The questionnaire was also printed and sent directly to the respondents, the answers were then entered into the spreadsheet and merged with the answers obtained by online form. For this form of data collection, there were 485 respondents to the questionnaire. After filtering the data, we obtained 451 valid answer sheets.

Data Analysis

All valid samples were processed by SPSS 20 and AMOS 20 to conduct reliability analysis, factor analysis, regression analysis, and hypothesis testing. SEM linear structural model is used to test the proposed research hypothesis to see if it is consistent with the actual data obtained or not.

4. Results

Out of 482 questionnaires collected, 451 answers were valid. The percentage of female respondents was 73% while that figure for male accounted for 26.4%, the remaining 0.6% belongs to the other gender. The number of respondents was divided into three categories, namely from 15 to below 18 years old (11.1%), from 18 to below 22 years old (83.1%) and from 22 to 26 years old (5.8%). Payments for green consumer goods were mostly less than 500,000 VND per month (> 89%). The majority of survey respondents have ever bought green consumer goods (accounting for more than 49%) and answered that they buy green consumer products on a regular basis.

To evaluate the reliability of the scales used in this research, the Cronbach Alpha coefficient was used, and exploratory analysis (EFA) was performed to evaluate the convergent and discriminant values of the scales. Some observed variables (GS4, EK5, EC2 and GPI4) were excluded due to low total correlation coefficients or simultaneous upload of both factors.

The results of CFA analysis showed that the Chi-Square coefficient/df (CMIN/df) was 1.914 (< 3), GFI = 0.872 (> 0.8), CFI = 0.944 (> 0.9), RMSEA = 0.078 (< 0.08). Therefore, the model is suitable for the research data, the values are satisfactory.

The process of analyzing the SEM linear structure model and analyzing the indirect relationship between the variables gave the following results:

Table 7. Hypothesis Testing Results

Hypo	Statement	P - value	Result	Degree of effect
1	Environmental Concern has a positive impact on Green Consumer Products Purchase Intention.	0.000	Accepted	0.414
2	Environmental Knowledge has a positive impact on Green Consumer Products Purchase Intention.	0.000	Accepted	0.423
3	Green Skepticism has a negative impact on Green Consumer Products Purchase Intention.	0.010	Accepted	-0.129
4	Environmental Knowledge mediates the relationship between Environmental Concern and Green Consumer Products Purchase Intention.	0.127	Not Accepted	
5	Environmental Concern mediates the relationship between Green Skepticism and Green Consumer Products Purchase Intention.	0.000	Accepted	-0.213
6	Environmental Knowledge mediates the relationship between Green Skepticism and Green Consumer Products Purchase Intention.	0.666	Not Accepted	

5. Discussion and Conclusion

5.1. Discussion

H1: Environmental Concern has a positive impact on Green Consumer Products Purchase Intention.

Research by Fabiola and Mayangsari (2020), Maichum et al. (2017) in Thailand and Yue et al. (2020) in China showed that Environmental Concern has a significant positive impact on Green Purchase Intention. It is understandable that Generation Z living in Hanoi faces serious environmental pollution which makes them more worried about the environment. This motivates them to make green shopping behavior.

H2: Environmental Knowledge has a positive impact on Green Consumer Products Purchase Intention.

The above results are consistent with the study of Fabiola and Mayangsari (2020) and Pratiwi et al. (2018), that consumers' environmental knowledge can increase their green purchase intention. The study was carried out by Aman et al. (2012) also suggested that there is a positive relationship between Environmental Knowledge and Green Purchase Intention.

H3: Green Skepticism has a negative impact on Green Consumer Products Purchase Intention.

The above results are in contrast to the study of Fabiola & Mayangsari (2020) and Luo et al. (2020), these two studies show that there is no significant relationship between Green Skepticism and Purchase Intention of green consumer goods. However, Kim and Oh (2020) argued that Skepticism has a direct negative impact on Green Purchase Intention. The more skeptical consumers are towards green claims of manufacturers, the lower their intention to buy green consumer products.

H5: Environmental Concern mediates the relationship between Green Skepticism and Green Consumer Products Purchase Intention.

The indirect effect of Green Skepticism on Green Purchase Intention is -0.213, larger than the direct effect of -0.129, this result is similar to Goh's study (2016). When consumers suspect that brands are making false green product claims, they will feel that their use of products that are said to be environmentally friendly is not really beneficial for the environment as they expected. Thereby reducing their intention to buy green consumer products.

H6: Environmental Knowledge mediates the relationship between Green Skepticism and Green Consumer Products Purchase Intention.

The results of testing the intermediate effects between variables show that Environmental Knowledge does not mediate Green Skepticism and Green Purchase Intention. P-value coefficient = 0.666 > 0.05. Thus, when consumers have Green Skepticism, even if they have Environmental Knowledge, it does not affect their Intention to buy green consumer products.

H4: Environmental Knowledge mediates the relationship between Environmental Concern and Green Consumer Products Purchase Intention.

The indirect impact of Environmental Concern on Green Purchase Intention through Environmental Knowledge is also tested as no effect due to the coefficient P-value = 0.184 > 0.05. Environmental Concern does not motivate consumers to accumulate more Environmental Knowledge. Therefore, the mediating role of Environmental Knowledge in the relationship between Environmental Concern and Green Purchase Intention is also rejected.

5.2. Conclusion and Recommendations

The research explored that consumers' concern about environmental issues will motivate them to buy green consumer products. Similarly, the accumulation of environmental knowledge is also one of the factors promoting the behavior of buying environmentally friendly consumer products. In contrast, green skepticism or distrust of consumers in green claims made by manufacturers will reduce their motivation to buy green consumer products.

From the research results, we make a number of recommendations as follows in order to increase the interest and understanding of the environment along with reducing consumer skepticism about green advertising.

Recommendations to state agencies, mass media

- Additional lessons in extra-curricular programs related to the environment in high school and higher education programs. Improve public understanding about green consumption through public advertisements, television programs, social networks, etc.
- Create motivation to promote the formation of green consumption intentions through the organization of green consumption week, green consumption month, building a green consumption network, etc.
- Promoting green production by offering preferential policies such as preferential support, loans for businesses to strengthen and produce green products. Using economic tools to invest in building and developing green networks and green supply chains.
- Promulgating strict inspection regulations and legal frameworks related to green consumption. Create trust for consumers, thereby reducing skepticism for green-labeled products.

Recommendations to companies and enterprises producing and distributing green consumer products

- Using different social networking and communication platforms to raise consumer awareness about green consumption and green products of businesses in particular.
- Comply with the state's regulations on green labeling, not giving false information about the benefits of green products. Regularly report to the authorities on the production and distribution of green consumer goods and demonstrate commitment to "green" through specific actions and results.
- Focus on investing in research and technology development in the production of green products. Diversify, ensure quality, minimize environmental risks to ensure consumer confidence in green products.

- Developing online distribution channels. Create products that co-create with customers about green products. Applying waste recycling and energy saving measures at green product distribution facilities.

Recommendations to consumers buying green products

- Update information from official news sources. Buy green products through reputable e-commerce platforms, official websites of companies and agents in Vietnam.

- Clear awareness of one's responsibilities and consequences of environmental pollution. Spend a portion of spending on green consumer products. Participate in seminars and events on green consumer products to spread the spirit of trust in green products in the community.

- Participating in contributing to environmental protection effectively through specific actions such as: saving electricity, limiting the use of plastic bags, etc. green consumption, thereby promoting the spread of green consumption behavior in the community.

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RESEARCH ON THE INFLUENCE OF ASYMMETRIC INFORMATION ON STUDENTS' INTENTION TO PARTICIPATE IN THE STOCK MARKET IN HANOI

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Abstract

In this study, the linear regression analysis method is used to evaluate the direct and indirect relationship between asymmetric information and the intention to participate in the stock market of Hanoi students. The indirect influence relationship is assessed through the factors of the TPB model (attitude, subjective norm, perceived behavior control) and an expanded variable is the financial literacy. The final research results show that: attitude, subjective norms, perceived behavioral control, financial literacy and asymmetric information, all have a direct influence on the intention to participate in the stock market of students in Hanoi. Besides, the indirect correlation of asymmetric information to the intention to participate in the stock market through the variables of attitude, subjective norms, perceived behavioral control, financial literacy is also demonstrated. According to the results of the descriptive statistical method, the demographic characteristics also have a certain impact on the dependent variable.

Keywords: *asymmetric information financial behavior, financial literacy, TPB*

1. Introduction

Vietnam's stock market, in recent years, has experienced a volatile period due to the impact of many different macro factors. In the current period, the stock market in general is experiencing continuous growth. However, it cannot be denied that Vietnam's stock market still has potential unsustainable factors. In particular, the information data on the market is incomplete and lacks transparency, the imbalance of information between individuals and

organizations participating in the stock market causes the phenomenon of "asymmetric information". Although publicly available information is not too reliable, information important to decision-making is scarce (e.g., research and development costs, profitability indicators, inputs...). From the perspective of the whole market, asymmetric information is also considered a factor leading to large fluctuations in the stock market.

For students having background in financial education but little experience, can form investment intentions based on objective reasons rather than personal experience. Under the influence of asymmetric information, too, individual investors who are experienced and have reliable sources of information can know whether this information is reliable enough to make a decision. Some of those investors might know information that is not publicly available, which will reduce the level of information asymmetry among stock market participants. For students, their experience is limited, personal relationships are not strong enough, which can help to verify information as well as collect information, so it is easy to lead to high levels of risk.

Not stopping there, students, with limited experience, limited access to information, their investment intentions will be different from experienced investors. However, even in the case that students' access to information is the same as that of ordinary experienced investors, i.e. the level of information asymmetry is not too high, they may still make different decisions from experienced investors. The reason for this phenomenon may be that students want to apply their financial knowledge in a real-life context, to test their own decisions, or because they have less to lose in the case of wrong decision. In summary, the behavior of students under the influence of asymmetric information on the stock market is different from that of ordinary individual investors in some aspects.

From a theoretical point of view, there are not many studies on the impact of asymmetric information on behavioral intentions in general in Vietnam as well as in the world. When it comes to asymmetric information, studies will often measure the level of asymmetric information in the market (Le, 2008). In terms of research on the factors affecting the intention to participate in the stock market, there are relatively many studies using the planned behavior model (TPB) and the factors in that model have also been shown to have an affect the intention to participate in the stock market. But the direct relationship of asymmetric information to the intention to participate and the indirect relationship of asymmetric information through the factors of the model of planned behavior has not been tested in any studies.

Stemming from the above theoretical and practical requirements, we decided to study the topic *"The influence of asymmetric information on students' intention to participate in the stock market in Ha Noi"*. The article's aims is to help investors invest more effectively, putting the stock market under operation more and more efficiently.

2. Hypothesis Development

Investment decision is the choice to invest in real assets. This is considered the most important decision that increases the value of the business. Typically, managers evaluate the effectiveness of an investment project based on expected cash flows and market forecast

risk. The accuracy of the forecasts depends on the information and the level of reflection of the information in the market. Asymmetric information makes the market inefficient, so prices do not accurately reflect asset values, unable to provide accurate information and indications for investment decision making. The risk-reward relationship is not reliable. It is possible that the market considers the project to be above the market risk-return curve meaning that the cost is relatively low, making the project an investment despite the fact that it has a high cost. Conversely, low-cost projects can be ignored because the market's assessment is below the market risk-return curve. Based on the previous discussion, we propose the following research hypothesis:

H1: Asymmetric information has an impact on financial literacy

H3: Information asymmetry has an impact on attitudes towards behavior

H5: Asymmetric information has an impact on behavioral intentions

H6: Asymmetric information has an impact on subjective standards

H8: Information asymmetry has an impact on perceived behavioral control

According to Brucks, the basic requirement for processing product information and making purchasing decisions is product knowledge. In the case of financial products, product knowledge is expressed in terms of financial knowledge. Financial literacy is defined as a requirement of a person's ability to make important financial decisions or a condition of a person's complete knowledge of the four concepts. fundamentals: calculation, inflation, risk diversification and compound interest. Based on the previous discussion, we propose the following research hypothesis:

H2: Financial literacy has an impact on behavioral intention

Attitude is defined as "an individual's evaluation of the results obtained from performing a behavior". In the first aspect, Attitude is seen as a tool to describe whether a behavior is important, harmful or valuable, and in the second aspect, to determine whether the behavior is pleasant or not. interesting. Therefore, we propose the research hypothesis:

H4: Attitude towards behavior has an impact on behavioral intention

According to Ajzen, subjective norm refers to the norms and social pressures on a person to perform a certain behavior. In Raut's research, in India, investors cannot control their own stock investment decisions because of the lack of investment platform, information related to the stock market; mainly friends, family or colleagues influence their intention to participate in the stock market. Accordingly, an individual can form an intention to perform a particular behavior under the influence of a subjective norm, even if he or she wants to or doesn't want to do it. Based on previous studies, the team proposes the following hypothesis:

H7: Subjective standards have an impact on behavioral intention

According to (Ajzen, 1991), Perceived behavioral control describes an individual's perceived ease or difficulty in performing a particular behavior; perceived behavioral control is influenced by the availability of other behaviors. opportunities or resources that

help the individual perform the behavior. Based on previous studies, the team proposes the following hypothesis:

H9: Perceived behavioral control has an impact on behavioral intention

Based on the hypothesis development, the research model is as follows:

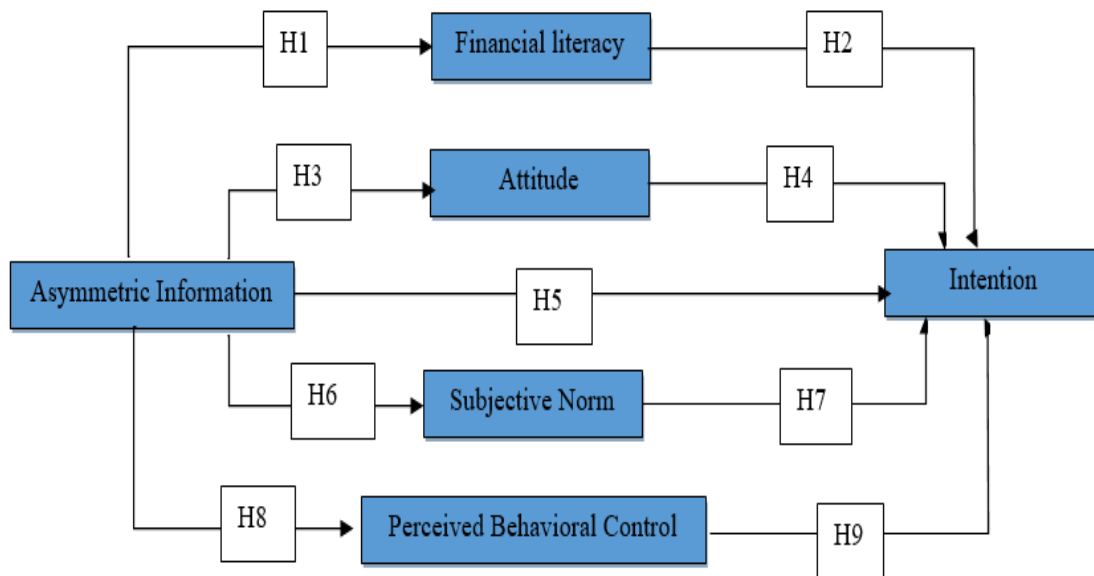


Figure 1. Proposed research model

Source: Research team

3. Method

The formula for determining sample size of Hair et al (2014) is used as follows:

$$N = 5 \times \text{number of observed variables}$$

With the number of observed variables is 30, the minimum sample size must be 150, with the expectation that the valid sample accounts for 30% of the total number of samples collected, the study chooses a sample size of 500 observations to ensure reliability. statistical. Due to the adoption of an online survey and to ensure sample size, the team decided to drop 900 votes via a Google form. After finishing the process of collecting answer sheets, the research team collected a total of 752 votes, of which 695 were valid, accounting for 92.4% to use in this study. The number of valid votes exceeded the initial expectation of the research team thanks to the convenient sampling method that the team used during the survey.

The research team used convenience sampling method to conduct the survey. With this method, the group invited students who were acquaintances of the group to fill out an online survey and asked those acquaintances to continue calling their acquaintances and friends to participate in the survey. In addition, the group also posted surveys on student forums of the schools and at the end of the survey time, the group collected a total of 695 answer sheets that can be used for research.

The research team entered data entry and coded the data. Then, this data will be analyzed and evaluated for reliability and convergence of the scales through the use of data analysis tools of SPSS software version 22.0, AMOS 20.0 combined with Data processing on Microsoft Excel 2016. The research team analyzed and assessed the reliability of the scale through Cronbach's Alpha reliability coefficient, exploratory factor analysis method EFA and confirmatory factor analysis CFA based on CFA. on structural modeling (SEM), and finally linear regression analysis.

4. Results

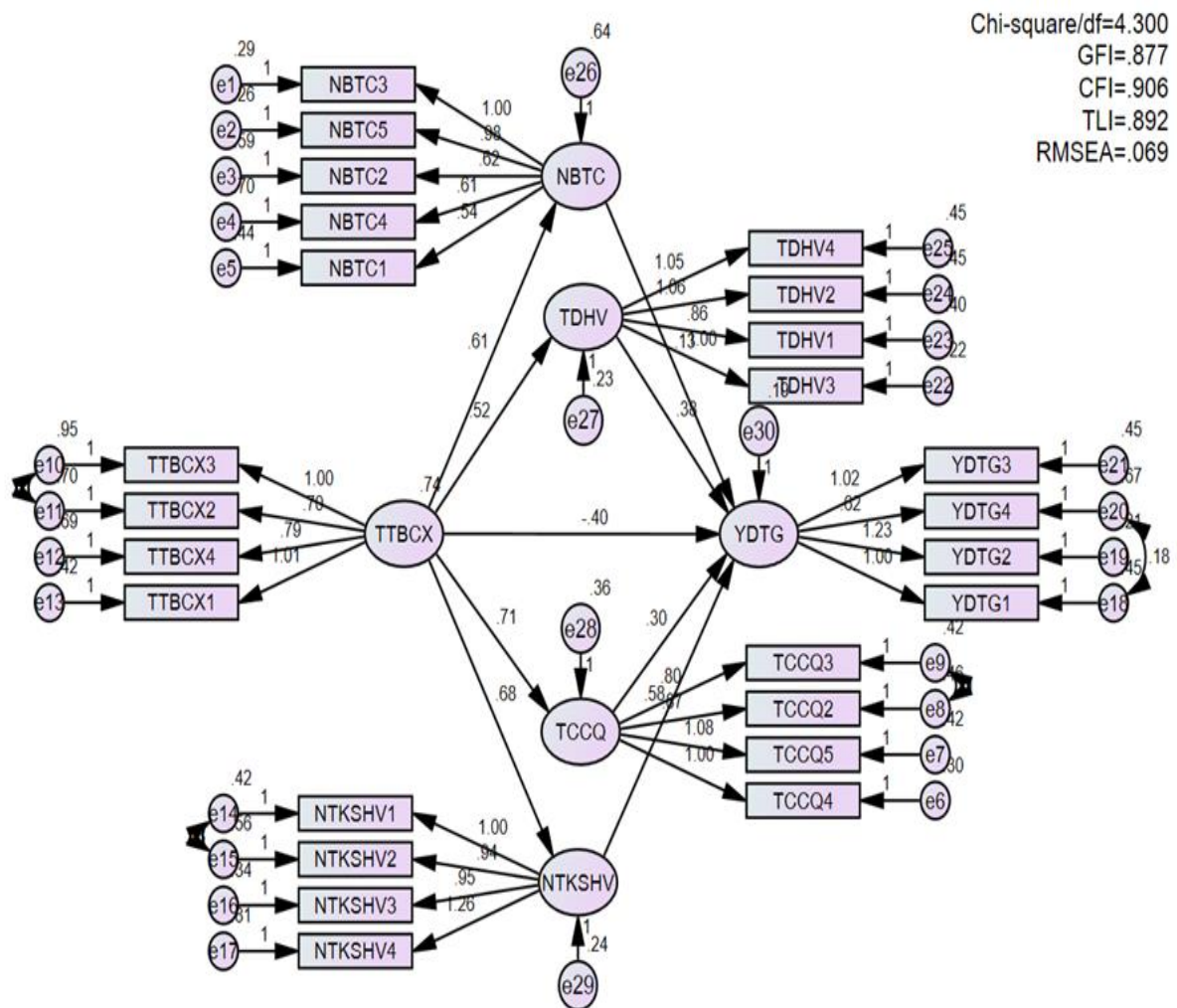


Figure 2. Linear structural SEM model verification

Source: Survey results, 2022

The results of the analysis of the fit of the SEM linear structure model showed that the CMIN/df = 4,300 (Chi-square/df \leq 5); GFI = 0.877 (Goodness of Fit Index \geq 0.8); CFI = 0.906 (Comparative Fit Index \approx 0.9); TLI = 0.892 (Tucker & Lewis Index \approx 0.9) and RMSEA = 0.069 (Root Mean Square Error Approximation \leq 0.08). So. The research model is relatively consistent with market data (Hu and Bentler, 1999).

Table 1. Results of testing the relationship between concepts in the model

			Estimate	S.E.	C.R	P	Hypothesis
NBTC	<---	TTBCX	.613	.052	11.703	***	Valid
TDHV	<---	TTBCX	.519	.039	13.299	***	Valid
TCCQ	<---	TTBCX	.711	.050	14.162	***	Valid
NTKSHV	<---	TTBCX	.675	.049	13.907	***	Valid
YDTG	<---	TTBCX	-.397	.097	-4.097	***	Valid
YDTG	<---	TDHV	.376	.061	6.146	***	Valid
YDTG	<---	NBTC	.128	.031	4.099	***	Valid
YDTG	<---	TCCQ	.304	.049	6.206	***	Valid
YDTG	<---	NTKSHV	.576	.074	7.813	***	Valid

Source: Survey results, 2022

The test results show that, with the confidence standard of 95%, all variables have sig < 0.05 (AMOS sign *** is sig equal to 0.000). therefore. These relationships are all statistically significant. Thus, there are 5 variables that affect YDTG including TTBCX, TDHV, NBTC, TCCQ, NTKSHV. Besides, the variable TTBCX also has an impact on 5 variables namely NBTC, TDHV, TCCQ, NTKSHV, YDTG.

According to the analysis results of the SEM test, it is shown in Table the relationship between perception of asymmetric information and intention to invest is shown to be opposite ($\beta = -0.397$; C.R. = -4,097; $p < 0.001$). Therefore, hypothesis H5 is accepted. On the other hand, the SEM test also shows a clear relationship between asymmetric information perception and behavioral attitude ($\beta = 0.519$; C.R. = 13.299; $p = 0.001$). subjective standard ($\beta = 0.711$; C.R. = 14.162; $p < 0.001$). perceived behavioral control ($\beta = 0.675$; C.R. = 13.907; $p < 0.001$) and financial awareness ($\beta = 0.194$; C.R. = 4.242; $p < 0.001$). From there, the hypotheses H1, H3, H6, H8 can be accepted. On the relationship between intention to invest and financial knowledge ($\beta = 0.128$; C.R. = 4.099; $p < 0.001$), behavioral attitude ($\beta = 0.376$; C.R. = 6.146; $p < 0.001$), main standard ($\beta = 0.304$; C.R. = 6.206; $p < 0.001$) and perceived behavioral control ($\beta = 0.576$; C.R. = 7.813; $p < 0.001$). all show a clear correlation. Thus, it can be concluded that H2, H4, H7 and H9 are acceptable.

Through testing the linear structural model SEM. The impact of factors on the intention to participate in investment is clearly shown. In which, the perceived behavioral control factor has the greatest impact on the intention to invest with $\beta = 0.579$, and the standard error of this relationship is also relatively small with 0.074. Therefore, it can be seen that the perceived behavioral control factor is a factor that has a great influence and is extremely important to the intention to invest.

Financial knowledge is the factor that has the smallest impact on the intention to participate in investment with $\beta = 0.128$. Behavioral attitudes and subjective standards are also two factors that have a large impact after perceived behavioral control, with the

measured impact being $\beta = 0.376$, $\beta = 0.304$, respectively. In addition, the impact of asymmetric information perception on mediating factors is also extremely large with $\beta = 0.613$, financial knowledge, $\beta = 0.519$ with behavioral attitude, $\beta = 0.711$ with subjective standard. and $\beta = 0.675$ with perceived behavioral control.

5. Discussion and Conclusion

Through the research results, the research team concludes that asymmetric information has a negative impact on the intention to participate in the market. This is shown by the results of the SEM test. The relationship between asymmetric information and the intention to enter the market is shown with $\beta = -0.97$. This result is also consistent with the previous research results of Muhammad Munir Ahmad et al (2021). Accordingly, asymmetric information has a negative effect on the intention to participate in the stock market. As the degree of information asymmetry increases, the intention to enter the market also decreases.

In addition, the indicators also show that “Asymmetric information” has a strong impact on 4 variables “Financial knowledge”, “Behavioral attitude”, “Subjective norm” and “Perceived behavioral control”. β when both have Sig coefficients. $= 0 < 0.05$ and the influence coefficient is 0.613, respectively; 0.519; 0.711; 0.675.

The influence of asymmetric information on the intention to participate through the extended TPB model

- Influence through Financial Literacy

The results of hypothesis testing show that the variable “Financial literacy” has a significant impact on the intention to participate in the stock market with the coefficient sig. $= 0 < 0.05$. The influence factor is 0.128. This finding is consistent with the results of previous studies where “Financial literacy” was found to be a determining factor. affects the investment behavior intention of stock investors (Aren and Zengin. 2016; Sivaramakrishnan et al., 2017).

Because the level of understanding is a variable affected by one of the factors is the frequency of reading economic articles. Therefore, besides "financial literacy" has a clear impact on students' intention to participate in the stock market. The factor “Financial literacy” also plays an important role as an intermediary variable to help “Asymmetric information” more clearly influence the intention to participate in the stock market of economics students in Hanoi. Noi and that is also well reflected with the influence factor of 0.613.

- Influence through Attitude

According to research results. It can also be seen that the variable “Behavior attitude” has a strong impact on students' intention to participate in the stock market with the coefficient sig. $0 < 0.05$ and the influence factor is 0.376. This finding is consistent with the results of previous studies. where “behavioral attitude” was found to be a factor affecting behavioral intention (Lim et al., 2018; Ali, 2011).

In addition to directly affecting the intention to participate in the stock market, the Attitude-behavior variable also acts as an intermediary variable to help asymmetric information more clearly affect the intention to participate in the stock market. Economics student in Hanoi. With an influence coefficient of 0.519, it shows that asymmetric information has a positive effect on behavioral intention.

- Influence through Subjective Norms

Based on the survey results of the research team. Subjective norm has a positive effect on students' intention to participate in the stock market. Subjective norm affects the intention to participate in the stock market with $\beta = 0.304$. This is consistent with the model proposed by the team as well as reasonable when compared with previous research on the subject. Many previous studies have demonstrated that Subjective Norm is a significant predictor of behavioral intention such as Ajzen (1991), Phan and Zhou (2014), Phan et al (2019), Huu Phuc Dang & Bang Nguyen Viet (2021). In addition, Subjective Norms also play an important role in the impact of Asymmetric Information on the intention to participate in the stock market. Subjective norm is strongly influenced by Information Asymmetry with $\text{Sig.} = 0 < 0.05$ and the influence coefficient is $\beta = 0.711$. This shows that as the level of asymmetric information increases. The greater the influence of those around the individual. From there, it affects students' intention to participate in the stock market.

- Influence through Perceived Behavioral Control

According to the survey results of the research group. The variable Perceived behavioral control is the variable that has the most significant effect on students' intention to participate in the stock market. The relationship between perceived behavioral control and intention to participate in the stock market is clear with $\beta = 0.675$. This proves the suitability of the proposed research model and at the same time is similar to previous studies of Fishben and Ajzen (1975), East (1993), Huu Phuc Dang & Bang Nguyen Viet (2021). Besides. There are many previous studies that have demonstrated that perceived behavioral control is the most significant predictor of behavioral intention (Maddeb et al. (1992), Tran Trung Dung (2020)).

In addition, according to the results, the research team obtained perceived behavioral control as an intermediate variable in the influence of asymmetric information on the intention to participate in the stock market. With $\text{sig.} = 0 < 0.05$ and the influence coefficient $\beta = 0.675$. perceived behavioral control is the variable most strongly affected by the asymmetric information variable. That means when the level of the greater the asymmetric information, the greater the ability to control behavior.

- Recommendation for student when joining in the stock market

To be able to make accurate decisions, students need to be fully equipped with knowledge of securities, trading regulations, operating principles of the stock market or risk management. Investing in knowledge is always the wisest and most economical investment because the money paid to improve investment knowledge is always cheaper than the

amount that can be lost to a mistake in the stock market. First of all, it is to firmly learn the basic and essential subjects related to financial knowledge. Participating in classes from basic to advanced before participating in the stock market will be a stepping stone to help future investors be more stable and confident in the investment process later. Moreover, not only learning theory, students need to apply what they have learned in practice. In addition to the knowledge acquired in lecture halls and books, seminars and knowledge sharing from experts in the financial field are the perfect complement for students. Through seminars, meetings and exchanges, students have access to practical lessons, accumulate more knowledge and understand more about the financial and securities industry.

However, receiving information is not enough, students who want to participate in the stock market also need to be able to analyze information. Information about macro markets, industries, and companies is often made public, but individual judgments of different data can lead to different results. Accordingly, the analysis and evaluation of information before making decisions will help investors better understand the market, not panic before the fluctuations. If investors only receive information without analysis, it is easy to lead to incorrect judgments about the stock code they choose. As a result, when making investment decisions, students will avoid the impact of crowd psychology, reduce trading according to rumors, and recognize opportunities through signals from the market instead of buying or selling stocks just because of what other people say.

- Recommendations on information management in the stock market

Investment analysis can be very misleading when information is not fully disclosed, dishonest. In the era of revolution 4.0. Knowledge and news about the market and businesses are constantly updated, and information transparency is essential. Therefore, State management agencies need to continue to improve the law on information safety and security and control the flow of information published in the securities sector to ensure authenticity and objectivity.

In addition, handling violations in the field of information disclosure related to the securities market. The State needs to introduce administrative and criminal sanctions against the phenomenon of information manipulation, giving false information, and profiteering. Stock Exchange, Securities Commission need to coordinate with securities companies to carry out the review, have better mechanisms to prevent these activities. There should be strong and deterrent sanctions, ensuring the transparency and coldness of the market; strictly handle the situation of reporting false information. negatively affect investor sentiment.

In summary, improving the quality of information on Vietnam's stock market is an important and necessary trend to create a safe investment environment and sustainable development. Many new policies and regulations have been introduced to address the challenges and inadequacies related to stock market information. However, more efforts are still needed from securities market regulators and supervisors to ensure the transparency and reliability of stock market information.

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FACTORS AFFECTING BUSINESS PERFORMANCE OF BUILDING MATERIAL FIRMS LISTED ON VIETNAM STOCK MARKET

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Abstract

The purpose is to test the performance of a company can be assessed in terms of profitability, capital structure, liquidity, dividend growth, sales revenue, asset base, capital employed, etc. However, there are still debates about how to measure business performance and the factors that affect performance (Liargovas & Skandalis, 2008). Financial performance is a subjective measure of how well a company can utilize assets from its primary mode of business and generate revenue. It is the process of measuring the results of a company's policies and activities in monetary terms (Mwangi, 2016). It identifies a company's financial strengths and weaknesses by establishing relationships between items of financial position and income statements. The term is also used as a general measure of the overall financial health of a company over a given period and can be used to compare similar companies within the same industry or to compare industries or aggregate sectors. Relationship between business performance and factors affecting the business performance of building material firms listed on the Vietnam stock market from 2010 through 2020. The data are obtained from financial statements of 30 Vietnamese building material firms listed on both the Ho Chi Minh stock exchange and Hanoi stock exchanges from 2010 to 2020 in the FiinPro database. The study uses the FGLS regression method to analyze the factors affecting the business performance of building material firms listed on the Vietnam stock market between 2010 and 2020. Analysis results show that the factors positively affecting the business performance of building material firms; include risk, growth rate, and firm size. On the contrary, capital structure, asset structure, and liquidity negatively affect the business performance of building material firms. Furthermore, the study proposes some implications for improving the business performance of construction material firms listed on the Vietnam stock market.

Keywords: *business performance, building material industry, Vietnam*

1. Introduction

The performance of a company can be assessed in terms of profitability, liquidity, liquidity, dividend growth, sales revenue, asset base, capital employed, etc. However, there

are still debates about measuring business performance and the factors that affect performance (Liargovas & Skandalis, 2008). Financial performance is a subjective measure of how well a company can utilize assets from its primary business methods and generate revenue. It is the process of measuring the results of a company's policies and activities in monetary terms (Mwangi, 2016). It identifies a company's financial strengths and weaknesses by establishing relationships between items of financial position and income statements. The term is also used as a general measure of the overall financial health of a company over a given period and to compare similar companies within the same industry or to compare industries or aggregate sectors.

There are different ways to measure business performance, but they should be in aggregate. They are line items such as operating revenue, operating income, cash flow from operations, and total unit sales (Njeru, 2012). Quantitative measures of business performance include profitability measures such as gross profit margin, net profit margin with profit on sales, profit return on equity, economic value added, return on equity less cost of equity, and return on capital employed. Other performance metrics are cash flow measures, such as free cash flow on sales and growth metrics with historical revenue growth. Ideally, forward-looking measures - expected profit, cash flow, and growth - should be used to measure a company's performance (Kiaritha, 2015).

Management researchers prefer accounting variables to be performance measures such as return on equity (ROE), return on investment (ROI), and return on assets (ROA). Other accepted performance metrics include earnings per share (EPS), price/earnings ratio (P/E), and net profit margin (NIM). The NIM variable is net interest income divided by total assets. Okiro (2014) used net profit margin and profit before tax/total assets to measure financial performance. Previous studies mainly used accounting rates of return which are return on investment (ROI), return on capital (ROC), return on assets (ROA), and return on sales (ROS). These metrics assess management effectiveness - how well a company's managers use assets to generate accounting profit per unit of investment, assets, or revenue (Memba, 2011).

Construction materials are products designed to serve different construction works such as houses, apartments, buildings, etc.. Building materials are derived from nature, or developed by humans, for example, bamboo, cork, sand, stone, and clay. Besides natural building materials, many countries have applied modern technology to create new materials. The manufacturing process of building materials is considered a growing industry in many different countries. Building material uses are also divided into some different specialized fields - carpentry, plumbing, roofing, etc. For developing countries like Vietnam, the role of construction and material firms in creating and developing transport infrastructure and physical facilities for units of the economy is indispensable. Increasing the business efficiency of building material firms will help to save social costs and improve the operational efficiency of industries in the economy.

2. Literature Review

Capital Structure

Corporate debt is considered a unified value in empirical research on capital structure. Therefore, almost the literature focused on the relationship between financial leverage and firm performance without accounting differences in debt sources (Margaritis and Psillaki, 2010; Vithessonthi and Tongurai, 2015).). An omitted debt structure can lead to misleading conclusions about the relationship between leverage and business performance because sources of debt can have different effects on the valuation and profitability of the company. Rauh and Sufi (2010) argue that many firms borrow from multiple sources, each of which can have different effects on financing, investment opportunities, and, therefore, performance.

Master and Yong (2014) studied the relationship between capital structure and financial performance by examining 1130 non-financial firms listed on the Shanghai Stock Exchange. The authors built a regression equation with the dependent variable (ROE) and the independent variables, including the debt-to-equity ratio, the growth rate of total assets, and the firm size. The results showed that financial performance is significantly affected by the debt-to-equity ratio and size. However, the growth rate of total assets has no significant impact on financial performance.

Zeitun and Tian (2007) inherited Master & Yong (2014) by not only studying the factors affecting financial performance in terms of book value but also in terms of market value (Tobin's Q). The research data was collected from 167 companies listed on the Jordan Stock Exchange from 1989 to 2003. The independent variables include short-term debt on total assets, growth rate, firm size, business risk, sector, financial crisis, fixed assets, income tax, and a standard deviation of cash flow in the most recent three years. The results showed the factors that have positive impacts on business performance are short-term debts on total assets, growth rate, size, and tax. Among those factors, short-term debt on total assets has the strongest impact on financial performance in terms of market value. The negative effect is the ratio of fixed assets to total assets. The results also showed that business sectors, such as real estate, educational services, chemicals, oil and gas, and tobacco have significant impacts on financial performance.

Firm size

The measurement of firm size can be the number of employees, total revenue, or total assets. In addition, firm size is also understood as the size of capital, asset, consumption network, etc. Firm size has been shown in some studies that have a positive and negative effect, with statistical significance to the financial performance. Most of the studies by Zeitun and Tian (2007), Margaritis and Psillaki (2010), Pouraghajan et al. (2012), Pervan and Višić (2012), Gleason et al. (2000) found that firm size has a positive and significant impact on the performance of the business. It means the bigger the size, the more efficient. In contrast, many other researchers, such as Durand and Coeuderoy (2001) and Tzelepis and Skuras (2004), argued that there is no significant effect between firm size and efficiency. Large-scale enterprises with financial strength, assets, capital, technology, and management

level will easily exploit economies of scale to reduce input costs and increase output efficiency to reduce production costs. The study of Gleason et al. (2000) pointed out that the more revenue the business expands, the higher the business performance.

Assets structure

Mackie (1990) concluded that a company with a high ratio of plant and equipment (tangible assets) as an asset base makes debt selection more possibly and affects its performance. Akintoye (2008) argues that a firm that invests more in tangible assets will have a lower cost of financial distress than a firm that relies on intangible assets. A positive relationship between asset tangibility and business performance is expected. Inheriting the study of Zeitun et al. (2007), Memon et al. (2012) determined that the asset structure measured through the ratio of long-term assets to total assets has a negative impact on operating efficiency. That means it has a negative impact on performance. Because these companies invest too much in fixed assets in a way that does not improve their performance. It shows inefficient use of assets in large companies and thus has a negative impact on performance.

Growth

Existing literature considers the growth opportunities available in a company as an essential determinant of business performance (Chinaemerem & Anthony, 2012). Zeitun and Tian (2007) argued that growth firms can generate returns on investment, thus positively impacting business performance. It is believed that the growth rate and profit margin are related (Coad, 2009, Goddard et al., 2004). There are several theoretical claims that growth rate has a positive effect on profit margins. Corporate growth can lead to an increase in company size so that larger companies can benefit from economies of scale and thus increase profits. Sales growth shows a company's growth in sales per share, based on some recurring periods, and is considered the best measure of how quickly the company's core business (Javed et al., 2015).

Short-term liquidity

Siahaan et al. (2014) concluded a significant positive correlation between short-term liquidity and business performance, which means that the more liquid a company's financial condition, the better its performance. The results are consistent with the previous studies conducted by Huang et al. (2013) and the results identified by Fang, Noe, and Tice (2009), which stated there are positive and strong correlations between short-term liquidity and business performance. However, there is a negligible positive effect of short-term liquidity on business performance, mainly valid in developed countries but not in absolute value in developing countries (Hwang et al., 2012). Reddy (2018) analyzed the relationship in India and showed there is no significant impact.

Business risk

Akintoye (2009) and Do and Wu (2015) confirmed the role of business risk, tax, managerial behavior, or financial flexibility in analyzing business performance. He explains that since the capital structure is based on a trade-off between risk and expected return, these

are important factors in determining the target capital mix. That will object to guiding companies toward an ideal combination of debt and equity to minimize the cost of capital and maximize firm value. Furthermore, any change in the reasonable level of debt or equity will change the company's value. According to tax benefits, it is assumed that a company will borrow more to achieve higher performance under tax burden.

Corporate income tax

Rohaya, Nor'Azem, and Bardai (2010) conducted a study on corporate income tax and showed the relationship between income tax and the profits of organizations. The research regarded the impact of corporate income tax liability on various variables such as gross profit, cost of goods sold, expenses, etc. A sample of 7,306 firms was taken from the hotel and restaurant sector, including 6,594 firms in the services sector and 1,484 firms in the transportation manufacturing sector, for the accounting period 1995-2000. The conclusion is that corporate income tax adversely affects the profitability of corporate entities but has a positive relationship with the size and age of the firms. In addition to these authors, De Mooij et al. (2001) and Meg (2008), Vätavu (2015) both found a negative relationship between corporate tax and financial performance.

From the research overview, the authors propose a research model of the factors affecting the business performance of building material firms listed on the stock market as follows:

$$ROE_{i,t} = \beta_0 + \beta_1 LEV_{i,t} + \beta_2 SZ_{i,t} + \beta_3 TANG_{i,t} + \beta_4 GR_{i,t} + \beta_5 LIQ_{i,t} + \beta_6 VOL_{i,t} + \beta_6 MTR_{i,t} + \varepsilon_i$$

3. Method

The data used in the study are gathered from the financial statements of 30 Vietnamese building material firms listed on both the Ho Chi Minh and Hanoi stock exchanges in the 2010 - 2020 period from the FiinPro database. The research sample includes all listed building material firms that satisfy the condition to have full financial statements from 2010 to 2020, so the research sample is highly representative.

The model variables are in Table 1.

Table 1. Description of the variables

Variable	Symbol	Calculation	Source
Business Performance	ROE	Profit after tax/Average equity	Chinaemerem và Anthony (2012), Do và Wu (2015), Vätavu (2015)
Capital Structure	LEV	Liabilities/Total Equity	Le (2015), Vithessonthi và Tongurai (2015)
Firm size	SZ	Logarit (Total Assets)	Chinaemerem và Anthony (2012), Do & Wu (2015)
Assets Structure	TANG	Fixed assets/Total assets	Chinaemerem và Anthony (2012), Do và Wu (2015), Vätavu (2015).

Variable	Symbol	Calculation	Source
Growth Rate	GR	(Current year's revenue - Previous year's revenue)/ Previous year's revenue	Chinaemerem và Anthony (2012), Do và Wu (2015), Le (2015)
Liquidity	LIQ	Current Assets/Current Liabilities	Do và Wu (2015), Vătavu (2015), Le (2015)
Risk	VOL	%EBIT/%Total Assets	Seetanah và cộng sự (2014), Do và Wu (2015), Vătavu (2015), Le (2015)
Frofit Tax	MTR	Frofit tax/Profit before tax	Vătavu (2015)

Source: The authors' Compilation

In order to analyze the factors affecting the business performance of building material firms listed on the Vietnam stock market, the authors used descriptive statistical analysis, correlation matrix analysis, and regression model estimation. We took tests on multicollinearity, variable variance, and autocorrelation to choose the appropriate model. If the model has variable variance defects and autocorrelation, it is necessary to conduct regression analysis with the FGLS method to overcome the variance defects.

4. Results

Descriptive statistics include the mean, median, standard deviation, and minimum and maximum values of the variables included in the model.

Table 2. Descriptive statistics

Variable	Number of observations	Medium	Standard deviation	Min	Max
ROE	330	1,1515	6,0775	-7,1272	49,303
LEV	330	0,5267	0,1851	0,0713	0,8779
SZ	330	27,454	1,7146	24,029	32,510
TANG	330	0,3573	0,2312	0,0071	0,8993
GR	330	0,6684	4,6359	-0,9971	60,738
LIQ	330	1,4516	1,0297	0,1542	6,6433
VOL	330	0,3145	0,8767	-2,2911	5,8846
MTR	330	0,2336	0,6982	0	10,401

Source: The author's calculation

The results of the descriptive statistical analysis presented in Table 2 shows there is a big difference in business performance between listed building material firms. ROE of listed building material firms in the period 2010-2020 is in the range of 7,127 to 49.3, which shows that besides businesses with a high return on equity, there are still building material firms making losses.

For the independent variables, capital structure has an average of 0.5267, a minimum of 0.07127, and a maximum of 0.8779. That indicates some firms use debt at an insignificant low level besides firms with very high debt ratios.

Firm size also has an obvious difference between listed building material firms. The average firm size is 27,454, the smallest value is 24,029, and the largest is 32.51. The asset structure at listed building material firms is quite low at an average asset structure of 0.3573. Besides, the building material firms with high fixed asset investment at the biggest value of 0.8993. Some firms have almost no fixed assets. The minimum value of the variable TANG is 0.0071.

The growth rate of the listed building material firms ranges from -0.9971 to 69.7383, with an average value of 0.6684. That shows the growth rate of building material firms a large difference between firms in years. Besides businesses with positive growth rates, there are still many businesses with negative growth in several years.

The liquidity of building material firms is at an average of 1.4516. However, there is a big difference between the firms, the liquidity coefficient is the smallest at 0.1542, and the liquidity ratio is at 0.1542. The biggest calculation achieved is 6.6433.

The business risk variable of building material firms is in the range of -2.2911 to 5.8846, which shows that the business risk level of building material firms is significantly different.

The corporate income tax of the listed building material firms has an average of 0.2335, the minimum value is 0, and the maximum value is 10.4.

Table 3 shows the correlation coefficient between the dependent and independent variables and between the independent variables. The correlation coefficient between the independent variables is not greater than 0.8, so there is no multicollinearity (Cohen, 1988). Capital structure (LEV), firm size (SZ), assets structure (TANG), and corporate income tax (MTR) are negatively related to business performance (ROE). Meanwhile, growth rate (GR), liquidity (LIQ), and business risk (VOL) have a positive relationship with business performance (ROE). The results of the correlation analysis between the independent variables in the model show that the possibility of multicollinearity between the independent variables in the model is not high.

Table 3. Matrix of correlation coefficients between variables in the model

	ROE	LEV	SZ	TANG	GR	LIQ	VOL	MTR
ROE	1,0000							
LEV	-0,3011	1,0000						
SZ	-0,2339	0,5438	1,0000					
TANG	-0,1860	0,4242	0,3806	1,0000				
GR	0,0399	-0,0207	-0,0457	0,0002	1,0000			
LIQ	0,1654	-0,7750	-0,5119	-0,5750	0,0120	1,0000		
VOL	0,7710	-0,4163	-0,4052	-0,2058	0,0668	0,3146	1,0000	
MTR	-0,0225	0,0945	0,0101	0,0680	-0,0231	-0,0696	-0,0267	1,000

Source: The author's calculation

Studying the impacts of factors on the performance of building materials companies listed on the Vietnam stock market with panel data is conducted by three methods (Pooled OLS, FEM, and REM). After conducting Hausman and White tests, it has been proved that the FEM method is the best of the three methods above. However, by the Wald test and the Wooldridge test, it has been shown that the results of the regression coefficients of the model according to the FEM method are not effective due to variable variance and autocorrelation. Since then, the FGLS method is used to overcome the above disadvantage of FEM. Regressing the model by FGLS method will help eliminate problems such as variable variance and autocorrelation, so the results of the regression coefficients will be efficient.

The results of the regression model studying the effects of factors affecting the performance of building material firms listed on the Vietnam stock market are shown in Table 4 as follows:

Table 4. Regression results

Variable	VIF	Dependent variable			
		POLS	FEM	REM	FGLS
LEV	2,88	-4,407***	-0,815***	-1,352***	-0,237***
SZ	1,59	0,363**	0,322**	0,0400*	0,0013*
TANG	1,53	-3,253***	-3,164*	-3,642***	-0,4860***
GR	1,01	-0,0116	-0,0563**	-0,0542*	0,0413*
LIQ	3,11	-1,224***	-1,972***	-1,868***	-0,4191***
VOL	1,29	5,528***	4,229***	4,364***	1,714**
MTR	1,01	0,0363	0,182	0,181	-0,0072
Cons		-5,296	-4,608	3,346	-0,110
White Test		Chi2 (35)= 275,02 Prob > Chi2 = 0,0000			
Wooldridge Test		F(1, 29) = 534,781 Prob > F = 0,0000			
Hausman Test			chi2(7) = 26,13 Prob>chi2 = 0,0000		
Wald Test			Chi2(30) = 7,2e+05 Prob>chi2 = 0,0000		

* p<0,1 ** p<0,05 *** p<0,01

Source: The author's calculation

Table 4 shows that the regression model by the FGLS method, corporate income tax (MTR) has no impact on the business performance of the listed building material firms.

The research results provide empirical evidence that the business performance of building material firms listed on the Vietnam stock market is affected by capital structure, firm size, asset structure, growth rate, liquidity, and business risk.

The capital structure of the firms has a negative correlation with the business performance with statistical significance at 1%, capital structure increased at 1%, and the business performance of building material firms decreased at 0.237%.

Firm size (SZ) has a positive relationship with the business performance of listed building material firms with statistical significance at 10%. It means firm size increases by 1% and business performance increases by 0.0013%.

With a statistical significance level of 1%, the asset structure has a negative relationship with the business performance of the building material firms. If the asset structure increases by 1%, the business performance will decrease by 0.486%.

The revenue growth rate has a positive relationship with the business performance of the listed building material firms. If the revenue growth rate increases by 10%, the business performance of will increase by 0.0413%.

The liquidity has a negative correlation with the business performance of the listed building material firms at a statistical significance of 1%. If the liquidity increases by 1%, the business performance will decrease by 0.4191%.

Business risk has a positive relationship with the business performance of listed building material firms at a statistical significance of 1%. If business risk increases by 5%, the business performance will increase by 1.714%. The results of the FGLS regression model show that business risk is the factor that has the strongest impact on the business performance of listed building material firms at a regression coefficient of 1,714.

The results of the study determine factors affecting the business performance of building material firms are summarized in Table 5.

Table 5. Summary of research results

Variable	Research Results
LEV	(-)
SZ	(+)
TANG	(-)
GR	(+)
LIQ	(-)
VOL	(+)
MTR	(N/A)

Note: (+) positive effect, (-) negative effect, (N/A) no statistical significance.

Source: The author's calculation

The summary of the results determining the factors affecting business performance in Table 5 shows that the factors that have the same impact on the business performance of building material firms include business risks, growth rate, and firm size. On the contrary, capital structure, asset structure, and liquidity negatively affect the business performance of building material firms.

Capital structure (LEV): The research results show there is a negative relationship between capital structure and the business performance of building material firms. That means businesses using a lot of debt will increase financial risks and reduce business performance. It is a factor that has a large impact on the business performance of listed building material firms. This research result is consistent with the study of Chinaemerem and Anthony (2012), Le (2015), Vătavu (2015).

Firm size (SZ): Size has a positive impact on the business performance of building material firms. That shows large-scale enterprises have advantages in terms of financial resources, experience, and brands to improve business efficiency. Because the size of an enterprise shows the ownership, structure, and quality of assets, these factors will determine the existence and development of an enterprise. This research result is consistent with the study of Chinaemerem and Anthony (2012) and Do & Wu (2015).

Asset structure (TANG): The variable has a negative impact on the business performance of listed building material firms. Enterprises with asset structures leaning towards short-term assets will increase business efficiency. The results of this study are consistent with those of Chinaemerem and Anthony (2012), Do and Wu (2015), and Vătavu (2015).

Growth rate (GR): The GR has a positive impact on the business performance of listed building materials companies, but the impact is small. Enterprises with good revenue growth can increase business performance. This research result is consistent with the study of Chinaemerem and Anthony (2012), Do and Wu (2015), and Le (2015).

Liquidity (LIQ): The LIQ has a negative impact on the business performance of building material firms. The liquidity of an enterprise is the payment solvency. That manifests in the use of current assets such as cash, inventory, accounts receivable, securities, and other current assets to meet current liabilities. Enterprises that reserve a lot of high-liquidity assets will have low profitability, thereby tending to reduce operating efficiency. This research result is consistent with the study of Do and Wu (2015), Vătavu (2015), and Le (2015).

Business risk (VOL): The risk has a positive impact on the business performance of building material firms. It is the variable with the greatest impact on business performance. Business risk represents uncertainty in the income stream from a business's operations. Risk and return have a positive relationship, or high risk, high expected return. In other words, for firms with high-risk appetites, there are many opportunities to increase profits to improve business performance. This research result is consistent with the study of Seetanah et al. (2014), Do and Wu (2015), Vătavu (2015), and Le (2015).

5. Discussion and Conclusion

This study aims to verify the factors affecting the performance of enterprises in the building materials industry in Vietnam. The autocorrelation and variance problems were determined, and the FGLS method was used to overcome them. The research results show that the factors that affect the business performance of building material firms in the same direction include business risk, growth rate, and firm size. On the contrary, capital structure, asset structure, and liquidity negatively affect the business performance of building material firms.

Determine the risk appetite suitable for firms in each period. Risk appetite is considered a relatively important tool in effective decision-making and management of corporate performance. In each period, enterprises need to determine the level of risk tolerance that investors (individuals or organizations) are willing to accept to pursue their goals. Risk appetite represents a balance between potential benefits and the threats it poses. Investors must accept the occurrence of risks along with the benefits that it brings. Things that bring high returns will come with a high level of risk. Safe and sustainable investments will have low returns. The risk appetite framework is built based on the analysis and assessment of external environmental factors such as macroeconomics, business environment, competitive pressure, and internal factors (such as business strategy, financial plan, and expectations of shareholders and stakeholders). The content of the risk appetite framework includes five major issues: Management principles, a Statement of high-level risk appetite, Determining overall risk tolerance, Develop Key Risk Indicators, and Building tolerance for Key Risk Indicators.

Develop a policy to choose a capital structure. When building the optimal one, building material firms listed on the Vietnam stock market should focus on the following factors:

First, corporate risks and corporate income tax: Risks incurred on the company's assets even if the company does not use debt. The higher the corporate risk, the lower the optimal debt ratio. Since interest is a pre-tax cost factor, using debt helps the company save on tax. However, this will no longer make sense when businesses are favored or for whatever reason income taxes are low.

Second, financial proactivity: Using a lot of debt reduces financial autonomy and worsens the balance sheet situation, making capital providers hesitant to lend or invest capital into the company.

Third, industry standards: it is necessary to compare the financial risks, as measured by the ratios of interest payment ability, ability to pay fixed financial expenses, and leverage ratio with other industry standards or norms.

Fourth, the effect of signals: When company issues new securities, this event can be considered as providing a signal to the financial market about the future outlook of future activities. The future is planned by the directors of the enterprise. The signals provided by capital structure changes are reliable because if future cash flows do not occur, the firm incurs penalties, maybe possibly bankruptcy costs.

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THE ATTITUDE OF TOP MANAGEMENT, PRESSURE OF STAKEHOLDERS TOWARD IMPLEMENTING AND DISCLOSURE OF ENVIRONMENTAL ACCOUNTING INFORMATION

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Abstract

Environmental protection plays a significant role in the process of economic development in Viet Nam. The firms implement an environmental strategy to reduce environmental pollution. However, the lack of legal and environmental accounting is why information Environmental accounting (EA) has a few items in financial statements. Enterprises in Viet Nam only disclose general environmental information in compliance with the guidance of Circular 155/2015 / TT-BTC. The article aims to evaluate the impact of the Attitude of top management (ATM) and Pressure of Stakeholders (PS) on the implementation of environmental accounting (EA) and disclosure of environmental accounting information (DEAI) in the context of the Mekong Delta enterprise Viet Nam. The author employed PLS-SEM to test the hypothesis. The findings indicate a positive association between ATM and EA, ATM and DEAI, and PS and EA. However, the result of the study showed no significant PS on DEAI and EA on DEAI. Nevertheless, the role of the regulation (REG) as a mediator in the link between EA and DEAI has statistically significant.

Keywords: *Attitude top manager, Environmental accounting; Disclosure of environmental accounting information, Pressure of Stakeholders.*

1. Introduction

Yakhou et al. (2004) suppose that Environmental accounting (EA) identifies, measures, and allocates environmental costs, combines environmental costs in economic decisions, and discloses information to stakeholders. A stakeholder in an organization is defined as any group or individual who can influence or is influenced by the achievement of that organization's goals (Freeman, 1984). They are shareholders, creditors, employees, customers, suppliers, and regulators. Another group includes the media, consumer and environmental lobby groups.

Firms will disclose environmental accounting information (DEAI) when they practise environmental accounting (Cho et al., 2008). In prior studies, DEAI published mainly through the annual report, and the disclosure may be voluntary or mandatory. Voluntary environmental information in the annual report is how organizations convey a specific message about the activities and measures for environmental protection (Deegan et al., 2000; O'Donovan, 2002). Besides, publishing the enterprises' environmental information is considered in response to the pressure of the stakeholders such as environmental regulators, providers, and communities, business management (Cormier et al., 2004; Neu et al., 1998). Lobby groups are paying more attention to the environmental sensitivity of the industry in which a corporation operates. This implies they impose costs on them because of their environmental impact (Deegan & Gordon, 1996).

The firm must adapt to the interest of stakeholders, primarily environmental strategy, given the regulator's ability to impose high costs on the firms. Firms previously convicted for unlawful and environmental regulations are more likely to make better environmental disclosures than corporations that have not been prosecuted (Kent & Chan, 2009). Environmental disclosure refers to all corporate disclosures concerning their responsibility against environmental issues. Usually, this information is part of the company's usual reports, such as the annual report, the integrated report, the annual information form and the sustainability report (Cormier et al., 2018). Three categories of information must be disclosed: environmental expenses, environmental assets, environmental liabilities on the balance sheet, the income statements, and notes of financial statements (Senn, 2018)

The Top manager is vital in implementing and disclosing environmental accounting information. Stakeholders' pressure imposes on Top managers to implement a proper environmental strategy. In developing countries, the rules regarding implementing environmental laws are stringent. When companies do not implement environmental laws and cause pollution, the firm's reputation is seriously reduced. Therefore, the customer was urged to boycott the country's products. Hence, these problems are the reason why the company must implementation of EA and DEAI to reduce environmental impact (Bismark Kusi Appiah et al., 2020)

DEAI bring up more benefit for the company through the optimal utilization of energy and inputs (Saleh et al., 2020). Environmental awareness of management has a role important in the company application DEAI. Therefore, they must have environmental knowledge and convey it to an employee. The company implements an environmental strategy to reduce environmental pollution. However, the lack of legal environmental accounting and an accountant's qualification is a barrier. The Investor is also interested in qualifying for DEAI, but it has a few items in the financial statements.

Information on implementation and effectiveness from environmental issues should be clear, public and transparent for stakeholders because the accounting information assists managers in decision-making (Frekat et al., 1996). Nevertheless, these enterprises only disclose general environmental information in compliance with the guidance of Circular 155/2015 / TT-BTC or GRI but have yet to publish information from the implementation of environmental accounting (Lam Thi Truc Linh, 2017).

Previous research has found that pressure from policymakers, managers, environmental management agencies, and the general public (Neu et al., 1998; Li, 2014) and the attitude of Top managers (Meng et al., 2013; Rao et al., 2016; Post et al., 2011; Post et al., 2015; Cucari et al., 2018) affect to the disclosure of environmental accounting information but in developed countries. Environmental accounting is still new in Vietnam, a developing country with no environmental accounting norms. This study investigates the interaction between top management's attitude, stakeholder pressure, and regulation to implement and disclose Environmental Accounting information.

2. Literature Review and Hypothesis Framework

2.1. Attitude Top Manager (ATM) with Environmental accounting (EA) and disclosure of Environmental accounting information (DEAI)

There is a difference between the Attitude of Top managers toward stakeholder groups, so the decision disclosure of EAI provides a perspective on how a firm respond to the other stakeholders to whom it must be accountable. The action to achieve social legitimacy and agreement of stakeholders (Cormier et al., 2004; Li et al., 2018).

Different environmental strategies were implemented to cope with this pressure (Lewis et al., 2014). Environmental awareness of the manager has a positive on DEAI. The previous research discussed the influence of board members' preferences such as gender, age, and level of education on DEAI. A greater degree of education will influence board members' environmental consciousness. More, Female board age has a positive effect on DEAI (Meng et al., 2013; Rao et al., 2016; Post et al., 2011; Post et al., 2015; Cucari et al., 2018)

The manager has an MBA educational background with higher environmental awareness of capital investment application modern techniques to reduce emissions (Cucari et al., 2018). They have more professional company management training, extraordinary management abilities, and better evaluation approaches for addressing rising global concerns (Graham et al., 2001). Therefore, they are more adaption to new things and more responsive to business environmental change. The MBA educational background of top managers has a favourable link with DEAI. Facing environmental issues, MBA education managers are better at making flexible actions. Besides, top managers' age also positively impacts DEAI (Ma et al., 2019). This result shows that the actual operation of the firm influences the disclosure decision; environmental performance is the assessment by top managers. Businesses with exceptionally strong or bad environmental performance are more likely to actively disclose environmental information, indicating that DEAI is a management tool for corporations to capitalize on external opportunities (Merkl-Davies et al., 2011; Hermalin et al., 2012). It should be emphasized that there is evidence that MBAs cheat more than other majors on self-reported assessments (McCabe et al., 2006). Management must carefully publish environmental accounting information to attract stakeholders while meeting their demands (Hermalin et al., 2012; Bondy et al., 2012)

Because innovation plans are established at the top management level, the impact of senior management teams should be significant (Talke et al., 2011). An organization can

only become environmentally friendly if its senior management is dedicated to changing its business strategy to be more environmentally friendly and reallocating resources to improve organizational and environmental performance (Latan et al., 2018). Human resources are fundamental to environmental sustainability (Daily & Huang, 2001; Jackson et al., 2011). Therefore, Top managers must implement Environmental accounting (EA) and environmental management systems. EA practices need qualified accountants for the best performance to apply a better environmental strategy. An EMS involves commitment and policy documentation, planning, execution, measurement and evaluation, review and improvement. The establishment and maintenance of an EMS can be costly and time-consuming. Therefore, the implementation should be carefully structured to ensure success (Daily & Huang, 2001). Top managers establish the regulation of the management control system; they set up how management control systems are implemented (Bamber et al., 2010). When top management is less committed or less effective, the firm fails to provide quality services and overall performance will also be affected. Management systems ensure employees improve decision-making (Poksinska et al., 2003).

Therefore, it has been hypothesized as follows:

Hypothesis 1: There is a positive relationship between ATM and EA

Hypothesis 2: There is a positive relationship between ATM and DEAI

2.2. Pressure of Stakeholders with Environmental Accounting and Disclosure of Environmental accounting information

Implementation of Environmental accounting (EA) is the step for the company to practice sustainable development and more and more gaining of pay attention to the researcher (Burritt & Schaltegger, 2014). This explains why stakeholders are much-paying attention to environmental issues. They pressure the managers to consider environmental performance evaluation (Burritt & Schaltegger, 2010; Rodrigue et al., 2013). These companies should have environmental management systems that gain an environmental certificate to improve their product quality. That is how they meet to reply to customers' concerns about environmental problems. Stakeholders such as customers, government, and creditors are concerned about environmental performance for different purposes, but they always need the information to decide. Chithambo et al. (2020) found that pressure such as regulatory, creditor, supplier, customer, and board control positively impacted disclosure information. However, creditor pressure had a significant negative relationship with disclosure. This pressure includes the implementation or not an environmental strategy and how the company practice to reduce environmental pollution (Yunus et al., 2020; Cornell & Shapiro, 1987). Creditors are essential stakeholders whose influences should be managed as part of the firms' stakeholder strategy. Because they supply financial resources for the firm. So, the environmental risk increases the risk of the creditors. The result (Milne & Chan, 1999) showed that investors draw capital if firms have nondisclosures environmental and social. The company must disclose information on environmental activities, including monetary penalties under legislative enactment and regulations (Deegan & Rankin, 1996).

Volunteer disclosure DEAI is a strategic tool when the companies hope to receive stakeholders' perceptions (Chen, Cho, & Patten, 2014). This is confirmed because the most environmentally conscious companies have not filed the most significant disclosures (Cho & Patten, 2007). The implementation of EA aims to improve corporate environmental performance. DEAI will be connected and strengthen stakeholder relationships. But, the environmental awareness of stakeholders has an impact on the practice of EA and DEAI (Seifert, C., & Guenther, E.,2020)

Environmental disclosures by firms are one means of communicating such information to these stakeholders' pressure. Attitude management affects the decision to disclose environmental information (Lee et al., 2005). External stakeholder and Internal stakeholder groups pressure firms to disclose environmental information. Besides, the environmental lobby group also influences managerial choices regarding environmental disclosure strategies (Huang et al., 2010).

Hypothesis 3: There is a positive relationship between PS and EA

Hypothesis 4: There is a positive relationship between PS and DEAI

2.3. Environmental accounting with disclosure of Environmental accounting information

Application DEAI will boost financial performance. The corporation produces competitive products while lowering marketing costs. According to this study, the firm's reputation will be built through providing environmentally friendly items and utilizing practical resources. To increase the quality of DEAI, the author proposes altering financial accounts (Saleh et al., 2020). The environmental accounting information must be disclosed in annual reports (Senn, 2018). This is supported by these researchers because annual reports as the document are reliable. The annual report is meant to communicate to investors. The presentation within one document includes environmental information that will reduce the costs of disclosure (Gray et al.,1995a). Moreover, stakeholders found this information in the annual report, which the report had completed editorial control (Guthrie & Parker, 1989).

External stakeholder pressure is a determinant of DEAI but not the qualified completeness of emissions disclosure. (Liesen et al., 2015). The lack of guidance from regulatory authorities negatively affected DEAI in an annual report (Gamble et al.,1995). The companies willingly provide information favourable to their image, even after being prosecuted, so disclosure regulations are essential for application (Deegan & Rankin, 1996). DEAI is required, but there needs to be specific guidance on the published, so the quality of DEAI is not suitable for deciding the decision of stakeholders. Even countries that comply with IFRS have different characteristics of politics, markets and social issues (Barbu et al., 2012). The standards of DEAI should be developed to create consistency in the disclosure and adaption of quality information (Deegan & Rankin, 1999; Barbu et al., 2012; Jamil et al., 2015).

In the context of Vietnam, Guidance for EA has not been published; Therefore, the regulation of EA has a positive effect on the implementation of EA and DEAI (Lam Thi Truc Linh, 2018; Nguyen Thanh Tai, 2019).

Hypothesis 5: There is a positive relationship between EA and DEAI

Hypothesis 6: There is a positive relationship between EA and DEAI through REG

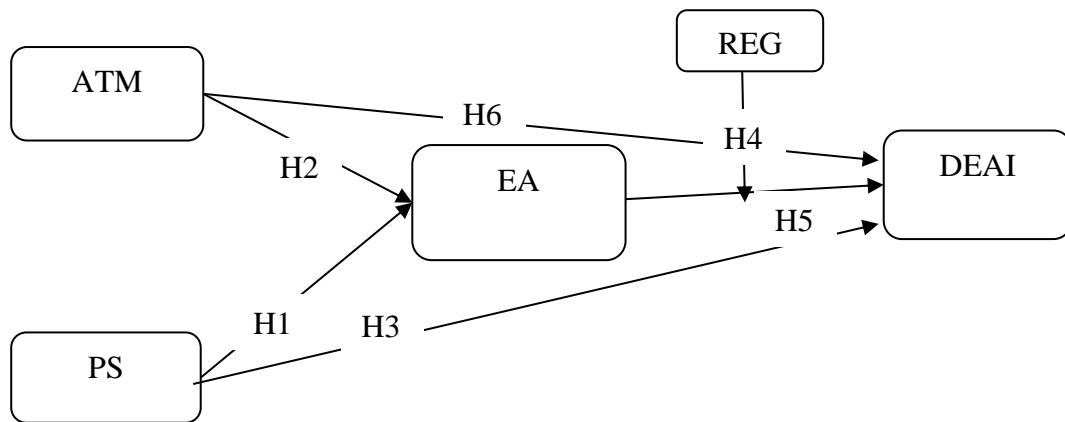


Figure 1. Research model

3. Method

This study collected the data through a survey of the Mekong Delta Fishery enterprise in Viet Nam. The questionnaire was designed from the measuring scales adopted from the literature showing consistent results. All items were scored on a 5-point Likert scale, with 1 being strongly disagreed and 5 strongly agree. Five variables include ATM, PS, EA, REG, and DEAI.

Two methods collect the sample. First, the researcher directly sent the questionnaire to firms through support members. The second email survey was then distributed to top managers from the business. This study chooses the top manager because they should be responsible for environmental issues and require the accounting department to implement EA and DEAI. This study received 211 feedbacks from the survey.

The study employed a quantitative research method; Smart PLS Version 4 software was used to test the research hypotheses through a Partial Least Square Structural Equation Modelling (PLS-SEM) technique.

The measurement model assessed two types of validity: convergent and discriminant. The measurement model ascertains convergent validity by examining factor loadings, average variance extracted (AVE), and composite reliability (CR) (Hair et al., 2017). Composite reliability is used to evaluate the internal consistency, and the reliability of individual observed variables. The AVE was used to assess convergence validity. In addition, the measurement model evaluation also includes discriminant validity. Heterotrait-Monotrait (HTMT) criterion, load factor, was used to check discriminant validity.

4. Results

4.1. Measurement Model assessment

Reliability and validity

Hair et al. (2014) suggest that the outer loading factor needs to be greater than or equal to 0.708 observed quality variables. One item, EA1, with a factor loading less than

0.7, was deleted. As results shown in Table 1, the outer loadings and Cronbach's alpha were all greater than 0.7, which Hair, Ringle, and Sarsterd (2011) supported. Hair et al. (2017) suggested that the AVE and CR obtained were all higher than 0.5 and 0.7, respectively. AVE also had a value higher than 0.50 or close to 0.70, which met a threshold of convergent validity. The result is presented in Table 1. All the factor loadings presented are greater than their cross-loadings, which indicates good discriminant validity. The collinearity issue was assessed using the variance inflation factor (VIF) with a cut-off value of 5, as suggested by Hair et al. (2017). The VIF values, as presented in Table 1, were all less than 5, indicating no collinearity problems.

Table 1. Reflective Measurement Model: Factor Loading, Alpha, CR, and AVE

	Outer loading	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)	VIF
ATM1	0.797	0.867	0.897	0.648	1.964
ATM2	0.832				1.842
ATM3	0.781				2.162
ATM4	0.824				2.403
ATM5	0.789				1.979
DEAI1	0.819	0.896	0.901	0.706	2.138
DEAI2	0.789				1.825
DEAI3	0.853				2.619
DEAI4	0.879				2.801
DEAI5	0.858				2.857
EA2	0.85	0.778	0.794	0.596	2.049
EA3	0.714				1.594
EA4	0.793				1.856
EA5	0.722				1.216
PS1	0.751	0.835	0.855	0.599	1.594
PS2	0.794				1.568
PS3	0.769				1.778
PS4	0.763				1.883
PS5	0.791				1.977
REG1	0.774	0.865	0.907	0.707	1.92
REG2	0.874				2.408
REG3	0.854				2.393
REG4	0.858				1.853

Source: Authors' estimation

Discriminant validity

Heterotrait-Monotrait (HTMT) techniques were used to check the discriminant validity. Garson (2016) suggested that the discriminant validity between the two latent variables is guaranteed when the HTMT index is less than 1. Henseler et al. (2015) indicate that the discriminant value will be guaranteed if this value is below 0.9. Meanwhile, Clark & Watson (1995) and Kline (2015) use a more stringent threshold of 0.85. SMART PLS prioritises a threshold selection of 0.85 in the evaluation. Specifically, in Table 2, HTMT values are less than 0.85. Therefore, discriminant validity was ascertained.

Table 2. Represents the Heterotrait-Monotrait ratio (HTMT) of discriminant validity for the study

	ATM	DEAI	EA	PS	REG
ATM					
DEAI	0.285				
EA	0.232	0.317			
PS	0.189	0.281	0.272		
REG	0.18	0.511	0.577	0.4	
REG x EA	0.028	0.228	0.047	0.07	0.096

Source: Authors' estimation

4.2. Structural model assessment

The structural model was performed using a bootstrapping procedure with a resample of 5,000 to improve the accuracy level of the estimation. The structural model assesses all the relationships between the constructs. The results are shown in Table 3.

Table 3. Structural Model Results

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Remarks
H1 ATM -> EA	0.175	0.182	0.069	2.54	0.011	Accepted
H2 ATM -> DEAI	0.188	0.19	0.056	3.335	0.001	Accepted
H3 PS -> EA	0.208	0.22	0.075	2.762	0.006	Accepted
H4 PS -> DEAI	0.073	0.078	0.072	1.013	0.311	<i>Rejected</i>
H5 EA -> DEAI	0.035	0.036	0.073	0.483	0.629	<i>Rejected</i>
H6 REG x EA -> DEAI	0.141	0.139	0.048	2.945	0.003	Accepted

Source: Authors' estimation

Table 3 clearly shows a significant positive relationship between ATM and EA ($\beta=0.175$; $P=0.011 < 0.05$), supporting hypothesis H1. Similarly, the result has been recorded that ATM has a significant favourable influence on DEAI ($\beta=0.188$; $P=0.001 < 0.05$); Also,

the PS factor saw an impact on implementation EA ($\beta=0.208$; $P=0.006 < 0.05$). Therefore, this study's hypotheses H1, H2, and H3 were accepted.

However, in Table 3, there was no significant effect of PS on DEAI and EA on DEAI. This relationship is not supported at P_value greater than 0.05 at 0.311 and 0.629, respectively. Therefore, these hypotheses H4 and H5 in this study were rejected. H6 is accepted where this study has discovered the mediating impact of REG on the relationship between EA and DEAI ($\beta=0.141$; $P=0.003 < 0.05$). It was found that firms that have implemented EA then disclosed environmental information when it was compulsory from regulation.

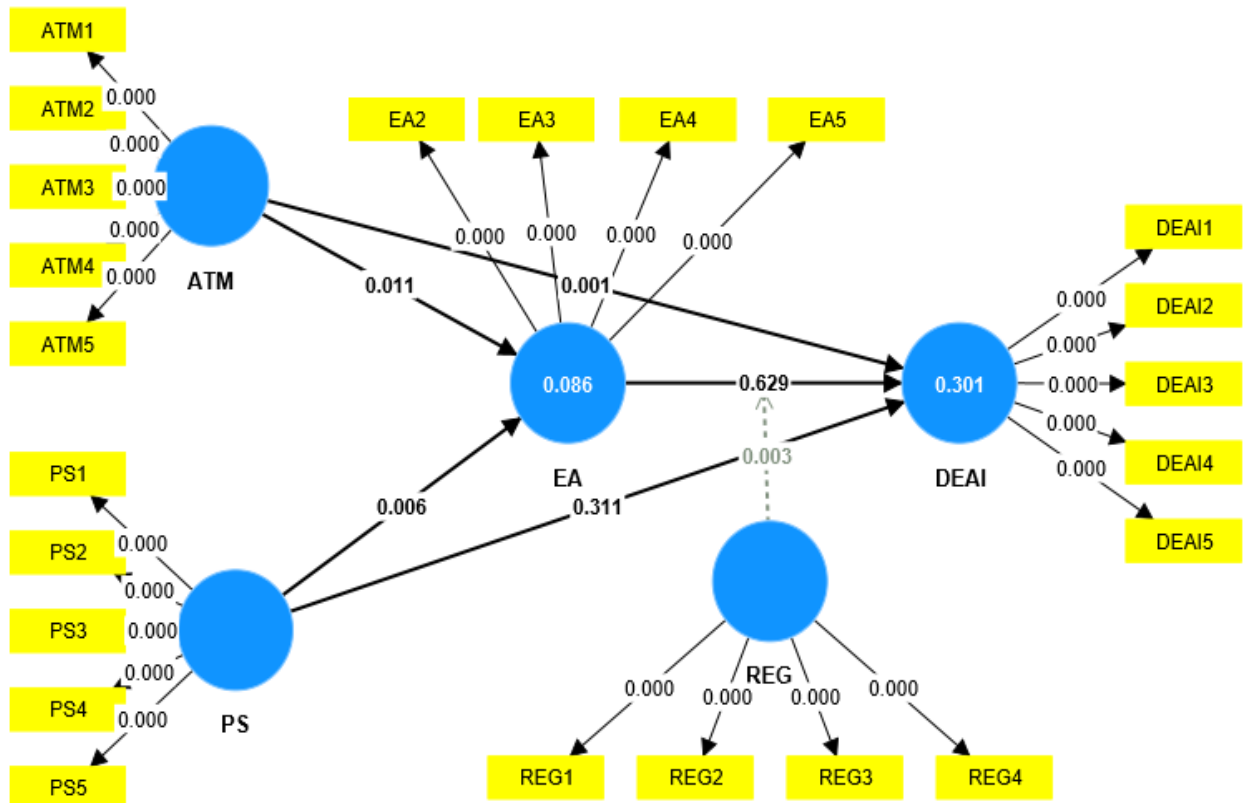


Figure 2. Structural model

5. Discussion and Conclusion

The study aims to identify ATM and PS impact on implementing EA and DEAI. The PLS-SEM result confirms ATM's statistical significance on EA and DEAI. ATM values on EA and DEAI are 0.175 and 0.188, respectively. This result shows that the manager will take action to solve the problem environmentally. They must improve firm performance to satisfy the requirements of stakeholders.

The empirical previous study confirmed that the implementation of EA positively impacts DEAI. However, in Table 3, this relationship is not supported at $P_value\ 0.629 > 0.05$. Also, there was no significant effect of PS on DEAI. In contrast, the role important of REG in the relationship between EA and DEAI is confirmed. This implication needs to be a policymaker in the context of Vietnam, where environmental and sustainable development issues are paid more attention.

This study has some contributions. First, this study continuously confirms that PS positively impacts environmental accounting; the firm must be responsible for explanation issues by disclosing environmental information. Second, in making decisions, EA and DEAI rely on top managers, so it is necessary to know adequate to benefit environmental strategy and sustainable development corporate. Third, this study implicates regulation for EA should be researched and mandatory application soon.

However, this study has several limitations. First, this study took into enterprise Mekong Delta, Viet Nam. Second, there is limited knowledge of the EA of a top manager. Therefore, the feedback for the survey is small. In the future, similar research should be implemented in the industrial differences in Vietnam.

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THE IMPACT OF SOCIAL MARKETING ON CUSTOMER INTENTION AND PURCHASE DECISIONS: A RESEARCH OF THE FMCG INDUSTRY IN VIETNAM

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Abstract

In the socio-economic development of each country, increasing the development of enterprises while maintaining social responsibility is an urgent issue to ensure sustainable development. In the context of increasing pressure on businesses to be socially responsible, cause-related marketing (CrM) strategies are increasingly used by businesses around the world. This study systematically implements the impact of socially significant marketing on customer retention and purchase decision through domestic and international studies. Through this study, we discuss the research gaps that need to be filled by a research model in the FMCG industry in Vietnam.

Keywords: *Cause-related Marketing, corporate social responsibility, purchase behaviour*

1. Introduction

In the context of the dynamic market landscape nowadays, consumers expect more value from the products in the market. Besides the pure value of the product such as use value and quality, consumers also expect other values towards social responsibility. When the quality and price of products in the market are similar, most consumers tend to choose brands that have practical support for society. In addition, the consumers not only consider quality and price in their purchasing decisions, but also consider factors related to the social contribution of brands of the products. In the context of increasing pressure on businesses to be socially responsible, Cause-related marketing (CrM) strategies are increasingly been popular around the world. Therefore, CrM strategy is considered as an important essential trend in the competitive environment. Because of the above reasons, a systematic review on consumer behaviour associated with its corporate social responsibility and marketing associated with its social responsibility is necessary in the current context.

Expectations of positive consumer behaviour responses to companies perceived as socially responsible have inspired academics in management and marketing. However, the findings drawn from most studies are one-sided, unconvincing and sometimes controversial about the nature and extent to which corporate social responsibility (CSR) is concerned and directly affects consumer response (Al Jarah & Emeagwali, 2017; Gürlek et al., 2017; He & Li, 2011). Several studies have confirmed the positive impact of perceived CSR on consumer responses, including loyalty and repurchase/post-patronisation behaviour (Khan et al., 2015; Mandhachitara & Poolthong, 2011; Pérez & Rodriguez del Bosque, 2015). On the other

hand, some research findings suggest that the influence of CSR on consumer outcomes is not always direct and clear, and in fact it may depend on a number of other factors (S Castaldo & Perrini, 2004; Sandro Castaldo et al., 2009; Tingchi Liu et al., 2014).

The practice of corporate social responsibility in marketing communications is often referred to as cause-related/socially meaningful marketing (CrM). The socially meaningful marketing is defined as the process of formulating and implementing marketing activities characterized by contributing a specific amount of money to a designated non-profit effort, thus, making customers engage in revenue-generating exchanges (Mullen, 1997). In the United States, CrM is used as a corporate term to refer to 'financial partnership with a charitable organization in order to tie a company and its products to one goal' (Ptacek & Salazar, 1997). It is an 'impressive way to build brand equity because it generates the most added value and directly enhances financial performance' (Mullen, 1997). The socially meaningful marketing can create the lasting value needed for a company to survive and gain competitive advantage (Collins, 1993).

When implemented properly, CrM will sell products, enhance image and create the motivation for employees. However, CrM can be a very dangerous area for companies if it is not implemented properly. According to Duncan et al. (1997), it is consistent with linking the cause with the organization's mission, making it permanent, and not using it as a short-term tactic to increase sales, and understanding that it's not always effective, easy to measure, and through reputation enhancement, is long-lasting. For example, most Americans think of CrM as a reliable and effective way to improve the country's social problems and it can influence what and where they buy.

However, Hawkins (2012) believed that CrM continues to be the trend of the world because of its practical and ideal meaning. However, achieving success in CrM can require businesses to understand consumers in terms of awareness, attitude and behaviour. According to Littrell et al. (1993), economic and cultural context can influence consumer attitudes and behaviour towards CrM. Therefore, differences in economic and cultural contexts can be an important variable affecting CrM performance (Emslie et al., 2007). This suggests that CrM efforts in different contexts may yield different results (Choi et al., 2016).

From the above arguments, it is necessary to conduct a research review on marketing with its corporate social responsibility associated with consumer consumption behaviour in the context of Vietnam. A systematic literature review will likely provide a clear picture of what has been studied and current research gaps that need further research to increase understanding in the field of the research area.

2. Method

The systematic literature review method used can provide a clear picture of what has been studied and current research gaps in the field of research area. In this approach, the aim of this paper is to provide the research topics of socially significant marketing and customer behaviour. First, we comprehensively review the research of socially significant marketing

and identify key research areas involved. Then, research topics in each of these areas are reviewed. Finally, the potential directions of future research are explored.

To analyse the research on the topic of socially significant marketing and customer behaviour, we conducted a literature review. Literature reviews help synthesize knowledge and determine the research directions (Xia et al., 2018). The research process consists of three stages: Stage 1_Document search; Stage 2_Preliminary assessment; Stage 3_Content analysis as follows:

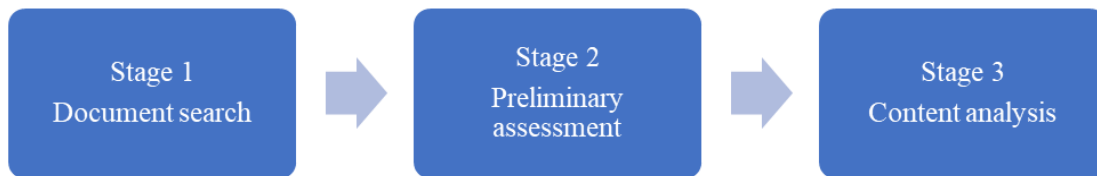


Figure 1. The research process

Figure 1 shows the research process about the topic of socially significant marketing and customer behaviour. The study collects data from pre-published studies at local and abroad, then the study does the initial assessment and analysis, and finally the study clarifies the research gap.

3. A systematic review

The current scientific literature shows that the relationship between CrM, brand, perception and consumer behaviour towards CrM is diversely approached by previous studies with different conceptual models in different contexts. Besides, the mediating relationships of different variables in the above relationships have contributed to diversifying the findings of previous studies. In this case, we conduct a systematic review and identify the research gaps as follows:

Table 1. List of studies by topic group

Study topic	Previous studies
(1) Brand image with customer satisfaction, loyalty intentions and customer retention.	Hellier et al. (2003); Shahroudi and Naimi (2014); Chatterjee et al. (2018); Palto et al. (2018); Veloso et al. (2018); Darzi and Bhat (2018); Subaebasni et al. (2019); Nguyen et al. (2020); Indarto et al. (2018); Le (2021); Hosseini and Behboudi (2017); Özkan et al. (2019); Mehta and Tariq (2020); Rusmahafi and Wulandari (2020)
(2) Consumers' perception of products and purchasing decisions	Wee et al. (2014); Nhu et al. (2019); Özkan et al. (2019)
(3) CrM with customer retention and purchase decision.	Santoro et al. (2019); Suriyanto et al. (2020); Srivastava (2020); Patel et al. (2017); Ferraris et al. (2019); Nguyen Anh Tuan (2020); Chaabouni et al. (2021)

Source: Authors' compilation

3.1. Descriptive statistics

The previous studies have been done in different regions and countries around the world, showing that research topics about corporate social responsibility and the socially meaningful marketing that is associated with consumer behaviour is very broad, and covering Asia, Australia, Europe, America and Africa. In particular, Asia accounted for the majority of studies on the above topic in the period from 2003 to 2021, showing that this region can show many differences and diversities in consumer culture and corporate social responsibility. Further, we believed that conducting a study on corporate social responsibility, specifically marketing activities with social significance in Vietnam, is an appropriate research direction in today's context.

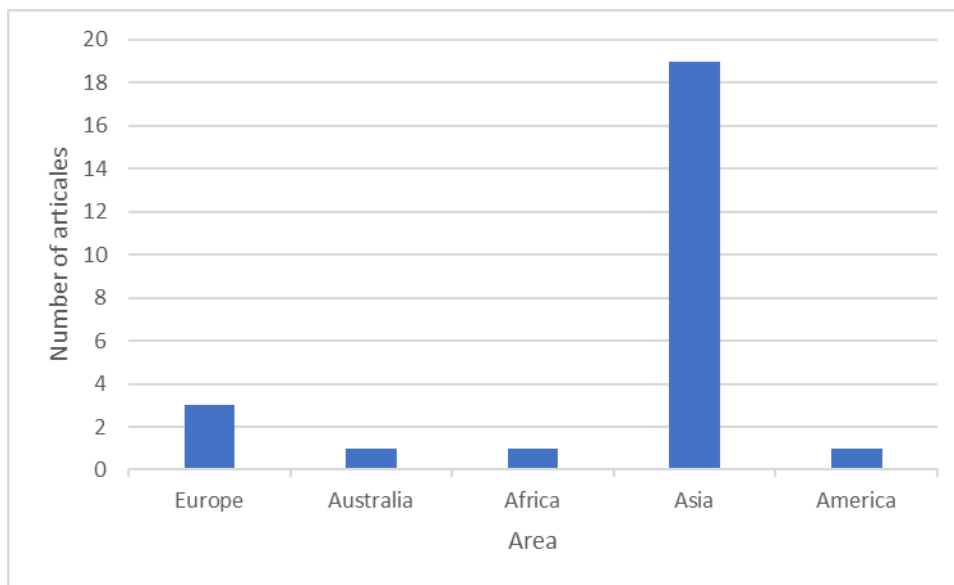


Figure 1. Distribution of studies by geographical area

Source: Authors' compilation

Australia, a study by Hellier et al. (2003).

Europe (Portugal), a research by Veloso et al. (2018).

Africa (Consumer Council of Zimbabwe), a study by Makanyeza et al. (2021).

Asia (Veloso et al.), a study of Shahroudi and Naimi (2014), Hosseini and Behboudi (2017); a study of Wee et al. (2014) in Malaysia; India with its studies as Patel et al. (2017), Darzi and Bhat (2018), Chatterjee et al. (2018), and Srivastava (2020); a study of Indarto et al. (2018) in Indonesia; Palto et al. (2018) in Bangladesh; Mehta and Tariq (2020) in Pakistan; Subaebasni et al. (2019), Rusmahafi and Wulandari (2020), and Suriyanto et al. (2020) in Indonesia; Nhu et al. (2019), Nguyen et al. (2020), Nguyen Anh Tuan (2020), Le (2021) in Vietnam.

In addition, there are studies done in 2 markets, as Santoro et al. (2019) in Italy and Japan; Ferraris et al. (2019) in Brazil and Italy. Further, Özkan et al. (2019) with their studies in Türkiye when this country has 97% of its area in Asia and 3% in Europe.

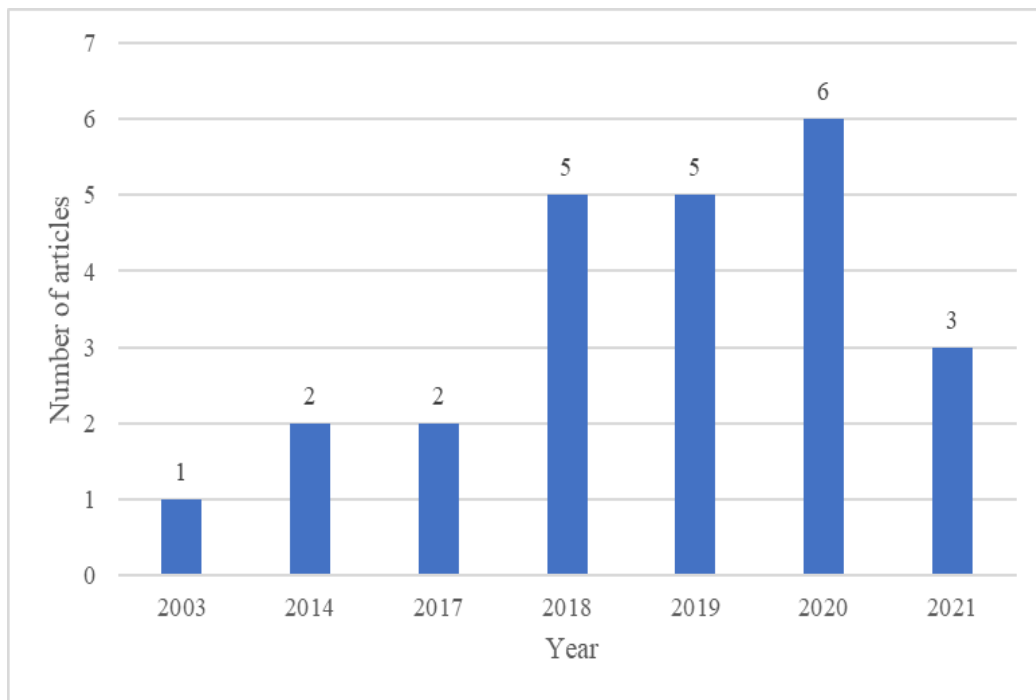


Figure 2. Number of research papers published over time

Source: Authors' compilation

3.2. Discussions on the research gap

There have been a few previous studies done from 2014 to the present. Table 2 indicates that there have been assessments of the topic of the cause related marketing, customer intention, and purchase decisions as follows:

Table 2. Some relevant studies

No.	Author	Method	Sample	Results	Area
1	Shahroudi and Naimi (2014)	Quantitative method, Using questionnaires	384 people	<ul style="list-style-type: none"> - Brand image does not directly affect loyalty intention but indirectly affects loyalty intention. - Brand image directly and positively affects customer satisfaction. - Customer satisfaction directly and positively affects loyalty intention. - Satisfied customers have a positive influence on repeat purchase intention. 	<ul style="list-style-type: none"> - Group of hygiene products - Iranian market
2	Patel et al. (2017)	Quantitative method, Using questionnaires	424 people	<ul style="list-style-type: none"> - CrM has a key role in creating a positive influence on purchase intention. - Purchase intention is significantly influenced by customers' perception of CrM. 	<ul style="list-style-type: none"> - FMCG industry of PG brand - Indian market

No.	Author	Method	Sample	Results	Area
3	Palto et al. (2018)	Quantitative method, Using questionnaires	202 people	<ul style="list-style-type: none"> - Service quality, customer relationship, customer trust, and customer satisfaction have a positive influence on customer loyalty, leading to customer retention. - Service quality has a positive and significant relationship to customer trust and customer satisfaction. - Customer relationships positively and significantly influence customer trust, customer commitment, and customer satisfaction. - Customer relationship is very important in maximizing customer satisfaction. 	<ul style="list-style-type: none"> - Retail area - Bangladesh market
4	Santoro, Bresciani, et al. (2019)	Quantitative method, Using questionnaires	154 Italian people 116 Japanese people - The age of survey respondents is mostly under 35 years old	<ul style="list-style-type: none"> - CrM is perceived to have a positive relationship with brand loyalty. - Customer perception of CSR does not moderate the relationship between CrM and brand loyalty. - There are similarities between Italian and Japanese consumers in terms of CrM awareness, CSR awareness and brand loyalty. 	<ul style="list-style-type: none"> - Subjective consumer feedback - CrM initiatives can vary between businesses in different contexts
5	Surianto et al. (2020)	Quantitative method, Using questionnaires	150 people	<ul style="list-style-type: none"> - CrM does not directly affect repeat purchase intent. - Socially meaningful marketing campaigns have an indirect effect on repeat purchase intention with brand awareness, customer attitude. 	<ul style="list-style-type: none"> - Bottled mineral water industry - Big brand, large scale - Indonesian market
6	Srivastava (2020)	Quantitative method, Using questionnaires	425 people	<ul style="list-style-type: none"> - Socially meaningful marketing has a positive and significant relationship to purchase intention, and intention to recommend the company's products to others. - Brand experience and brand image moderate this relationship. 	<ul style="list-style-type: none"> - Personal care industry - Indian market

No.	Author	Method	Sample	Results	Area
6	Chaabouni et al. (2021)	Quantitative method, Using online questionnaires	300 people	- The size of a charitable donation has no direct relationship to purchase intention. - The scale of large-scale charitable donations causes skepticism among consumers.	
7	Le (2021)	Quantitative method, Using questionnaires	218 people	- Brand love has a positive relationship to brand loyalty. - Self-esteem and sensitivity to normative influences mediate the relationship between brand love and brand loyalty.	Vietnam market

Source: Authors' analysis

From the above-mentioned overview documents, we conduct the analysis according to three main groups of topics related to the research problem, including (1) Brand image with customer satisfaction, loyalty and retention intentions. customer retention; (2) Consumers' perception of products and purchasing decisions; and (3) Cause-related marketing (CrM) with customer retention and purchase decisions.

(1) Research topic on “Brand image with customer satisfaction, loyalty intention and customer retention”

The study of Hellier et al. (2003) evaluates the process related to consumer's repeat purchase intention. The findings of this study suggest that sense of quality and equity, sense of value, customer satisfaction, expected switching costs, and brand preference affect repeat purchase intention. In which, the relationship between customer satisfaction and repeat purchase intention is related to the relationship between “customer satisfaction” and “loyalty intention” (Chatterjee et al., 2018; Shahroudi & Naimi, 2014) and “customer retention” (Darzi & Bhat, 2018; Palto et al., 2018; Subaebasni et al., 2019; Veloso et al., 2018). In addition, the relationship between brand preference and repeat purchase intention is associated with the relationship of “good impression of brand image” to “customer satisfaction” (Indarto et al., 2018; Shahroudi & Naimi, 2014), between “loyal intentions” (Shahroudi & Naimi, 2014) and “customer retention” (Indarto et al., 2018; Subaebasni et al., 2019; Veloso et al., 2018). Although the literature review shows that the relationships between the factors as customer satisfaction, brand image, and loyalty intention, customer retention are approached by current studies quite varied, but there are few in-depth studies on the comprehensive relationship of these factors. Meanwhile, this is a complex relationship that reflects customers' impressions of how brand image affects their satisfaction, and the intention to stay loyal and keep them engaged with the business. Therefore, understanding this process is very important for businesses and brands to have the right strategy towards improving customer retention rates.

(2) Research topic on "Consumer perception of products and purchasing decisions"

Research by Wee et al. (2014) evaluates the process related to the actual buying behaviour of consumers. Research results indicate that this process starts from consumers' perceptions of product aspects (value, safety, environmental friendliness, and quality) to purchase intention and ultimately the actual buying behaviour. This process refers to the relationship between the "consumer perception of the product" and the consumer's "purchase decision". The current literature suggests that very little current research on the purchasing decision-related process other than the study by Wee et al. (2014). Meanwhile, customers' purchasing decisions are very important for all marketing activities of businesses and brands. Moreover, it is even more important to understand the specific process that affects a customer's purchasing decision in the specific context, and to help businesses operate with the most appropriate strategy to optimize the effectiveness of related marketing activities leading to an increase in actual purchase rate.

(3) Research topic on "CrM with customer retention and purchase decision"

Research by Santoro et al. (2019) evaluates the relationship between CrM and brand loyalty with the regulatory mechanism of perceived social responsibility. The results of this study determine that consumer perception of CrM has a positive relationship with brand loyalty, regardless of country of origin. This finding suggests a relationship between "perceived socially significant marketing" and consumers' positive attitudes about "brand image" (Suriyanto et al., 2020). Besides, the study of Srivastava (2020) found that "perceived social meaningful marketing" positively affects purchase intention and intention to recommend products to others. Similarly, the study by Srivastava (2020) and Suriyanto et al. (2020) relates the relationship between "perceived socially significant marketing" and "loyalty intentions", "customer retention". Although these important relationships have been approached in different contexts by previous studies, it is rare to find studies that integrate the factors of consumer attitudes towards brands and customer satisfaction in this relationship.

In general, most of previous studies indicated the CrM and its influence on brand indicators and customer behaviour approached with different conceptual models in different contexts. Besides, studies related to the relationship between brand, consumer perception of products, customer satisfaction, customer loyalty, purchase decision, customer retention have also been presented by previous authors. The findings of the above studies indicate the influence of the relationships between the above factors, thereby, highlighting the role of each factor in the process of creating value. However, a comprehensive review of the influence of CrM on purchase decisions and customer retention through the two-layer mediating mechanism of brand image and consumers' perception of products, customer satisfaction, customers and loyalty intentions have not been covered in previous studies.

Based on the synthesis of the above-mentioned domestic and international research directions, the study points out the following research gaps:

First, the relationship between CrM and customer retention should be considered through a two-layer mediated mechanism of brand image and customer perception of the product, customer satisfaction and loyalty intention, especially from consumer perception perspective has not been covered in previous research. Therefore, new research is needed to fill this gap.

Second, CrM affects brand and customer behaviour (customer retention, purchase decision), however there are few studies evaluating this comprehensive relationship. Therefore, new research is needed to fill this gap.

Finally, CrM efforts in different contexts may produce different results. Therefore, new studies for different contexts are needed to test the effects of CrM.

4. Building the research model

Based on the previous studies and a few documents on CrM and its implications for businesses, consumers and society, especially in the context of a competitive and changing market, it is necessary to have a deep understanding of consumers' behavioural responses to enterprise's CrM activities. Besides, the authors found that brand image, consumers' perception of the product, customer satisfaction, loyalty intention, all are related to CrM, purchase decisions and customer retention. At the same time, purchasing decisions and customer retention are two very important factors that affect the existence and development of businesses (Chatterjee et al., 2018). Therefore, we propose the research model to comprehensively evaluate the influence of CrM on purchase decisions and customer retention through a two-layer mediation mechanism of brand image and consumer perception about product, customer satisfaction and loyalty intentions, and the regulatory mechanism of consumer perception in the relationship between CrM and brand image, CrM and consumer perception about the product.

Accordingly, the proposed research model is shown in Figure 3 below, including an independent variable that is “perceived CrM”; two dependent variables are (1) “purchase decision” and (2) “customer retention”, and four mediating variables include (1) “brand image”, (2) “consumer perception of the product”, (3) “customer satisfaction”, and (4) “Loyal intention”.

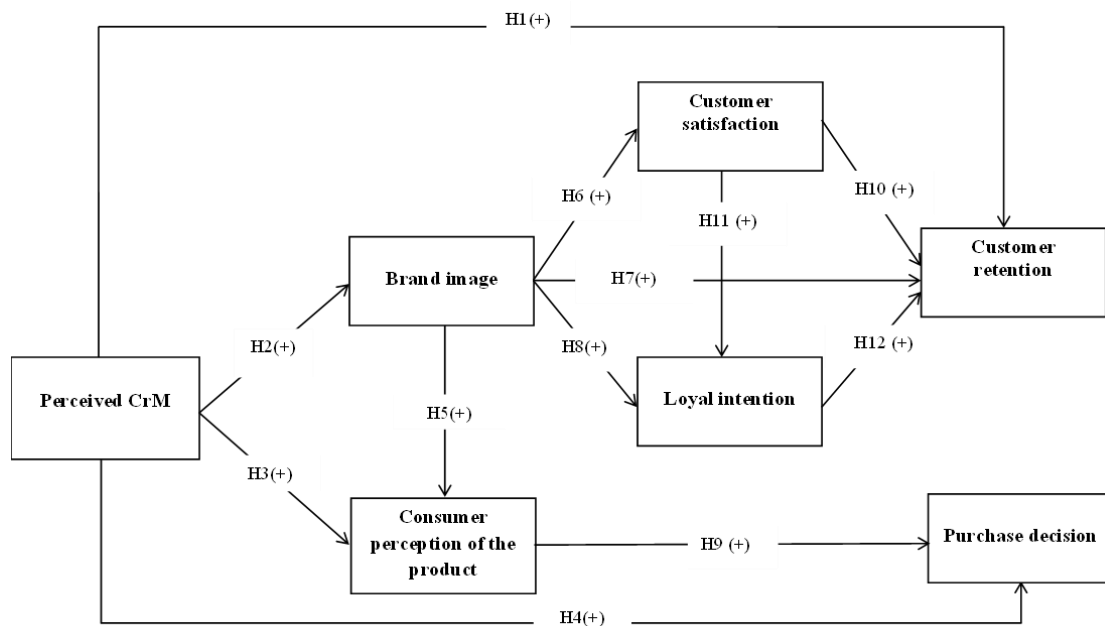


Figure 3: The proposed research model

Source: Authors' compilation

Research hypotheses

H1: A perceived socially significant marketing has a positive impact on a business' customer retention.

H2: A perceived socially significant marketing has a positive impact on a business' brand image.

H3: A perceived socially significant marketing has a positive effect on consumer perception of a product.

H4: A perceived socially significant marketing has a positive impact on consumers' purchasing decisions.

H5: Brand image has a positive impact on consumers' product perception.

H6: Corporate brand image has a positive impact on customer satisfaction.

H7: Brand image has a positive impact on customer retention.

H8: Brand image has a positive effect on customer loyalty intention.

H9: Consumer perception of the product has a positive impact on the purchase decision.

H10: Customer satisfaction has a positive impact on customer retention.

H11: Customer satisfaction has a positive effect on loyalty intention.

H12: Loyalty intention has a positive effect on customer retention.

FMCG is an acronym for Fast Moving Consumer Goods. This category includes all essential products and goods for the human life. FMCG products include household products, functional foods, food and personal care products, cleaning and laundry products, etc. Currently, stationery and pharmaceutical products, and consumer electronics are also as FMCG.

The peculiarity of the FMCG industry can be shown as the products usually have a short life cycle, a small value per unit but a large consumption rate. This industry requires manufacturers to always innovate themselves to meet the tastes of consumers. This is also a highly competitive industry, not only between domestic enterprises but also its importers and foreign markets.

Vietnam's FMCG industry is currently one of the fastest growing markets in the ASEAN region. According to the General Statistics Office, the total retail sales of Vietnam's goods reached about 180 billion USD in 2021, most of which were fast-moving consumer goods. The growth rate over the past decade has been 10-12%, while it was about 6% in the two years of the pandemic. With a growth rate of 19% in the first 8 months of 2022, this industry has recovered strongly. The expected growth rate of 10-12% will continue to maintain for the next 5-10 years. The size of Vietnam's FMCG market could reach \$360 billion by 2030.

With a positive economic growth prospect, consumers' tastes and requirements for goods will significantly change and demand quality and healthy products. Besides, consumers' awareness has also improved and followed the trend of paying attention to corporate social responsibility. Moreover, some factors such as promotion, convenience, delivery method, corporate social responsibility.... are also selected by consumers, especially cheap goods, food, packaged drinks, fashionable products.

The FMCG industry is on track to grow by 4.9% (Data from the General Statistics Office) and is forecast to continue to shine in the coming years. In the coming time, the FMCG industry will have different growth scenarios as follows: (1) Less frequency of shopping but more spending. This presents both challenges and opportunities for brands in attracting and retaining customers. (2) Although people are spending more, they don't buy more categories of goods, but mainly focus on food, milk, tools, cooking, home care, etc. However, this list is likely to change in the near future as consumers should adapt to the new normal after the pandemic era. (3) Brands will have a harder time maintaining buyer loyalty. The proposed solution is to continuously innovate products, improve brand image to keep consumers engaged with the brand (Kantar, 2022).

Successful brands keep their customers' sentiments and their overall satisfaction in mind. This expectation can be met by focusing on the habits and experiences of consumers through the brand image and creating quality products that benefit their health and peace of mind. In addition, catching up with their psychology and changing behaviour is also very important so that businesses in the FMCG industry have strategies to adjust in accordance with consumer behaviour. That is the gap for doing this research.

5. Discussion and Conclusion

CrM has an important influence on consumer behaviour in making purchasing decisions and continuing to use products in the future. In order to increase market share, brand image, consumer awareness of products, customer satisfaction as well as loyalty to a business, businesses must aim to build develop a marketing strategy associated with its social responsibility. In the content of this topic, we clarify the research issues as follows:

The relevant studies show the importance of CrM activities for brand image, customer satisfaction, purchase intention and repeat purchase intention. These studies were carried out in different contexts, or different sectors including Fast-moving consumer goods (FMCG) and services industries. Although customer retention is considered an indicator of business success, especially in the context of an increasingly competitive and rapidly changing environment, however, there has not been a specific study on the influence of CrM on customer retention and purchase decision. Besides, purchasing decision is an important factor affecting the viability and development of enterprises, but this factor has not been covered in previous studies as the expected results of CrM. In addition, a number of studies in Vietnam mainly explore the relationship between brand and consumer behaviour as well as the factors affecting customer loyalty and purchase intention. Therefore, research on CrM

has not been included in these studies. Meanwhile, the arguments show the strategic importance of CrM for the existence and development of enterprises on the basis of balancing benefits between businesses, consumers and society. In the context of a dynamic market and consumers increasingly expect more value from products in the market, this can be considered as a research gap related to CrM activities in the Vietnamese market.

In this study, we conduct the analysis according to three main groups of topics related to the research problem, including (1) Brand image with customer satisfaction, loyalty intention and customer retention; (2) Consumers' perception of products and purchasing decisions; and (3) CrM with customer retention and purchase decisions. In addition, the study points out gaps for current research. First, the relationship between CrM and customer retention exists through a two-layer mediated mechanism of brand image and customer perception of the product, customer satisfaction and loyalty intention, especially the perceptions of consumers have not been covered in previous research. Second, CrM affects brand and customer behaviour (customer retention, purchase decision), however there are a few studies evaluating this comprehensive relationship. Finally, CrM efforts in different contexts may produce different results. Therefore, new studies for different contexts are needed to test the effects of CrM.

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FACTORS IMPACTING PRODUCT COMPETITIVENESS: A SYSTEMATIC LITERATURE REVIEW AND SOME FUTURE RESEARCH DIRECTIONS

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Abstract

Competition is inevitable in the market economy, so competitiveness is a vital issue in business and business development. The competitive impact factor is a key concern of academics and professionals. Many researchers investigate aspects of competitiveness and impact factors. This article evaluates the system of factors affecting product competitiveness. Based on a systematic review of studies, the authors review key topics discussed in the literature, identify and resolve research conflicts and gaps, and develop an integrated and integrated conceptual model of factors impacting product competitiveness. In addition, the authors also identified two future research directions that will include: (1) Conducting a multi-factor study to assess the impact of factors on competitiveness; (2) Using quantitative and qualitative criteria to measure the impact of factors on competitiveness.

Keywords: *competition, capacity, factor, impact.*

1. Introduction

Improving the competitiveness of goods is a key requirement for every business. Highly competitive goods will create a solid foundation for business development and help businesses increase their ability to expand production scale (Dang, 2006). In the context of globalization, many countries have the same advantages and opportunities to produce the same type of products with different quality and price, improving the competitiveness of exports becomes even more urgent when it comes to gaining market share in the world market. Competition is a concept used in many areas, which appeared simultaneously with the birth and development of the production of goods. At the initial stage of the development of commodity production, the competition was not fully recognized and

considered in all aspects. It is only when the concepts of value and price are studied scientifically that the issue of competition is more fully understood and its role in the economy is better appreciated.

However, besides capital advantages, exporting enterprises are always subject to fierce competition from competitors in terms of price, quality, distribution channels, technology, and customers,... In particular, exporting enterprises are also under pressure from the exporting country such as laws, culture, and protectionist policies,... (Tri and Na, 2018). Therefore, the study of factors affecting the competitiveness of products is a stepping stone for businesses to self-assess, check, recognize opportunities and challenges, as well as to implement business plans to improve competitiveness and achieve competitive advantages.

In the context of the market growing and expanding, no longer confined to a certain geographical area, it is increasingly necessary to understand the factors affecting product competitiveness. Vietnam is in the process of strong international integration, especially international trade through participation in free trade agreements. Therefore, it is urgent to study issues related to competitiveness to come up with solutions to help businesses participate in the international market. To date, there have been several related studies mentioned at different levels. However, the studies are still relatively independent, with no connection and mutual inheritance, making this issue not attract the attention of researchers. Therefore, the article clarifies gaps in the scope of competitiveness by conducting a systematic review of the literature on the competitiveness of products and impact factors, thereby proposing future research directions.

The research paper consists of 5 parts: (i) Introduction, (ii) Literature review, (iii) Research method, (iv) Research gaps and future research directions, (v) Conclusion.

2. Method

The authors systematically review previous academic studies. The research uses qualitative and quantitative research methods to thoroughly understand the competitiveness of products, methods, and research theories used in previous publications.

2.1. Search procedure

The authors use a variety of approaches to identify and categorize relevant articles, initiating manual searches and sifting through articles related to competitiveness and product competitive advantage. By examining keywords, article titles, and abstracts, the authors built a list of related articles on Scopus, Elsevier Science Direct, and PubMed. The team also expanded the search by looking at a list of references to previously related articles, otherwise known as the Backward and Forward Reference Search method (Johnson and Jaramillo, 2017).

2.2. Inclusion criteria

All articles are further assessed based on the following criteria:

Firstly, international articles must be published in peer-reviewed journals to ensure the quality and reliability of research results. For studies in Vietnam, the scope of the search

is expanded, including some articles from unassessed journals that have a great impact on many fields.

Secondly, this article focuses on evaluating empirical research and theoretical research that is eliminated in order to prioritize the flexibility of the subject in the investigation in different aspects and contexts, as well as ensuring that the subject of research is closely followed.

2.3. Evaluation methods

After the above search and selection process, related articles are synthesized and categorized into four angles: Articles about competition, competitiveness and factors affecting competitiveness. After collecting quantitative data, the team uses a tool that supports accurate assessment and classification of results. From there, identify the issues, extent, and scope raised in related works, point out the research gaps in previous research, and propose some research orientations suitable to the current context of Vietnam.

3. Results

The authors' findings point to the following key issues: (1) How past studies have been conducted and (2) The major themes in previous studies.

3.1. The way competitiveness research has been conducted

Much of the research on competitiveness to date has been published in numerous journals. After evaluating the literature on competition, the authors found many different perspectives on competitiveness and the factors that influence the competitiveness of previous scholars, and how this changes over time.

First, the papers mainly study the competitiveness of products in a particular country/region (84.5%), with little research linking countries, continents, or the world. Oh and Kim (2015) assessed Indonesia's competitiveness of wood products. Muhammad and Yaacob (2008) analyzed Malaysia's export product competitiveness. Vozarova and Fedorko (2013) analyze the competitiveness of agricultural products exported by the Slovak Republic. Thuy (2006) has delved into researching solutions to improve the competitiveness of Vietnamese seafood exports.

Second, the results of a review of relevant studies show that each study uses a combination of different research methods. However, most studies use primary methods such as: (1) Methods of analysis and synthesis of theory (Fagerberg, Mowery and Nelson (2003); (2) Statistical methods used by studies in evaluating criteria of selling price, revenue, export turnover, market share,... (Tambunan, 2006; Sujová, Hlavackova and Marcinekova, 2015; Song and Gazo, 2013); (3) The comparison method is used in two ways: first, comparing values at different timelines such as sales price, revenue, export turnover, market share (Han, Wen and Kant, 2009); Secondly, comparing between competitors, the criteria used for this method are export value, comparative advantage, calibrated comparative advantage, relative goodwill index and trade competitiveness index,... (Paluš et al., 2015); (4) Graphical research methods are used by some researchers in research to describe research

problems using charts and graphs. (Vozarova and Fedorko, 2013); (5) Regression analysis method to evaluate factors affecting the competitiveness of products (Tuan, 2017); (6) The method of analyzing the sequence over time is used to analyze the fluctuations of the criteria for assessing competitiveness over time to find out the laws of development and predict the level of phenomena in the future (Hoa and Xuan, 2012). In addition, in these studies, none have used value chain analysis methods to assess the competition...

Third, the studies mainly applied a quantitative approach by applying questionnaires. Vozarova and Fedorko (2013), Zhao et al. (2012), Tambunan (2006), Sujová, Hlavackova and Marcinekova (2015), Deng (2006) surveyed with academics and administrators to ensure professional relevance before conducting the questionnaire. After receiving expert feedback and making relevant changes, the final draft of the questionnaire was developed. Questionnaires are sent to executives in companies.

Fourth, the research results on the competitiveness of the product have not been completed and there are still conflicting results. Karima et al. (2008) compared and demonstrated measurements for competitiveness in different countries are not the same. Although competitiveness is studied in many works, each theory provides only one perspective on the subject. Therefore, a system theory basis is needed to comprehensively explain all the factors affecting competitiveness (Buu, 2019). Of the influencing factors studied, few were analyzed in depth. Most studies investigate the direct link between influencing factors and competitiveness but ignore the interplay between factors.

3.2. The major themes within the competitiveness literature

3.2.1. Research on competitiveness

Competition in the economy has been studied for a long time. However, competitiveness and systematic competitiveness research have only been around since 1980.

Achieving competitiveness requires a holistic view of business advantages and competitors (Clark and Montgomery, 1999; Day and Nedungadi, 1994) for competitive advantage that comes from a variety of activities, such as product-related areas (Leonidou et al., 2015; Schiefer and Hartmann, 2008), market characteristics (Carbone et al., 2020), quality of service (Johnson and Sirikit, 2002; Pauline and Pauric, 1999; Rapert and Wren, 1998), distribution (Hoffman and Novak, 1996) and the marketing ecosystem (Zhang and Watson IV, 2020).

Aldington (1985) believes that enterprises have good competitiveness when they can produce quality products and services at lower prices than competitors. Prahalad and Hamel (1990) when studying the competitiveness of enterprises emphasize the importance of factors belonging to the endogenous capacity of enterprises. These are: (1) The business strategy of the enterprise; (2) Structures, capacities, and creative abilities; (3) Intangible and tangible resources. The authors point out that the competitiveness of the enterprise is the ability to develop and make better use of resources than competitors, that is, it is necessary to rely on the resources of the enterprise. According to this view, Markusen (1992) asserts:

"a manufacturer is competitive if it has an average unit cost equal to or lower than the unit cost of international competitors". D'Cruz and Rugman (1992) argue that the competitiveness of a business is the ability to design and manufacture products for the market with outstanding prices and quality. From there, it shows that the analysis of business competitiveness can be based on many different angles depending on the perspective and level of interest of the study. While the above studies look at competitiveness in a variety of aspects from measurement methods, to measurement perspectives in each country, Xiao et al. (2009) focused intensively on the causal relationships of competitiveness and suggested that business performance increases if the company has strong competitiveness. more through improving the factors that impact this capacity.

Competitiveness is measured in many ways, such as production capacity, marketing capacity, product quality, differences in price (Katsikeas, 1994), and innovation and cost management (Chandler & Hanks, 1994). According to Song and Parry (1997), competitiveness can be seen from the uniqueness of the product, product quality, and competitive price.

Table 1: Some research on competitiveness

Author/year	Research name	Magazines/publ ishers	Results
Nguyen Dinh Long 2001	Research the main solutions to promote advantages to improve competitiveness and develop agricultural export markets in the coming time: coffee, rice, rubber, tea, cashew	Scientific report of Viet Nam Ministry of Agriculture and Rural Development	Develop a rationale to evaluate the competitiveness of export products from comparative advantages and competitive advantages
J. Fagerberg, D.C.Mowery& R.R.Nelson 2003	Innovation and competitiveness	<i>Oxford University Press</i>	Study of competitiveness theory, emphasizing the importance of technological innovation in competitive levels
Han, X., Wen, Y., & Kant, S. 2009	The global competitiveness of the Chinese wooden furniture industry	<i>Annals of Forest Science</i>	The study provides an exploratory framework for analyzing China's competitiveness for the wooden furniture industry from an international trade theory perspective

Author/year	Research name	Magazines/publ ishers	Results
N. Savić, M. Stojanovska, V. Stojanovski. 2011	Analyses of the Competitiveness of Forest Industry in the Republic of Macedonia	<i>Original scientific paper</i>	Analysis of the competitiveness of the forest products industry in Macedonia through the Diamond model of MC. Porter
Nguyen Van Hoa, Mai Van Xuan 2012	Study the competitiveness of Dak Lak coffee in the integrated market	Scientific Journal, Hue University B	Assess the competitiveness of Dak Lak coffee in the integrated market, using the competitiveness measurement criterion of domestic resource cost (DRC)
Paluš, H., Parobek, J., & Liker, B. 2015	Trade performance and competitiveness of the Slovak wood processing industry within the VisegGroup countries	<i>Drvena industrija</i>	Based on criteria such as: export value (export), comparative advantage (RCA), corrective comparative advantage (RSCA), relative goodwill index (RTA) and trade competitiveness index (TC),... to assess the competitive advantages of Slovak woodworking industries
Cheba, K., & Szopik-Depczyńska, K. 2017	Multidimensional comparative analysis of the competitive capacity of the European Union countries and geographical regions	<i>Journal of management</i>	Accreditation of criteria used by the World Economic Forum to assess the competitiveness of EU economies
Ávila, M.M. 2022	Competitive Advantage and Knowledge Absorptive Capacity: the Mediating Role of Innovative Capability	<i>Journal of the Knowledge Economy</i>	This study aims to investigate the intermediate role of innovation capacity between absorption capacity and competitive advantage

3.2.2. *Research on factors affecting competitiveness*

This category involves authors who study and synthesize theories about the factors that affect competitiveness. The process of improving the competitiveness is influenced by external factors as well as internal factors (Buu, 2019).

3.2.2.1. Elements inside the business

According to the competency theory proposed and developed by the studies of Wernerfelt (1984), Barney (1991), Peteraf (1993), Sanchez & Heene (1996, 2008), through research, development and application, Pham Thu Huong (2017) showed that there are 5 main groups of factors inside that affect competitiveness improvement, including: (1) Executive management capacity, (2) Marketing capacity, (3) Financial capacity, (4) Equipment and technology capacity, (5) Service organization capacity. Buu (2019) added (6) The quality of labor resources, (7) The source of raw materials and (8) The ability to create relationships is one of the internal factors (internal resources) affecting the improvement of competitiveness. Those factors are as follows:

a. Equipment and technology capacity

Equipment and production technology are very important factors, greatly affecting competitiveness. Studies by Hudson and Mosley (2001); Qian and Li (2003); Tho and Trang (2008) show that technological characteristics that impact competitiveness are: slow technological innovation; suitable technology; the ability to apply and access new technologies; human resource level of the department of research and application of new technologies in the enterprise.

b. Quality of labor resources

Labor is one of the important inputs of every production process besides capital and technology. To create quality, highly competitive products require quality inputs, including labor (Buu, 2019). In the process of integration, the requirements of high-quality of labor are enough to meet the requirements of the development level of the region, the world, of the times... is necessary. According to Tho (2009) labor and labor quality are one of the resources that make up the capacity of enterprises. Labor quality is evaluated on aspects such as: Experience, knowledge and skills of managers and employees; Adaptability and loyalty of employees. Accordingly, Trang et al. (2004) also assessed the quality of labor resources through the level of education, organizational consciousness as well as the attitude of employees. According to this group of authors, human resources and labor quality affect competitiveness.

c. Sources of raw materials

According to Tho (2009), besides other material resources, raw materials are one of the factors that make up the capacity of enterprises. Raw materials are indispensable inputs of production, directly creating products. Lack of raw materials the production process will be interrupted or unable to proceed. Therefore, raw materials play a very important role in deciding the results and business efficiency of the business. If raw materials are fully

guaranteed in quantity, quality, type ... huge impact on product quality. Raw materials are also directly related to product production and consumption plans. Therefore, timely supply of raw materials at reasonable prices creates favorable conditions for production and consumption of products. Enterprises proactively source input materials, business efficiency will be high. The initiative to source input materials by themselves or find their own supply market, cheap and high quality. This is an important solution that contributes to improving efficiency, increasing business competitiveness, increase product competitiveness.

d. Marketing competencies

Marketing is the function of satisfying the customer's need to achieve the goals of the business (Kotler and Waldermar, 2006). The marketing capabilities of the business are constantly monitored and responsive to customer changes along with competitors (Kotler and Waldermar, 2006; Homburg and Jensen, 2007).

The assessment of the marketing capacity of the enterprise is carried out through four basic components (Tho and Trang, 2008): (1) Customer response, demonstrating the response of the business according to the change in customer needs and desires; (2) Reacting to competitors, demonstrating the company's follow-up to rival business strategies, such as corporate marketing strategies that respond to competitors; (3) Adapting to the macro environment, demonstrating that enterprises monitor environmental changes to seize opportunities and barriers from which to have appropriate policies; (4) The quality of partnerships, referred to as relationship quality, demonstrates the extent to which the enterprise achieves the quality of relationships with customers, suppliers, distributors and relevant levels of government. It is whether the business fulfills the commitments set out with customers or is a participant meeting the established relationship.

e. Executive management capacity

According to Tho (2009) executive management capacity is one of the constituent elements of the enterprise's capacity. In the same vein, Huong (2017) also considers executive management capacity as a factor that has a great impact on the capacity of enterprises. The ability to organize and manage enterprises is considered a decisive factor in the existence and development of enterprises in general as well as the competitiveness of enterprises in particular. Therefore, the enterprise management capacity is shown in the following aspects: The level of the management staff; Qualifications of organization and management of enterprises; Qualifications and capacity of business management (Tho, 2009; Incense, 2017).

f. Financial capacity

Financial capacity is the ability to ensure financial resources for activities to achieve the set goals. According to Tho (2009), financial capacity is reflected in revenue growth, profit growth and market share growth. According to Huong (2017), financial capacity is expressed in the ability to ensure capital sources capable of mobilizing to meet capital needs for activities; is expressed in the size of capital, the ability to mobilize and use capital

effectively, financial management capacity ... First of all, financial capacity associated with capital is a fundamental factor of production. The efficient use of capital, fast capital turnover, good financial growth ... has great significance in reducing capital costs, reducing product costs, rapidly increasing financial scale (Huong, 2017). At the same time, capital is also a premise for other factors of production. The timely mobilization of capital to meet materials, raw materials, hire workers, purchase equipment, technology, organize retail systems ... Financial capacity reflects the economic strength of the enterprise, which is the first and mandatory requirement if the enterprise is to succeed in business and improve competitiveness. Strong financial capacity contributes to increasing competitiveness, thereby contributing to increasing product competitiveness.

g. Ability to create relationships

In production and business activities, in addition to making good use of resource factors to improve competitiveness, enterprises also have to create relationships with different subjects. These relationships include relationships with customers, suppliers, credit institutions, enterprises in the same industry and with the government (Huong, 2017). According to Trang et al. (2004), the ability to create relationships is reflected in the ability of businesses to create relationships with customers; with distributors; with suppliers; relationships with localities, social cohesion; cooperation, affiliation with other enterprises and relationships with credit institutions. The linkage between enterprises creates competitive strength for businesses, thereby affecting product competitiveness.

3.2.2.2 Factors outside the business

According to Porter (1990-1998), external factors affecting the improvement of competitiveness include: Entry conditions; bridge conditions; related and supporting sectors; competitive level strategy and structure; and the impact of the state. These factors are generalized in the Diamond Model (Figure 1) in terms of competitiveness. Porter's diamond model builds on four major attributes of a country and it forms a competitive environment for businesses in that country. These attributes either promote or prevent the creation of that country's competitive advantage. Those attributes are:

(1) Conditions on factors of production: The position of a local country 1 in terms of factors of production, e.g. raw materials, skilled labor, infrastructure necessary to compete in a particular industry.

(2) Demand conditions: Domestic demand for goods or services of an industry.

(3) Supporting and related industries: The presence or unavailability of supporting and related industries with international competitiveness.

(4) Strategy, structure and level of intra-industry competition: What are the conditions of management, organization and administration, the nature of domestic competitors.

(5) The role of government: Government can influence one of the four determinants of competitiveness. The government can influence the conditions of supply of important factors of production, demand conditions in the domestic market and competition among enterprises.

(6) Opportunities: are events that occur outside the control of the subject of study. They are important because they create disruptions, fractures in which some positions increase competition and some are lost.

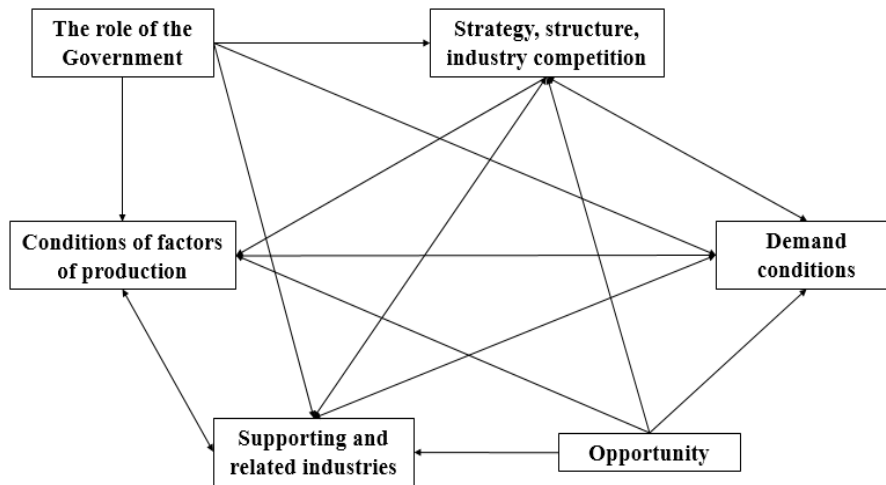


Figure 1. Mc. Porter's diamond model

Source: Hill và Jones (2009)

MC. Porter argues that there are two more factors that govern the diamond model in other important ways: Opportunity and the role of government. The opportunities that come can help restructure the industry and provide opportunities for a country's businesses to get ahead. The role of government manifests itself by choosing policies, which can reduce or improve national advantages. According to Porter's theory, countries should export products of industries where all four components of the diamond model are favorable and import in those sectors where components do not have favorable conditions.

4. Discussion and Conclusion

4.1. Research gaps

From a theoretical perspective, product competitiveness is always the top concern not only of businesses but also researchers, there have been many studies on competitiveness (Aldington, 1985; Prahalad and Hamel, 1990; Markusen, 1992; Xiao et al., 2009) and each study has a different perspective. There are many different approaches both in terms of methods (Fagerberg, Mowery and Nelson ,2003), content and evaluation criteria (Tambunan, 2006; Sujová, Hlavackova and Marcinekova, 2015; Song and Gazo, 2013). There is not yet a comprehensive and unified theoretical framework, so this is a gap in the study of product competitiveness theory.

The review studies all have in common the use of a comparative advantage platform to evaluate competitiveness through criteria such as: comparative advantage coefficient (Paluš et al., 2015); export value, market share (Tambunan, 2006); trade competitiveness index (Oh and Kim, 2015); localization coefficient (Long, 2001; He, 2010).... The difference

of the studies is that the scope of the research space is taken place in different countries (Paluš et al., 2015; Hoa & Xuan, 2012; Han, Wen and Kant, 2009), there is no study for a specific region or region. In addition, the studies also have some differences in the approach as well as the use of problem-solving research methods and the selection of comparative subjects. The above studies mostly stop at assessing the current state of competitiveness through conventional criteria (Han, Wen and Kant, 2009; Tambunan, 2006; Sujová, Hlavackova and Marcinekova, 2015; Song and Gazo, 2013), not deeply studying internal factors as well as external factors affecting the competitiveness of products.

There have been many domestic studies on product competitiveness. However, so far there has been no comprehensive, complete and up-to-date study on this issue. Moreover, in the process of reviewing the relevant studies gave the author a lot of information in guiding future research.

4.2. Research orientation

One of the main goals of a systematic literature review is to "resolve ambiguities in definition and provide an aggregated view of the current state of knowledge" (Palmatier et al., 2018). As a result, the study found that researchers of competitiveness often neglect to clearly define and evaluate what is involved in competitiveness and focus only on certain aspects of the relationship between influencing factors and competitiveness (Hudson and Mosley, 2001; Qian and Li, 2003; Tho and Trang, 2008; Huong, 2017). This leads to inconsistencies between studies on the main component of competitiveness.

To resolve such inconsistencies in the existing literature and give an overview definition of competitiveness, we do not use the unclear and incomplete descriptive concepts of competitiveness used in previous studies. Instead, we follow the approach used by Xiao et al. (2009) to rely on key influence variables.

Combining these changes with findings from a systematic literature review, we identified two directions for future research that will have a major impact on the team's understanding of the factors impacting competency: (1) Conduct a multi-factor study to assess the impact of factors on competency competitive forces; (2) Use quantitative and qualitative criteria to measure the impact of factors on competitiveness. Below, we briefly discuss each research direction and make initial proposals that can serve as sources of ideas for future studies.

4.2.1. Conduct a multi-factor study to assess the impact of these factors on competitiveness

The study uses factors that are very important and necessary, which are the factors that constitute competitiveness (Katsikeas, 1994; Chandler & Hanks, 1994; Song and Parry, 1997). Depending on the characteristics, business field and size of the enterprise, the analysis of factors determining the product competitiveness of the enterprise from many different angles.

The concept of competitiveness is a dynamic concept, so the factors used to evaluate today's competitiveness can change over time, and differences also appear in different geographical locations, combining many factors to assess the impact of factors on competitiveness is extremely necessary.

4.2.2. Use quantitative and qualitative criteria to measure factor impact on competitiveness

The above studies, each study uses different criteria to assess competitiveness, when considering, researching and analyzing specifically the actual situation of each field of activity, it is possible to use other criteria that the scope of research cannot fully cover. Besides qualitative criteria are product quality, design, design, packaging, brand (He, 2010) then quantitative criteria such as: comparative advantage (RCA), market share (MS), localization coefficient (DRC) (Tambunan, 2006), specialization index, export turnover (Sujová, Hlavackova and Marcinekova, 2015), trade competitiveness index (TC), import and export ratio (Paluš et al., 2015), product selling price (He, 2010), needs to be used in parallel to have the most overview as well as have specific measurement data to help the competitive analysis process more accurately.

4.3. Conclusion

Businesses are now competing fiercely under the pressure of global integration. For sustainable development, enterprises must improve their competitiveness. In that context, identifying, nurturing and developing resources to increase competitiveness is an urgent requirement of enterprises. Over time, research in this area uncovers valuable knowledge about the theoretical basis of competitiveness and factors affecting competitiveness. Studies demonstrate that enterprise-level factors, industry-level characteristics, country-level characteristics, intermediate variables, and regulatory variables are significant impact factors on competitiveness, despite the complexity of measuring competitiveness. Published research on competitiveness is limited to specific industries and regions. In summary, the authors identified, integrated, and synthesized the literature on competitiveness, developed several promising directions for future research.

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EXPECTATIONS AND EXPERIENCE IMPACT ON VALUE CO-CREATION INTENTION OF USERS WHEN PLAYING GAMES

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Abstract

Numerous studies on value co-creation in the context of gaming have been conducted, but they typically focus on the action's process and outcome rather than its fundamental cause. This study emphasizes on the gratification of the participant as the motivating force behind this activity. Using the expectation-confirmation theory (ECT) to explain the relationship between these characteristics and gamers' desire to co-create, we conducted research from the perspective of game service consumers regarding initial expectations and playing experience. Through qualitative surveying, we can determine the factors that influence players' initial expectations, such as enjoyment and attitude toward advertising, as well as the factors that influence their actual gameplay, such as achievements, game visual, and social interaction. In Ho Chi Minh City, 298 video game users provided the sample data for the quantitative analysis. According to the results of the factor analysis, the factors had a positive impact on how participants intended to co-create value. Researchers and developers in the video game industry can benefit from both theoretical and practical contributions.

Key words: *Value co-creation, Expectation-Confirmation Theory (ECT), Video games, Achievement, Game visual.*

1. Introduction

Value Co-creation is considered a novel approach to defining value. They have existed for a long time in business transactions between companies and customers. However, consumer value co-creation was not clarified and received significant scholarly attention until the service-dominant marketing logic debate emerged (Vargo and Lusch, 2004). Blazevic and Lievens (2008) examined its positive impact on firm innovation; the cost,

scope, and competitive advantage that co-creating consumers can bring (Cook, 2008). In addition, co-creation helps organizations increase their innovation by generating concepts that they might not have thought of on their own. Co-creation accelerates the development process by bringing multiple parties together to work toward a common objective, nurturing strong relationships, and cultivating consumer loyalty. In addition, the co-creation process can provide organizations with the agility to respond rapidly to market or consumer requirements shifts. Simultaneously, it increases operational efficacy, thereby generating both business and social value. The most prominent example of this is the partnership between Haier Group, the world's largest manufacturer of home appliances, and Heji Home, a Chinese home furniture company. In response to the Covid - 19, 2020 epidemic in Wuhan, China, these two companies developed a prototype of the device and delivered it to the hospital within two weeks. In the weeks that followed this initial triumph, additional units were manufactured and distributed to local hospitals. One of the most notable instances of co-creation is the 2016 introduction of LEGO Ideas.



Figure 3. LEGO Ideas

Source: Lego

Another example of co-creation is Sodexo's global platform, which aims to empower every Sodexo collaborator to share and realize innovative ideas and launch service delivery initiatives. Sodexo's Autonomous Food Delivery is one of the products created from employee ideas.



Figure 4. Sodexo's Autonomous Food Delivery

Source: Sodexo

Gamification approaches provide a substantial return on investment for the co-creation of new solutions by fostering an environment that is open, engaged, and collaborative (Ind & Coates, 2013). Gamification techniques offer a significant return on investment in the co-creation of new solutions by encouraging this practice in a transparent, interactive, and collaborative environment (Ind & Coates, 2013). Every ardent participant is, at heart, a game designer. He is cognizant of the possible modifications to the game. This topic is frequently discussed on forums and social media by players. Brendan Greene, an avid gamer, created PUBG by recreating Arma II in a manner he believed to be superior. Brandon Beck and Marc Merrill were inspired by DOTA when creating League of Legends. The mobile versions of League of Legends, Arena of Valor, and PUBG were all significant innovations in the gaming industry in 2017, and they were all developed primarily by enthusiasts as opposed to professional game designers.

The Day Z video game's PlayerUnknown's Battle Royale mode proved popular, and Sony Online Entertainment was the first to recognize this trend. Even the game's creator, Brendan Greene, was asked to serve as a consultant for H1Z1: King of the Kill. After several months of negotiations, his contract was not renewed because all relevant skills had been relocated. Soon after relocating to Bluehole in Korea, Brendan Greene rose to the position of chief game designer for the Player Unknown's Battleground (PUBG) project. PUBG and H1Z1: King of the Kill have drastically distinct levels of significance. It appears that you must do more than simply observe the other participants. The majority of research has outlined the characteristics and benefits of consumer co-creation. However, these discussions do not adequately explain why consumers interact with businesses in ways that generate value. Understanding what motivates consumers to engage in value co-creation could enable firms to manage their interactions with consumers in a manner that creates superior value for both the consumer (e.g., more relevant and high-quality products) and the firm itself (e.g. extraordinary margins). In reality, the aforementioned research does not have a comprehensive understanding of motivation and has not exhaustively examined and investigated consumer's motivation to produce user value. Some research articles discuss user motivation, but lack quantitative evaluation; consequently, the theory cannot be generalized, leaving a significant knowledge void in customer-centric innovation.

2. Conceptual Framework and Hypotheses

2.1. Expectation Confirmation Theory

In an effort to fully conceptualize and explain the consumption process, the Expectation-Confirmation Theory (ECT) has been widely applied in marketing to measure consumer satisfaction and post-purchase behavior (Oh, 1999). According to Oliver (1980), Oliver (1999), and Bhattacharjee (2001), the fundamental mechanism supporting ECT is a sequence of procedures. First, prior to actual purchase behavior, consumers create initial anticipation of a particular service/product, which can be characterized as the extent of customers' expectations about the goal and the extent of their opinions about the service provider's capabilities (Coye, 2004). Perceptions of overall performance fluctuate progressively during the consumption phase. Customers then evaluate the extent to which

their expectations were met by comparing perceived performance to their prior expectations of the service. In the subsequent phase, client satisfaction with the service is measured based on pre-purchase expectations, and the disparity between pre-purchase expectations and post-purchase service evaluations is validated. (Kristensen et al., 1999). Figure 3 depicts the fundamental constructs and structural connections of ECT.

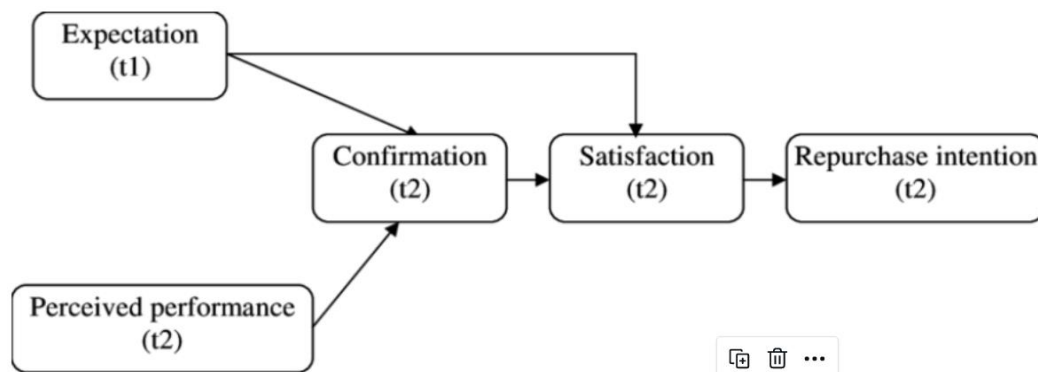


Figure 5. Expectation Confirmation Theory (ECT) sample model

2.2. Hypotheses and Research Model

For the former, Hsu and Lin (2008) defined enjoyment as the degree to which an Internet user participates in social networks because the process “yields fun and enjoyment”. In this research, perceived enjoyment can be considered as enjoying playing games while spending time with them. According to Davis et al. (1992), perceived enjoyment can be described as an intrinsic motivation, whereas expectation in ECT is an example of intrinsic motivation. Based on that, we applied ECT in the field of game. With the trend that more and more video games can be played to meet different needs of users, it is expected that the level of enjoyment after adoption will also become important in developing players' expectations with the games which haven't been experienced. Consequently, this study postulates the hypothesis:

H1: Enjoyment positively influences Expectation

Attitudes towards Ads mentioned in this study mean negative or positive feelings after viewing ads about games they have not played. Most of the ads about games are launched on the Internet. The Internet is a widely used tool for information seeking and decision-making regarding consumer goods (Darley et al., 2010, Johnson et al., 2004, Roscoe et al., 2016). Similarly, Game players can find large amounts of game information on the Internet. It can be observed that a large number of promotional strategies have been carried out by game manufacturers and distributors with the aim of impressing players and motivating them to seek out or play that game. Therefore, the relationships between Advertisement and Expectation were inferred. Based on such facts, this study hypothesizes that:

H2: Positive Attitudes toward Advertisement lead to higher Expectation

Achievement component suggested by Yee (2006) consist of: Advancement (The desire to gain power, progress rapidly, and accumulate in-game symbols of wealth or status); Mechanics (Having an interest in analyzing the underlying rules and system in order to

optimize character performance); Competition (The desire to challenge and compete with others). Achievement focuses on the motivation to behave competently or the desire to perform a task or activity well. We suggest that an individual with a high level of achievement has a higher extent of perceived performance.

H3: Achievement positively impacts on Perceived Performance

Game visuals are visual design elements built into the game to make the game more realistic, close, and attractive to players. Hicks et al (2019) show that engaging design elements improve the visual appeal of the game and contribute to player curiosity (e.g., contributing to the desire to explore the world. player's virtual reality) by adding visual interest, suggesting that the design strategy can be of tangible benefit to the player. Based on the study of Hicks et al (2019), our study hypothesizes.

H4: Game visual positively influences Perceived Performance

Social interaction was defined as App's ability to help customers stay in touch with friends and others. (Eisingerich et al .2019) Customers engage with gamified health apps to share the experience with their peers and join in conversations within their social groups, in a form of social interaction. Many gamified health apps allow customers to share their progress with friends and social groups. In this way, the apps motivate customers to perform better, to avoid any embarrassment due to failing to achieve their health objectives. Similar to our topic, as players experience social interactions, their cognitive performance improves. Hypothesis is:

H5: Social Interaction positively influences Perceived Performance

Expectation-Confirmation Theory (ECT) has been widely applied in the field of marketing to assess customer satisfaction and post-purchase behavior, in an attempt to perfect the concept and explanation of the process of customer satisfaction (Oh, 1999). According to Oliver (1980, 1999) and Bhattacharjee (2001), the basic mechanism of ECT is achieved after a sequenced process. First, before actual purchasing behavior, customers form initial expectations about a particular service/product, which can be understood as the level of customer expectations about the goal as well as their level of confidence in the service provider's capabilities (Coye, 2004). During the consumption phase, the perception of overall performance is gradually developed. The customer then evaluates the perceived performance against their prior expectations for the service to determine the extent to which these expectations are confirmed. In the next step, service satisfaction is determined through the customer's pre-purchase expectations, along with confirmation of the difference between pre-purchase expectations and post-purchase evaluation of the service (Kristensen). Et al., 1999). Applying ECT to the field of game, players firstly form an initial expectation about the game. During the period of playing, their perceptions of overall performance are gradually developed. Then, the players assess the perceived performance compared with their prior expectation about the game to identify the extent to which these expectations are confirmed. In the next step, satisfaction with the game is determined through players' confirmation of discrepancy between pre-play expectation and post-experience evaluations about the game.

H6a: Players's Expectations positively impact on their Confirmation about the gaming process.

H6b: Players's Perceived Performance positively influences their Confirmation about the gaming process.

3. Method

In terms of Quantitative research, this is a method of research that aims to quantify the data and usually makes use of statistical analysis. It is a straightforward tool or method that enables researchers to gather a significant volume of data in a brief length of time. For this method, we focus on having the Online survey which is completed online by the target audience typically by filling out a form. Surveys can be used to gather data on a variety of topics, such as individual characteristics, attitudes, past actions, and opinions. The focus of the survey may be on opinion or fact-based, depending on its goal.

➤ Method

Step 1: Define goals and related issues

We defined the Approach: Quantitative Research - Online Survey to collect a large amount of data on respondents to factors influencing game co-creation. Using the data we collect, we can look at the impact of game elements on the psychological needs of Generation Z users and how that increases player satisfaction. In addition, we wanted to find out the limitations of gamification in increasing customer satisfaction and make some recommendations for the game to improve the user experience.

Step 2: Identify target responders

With locations in Ho Chi Minh City and surrounding provinces, we primarily target Gen Z, ages 15-25. Our sample sizes range from 200 to 300. We use convenience sampling to collect data by sending it to everyone we know.

Step 3: Create a survey:

The survey form must follow standards such as brevity, directness, avoiding asking questions related to personal information first, stating each question clearly, prioritizing multiple-choice questions and a 5-likert scale. In addition, it must include key questions to achieve the research objectives.

Step 4: Analyze

We collect data from the google form and exclude answers that do not come from the target group. We then analyze the information to test the hypothesis and answer the research question. In addition, we have created tables or graphs to better demonstrate the findings and help readers better understand the issues

➤ Data collection and demographic

We survey using Google Forms. Our audience is Gen Z in Ho Chi Minh City, mostly in college, and collected nearly 390 responses. Then, we proceed to filter the answers that

do not have high confidence (such as selecting only all on one level, selecting only on 2 alternating levels, survey participants under the age of 18,...) and finally we get about 299 reliable answers. People between the ages of 18 and 22 are the main participants in this survey. They are university students who have not graduated and have a salary of less than 5,000,000 VND/month. Regarding gender, the respondents were quite similar. More details can be found in table 6.1.

Table 8. Demographic information of the respondents

Items	Detail	Frequency	Ratio (%)
Gender	Male	120	40.3
	Female	178	59.7
	Total	298	100.0
Income	From 5 to 10 million VND/month	83	27.9
	From 10 to 15 million VND/month	15	5.0
	Above 15 million VND/month	8	2.7
	Under 5 million/month	193	74.4
	Total	298	100.0
Age	18-22	281	94.3
	>22	17	5.7
	Total	298	100.0
Education	Vocational degree	5	1.7
	Undergraduate	278	93.3
	Post-graduate	7	2.3
	Working	8	2.7
	Total	298	100.0

➤ **Measurement**

Nominal scale: We collect information on gender, age, place of residence and work, income, education level of survey participants. Interval Scale: We use a 5-point Likert scale, ranging from strongly disagree to completely agree.

4. Results

4.1. Data Analysis and results

- ***Exploratory factor analysis (EFA)***

First, the study will test whether the observed variables are reliable or not, have a close relationship with each other, and can show the characteristics of the scale well. The test is carried out through Cronbach's Alpha reliability coefficient. (Hoang Trong & Chu Nguyen Mong Ngoc, 2008).

Convergent validity was assessed through the factor loadings of the indicators and average variance extracted (AVE). Individual item reliability for all factor loadings was confirmed as they were all above 0.5 and the average variance extracted values were exceeded 0.5 (Table 6.2).

The benchmark value for Cronbach's alpha that analysts typically use is 0.7. The items are sufficiently consistent at this level and above to demonstrate the measure is reliable. The summary table of Cronbach's alpha analysis results (Table 6.2) shows that internal consistency reliability was confirmed as Cronbach's alpha is greater than 0.7. Specifically, Cronbach's alpha of Enjoyment (EY) is 0.806; Attitude toward advertisement (AT) is 0.841; Achievement (AV) is 0.777, Social Interaction (SI) is 0.898; Game Visual (GV) is 0.851; Expectation (ET) is 0.855; Perceived Performance (PP) 0.838; Confirmation (CF) is 0.786; Value Co-creation Intention (VC) is 0.844. Therefore, the observed variables of the scales are kept for confirmatory factor analysis.

Table 9. Hypotheses results

Ho	Relationships	Path Coefficient	Std	t-values	P Values	Results
H1	EY → ET	0.261	0.046	5.715	0.000	Approved
H2	AT → ET	0.431	0.048	8.912	0.000	Approved
H3	AV → PP	0.267	0.064	4.160	0.000	Approved
H4	SI → PP	0.340	0.061	5.565	0.000	Approved
H5	GV → PP	0.160	0.059	2.700	0.007	Approved
H6	ET → CF	0.304	0.055	5.528	0.000	Approved
H7	PP → CF	0.413	0.061	6.828	0.000	Approved

Notes: EY: Enjoyment; AT: Attitude toward advertisement; AV: Achievement; SI: Social Interaction; GV: Game Visual; ET Expectation; PP: Perceived Performance; CF: Confirmation.

4.2. Theoretical contributions

This study contributes to enhancing the understanding of game design, value co-creation, and advances research on these connected issues by making significant theoretical additions to the user engagement literature. This study expanded Expectation-Confirmation Theory (ECT) to investigate the impact of expectations and experience on users' value co-creation intentions while playing games. Unlike most previous studies which lacked a comprehensive grasp of the motivations for user value co-creation and did not investigate any new crucial motivating stimuli through qualitative results (Hussain et al.). This study focuses on bridges this gap. The value of the co-creation endeavor appears to be in the process, rather than the outcome, which is transferred from the elements related to users' expectation and experience to the confirmation of satisfaction, then results in the value co-creation intention. This procedure was used in the gaming area to measure the level of confidence by our study. Therefore, the findings of this study specifically contributes to the theoretical values.

4.3. Practical contributions

This study's findings provide a variety of practical recommendations to assist game developers in structuring certain game qualities to increase players' expectations and experiences, thus encouraging them to value co-creation goals. The results of this study suggested that confirmation had a significant impact on the user's enjoyment of the game. In order to increase the value co-creation intention, businesses must design games that provide players with experiences that fulfill their expectations and leave them satisfied. In addition, one of the other major discoveries is that game trailers and marketing efficiently heighten consumers' anticipation before they start a game. In this sense, developers should exercise caution in this area, as players will feel duped and dissatisfied if their expectations are not met by the game's reality if the advertising is excessively appealing. The studies also revealed that players pay particular attention to social interaction aspects, which have a significant impact on their experiences. Thus, firms should create more opportunities for players to share their gaming experience with their social circle by emphasizing the design of games that stimulate interaction between players within the game or by creating gifts that motivate users to invite more friends to participate. Moreover, let's invest more in the game's graphics and engage the players by providing them with superior gaming functionality, a competitive gaming environment, adding more achievement systems (rankings, rewards, etc.) to the game, allowing users to earn points through their achievements and, based on the points collected, can reach higher levels that include tasks of increasing difficulty, so that they feel as though their capabilities are evolving. Finally, the majority of players are willing to share their thoughts, opinions, and fresh ideas to enhance the game for future players' enjoyment. Thus, businesses should collect feedback frequently and respond actively to customer suggestions.

5. Discussion and Conclusion

The study shows its findings are restricted by a number of restrictions. We currently view this investigation as exploratory because the subjects of the survey are small, mainly students from all over Ho Chi Minh city, so reliability is not really high. Furthermore, the study did not use a variety of consumer samples, such as those who participated in all forms of co-creation as well as those who did not. Future research can further explore these effects by interviewing experts and utilizing larger sample sizes (such as nationwide survey expansion) to be able to report effect size differences between contexts in greater depth. In addition, future research can concentrate on in-depth research on a game genre to better clarify satisfaction motivations and co-creation intentions.

Although this study provided an analytical view of value co-creation, we only considered perspectives from customers (players) as the beneficiary of this process and focused on resource integration along with value perception in this regard. This section should be expanded in future studies, such as by looking more closely at interaction between users and game designers.

The observational scope of the study is still limited to the aspect of consumer expectation and experience. Future research can expand on aspects derived from game manufacturers and brands to clarify co-creation intentions of players. The study also only

identified the motivation that leads to the formation of co-creative intentions. Future research could broaden our understanding of player co-creation behavior (e.g. consider the impact of intention on player co-creation).

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FACTORS AFFECTING THE APPLICATION OF MANAGEMENT ACCOUNTING: AN ACTUAL SURVEY OF SMALL AND MEDIUM-SIZED ENTERPRISES IN NGHE AN PROVINCE, VIETNAM

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Abstract

Using four research methods namely methodology, data collection, qualitative and quantitative research, the authors have generalized the theoretical basis of accounting, management accounting, and the role of accountants. At the same time, it also summarizes the results of several domestic and foreign studies related in the application of management accounting in enterprises. Applying the theoretical basis, the scale is suitable for the economic conditions and the characteristics of Small and medium-sized enterprises (SME) in Vietnam, and the research team has built a research model consisting of four independent factors, namely the interest of Business owners for management accounting, Information technology, accounting personnel qualifications, Costs for organizing management accounting and dependent factors are management accounting applications. Based on the research model, the research team built a questionnaire and conducted a practical survey of SME in Nghe An province. With 154 valid questionnaires, the results of the reliability analysis of the scale, exploratory factor analysis, and multivariable regression using SPSS software have shown that all 4 independent factors have a positive influence on the application management accounting in SME in Nghe An province. At the same time, the results also show the strong and weak influence of each factor. Accordingly, the strongest influence is the qualification factor of accounting staff, and the weakest effect is the factor of Information Technology. Through the influence of each factor, the research team also makes some recommendations to promote the application of management accounting in small and medium-sized enterprises in Nghe An province, such as accountants have time to study and learn about management accounting; business owners need to focus on improving their management skills as well as their knowledge of management accounting; select and apply management accounting models suitable to the enterprise's costs; application of information technology in accounting work, especially management accounting.

Keywords: *Management accounting, Nghe An, Impact factors, SME, Vietnam*

1. Introduction

Management accounting has the function of collecting, processing, analyzing, providing information as required, and helping managers have a basis for planning, operating, organizing the implementation of plans, and making decisions more precise in

production and business activities. Management accounting is especially important in the process of operating a business, and the information provided by management accounting includes financial and non-financial information, meeting the requirements of both managers and departments other in the business. Necessary and brings many benefits, but currently many businesses have not applied management accounting, especially SME. The reason these businesses have not applied management accounting must be mentioned such as the business owner's understanding of management accounting, the cost of applying management accounting, or the level of personnel working as accountants at the enterprise not yet meet the position of management accountant ... Not applying management accounting causes many difficulties and reduces the competitiveness of enterprises. The consequences of this problem lead to many SME making inappropriate business and production decisions, causing losses or even bankruptcy. Therefore, it is necessary to study the factors affecting the application of management accounting in SME in the province of Nghe An and currently, there is no research on this content perform.

2. Literature review

2.1. Some concepts

Accountant

According to the Accounting Law (2015), Accounting is the collection, processing, examination, analysis, and provision of economic and financial information in the form of value, in kind, and labor time [4].

Management Accounting

According to the Law on Accounting (2015), management accounting is the collection, processing, analysis, and provision of economic and financial information according to management requirements and economic and financial decisions within an organization's accountant [4].

The role of management accountants for businesses

In enterprises, management accounting has the role of providing information to support the decision-making of managers. Decision-making is done through four steps as follows:

Planning and Budgeting: Planning is setting goals that must be achieved and outlining the steps to achieve them. Reasonable and well-founded accounting information will be the decisive factor for effective and highly feasible plans and estimates.

Organization for implementation: To achieve the plan effectively, Business owners must know how to link the elements between the organization, people, and resources together, and there is also a great need for information accounting information. Therefore, the information provided by management accounting helps business owners to make the right decisions in the processing of operations, in line with the goal of the business.

Testing and evaluation: The method commonly used in testing and evaluation is to compare the planned or estimated data with the implementation data, thereby identifying the deviations between the achieved results and the set goals.

Decision-making: Decision-making is combination of the three functions of planning, organizing, implementing, controlling, and evaluating. For the most part, in small and medium-sized enterprises, the information provided by management accountants is used to serve short-term decision-making functions such as production coordination, optimal distribution of goods, purchase and sale, pricing, and termination manufacturing goods ... Management accountants will perform professional analysis and select necessary and appropriate information, then synthesize and present them in the most understandable order to help business owners appropriate choices and decision-making.

Small and medium-sized enterprises

The criteria for identifying small and medium-sized enterprises are specified in Article 4 of the Law on Supporting Small and medium-sized enterprises in 2017, as follows:

“1. Small and medium-sized enterprises include micro enterprises, small enterprises, and medium enterprises, having an average number of employees participating in social insurance not exceeding 200 people per year and meeting one of the following two criteria:

- a) Total capital must not exceed 100 billion VND;
- b) Total revenue of the preceding year is not more than 300 billion VND.

c) Micro enterprises, small enterprises, and medium-sized enterprises are defined according to the fields of agriculture, forestry, and fishery; Industry and construction; trade and services” [5].

2.2. Some related studies

Table 1. Literature review of some related studies

The name of the construction	Author	Research results
Some factors affecting the application of management accounting in enterprises	Tuan, T. A	The author identifies eight factors affecting the application of management accounting in enterprises: Competitive pressure; Decentralization; Enterprise size; Proportion of ownership by professional members; Information technology; Production technology; Business owners' interest in management accounting; Management accounting staff qualifications [8].
Factors affecting the application of management accounting in manufacturing enterprises in Ho Chi Minh City	Nga, H.T., & Thao, L.N.N	The research results show managers' awareness of management accounting, information technology, qualifications of accounting staff, costs for organizing the management accounting system, decentralization, level of competition, etc. Market competition has a positive impact on the application of management accounting in manufacturing enterprises in Ho Chi Minh City [7].

The name of the construction	Author	Research results
Factors associated with the adoption and use of management accounting techniques in developing countries: The case of Romania	Albu, N., & Albu, C. N	The authors have pointed out the business environment, business lines, business size, organizational factors, capital sources, stock listing, competition, tax relations, training, and capacity of management accountants. Values are the factors affecting the application of management accounting in enterprises [10].
An empirical investigation of the adoption status of the new management accounting techniques among kenyan manufacturing companies	Patrick Idode	The research results show that the factors affecting the application of modern management accounting are the interest of managers; Accounting personnel qualifications; Enterprise size. The study also shows that these three factors have a positive impact on the application of management accounting in enterprises [6].
The impact of structure, environment, and interdependence on the perceived usefulness of management accounting systems	Chenhall, R. H., & Morris, D	In this study, the factors affecting the application of management accounting in enterprises have been pointed out, including competitive pressure, decentralization, information technology application, management accounting level, and level of management accounting the interest of managers, and the qualifications of the accounting team [2].
Factors influencing the alignment of accounting information systems in small and mediumsized Malaysian manufacturing firms	Ismail, N. A., & King, M	Research has shown that the independent variables in the study are firm size, information technology level, managers' understanding of accounting and information technology, advice of government agencies and audit firms, and the existence of internal IT staff [11].

Source: Results of data analysis of the research team

2.3. Research model

Based on relevant research, based on the actual situation for SME in Vietnam and Nghe An province, the research team identified four independent factors to include in the research model: The interest of business owners in management accounting, Information technology, the qualification of accounting personnel, and the cost of organizing management accounting. The dependent variable on the study is the application of management accounting in SME in Nghe An province. The content of each variable and their research hypotheses have presented below:

Business owners' interest in management accounting

Business owners are people who directly use management accounting information to make decisions, so the need to use the information of business owners has an important influence on the application of management accounting in enterprises. In addition to information needs, the support of business owners in accessing new management accounting techniques and applying them to their businesses is also a positive factor affecting the application of management accounting in enterprises. Research results by Tuan, T.A (2018), Albu, N., & Albu, C. N. (2012), Patrick Idode (2019), Chenhall, R. H., & Morris (1986), DIsmail, N. A., & King, M (2007) shows that the interest of business owners has a significant influence on the level of management accounting application in enterprises.

Hypothesis H1: The interest of business owners in management accounting is assessed to increase or decrease, the application of management accounting in SME in Nghe An province, Vietnam increases or decreases.

Information technology

In the era of Industry 4.0, information technology has a strong influence, and impact on all aspects of social life. The impact's of information technology on Management Accounting is no exception. Russian Studies, H.T - Thao, L.N.N (2022), Albu, N., & Albu, C. N. (2012), Patrick Idode (2019), Chenhall, R. H., & Morris (1986), DIsmail, N. A., & King, M (2007) shows that information technology has a strong influence on the management accounting system and the application of management accounting in enterprises. The application of information technology and computers in management accounting makes the information provided more timely, relevant, and useful (Abdel-Kader, 2006) [1].

Hypothesis H2: Information technology has been assessed to increase or decrease, the application of management accounting in SME in Nghe An province, Vietnam increases or decreases respectively.

Accounting personnel qualification

Accountants at the enterprise must regularly update new knowledge and techniques, apply them to design the system, and build and implement an appropriate cost accounting system to support the business owners in future decision-making (Chenhall, R. H., & Morris, 1986). In addition, the study (Kaplan, 1995) also identified the relationship between the level of accountants and the change in the management accounting system. In this independent variable, the research team wants to investigate the knowledge of management accounting for accountants in SME. Therefore, hypothesis H3 has stated as follows.

Hypothesis H3: If the level of accounting personnel has been assessed to increase or decrease, the application of management accounting in SME in Nghe An province, Vietnam increases or decreases respectively.

Costs for the application of Management Accounting

Management accounting applications require businesses to spend part of the costs on personnel and technology. Therefore, if the enterprise is small in scale, doing business or producing in small quantities, the application of management accounting is not necessary

and may cause a waste of resources and increase the operating costs of the business. In contrast, for enterprises with large production and business scale, the application of management accounting can increase the efficiency of capital and labor ... With the same point of view, author Giang, N.V.T (2017), Russia, H.T - Thao, L.N.N (2022), businesses know that the benefits from the application of management accounting are great, but because the financial potential is always limited, the investment costs for the application of accounting management will also decide whether the entity accepts the application of management accounting or not [3].

Hypothesis H4: The cost for the application of management accounting is estimated to increase or decrease, the application of management accounting in SME in Nghe An province, Vietnam increases or decreases respectively.

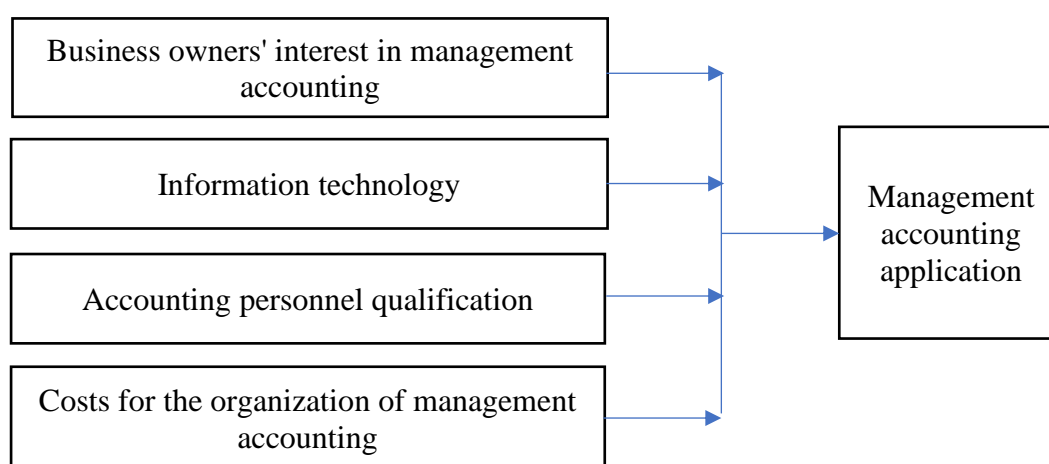


Figure 1. Research model of factors affecting the application of management accounting

Source: Results of data analysis of the research team

3. Method

Methodology: The research team used accounting theory, management accounting, and the role of management accounting as the basis and foundation for the research content Factors affecting the application of management accounting in SME in Nghe An province.

Data collection method: Data collection method is a method of finding and synthesizing information, knowledge, and theories from available sources, thereby building theories and proving and synthesizing to form a data thesis. Through the studies related to this article, the research team has synthesized the research results and the scale used by these authors. At the same time, based on the appropriateness and different economic characteristics, the research team applied a few independent factors and built hypotheses in this study.

Qualitative research methods: From the factors applied by the research team, to consider the suitability, the research team conducted in-depth interviews with experts in the accounting industry, especially those with in-depth knowledge of management accounting. The research team also built and coded the observed variables in the scale. Conduct mock interviews and adjust the questionnaires accordingly.

Quantitative research methods: From the survey table that has been adjusted through qualitative research methods, the research team selects a sample and determines an appropriate sample size. Through face-to-face interviews with respondents, the research team collects and processes data. The data has been processed as a basis for evaluating the quality of the scale, analyzing the factors to discover EFA, and testing the regression model to determine the degree of influence of the factors on the accounting application management are SME in Nghe An province, Vietnam.

Table 2. Scale after adjustment

The scale	Symbols and contents of observed variables
Business owners' interest in management accounting (BIM)	BIM1. Business leaders make necessary and appropriate changes to improve business performance
	BIM2. Business owners appreciate the benefits of Management Accounting
	BIM3. Business owners with knowledge of Management Accounting
	BIM4. Business owners intend to apply Management Accounting
Information technology (IT)	IT1. Enterprises apply advanced production technology
	IT2. Does your business use accounting software?
	IT3. Enterprises apply total quality management in operations
Accounting personnel qualification (APQ)	APQ1. Enterprises recruit accounting personnel in the right profession
	APQ2. Accountants have a good understanding of management accounting
	APQ3. Corporate accountants capable of handling management accounting
Costs for the organization of management accounting (COM)	COM1. Enterprises focus on investing in accounting activities
	COM2. Enterprises always prioritize funding to deploy management accounting
	COM3. Do you think that the budget for accounting activities ensures the application of management accounting in enterprises?
Management accounting application (MAA)	MAA1. Business leaders always consider and apply governance models that are more suitable for businesses
	MAA2. Enterprises using Management Accounting can achieve higher performance for businesses
	MAA3. Planning to develop and supply products of the enterprise by the application of management accounting

Source: Construction of the research team

4. Results

The results of the analysis of the average scores of 16 observed variables were highly appreciate by survey participants from level 3 to level 4. The lowest average score belonging to survey variable IT3 was 3.36, and the highest was rated as the BIM1 variable with an average score of 4.08. In particular, the dependent variable is rated at near level 4,

which shows that the ability to apply management accounting in SME is highly appreciated by the surveyors.

Cronbach's Alpha reliability coefficient according to Trong, H, & Ngoc, C.N.M. (2008), "The requirement for Cronbach's Alpha coefficient must be greater than 0.6 but preferably 0.7 [9]". The research team has performed the analysis of the reliability coefficient for each scale in turn. The analysis results show that the Cronbach's alpha of the whole scale is greater than 0.7, the scales are good and ensure reliability for research and future analysis. In particular, the reliability coefficients of the BIM scale are still above 0.9, and the lowest is 0.858 belonging to the COM independent variable scale. The smallest total correlation of the components of the scales ensures that the level >0.5 is suitable for the research purpose and novelty of the research. Specifically, the smallest total correlation belonging to the observed variable COM3 is 0.621, and the largest is the observed variable APQ2 = 0.824. Data on Cronbach's alpha coefficient if the variable type (the largest) is smaller than the reliability coefficient and satisfies both conditions for keeping the observed variable for the following analyses. Therefore, it can be concluded that: the scale used in the study is appropriate and reliable and can be used to conduct factor analysis and further research steps.

EFA exploratory factor analysis aims to evaluate two important types of values of the scale: convergent value and discriminant value. Theo Trong, H, & Ngoc, C.N.M. (2008), The condition for exploratory factor analysis is to satisfy the following requirements: Factor loading > 0.5 , $0.5 \leq KMO \leq 1$: KMO coefficient (Kaiser-Meyer-Olkin) is the index used to consider the appropriateness of factor analysis. A large KMO value is appropriate for factor analysis. Percentage of variance $> 50\%$: Shows the percentage variation of observed variables [9]. From the results of exploratory factor analysis for all components of the scale of independent and dependent variables, we see that the total variance extracted is $80.314\% > 50\%$, and the KMO index is 0.756, in addition, sig also gives the same results. The result is $0.000 < 0.05$ which warrants our analysis. All scales converge to only one common factor, with all factor weights being 0.5. The results of the factor rotation matrix converging on four factors with the scale and observed variables are kept the same as the original construction of the research team.

To evaluate the relationship and impact direction of the components Business owner's interest in management accounting, Information technology, qualification of accounting personnel, and Cost for organizing management accounting. This study used the regression analysis method with the support of SPSS 22 software. In the regression equation to be performed, it is a multivariate regression equation, to determine the important role of each component in assessing the relationship between the application of management accounting and the group of independent factors mentioned above.

Multivariable regression equation shows the relationship between Management accounting applications and the interest of business owners in management accounting, Information technology, Qualification of accounting personnel, and Cost of organization. Management accounting has the following form:

$$MAA = a_0 + a_1BIM + a_2IT + a_3APQ + a_4COM$$

In there:

MAA: Dependent variable showing the predictive value of management accounting application in SME in Nghe An province, Vietnam

a_0, a_1, a_2, a_3, a_4 : Are regression coefficients

BIM, IT, APQ, COM: Are the independent variables in the order: component Business owner's interest in management accounting, Information technology, Qualification of accounting personnel, Cost of organization management accounting.

The results of the linear regression analysis are as follows:

We see that adjusted R square (Adjusted R square) = 0.557 (>0.5) indicates that the four components BIM, IT, APQ, and COM have an influence on the application of management accounting in SME in the region of Nghe An province, Vietnam. Looking at the results of the regression analysis, we see that the preconditions for the regression analysis are satisfied. The fit of the model is relatively high. Thus, we can consider the results of the regression analysis to be reliable. However, this fit is only true for the sample data. To test whether the model can be inferred for the real population, we must test the model's goodness of fit:

The results of the ANOVA test show that the F-test value is 49.138 at the significance level $\text{sig} = 0.000 < \alpha = 0.1$. Thus, we accept the hypothesis that the four components of the independent variables BIM, IT, APQ, COM, and the dependent variable MAA have a relationship each other. Therefore, the model fits the data set and can generalize to the population. Checking the Tolerance coefficient or VIF (variance inflation factor) showed no sign of multicollinearity.

Table 3. Linear regression results
Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.754 ^a	0.569	0.557	0.60430	0.569	49.138	4	149	0.000

a. Predictors: (Constant), COM, APQ, IT, BIM

b. Dependent Variable: MAA

Source: Compiled and analyzed survey data of the research team

The regression results show that the regression coefficients of the factors BIM, IT, APQ, and COM all have positive signs and $R = 0.754^a > 0$, showing that these components have a proportional effect on the factor MAA dependent factor. Thus, the hypothesis of the research model is accepted. Components Business owners' interest in management accounting, Information technology, qualification of accounting personnel, and Cost for the organization of management accounting has a positive relationship with accounting application management in SME in Nghe An province, Vietnam.

**Table 4. Results of multivariable regression model
Coefficients^a**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.585	.361		-1.621	.107
	BIM	.347	.063	.326	5.534	.000
	IT	.151	.045	.188	3.360	.001
	APQ	.390	.051	.451	7.714	.000
	COM	.274	.059	.253	4.642	.000

a. Dependent Variable: MAA

Source: Compiled and analyzed survey data of the research team

The results of the regression table allow us to test the regression coefficients in the model. Components with a statistical significance of less than 5% are kept, and components with a statistical significance greater than 5% are discarded. The larger the beta coefficient of a component, the more important it is, showing the degree of influence on the dependent variable from the table of regression analysis results above, we can see that the constant is not statistically significant because the sig of constant = 0.107 > 0.05, so the constant is eliminated in the regression equation we mentioned above. The remaining four factors BIM, IT, APQ, and COM are all suitable and have the same influence on MAA. So the regression equation for the standardized coefficients Beta is as follows:

$$MAA = 0.451APQ + 0.326BIM + 0.253COM + 0.188IT$$

From the above regression equation, we can make the following table:

Table 5. Influence of factors according to coefficient Beta

Factors	Beta coefficient	Evaluate
APQ	0.451	Other factors remained constant, when the accounting personnel qualification increased (decreased) by 1 point, the application of management accounting in SME in Nghe An province increased (decreased) by 0.451 points.
BIM	0.326	Other factors were unchanged when Business owners' interest in management accounting increased (decreased) by 1 point, and the application of management accounting in SME in Nghe An province increased (decreased) by 0.326 points.
COM	0.253	Other factors unchanged, when Costs for the organization of management accounting increased (decreased) by 1 point, the application of management accounting in SME in Nghe An province increased (decreased) by 0.253 points.
IT	0.188	Other factors remaining constant, when Information technology increased (decreased) by 1 point, the application of management accounting in SME in Nghe An province increased (decreased) by 0.188 points.

Source: Construction Research Team

5. Discussion and Conclusion

Research results have determined the degree of influence of each independent factor BIM, IT, APQ, and COM on the dependent factor MAA. Specifically, all the independent factors have the same influence as the dependent factor. The biggest influence is the APQ component with a Beta coefficient of 0.451 ($t=7.714$ and $\text{Sig} < 0.05$), followed by the BIM component with a Beta coefficient of 0.326 ($t=5,534$ and $\text{Sig} < 0.05$) second major direction. Third is the COM component with a Beta coefficient of 0.253 ($t=4.642$ and $\text{Sig} < 0.05$). Finally, the IT component with a Beta coefficient of 0.188 ($t=3,360$ and $\text{Sig} < 0.05$) is also the component that has the lowest influence on the survey participants' MAA.

From the results of this study, the authors also propose some recommendations to facilitate the application of management accounting in small and medium-sized enterprises as follows:

First, create conditions for accounting personnel to have time to study and learn about management accounting. The research results also show that the level of accounting staff has the greatest influence on the application of management accounting in enterprises. Therefore, business owners need to build a team of financial accounting and management accountants who not only have professional expertise but also understand the production and business activities of the business. business, thereby making accurate analyses and assessments based on collected data.

Second, business owners need to focus on improving their management skills as well as their knowledge of management accounting. Once business owners understand and are aware of the benefits that the application of Management Accounting brings to the business, they will actively invest as well as encourage, motivate, or direct their employees in the implementation process. Apply management accounting in enterprises.

Third, businesses need to base on their financial ability to choose to apply cost-effective management accounting models such as combining management accounting with financial accounting, using compact software but the information provided is suitable for the needs of use, taking advantage of a part of the data source, information from financial accounting that serves the management accountant based on ensuring the relationship of benefits and costs.

Fourth, enterprises need to organize the application of information technology in accounting work, especially management accounting, to improve the quality of information to serve the requirements of business management and administration decision-making.

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INTERNATIONAL FINANCIAL REPORTING STANDARDS 17 - INSURANCE CONTRACT AND ISSUES WITH VIETNAM INSURANCE ENTERPRISES

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Abstract

Accounting for Insurance company has proved a challenging topic for many years for standard setters, preparers and users. Currently, there is only one standard International Financial Reporting Standards (IFRS) 04 make regulations for insurance companies, but it is quite simple and depends heavily on the national accounting standard system. Thus, accounting information comparison between foreign enterprises has lots of differences and difficulties. Therefore, the urgent requirement is to build a comprehensive standard system covering all transactions and applying uniformly to all countries. In that context, International Financial Reporting Standards 17 - insurance contracts have born, which is a globally standardized accounting model for insurance contracts, overcoming all limitations of IFRS 04 and is expected to take effect in Vietnam in 2025. Within the scope of this article, an overview of the new features and requirements of IFRS 04 would be provided before analyzing the differences between IFRS 04 and IFRS 17. Finally, the article presented challenges and difficulties for Vietnamese insurance companies when applying these IFRSs, from that settled out key issues and implications.

Keywords: *insurance contract, insurance enterprises, IFRS 17, insurers*

1. Introduction

IFRS is an international financial reporting standard system, with the goal of building a legal framework that applies to all businesses in the world. Therefore, recognizing the urgent need for improved policy disclosure and some improvements to measurement and recording practices related to insurance policies, and for insurers across Europe to and elsewhere promptly adopted IFRS in 2005, the International Accounting Standards Board (IASB) issued IFRS 04 in March 2004 and entered into force on January 1, 2005. This Standard is considered the first guide of IASB to insurance policy accounting. Because IFRS 4 was compiled in a rather short time frame, just before the adoption of the IFRS Standards by the European Union, IFRS 04 was primarily geared towards minimal rather than maximal harmonization. Under IFRS 4, companies can therefore continue to use national standards when accounting for insurance policies. This makes comparisons extremely difficult, which is not really beneficial for investors as well as business administrators.

It can be seen clearly that IFRS 04 can be considered as an interim standard under the urgent need to have a standard that governing insurance transactions. That is the reason why

right from the setting up of standards, IASB has cherished to build a different accounting system for insurance enterprises, which is more comprehensive, clearer, more detailed and ready to replace and overcome any problems as well as limitations of IFRS 04. Therefore, IFRS 17 - is the comprehensive accounting standard that IASB has cherished, it was born with the aim of creating a unified accounting framework that ensures insurance companies worldwide apply it to all insurance policies, regardless of product.

2. Background: standard history and the need of IFRS 17

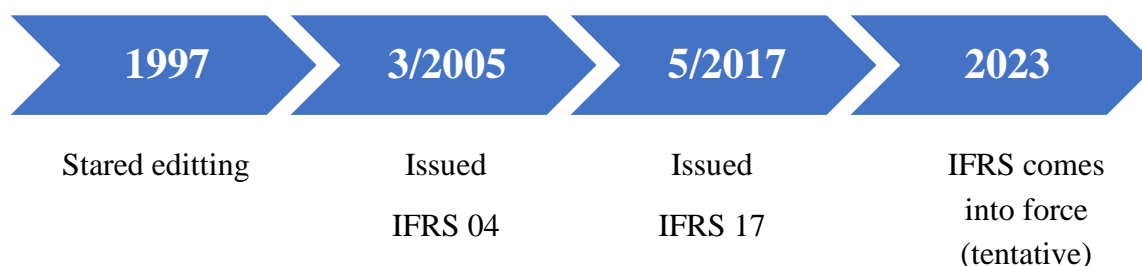


Figure 1. Formation process of IFRS 17

According to the IASB, the International Financial Reporting Standards System for the insurance sector was drafted in 1997. However, due to insufficient time to complete this project before the mandatory date of IFRS adoption - 2005, the IASB divided the project into 2 phases:

- Phase 1 - finalization of IFRS 04 in 2004 (the standard is considered to be provisional for insurers, but it is too dependent on national standards of the country);
- Phase 2 - finalizing IFRS 17 in 2017 to replace IFRS 04 (overcoming all limitations of IFRS 04, building a new, more detailed, more comprehensive regulatory system that applies to all countries)

It can be seen that IFRS 04 was issued in 2004 but in the process of application, insurers have difficulty in comparing information and synchronization among insurers from different countries. The reason is because IFRS is dependent on national accounting standards - GAAP, and each country has its own and different characteristics, which has led to great differences in the accounting systems of countries around the world.

Therefore, the completion and issuance of IFRS 17 is urgent to overcome the gaps left by IFR04, to limit errors when assessing the impact of insurance policies on the financial situation and financial performance and the entity's cash flows to users of financial statement information. Based on the efforts of IASB experts in developing standards, IFRS 17 (issued in 2017) was revised on June 25, 2020 and expected to take effect from 2023. This Standard consists of 17 international financial reporting standards, which specifies a number of material points, changes the classification requirements of insurance contract based on expected profit over the entire policy life; additional requirements for some new professional backup components; requires the assessment of the provisioning interest rate based on long-term economic forecasts, and in the application of this standard, premiums collected will not be recognized as revenue under the previous accounting method.

The new standard was pointed out new accounting principles that are more superior than that of IFRS 04. Below is a comparison table of outstanding differences between IFRS 17 and IFRS 04 to see the changes and advantages when applying this new standard.

The notable differences between IFRS 17 and IFRS 04

Criteria	IFRS 17	IFRS 04
Measurement	IFRS 17 provides a uniform accounting framework for all types of insurance policies. This standard provides three evaluation models: the general model, the premium allocation approach and the variable fee approach.	IFRS 04 requires insurance companies to disclose information about insurance contracts, but does not specify the method of evaluating insurance contracts, and allows the application of accounting principles of each country's insurance policies to evaluate insurance contracts issued by insurers. As a result, investors and analysts would face many difficulties in analyzing which groups of insurance products are profitable, which groups are losing, as well as the trend of information about insurance policies.
Comparability of information	IFRS 17 builds a synchronous system to record information about insurance companies, so it is easy to compare and contrast accounting information between firms from different countries.	IFRS 04 mainly allows insurers to apply national accounting principles, so the diversity of accounting systems in countries around the world creates a difficult barrier in accounting information comparison among foreign insurers.
Estimates and assumptions	Insurers are required to use the most up-to-date estimates and assumptions when evaluating insurance policies to represent the time value of cash flows and the uncertainties associated with that policy. It is this requirement of IFRS 17 that will help provide more transparent information about the financial situation as well as the risks of insurers.	Estimates and assumptions when evaluating IFRS 04 insurance policies do not require updating.

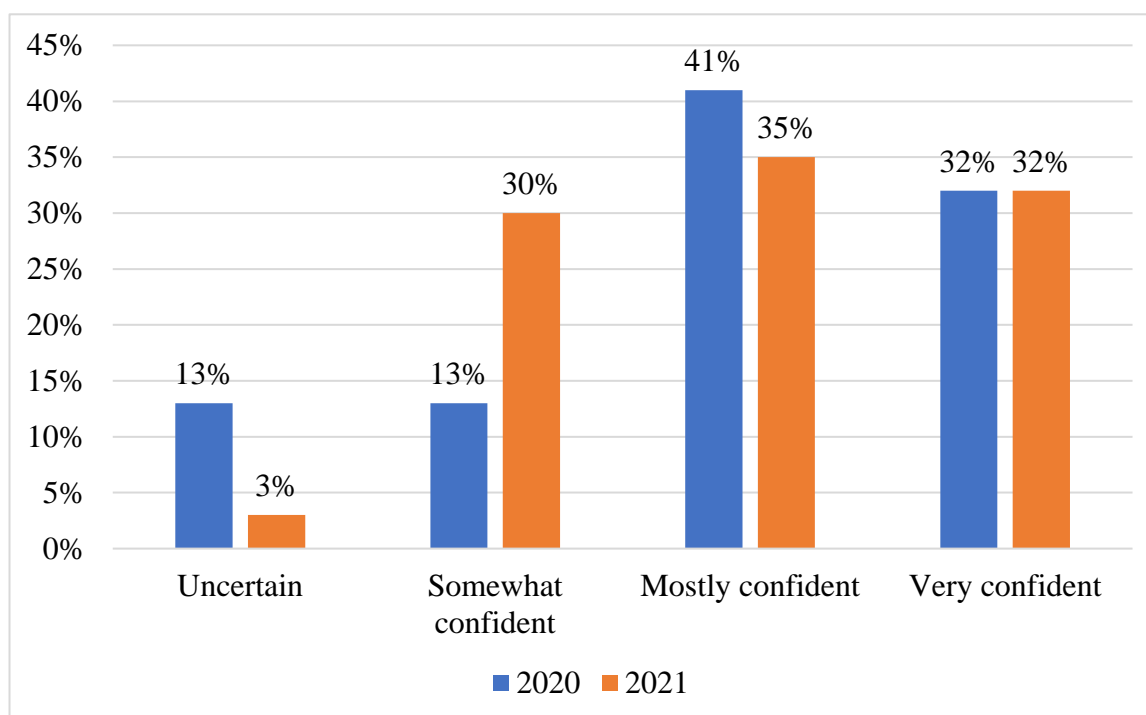
Criteria	IFRS 17	IFRS 04
Revenue recognition	IFRS 17 requires insurers to only recognize interest at the time of providing insurance services, not at the time of receiving premiums as it is now. Insurers must also provide information regarding interest from insurance contracts expected to be recognized in the future. This information will be used as a measure to assess the business situation of the insurer over time.	IFRS 04 allows businesses to recognize interest at the time of premium receipt, or contract initiation.
Discount rate	The discount rate of an insurance contract is based on the cash flows of the policies	The discount rate of the insurance contract is based on the amount the investment.

Source: Author's own compilation

With the highlights of the level of detail and coverage in the requirements of insurance policies, IFRS 17 is expected to help the insurance accounting information system become transparent and clear, and at the same time it governs the business activities of insurance enterprises. With the goal of improving transparency and comprehensiveness in reflecting the business performance of each insurance policy to the overall profit of the business, in fact, This standard application is considered to be quite complicated and difficult as well as creates lots of challenges for insurers in the world. Therefore, although the IFRS was issued in 2017, is expected to take effect from January 1, 2021, but up to now, the IASB has delayed and has not officially announced the effective time. Experts had expected it could be 2023.

In addition, the transition from applying national accounting standards to IFRS requires comprehensive preparation because of the complexity of the standard. It requires changes not only in accounting books but also in accounting standards, insurance policy management, business orientation and economic decision-making. Therefore, one of the reasons why IFRS 17 has not taken effect is because insurers in the world are not really ready and have the best preparation for the application.

Table 1. Readiness to adopt IFRS 17 in the Asia-Pacific region in 2021 and 2022



Source: PwC survey

According to the survey results "Assessment of the roadmap to apply IFRS 17 in 2020 and 2021: Asia-Pacific region" by PwC, the percentage of enterprises participating in the survey answered that they were "mostly confident" in the coming time. The likelihood of full adoption of IFRS 17 on the benchmark's effective date has decreased from 41% in 2020 to 35% in 2021, while the "very confident" level has remained at 32%. In addition, 70% of enterprises expressed concern about practical difficulties in implementing IFRS 17, although more than half of them have already entered the detailed design stage. Hence, the implementation of IFRS 17 remains a major challenge for many insurers. Insurance business operators expect it to take an average of 3.8 years to complete the end-to-end implementation of IFRS 17.

In Vietnam, on February 28, 2019, the Prime Minister issued Decision 242/QĐ-TTg approving the Scheme on restructuring the securities market and insurance market until 2020 and orientation to 2025, which sets out the task of developing and implementing the project of applying international accounting standards in Vietnam. On May 23, 2018, the Ministry of Finance issued Decision No. 918/QĐ-BTC on the establishment of a Drafting Committee for the application of IFRS. According to the draft scheme, insurance companies can be subject to the trial application in sync with the time of applying IFRS 17 on a global scale.

Compared to the roadmap that the world insurance groups have to apply, the Vietnamese market has a lag of about 3 years. Thus, according to the MOF roadmap, Vietnam's insurers are expected to apply IFRS 17 to replace the current VAS standards by 2025, which is 2-3 years behind the world.

3. Results

3.1. Opportunity for Vietnamese insurers when applying IFRS 17

Creating global consistency

IFRS 17 stipulates a uniform accounting method for all insurance policies, increasing the comparability of information of insurance policies between insurers in different countries, between insurance contracts. insurance with each other and between businesses in different fields. Therefore, this standard helps to provide more transparent and useful information about insurance obligations and current and future profit and loss situation of insurers.

In addition, this standard will help provide users of accounting information, especially investors, with insight into insurance companies, allowing them to compare one company with another one by one. more consistent way. This improves investors' confidence and understanding of insurance companies in making investment decisions.

Increasing financial statements' comparability and transparency

In Vietnam, some insurance companies have designed their products to maximize initial profits. For products where the premium is paid in one year, the business will make large profits in the first year and then small losses thereafter. However, IFRS 17 does not allow the full recognition of revenue for the first year, but requires measuring profit in accordance with services performed and allocating that profit over the life of the contract into one series of smaller cash flows - providing more insight into how profits are formed. The Standard also excludes deposit insurance from revenue calculations, which would particularly affect the accounting of poorly concealed savings policies - and again, help better reflect reality.

Improving the management accounting in insurance companies

In terms of how insurance policies are managed, IFRS 17 requires the classification of insurance policies into homogeneous portfolio groups based on characteristics, type, risk or level of return. Therefore, with this requirement, enterprises need to take steps to evaluate the characteristics of the list of insurance contracts, select accounting policies to classify contracts and suitable models. Not only that, businesses also need to estimate the profitability of the contract right from the time of signing. It is the detailed requirements of IFRS 17 that will help insurance businesses build and improve their management accounting systems instead of focusing mostly on the financial accounting system like today's businesses.

3.2. Challenges for Vietnamese insurers when applying IFRS 17

The adoption of IFRS 17 worldwide will bring uniformity, standardization and financial reporting to insurance companies. This allows the users of the financial statements to compare the statements of different insurance companies from different countries. However, because of the complexity of the standard, the application of IFRS 17 also has the following challenges as following:

Firstly, the complexity of the standard. IFRS 17 lays out a lot of complicated rules about estimates, judgments and assessments based on information and specific situation of each insurer. Therefore, IFRS 17 requires very detailed information, complicated calculations, and must be regularly updated over time. Therefore, in order to apply this standard, insurers need to have the synchronous coordination of all departments in the enterprise, not only the finance and accounting departments. This requires businesses to have a long-term plan and the right direction from the business leadership.

In addition, the performance indicators will also change significantly depending on the conversion method and accounting policy when applying IFRS 17. Accordingly, this change will not only directly affect the way to manage business activities of the enterprise but also affect the determination of business plans and results.

Secondly, currently, the information technology infrastructure of Vietnamese insurers is not strong enough to collect, store and retrieve data according to the specifications and quantity required by the standards. In addition, IFRS 17 offers 3 evaluation models suitable for insurance, so besides storage requirements, the IT system must also ensure input data processing.

At the same time, to be able to apply IFRS 17, it requires relatively high quality of human resources, especially experienced accounting, actuarial and information technology experts. Therefore, enterprises also have to spend a lot of money to recruit and train employees with appropriate skills for the application of standards. These changes will require a lot of time, effort and financial investment from the insurer.

Thirdly, the negative impact on financial statements due to the adoption of IFRS 17 in the first year. The difference in insurance policy recognition between VAS 19 and IFRS 17 will lead to a situation where the profit of the enterprise is lost. a sharp decline compared to previous years, or create losses incurred by enterprises. This will be detrimental to insurers that are in the process of attracting investment capital.

4. Discussion and Conclusion

4.1. Solutions for Vietnamese insurers to apply IFRS 17

Improving the manager's awareness

Because IFRS 17 requires a large amount of data for evaluation and estimation coming from many different departments and agencies, therefore, insurers must conduct research and reform enterprises to get consensus. between stakeholders in the implementation of this project because this project needs a lot of resources from different departments: finance and accounting department, sales department, planning department, IT department... Therefore, It is necessary to have the right awareness from business administrators to be able to lead the reformed enterprises in the right direction and in accordance with the requirements of IFRS 17.

Changing in insurance management policies according to IFRS 17

Vietnamese insurers need to carefully study IFRS 17 to reclassify the management of insurance policies into homogeneous portfolio groups based on characteristics, types, risks or profitability as required by IFRS 17. At the same time, enterprises need to take steps to evaluate the characteristics of the list of insurance policies, select accounting policies to classify contracts and suitable models, to ensure quick information collection to compute as well as retrospectively the past comparative information.

Improving information technology infrastructure

Vietnam insurance enterprises need to look at the database and information technology system infrastructure that the company has to know where the current position is, and to what extent the system's ability to meet it. From there, proactively plan to upgrade technology infrastructure, insurance management systems and software, and automate document rotation processes. In order to shorten the research time, Vietnamese insurers can choose to attract foreign information technology partners to learn and promote technology transfer.

Investing in company's human resources

In addition to raising awareness about IFRS 17 among internal employees of the enterprise in the form of organizing exchange seminars in the insurance field, participating in domestic and foreign training courses, combining researching with training institutions such as universities, research institutes, etc. VN insurance enterprises need support from experts who act as advisors for the process of applying IFRS 17 to enterprises, especially experts. from countries that have experience in applying IFRS 17.

Limiting negative effects on financial statements

At the time of adoption, Vietnamese insurers need to evaluate and estimate the overall impact of IFRS 17 on their operations, and study and choose appropriate policies to minimize negative impacts. In addition, with the effects of policy changes, enterprises need to clearly explain and notify shareholders and related parties.

4.2. Conclusion

Financial Reporting Standard on Insurance Contracts (IFRS17) is an international financial reporting standard dedicated to insurance companies that guides the recognition of revenue and expenses, and the preparation of reports according to the following principles: new rule. IFRS17 is not only a matter of accounting, recognizing or presenting financial statements, but it deeply and comprehensively affects the insurance business. Faced with the complicated requirements of the standards as well as the urgency to change and use a new set of international accounting standards, especially for the insurance sector, it requires the efforts of insurance enterprises. as well as support from the Government and state agencies.

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FACTORS AFFECTING VIETNAMESE CONSUMERS' KOREAN COSMETIC CONSUMPTION BEHAVIOR: AN EXTENDED THEORY OF PLANNED BEHAVIOR APPROACH

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Abstract

The study analyzes and evaluates the factors affecting the Vietnamese people's Korean cosmetic consumption behavior by utilizing linear structural equation modeling (SEM), incorporating confirmatory factor analysis (CFA) and exploratory factor analysis (EFA). Data was collected through a survey targeting Vietnamese consumers who have experience using Korean cosmetics. The SEM analysis confirmed the proposed research model's fit, showing significant influences of attitude, subjective norms, perceived behavioral control, product innovation, brand image, and perceived quality on consumers' behavioral intentions. These findings provide valuable insights for marketers and practitioners in developing effective marketing strategies in the Korean cosmetics industry.

Keywords: *consumer behavior, Korean cosmetics, behavioral intentions.*

1. Introduction

Nowadays, as society develops and people's lives are increasingly enhanced, the importance of physical appearance is being given more attention. To meet the growing demands of individuals, the cosmetics industry is thriving more than ever. Schneider et al. (2001) stated that Greece and Egypt were the first countries to use cosmetics. The main consumers of the cosmetics industry are young girls (Anderson, 2014). According to The Statistics Portal (2019), the global cosmetics industry grew at a rate of 5.5% in 2018. In addition to the global development of the cosmetics industry, the cosmetics industry in Vietnam is currently experiencing rapid growth. According to the Insight Handbook 2021 report by Kantar Worldpanel, the largest segment of the cosmetics market in Vietnam is lipstick. The boom of e-commerce platforms has influenced Vietnamese shopping habits. In particular, personal care product statistics increased by 63% in 2019 compared to 2018, skincare products increased by 55%, and makeup products increased by 25%.

According to data collected by Kantar Worldpanel, a multinational company specializing in global consumer shopping behavior research, South Korea is the leading country in cosmetics imports, accounting for nearly 1/3 of the import value and holding the number one position as the country with the highest cosmetics imports into Vietnam in 2018, mainly focusing on makeup and beauty mask products. In 2020, Vietnam imported approximately 60 million USD worth of cosmetics from South Korea. The beauty products from South Korea, also known as K-beauty, are particularly popular among Vietnamese consumers due to the influence of Korean popular culture. In total, the value of cosmetics imported into Vietnam in that year reached approximately 175.6 million USD (Statista).

Currently, Vietnam has over 400 cosmetics companies. However, Vietnamese cosmetics companies only account for 10% of the market, and they are striving to regain this lucrative market share. Vietnamese cosmetics companies are currently only able to compete in the low-priced segment and export to some neighboring markets (90% of Vietnamese cosmetics companies are distributors of foreign cosmetics brands). As a result, popular domestic brands achieve low sales volume and primarily export to neighboring Asian markets. Most foreign cosmetics dominate the shopping centers in Vietnam. Statistics from the General Department of Customs of Vietnam show that South Korea is the largest exporter of cosmetics to Vietnam. In 2021, South Korea accounted for about 44.5% of the total value of cosmetics imports into Vietnam. Therefore, South Korea has been proven to be the leading cosmetics importing partner of Vietnam in recent years.

According to Statista, in 2022, the global cosmetics market witnessed a growth rate of over 16% compared to the previous year. Skincare, haircare, makeup, fragrance, personal hygiene and deodorant, and ingestible beauty products are the main product categories in the cosmetics market. Skincare is the top category in 2021, accounting for about 41% of the global market. Hair Care products account for an additional 22%, while makeup products represent about 16%. Skincare is one of the highest-profit categories as its revenue is predicted to generate around 188 billion USD by 2026.

Currently, there are numerous studies on the role of product innovation, brand image, and quality perception in marketing and business management. The importance of product innovation has been demonstrated in previous studies with positive evaluations and outcomes. Shiau (2014) suggests that product innovation helps consumers better understand product features and enhances their satisfaction with the product. Wahyuni (2019) highlights the positive impact of product innovation on purchase decisions. Dolatabadi, H.R. et al. (2012) argue that brand image represents the personality of the brand or the reflection of the product. According to Jalilvand, M.R. et al. (2011) and Tuškej, U. et al. (2013), the brand is always an important factor for a company. Brand image can foster brand loyalty from consumers. Therefore, brand identity becomes a crucial issue in brand management. Additionally, quality perception is an important factor in consumer decision-making; hence, consumers will compare the quality of alternative choices in a price category (Jin and Yong, 2005). However, specific research on product innovation, brand image, and quality

perception of Korean cosmetic brands in Vietnam is still limited. Therefore, conducting investigations in this field is crucial for empirical research.

This article aims to measure the factors influencing the purchasing behavior of Vietnamese consumers toward Korean cosmetics through a survey on consumer preferences for imported cosmetics in the Vietnamese market. It also clarifies the position of foreign cosmetics in the domestic market, specifically Korean cosmetics. We used the Theory of Planned Behavior (TPB) as the research model and expanded it by adding "product innovation," "brand image," and "quality perception." Through this, the article predicts the near future of the domestic cosmetics industry as well as the cosmetic consumption trends of Vietnamese consumers. The goal is to provide a clearer view of the development and competitiveness of the domestic cosmetics industry in Vietnam. The article was completed based on an online survey targeting consumers of various cosmetics available in the Vietnamese market.

2. Theoretical framework

2.1. The Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) is derived from the Theory of Reasoned Action (TRA). TRA uses subjective attitudes and norms to predict the behavioral intentions of individuals, and then predicts their specific behavior based on their behavioral intentions (Truong, Y., 2009). The interaction between subjective norms and attitudes is complex, and TRA directly predicts intentions without limitations. Furthermore, some behaviors are beyond the control of individuals. For example, they may not have enough time to complete the behavior or they may lack the opportunity or suitable situation. This makes it difficult for TRA to accurately predict behavior (Solomon, M.R., 2007). When people engage in behavior that may not be successful and they cannot control the situation they encounter, such behavior will not be predicted by TRA. To address this issue, Ajzen (1985) proposed the more advanced Theory of Planned Behavior (TPB).

TPB provides a practical framework that helps us understand complex human behavior (Lu and Chen, 2017). It has a high accuracy in predicting behavior by using attitude, subjective norms, and perceived behavioral control (Ajzen, I., 1991). For this reason, many scholars have used TPB as their research framework (Farah, M.F., 2017). Pikturnienė and Mackelaitė (2013) used TPB to compare the attitudes of consumers towards purchasing skincare products domestically and internationally; Kim and Karpova (2009) explored why consumers want to buy counterfeit goods using TPB as a research model.

Attitude refers to "the degree to which a person evaluates the discussed behavior positively or negatively." Subjective norms refer to "perceived social pressures to perform or not to perform the behavior." Perceived behavioral control refers to "the perceived ease or difficulty of performing the behavior and is thought to reflect past experience as well as anticipated obstacles and impediments" (Ajzen, I., 1991). Since consumers cannot control whether they can purchase cosmetics when they lack time, money, or opportunity, perceived behavioral control seems to influence consumers' purchase intentions. Therefore, TPB is used as our research model.

2.2. Product innovation

For some brands, product innovation has a positive impact on their success (Thoa and Chiu, 2021). According to Hanaysha (2014), product innovation, including new products and technological innovations, helps businesses promote product quality and functionality. Drucker (1985) mentioned that innovation is the introduction of new products, new services, new technological processes, or new business models. According to Rainey (2005), the focus of product innovation is the differentiation from existing products in the market, through new features and functions that have not been provided before. Leow and Ng (2016) point out that product innovation is carried out to improve or apply new production methods for a business. Horn and Salvendy (2006) indicate that if consumers are provided with more detailed information about innovative products, their purchase intentions will be positively stimulated.

According to Thoa and Chiu (2021), product innovation can be analyzed by considering both the internal and external aspects of the product. The internal aspect depends on the company's expertise, capabilities, resources, and technologies used, while the external aspect involves consumer needs and the owner's expectations for the company's products. Therefore, product innovation does not necessarily entail significant differences compared to developing entirely new products or using new technologies to enhance existing products. The research findings of Thoa and Chiu (2021) indicate that Vietnamese consumers seem willing to spend money on a product when there is technological innovation that enhances the functionality of the product rather than choosing a completely new product. Hence, this study focuses on product innovation in the aspect of new technologies.

2.3. Brand image

According to Dobni and Zinkhan (1990), brand image is the subjective perception of consumers, understood through cognition or emotions. Additionally, brand image is often influenced or shaped by marketing activities and advertising content or the individual perceptions of each customer. Park et al. (1986) argue that brand image is not solely based on consumer perception but also on the business activities of the company, both of which bring profit to the business and fulfill consumer needs. Shamma and Hassan (2011) state that the stronger the brand image in the consumer's perception, the more attention it can attract, thereby generating consumer purchase intentions. Saydan (2013) suggests that brand image helps managers and marketing professionals differentiate their products, expand the brand, and benefit the business.

Furthermore, Lee et al. (2014) emphasize that building brand image with the purpose of product development and profitability is crucial for businesses. Enhancing brand image, creating brand advantages, and standing out in consumer perception are always top priorities for any business manager. Keller (1993) defines brand image in three dimensions: essence, concern, and attitude. Within the concern dimension, brand image is defined by functionality, symbolism, and experience. Rahi (2017) argues that to differentiate their products from others, businesses should create distinctive and unique characteristics for their products. Therefore, it can be seen that brand image is constructed based on the objectives of marketers and businesses and subjectively perceived through consumer cognition.

The research conducted by Thoa and Chiu (2021) concludes that based on a positive perception of brand image, Vietnamese consumers tend to purchase more Korean cosmetics. Specifically, the symbolic aspect of brand image is the factor that drives Vietnamese consumers to spend more. This study primarily examines brand image in terms of symbolism through consumer perception and evaluation to understand the role of brand image in purchase intentions.

2.4. Perceived quality

Perception of quality is an important factor in consumer decision-making; therefore, consumers will compare the quality of substitute products in relation to their prices within a product category (Jin and Yong, 2005). The components of the marketing 4Ps, including price, place of sale, and advertising, as well as brand-related variables such as origin, good warranty, and advertising, can provide signals to consumers in evaluating product quality (Rao and Ruekert, 1994; Yoo et al., 2000).

Consumers may be uncertain about product quality because sellers can deceive them with defective products or provide lower-quality products than advertised or stipulated in the purchase contract (Ba and Pavlou, 2002; Pavlou and Fygenon, 2006). Perception of quality is the result of consumers' subjective evaluation of a product (Zeithaml, 1988; Dodds et al., 1991). Garvin (1983) suggests that perception of quality is determined by the user's perception, while objective quality is determined by the product or manufacturing orientation. The difference between objective quality and perception of quality lies in the fact that objective quality has a predetermined design standard for a product, while perception of quality is influenced by the intrinsic and extrinsic attributes of the product, serving as the basis for consumer evaluation (Zeithaml, 1988). Perception of quality is an assessment by consumers of the accumulated benefits of a product and their subjective feeling about the quality of the product (Zeithaml, 1988; Dodds et al., 1991). Perception of quality will be influenced by factors such as prior experience, level of education and perceived risk, as well as situational variables like purchase purpose, purchase situation, time pressure, and consumer social background (Holbrook and Corfman, 1985). In summary, perception of quality is a subjective evaluation by consumers of product quality, and they will evaluate product quality based on their prior experiences and perceptions.

2.5. Hypotheses and Research Model

In this study, attitude refers to the positive emotions towards Korean cosmetics. Consumers' attitude towards products and services can predict individual consumer behavior and purchase intentions, which are derived from positive attitudes (Mooij, M.; Hofstede, G. 2011). Based on this, the first hypothesis is formulated as follows:

Hypothesis H1: Attitude has a positive impact on the behavioral intention of consumers in purchasing Korean cosmetics.

Subjective norm refers to an individual's perception of social influence, such as the belief that important others want them to engage in the target behavior (Hagger, M.S., 2007). The influence of others surrounding individuals impacts their decision-making, including family, friends, colleagues, and others. Therefore, the second hypothesis is formulated as follows:

Hypothesis H2: Subjective norms have a positive impact on the behavioral intention of consumers in purchasing Korean cosmetics.

Perceived behavioral control is an extension of the theory of reasoned action and describes an individual's perception of their personal capabilities or limitations (such as time, money, and opportunities) to perform a specific behavior (Godbersen, H. et al., 2020; Ajzen, 1988). The limited resources of an individual can hinder and influence their ability to make purchasing decisions. Therefore, the third hypothesis is formulated as follows:

Hypothesis H3: Perceived behavioral control has a positive impact on the behavioral intention of consumers in purchasing Korean cosmetics.

Among the factors influencing consumers' purchase intentions, product innovation is a significantly positive factor (Thoa and Chiu, 2021). According to Tidd (1997), to generate innovation for a business and new value for a product, managers often engage in product innovation. Innovation through features, functions, or creating entirely new products creates positive impacts on the company's benefits. Simultaneously, consumers also perceive certain benefits through product innovation, leading to a tendency to prioritize purchasing those products (Holak, 1988). Shiau (2014) indicates that a company with good product improvements enhances consumers' willingness to pay. Through brand image, product innovation also has a positive impact on consumers' perception, resulting in an increased likelihood of purchasing that product. Actualizing customer expectations by introducing new product prototypes will enhance the company's profitability. Leow (2016) suggests that to increase purchase intentions, businesses need to focus on understanding consumer perceptions and implement appropriate improvement and innovation solutions to meet market demands. Based on the above-described relationships, we propose the following hypothesis:

Hypothesis H4: Product innovation has a positive impact on the behavioral intention of consumers in purchasing Korean cosmetics.

Aaker and Keller (1990) suggest that consumer trust increases when they have a clear understanding of the product, thereby enhancing their purchase intentions. It can be said that a good brand image positively influences consumers' purchase intentions. Therefore, when making purchase decisions, brand image is one of the positive factors influencing consumer behavior (Adenan, 2018). Shoaib and Ali (2018) found a positive impact between brand image and purchase intentions and concluded that differences in brand image among companies lead to differences in consumers' purchase intentions. Furthermore, some researchers argue that product innovation is a consideration factor and influences consumer purchase intentions (Boyd and Charlotte, 1999; Shiau, 2014). Waluya et al. (2018) demonstrated that brand image has a certain positive influence on consumers' purchase decisions. Particularly in the cosmetics research field, Kim (2016) investigated the level of preference for domestic and imported cosmetics and argued that the better the brand image and perceived value of their quality, the higher the brand preference. It can be observed that consumers' positive perception of brand image significantly impacts their purchase intentions. Based on the above-mentioned research findings regarding the relationship between brand image and purchase intentions, we propose the following hypothesis:

Hypothesis H5: Brand image has a positive impact on the behavioral intention of consumers in purchasing Korean cosmetics

Perceived product quality is determined by evaluating a specific outcome and comparing it to the consumer's prior expectations; thus, it is fundamentally a cognitive structure (Doyle Kim and Vu Thi Phuong, 2019). Garretson and Clow (1999) argue that perceived product quality influences consumers' purchase intentions, and Monore (1990) suggests that perceived product quality positively influences purchase intentions through perceived value. In the marketing field, the structure of perceived product quality has been widely recognized as a key driver of purchase intentions (Jacoby and Olson, 1985). This also means that perceived product quality varies depending on various factors, such as the timing of consumers' purchase or consumption of the product and the location where they purchase or enjoy the product. Additionally, Chang (2006) and Wu (2006) conclude that perceived product quality and purchase intentions have a positive relationship. Previous studies indicate a positive correlation between perceived quality and perceived product value. Therefore, the perception of high product quality leads to increased and enhanced perceived value, thereby increasing customers' purchase intentions (Cronin et al., 2000; Snoj, 2004; Beneke, 2013). Perceived product quality has been found to significantly and positively influence purchase intentions (Saleem et al., 2015). Additionally, Asshidin, Abidin, and Borhan (2016) also found that perceived product quality significantly affects consumers' purchase intentions for both imported and local products in a positive direction. Based on the aforementioned descriptions of the relationships, we propose the following hypothesis:

Hypothesis H6: Perceived quality has a positive impact on the behavioral intention of consumers in purchasing Korean cosmetics

Based on the above hypotheses, the research team proposes the following research model:

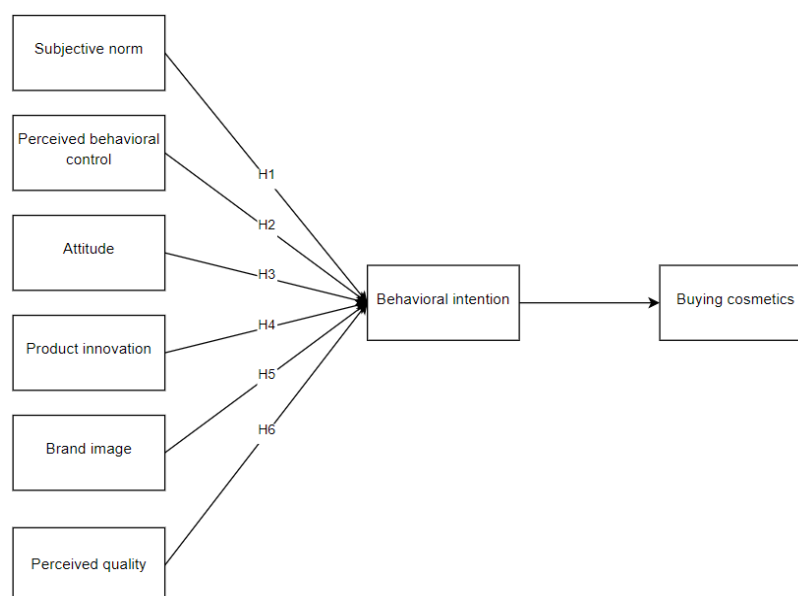


Figure 1. Research Model

Source: Compilation of results by the authors, 2023

3. Method

A quantitative research method was employed to measure the influence of the following factors: Product Innovation (PI), Perceived Quality (PQ), Subjective Norms (SN), Perceived Behavioral Control (PBC), Attitudes (ATT), Brand Image (BI), and Behavioral Intention (BINT) on Vietnamese consumers' purchasing intention of Korean cosmetics.

The survey questionnaire was designed in two parts and distributed to consumers through a direct link. The introduction section provided an overview of the survey's purpose and included demographic questions such as gender, age, purpose of using Korean cosmetics, etc. The second part consisted of questions related to the perception of each factor: Product Innovation (PI), Perceived Quality (PQ), Subjective Norms (SN), Perceived Behavioral Control (PBC), Attitudes (ATT), Brand Image (BI), and Behavioral Intention (BINT) of Vietnamese consumers regarding the purchase of Korean cosmetics. A total of 565 valid responses were used for the study after eliminating incomplete responses.

According to the statistical results from the survey data of 565 samples, the gender distribution was as follows: female (62.7%) and male (37.3%). Participants became aware of Korean cosmetics through various channels, including TV advertisements (18.2%), friends and relatives (35.6%), the internet and social media (45.3%), and other sources (0.9%). The purpose of using Korean cosmetics was categorized as makeup (34.9%), skincare (35.8%), and makeup and skincare (29.3%). The age groups were as follows: below 21 years old (24.8%); 21-30 years old (28.5%); 31-40 years old (24.6%); 41-50 years old (20.9%); 51-60 years old (1.2%); and above 60 years old (0%). Furthermore, 100% of the survey respondents were familiar with at least one of the following Korean cosmetic brands: The Face Shop, Ohui, Innisfree, Laneige, Etude House, Missha, Skinfood, and Sulwhasoo.

To ensure content validity of the survey instrument, an experienced marketing research expert in scale development and quantitative research evaluated the proposed scales. The results of the study were analyzed and tested using SPSS 25.0 software, and Cronbach's alpha values were found to be above 0.8, indicating good measurement reliability. A 5-point Likert scale was used to measure respondents' attitudes towards the factors influencing their intention to purchase Korean cosmetics. To test the measurement model and the proposed hypotheses aiming to determine the degree of influence from each factor: Product Innovation (PI), Perceived Quality (PQ), Subjective Norms (SN), Perceived Behavioral Control (PBC), Attitudes (ATT), Brand Image (BI), and Behavioral Intention (BINT) on Vietnamese consumers' purchasing intention of Korean cosmetics, we utilized an analysis method through the following steps:

1. Evaluation of measurement scales and reliability using Cronbach's Alpha coefficient and exploratory factor analysis (EFA);
2. Validation of scales using confirmatory factor analysis (CFA);
3. Testing the model using structural equation modeling (SEM) in AMOS.

3.1. Cronbach's Alpha measurement of reliability

The reliability of the measurement scale was assessed using Cronbach's Alpha analysis (Table 1) based on the official quantitative survey sample. All measurement scales met the criteria and were used for Exploratory Factor Analysis (EFA). The final results showed that all measurement scales had reliable values for their respective factor groups. This demonstrates that the research concepts built from the observed variables achieved internal consistency and ensured good measurement properties.

Table 1. Results of the reliability testing of the measurement scale

Variances	Cronbach's Alpha	Corrected Item - Total Correlation	The number of scales eliminated
Subjective Norms (SN)	0,849	0,598 - 0,743	0/4
Perceived Behavioral Control (PBC)	0,928	0,805 - 0,861	0/4
Attitudes (ATT)	0,843	0,600 - 0,775	0/3
Product Innovation (PI)	0,922	0,801 - 0,874	0/3
Brand Image (BI)	0,849	0,665 - 0,723	0/4
Perceived Quality (PQ)	0,854	0,721 - 0,731	0/3
Behavioral Intention (BINT)	0,925	0,801 - 0,854	0/4

Source: Compilation of results by the authors, 2023

3.2. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA)

Exploratory Factor Analysis (EFA) was conducted on 19 observed variables belonging to 6 factors. The extraction method used here was Principal Axis Factoring combined with Promax rotation, which reflects the data structure more accurately (Gerbing and Anderson, 1988) and is suitable for analyzing the structural model of linear SEM. The Kaiser-Meyer-Olkin (KMO) measure was 0.899 (> 0.5), and the Bartlett's test of sphericity had a significant value of Sig = 0.000, indicating the meaningfulness of the EFA results. The analysis revealed that at Eigenvalues ≥ 1 , 5 factors were extracted from the 21 observed variables, accounting for an extracted variance of 76.269%. We conducted separate EFA analyses for independent and dependent variables (Table 2 and Table 3). Hair et al. (2010) suggested that combining independent and dependent variables in the same exploratory factor analysis and then examining the dependent relationships is inappropriate. Variables included in the EFA should be of the same type, either all independent or all dependent. Both types of variables should not be combined in a single EFA analysis.

Table 2. Results of Exploratory Factor Analysis (EFA) for Independent Variables

	Factor				
	1	2	3	4	5
PI3	0,892				
PI2	0,890				
PI1	0,836				
PQ1	0,834				
PQ3	0,737				
PQ2	0,725				
PBC2		0,868			
PBC1		0,830			
PBC3		0,780			
PBC4		0,778			
BI2			0,815		
BI1			0,758		
BI4			0,746		
BI3			0,737		
ATT3				0,931	
ATT2				0,857	
ATT1				0,620	
SN2					0,817
SN1					0,779
SN4					0,597
SN3					0,543
Extraction variance	41.349	9.935	7.997	6.408	3.352

Source: Compilation of results by the authors, 2023

Table 3. Results of Exploratory Factor Analysis (EFA) for Dependent Variable

Component	
1	
BINT2	0,922
BINT1	0,916
BINT4	0,894
BINT3	0,888
Extraction variance	3.277

Source: Compilation of results by the authors, 2023

The CFA analysis was further utilized to evaluate the fit of the research model (Model Fit). The results indicated that the measurement scales used to assess the independent variables converged into six factors: Subjective Norms (SN), Perceived Behavioral Control (PBC), Attitudes (ATT), Product Innovation (PI), Brand Image (BI), and Perceived Quality (PQ). Additionally, the measurement scales for Product Innovation (PI) and Perceived Quality (PQ) converged into a new measurement factor related to the perception of product quality and innovation. Consequently, we named this new variable "Perceived Innovation of Product Quality" (PIPQ). Subsequently, we considered standardized residual covariances to improve the Model Fit indices to achieve the best standards. As a result, the observed variables PerceivedQuality1, PerceivedQuality2, BrandImage1, and SubjectiveNorms3 were removed. The final Model Fit results are presented in Table 4 as follows:

Table 4. The indices for evaluating Model Fit are as follows

	Index	Evaluating
CMIN/DF	4,526	Acceptable (<5)
GFI	0,909	Acceptable (>0,8)
CFI	0,946	Acceptable (>0,9)
RMSEA	0,079	Acceptable (<0,08)

Source: Compilation of results by the authors, 2023.

Factor analysis confirms CFA, in addition to assessing Model Fit, also requires examining the convergent validity and discriminant validity between variable groups. We obtained the following results according to Table 4 and various indicators:

1. The composite reliability (CR) ≥ 0.7 and average variance extracted (AVE) ≥ 0.5 for all variables, ensuring convergent validity.

2. The mean shared variance (MSV) $<$ AVE, and the square root of AVE $>$ correlation for all variables, ensuring discriminant validity.

Table 5. Model Validity Measure

	CR	AVE	MSV	MaxR(H)	PIPQ	PBC	BI	SN	ATT
PIPQ	0.925	0.757	0.433	0.939	0.870				
PBC	0.929	0.767	0.561	0.934	0.658***	0.876			
BI	0.819	0.602	0.187	0.822	0.355***	0.432***	0.776		
SN	0.851	0.656	0.561	0.863	0.656***	0.749***	0.418***	0.810	
ATT	0.851	0.660	0.092	0.889	0.275***	0.303***	0.194***	0.269***	0.813

Source: Compilation of results by the authors, 2023

Thus, the results of the Confirmatory Factor Analysis (CFA) have demonstrated that the proposed research model is entirely consistent with the theory. The measurement scales of the variables PIPQ, PBC, BI, SN, ATT, and BINT in the research model exhibit strong relationships with each other and have the ability to provide a good explanation for the corresponding representative variable. We utilized the factor analysis results to confirm the CFA, which serves to test the hypotheses and evaluate the relationships between the factors influencing the independent and dependent variables.

3.3. Structural Equation Modeling (SEM) analysis

We utilized the Structural Equation Modeling (SEM) technique to analyze the multidimensional relationship between the dependent variable "Behavioral Intention" (BINT) and the independent variables in the model. The obtained results are presented in Figure 2.

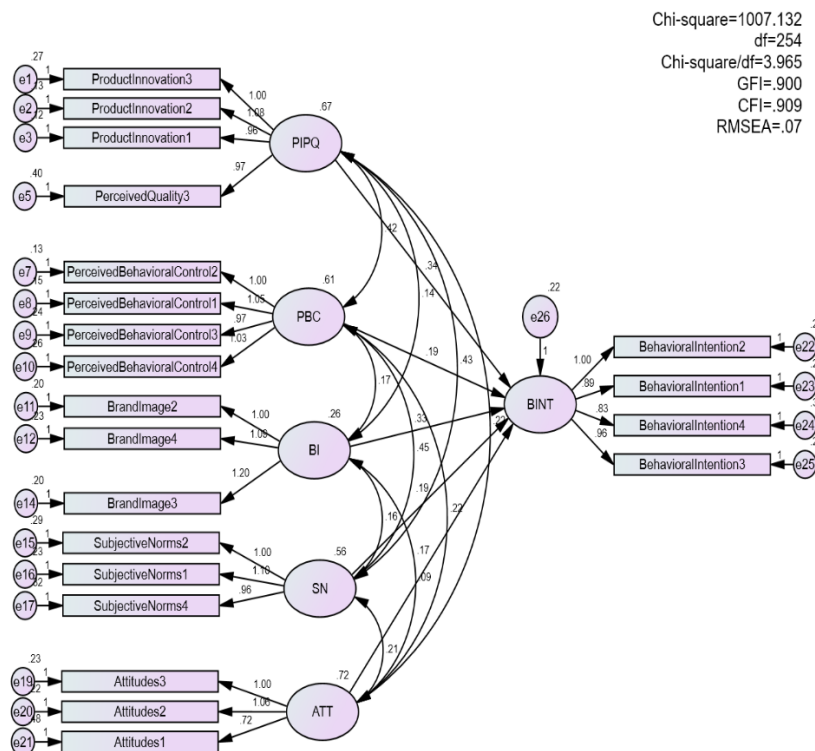


Figure 2. Model SEM

Source: Compilation of results by the authors, 2023

The P-values of all variables are < 0.05 , indicating a 95% level of confidence and significant relationships between the independent variables and the dependent variable. The unstandardized regression coefficients are all positive for hypotheses H1, H2, H3, H4, and H5, indicating a positive impact of the independent variables on the dependent variable. The SEM results confirm the acceptance of all proposed hypotheses H1, H2, H3, H4, and H5.

Table 6. Summary of SEM Results

Hs		Unstandardized ML	SE	CR	P-value	Result
H1	BINT ← SN	0,185	0,068	2,726	0,006	Approved
H2	BINT ← PBC	0,188	0,057	3,300	***	Approved
H3	BINT ← ATT	0,173	0,033	5,272	***	Approved
H4	BINT ← PIPQ	0,341	0,048	7,134	***	Approved
H5	BINT ← BI	0,334	0,061	5,460	***	Approved

Source: The results were synthesized by the research team using AMOS.

The results in Table 6 indicate that all Critical Ratios (C.R) values are smaller than 1.96, indicating no significant difference between the estimated results of the initial model and the estimated mean results. Therefore, the research model remains meaningful with a large sample, and the model estimates are reliable. Perceived product quality innovation (PIPQ) and Brand Image (BI) are the two factors with the strongest impact on Behavioral Intention (BINT). According to the unstandardized regression coefficients, when perceived product quality innovation (PIPQ) and Brand Image (BI) increase by 1 unit, Behavioral Intention (BINT) increases by 0.341 and 0.334 units, respectively. Additionally, for each 1-unit increase in the factors of the Theory of Planned Behavior (TPB), Behavioral Intention (BINT) increases by 0.185, 0.188, and 0.173 units, respectively.

4. Discussion and Conclusion

4.1. Discussion

The latent variable "perceived product quality innovation" was discovered after conducting EFA analysis and was found to have the strongest influence on Behavioral Intention (BINT), with an impact level of 34.1%. The measurement scale for the variable "product innovation" converged with the measurement scale for "perceived quality" to create the independent variable "perceived product quality innovation" (PIPQ). In reality, when purchasing Korean cosmetic products, most consumers are concerned about the quality of the products they buy. Improving product quality plays an important role in consumer repurchase behavior, as consumers perceive upgraded product functionalities to increase their intention to purchase. Therefore, based on the research results, it can be affirmed that if consumers perceive the quality of the product as innovative, they will have a more positive attitude and drive their intention to purchase Korean cosmetics.

Brand image plays a crucial role in consumer buying behavior by building subjective perceptions and providing benefits to consumers when purchasing those products (Thoa & Chiu, 2021). For the Korean cosmetic industry, Brand Image (BI) is the second-highest

influencing factor, accounting for 33.4%. In the beauty industry, consumers pay attention to the brand image they are buying, its popularity, and its reputation on the market. SEM analysis results demonstrate that if consumers perceive Korean cosmetic brands as having excellent quality, being the most preferred brand on the market, having market credibility, and providing reassurance to customers, their intention to purchase tends to increase. To differentiate their products from others, businesses should create unique and distinctive characteristics for their products (Rahi, 2017).

It can be observed that when purchasing Korean cosmetic products, the factors of Subjective Norms (SN), Perceived Behavioral Control (PBC), and Attitudes (ATT) play the least important roles in influencing the Behavioral Intention of consumers regarding purchasing Korean cosmetics. Although the factors of the Theory of Planned Behavior (TPB) have the least impact on consumers' Behavioral Intention to purchase Korean cosmetics, they still explain 18.5%, 18.8%, and 17.3% respectively of the variation in the intention to purchase Korean cosmetics among Vietnamese consumers.

4.2. Conclusion

Based on the research findings, we propose solutions for organizations and cosmetic businesses in Vietnam to improve the quality of product communication to consumers and enhance the effectiveness of their marketing strategies based on the research results on factors influencing the intention to purchase Korean cosmetics among Vietnamese consumers.

To promote consumer intention to purchase cosmetic products through awareness of product quality innovation, businesses should: (1) Stay updated with product functionalities to meet market demands. To achieve this, companies need to build teams for customer needs research as well as research and development.(2) Regularly update production technology to manufacture products, stay informed about the latest market information, improve machinery, and explore high-quality ingredients for product manufacturing. (3) Emphasize product quality as a guiding principle for the business's development in cosmetic production.

To promote consumer intention to purchase cosmetic products through brand image, businesses should (1) Establish a strong brand presence in the market by offering high-quality products to dominate the Vietnamese market.(2) Build credible media platforms to disseminate information about the company's products to enhance the brand image across social media platforms.(3) Build trust with customers regarding the use of the company's cosmetic products. To achieve this, businesses need experienced personnel in the industry, conduct thorough research on product quality and side effects before launching them into the market to avoid unnecessary risks.

To promote consumer intention to purchase cosmetic products based on the factors of the Theory of Planned Behavior (TPB), businesses should: (1) Build product image on social media platforms to reach a wider market.(2) Produce diverse product lines at low, medium, and high price ranges to meet consumers' desire for recognition.(3) Establish online sales channels to expand the sales network and create a convenient purchasing experience for consumers, allowing them to buy anytime, anywhere without visiting physical stores.

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DETERMINANTS OF DIGITAL FINANCIAL COMPETENCY AMONG EMPLOYEES IN VIETNAM BANKING SECTOR

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Abstract

This study aims to examine the factors affecting the digital financial competency (DFL) of employees in the Vietnamese banking sector. Inheriting previous studies on the digital competency framework; especially the definition of DFC; The data is fed by 431 domestic banks' employee responses. The results of exploratory factor analysis (EFA) show that there are 7 factors affecting DFC. In addition, ANOVA analysis results that: there is a statistically significant difference in DFC between educational groups of employees. Profit-making group of employees has better DFC than the rest. While ANOVA analysis does not find significant differences in DFC of some demographic characteristics and IT training as well as digital financial training. Some policy implications related to the enhancement of DFC for Vietnamese bankers are also discussed.

Keywords: *digital literacy, digital financial competencyframework, financial literacy*

1. Introduction

Today, financial literacy along with digital literacy is crucial for citizens who are actively involved in the monetized and digitized economy (Medlock Paul, Spires, & Kerkhoff, 2017; WEF, 2015). The combination or intersection between digital literacy and personal financial literacy has been referred to as "digital financial literacy" or "digital financial competency" (DFC); while DFC is also recognized as a synergistically essential competency for every citizen today (FinEQUITY, 2021).

Morgan et al (2019) and the OECD (2018a) have recommended that, it is essential to strengthening the DFC of all members of society. Black et al (2018) as well as Buvat (2017) have shown that banks are also facing a shortage of digital human resources.

Specifically, researchs (Murawski, Darvish, Prinz, & Bick, 2020; Shahlaei, Rangraz, & Stenmark, 2017) pointed out that there is still no clarity on the required competency components for each bank- employee. Murawski (2020) emphasized that there is a need for in-depth research on the components of DFC framework for specific groups of bankers. This

issue has also agreed upon by many studies (Henderson & Cockburn, 1994; Strasser, London, & Kortebout, 2005). In addition, Prete (2021) also recommended that digital literacy and personal financial literacy should be considered together when assessing the impact of digitalisation.

Literature review (Azeez & Akhta, 2021) show that research focusing on digital financial literacy and its determinants has been scarce in academic journals.

In Vietnam, the review revealed that there is an absence of study on DFC for bankers while finding a number of studies on digital competency (Hinh & Vân, 2022; Nguyen, Pham, & Le, 2022) and studies on personal financial literacy (Anh, 2020; Vân & Hinh, 2019; Vân, Hinh, & Minh, 2021) separately. Meanwhile, the banking sector is being strongly promoted for digital transformation (Chinh_Phủ, 2020; ĐCSVN, 2019; Hải & Đăng, 2021; Thông_Độc, 2018, 2022a; Thống_Độc, 2019a, 2019b, 2020, 2021; Thủ_tướng, 2018b, 2020a, 2020b, 2020c, 2021, 2022b, 2022c). The authorities (Thông_Độc, 2022a, 2022b, 2022c) has also advocated improving digital human resources for the banking sector by starting to develop the DFC framework for bank employees, while also being aware that this is a challenge even in developed economies as shown by literature (Henderson & Cockburn, 1994; Morgan et al., 2019; Strasser et al., 2005).

In the above context, the purpose of the article is to explore the factors that determine the DFC of bankers and then have some relevant recommendations.

2. Literature reviews & Hypothesis development

2.1. Literature reviews

2.1.1. Competency and competency assessment

Competencies are basic human characteristics that manifest a way of behaving or thinking, are general in many situations, and persist for a long time. The literature reviews (Hinh, Vân, & Nguyệt, 2023; Vazirani, 2010) show that at least five components of competency, which are : (i) Knowledge; (ii) Skills; (iii) Self Concepts & Values; (iv) Traits; (v) Motives.

While the educational and sociological aspects, competency is the knowledge, skills, and attitudes that an individual acquires from education and training (formal or informal). Competency is considered the result of the process of acquiring so that an individual can master knowledge (“K”), the ability to do is called skill (“S”), and have appropriate attitudes or emotions, individually for work in a given field (“A”) (OECD, 2018b; Redding, 2014). Basically competencies are reflected by these factors (“KSA”) (Henderson & Cockburn, 1994b; Hinh et al., 2023) .

On the organizational management point of view, professional competency is an asset or human capital, one of the most important resources and great influence on the success of the organization (Vathanophas & Thai-ngam, 2007) (Boyatzis, 1982, 2008; Hinh et al., 2023)

Competency structure therefore often consists of K", "S", and "A" (Kak, Burkhalter, & Cooper, 2001). They are accumulated by the individual before working in a particular

field; professional competency is accumulated by individuals through study, work, and professional experience (Strasser et al., 2005) (Elliot, Dweck, & Yeager, 2017; Hinh et al., 2023; Machado, 2017).

Studies (Elliot, Dweck, & Yeager, 2017; Hinh et al., 2023; Machado, 2017) indicate that specific competencies are difficult to measure directly and require indirect indicators such as the level of professional maturity in performing a task or job (Henderson & Cockburn, 1994b; Hinh et al., 2023). Davids et al., (2008) also stated that professional maturity is the process of learning and training at each stage of life, accumulating physically and intellectually... Professional maturity is measured at levels from low to high corresponding to the process of personal skill acquisitional process, reach a certain maturity levels, such as: (i) Novice; (ii) New officer or employee; (iii) Skilled officers; (iv) Effective staff; (v) Expert level (Kaba & Ramaiah, 2020). Many studies have used different variables to measure the process of acquiring specific competencies in some career fieldsities (Hinh et al., 2023; Kaba & Ramaiah, 2020)

2.1.2. Digital financial competency

According to Dimova et al (2021) as well as FinEQUITY(2021), digital financial literacy/competency (DFC), is the intersection between “digital literacy” and “financial literacy”, thereby allowing consumers to benefit and take full advantage of the benefits of digital financial services.

(i) Digital literacy

A person who is both knowledgeable about new technologies and at the same time able to use new technologies confidently and securely to interact with the rest of them for their lives and work, In the context of technology and information pervasive, people are seen as digitally competent (Ala-Mutka, 2011b; Hinh et al., 2023; Medlock Paul et al., 2017). The study (Prete, 2021) recommends that both digital literacy and personal financial literacy should be considered when assessing the impact of digitization on employee competencies.,

Studies (Ala-Mutka, 2011a; Dewi, Fahrurrozi, Hasanah, & Dj, 2021; Hatlevik, Guðmundsdóttir, & Lo, 2015; Ryder & Machajewski, 2017; Tang & Chaw, 2016) suggest that digital competency is built or accumulated from an individual's socialization process (study, work experience, social relations, or participation in forums...). Digital competency is determined by the fundamental factors that affect an individual's overall capacity. Digital competency includes (k) Specific knowledge and skills in the use of digital media and tools; (S) Advanced skills and knowledge of communication and collaboration, information management, learning and problem-solving, and meaningful participation; (A) Attitudes toward using strategic skills in an intercultural, criticism, creative, responsible and autonomous manner and also differences in digital competency across demographic groups learn.

Vodă et al. (Vodă, Cautisanu, Grădinaru, Tănăsescu, & Moraes, 2022) have proposed a theoretical framework of 06 factors (domains). However, these 6 domains of digital competency are some what inadequate compared to the 11 domains proposed by Janssen et al., (Janssen et al., 2013a) which could be considered more realistic.

Studies (Deursen & Van Dijk, 2009; EU, 2018, 2022; Janssen et al., 2013a; Jisc, 2014; Martin & Grudziecki, 2006; Pérez & Murray, 2010) show that the digital competency research model is associated with the principle of the individual's process of accumulating new technological capabilities. In the process of learning through many channels, individuals accumulate knowledge, skills and form attitudes and behaviors. Therefore, the research model consists of the basic factors: knowledge (K), skills (S), and attitude (A) of the individual extended to the new technology field and on a multi-dimensional manner, which characterizes by technology and consistent with the cross-cutting-structures character of “digital competency”.

As stated, digital competency includes domains of multi-tasking capabilities; and have gone beyond functional IT skills; Digital competency implies a richer and more diverse range of digital behaviors, practices, and identities than IT competency. The term changes continuously but is still consistent with the skills accumulating process of individual, which is closely related to the individual's learning process (Hinh et al., 2023; Kaba & Ramaiah, 2020; Niyigena, Jiang, Ziou, Shaw, & Hasan, 2020).

That is why, research (Jisc, 2014) has also generalized “digital competency” as essentially a set of professional and academic practices supported by technologies that are both diverse and medium constantly changing. This view is consistent with Janssen et al. (Janssen et al., 2013a) who included 11 components (domains) in the research model on digital competency.

(ii) Financial literacy

The concept of “financial literacy” has undergone a long development process and has been contributed to and improved by many scholars (Lusardi & Mitchell, 2006, 2007, 2014; Lusardi, Mitchell, & Curto, 2009). To now, this term has evolved far from the original meaning of "capability to read and to write" about finance (Hinh et al., 2023).

International Institutions (OECD, 2013; WB, 2013) define and use that personal financial management capacity is quite similar to “financial literacy” and “financial capability”. Financial literacy includes knowledge and understanding of financial concepts and risks, as well as the skills and motivation with confidence to apply that knowledge and understanding to make effective decisions in the financial area and context, to improve the financial well-being of individuals and society, and to enable individuals to participate in socio-economic life (OECD, 2013; OECD/INF, 2013; OECD/INFE, 2011).

Literature review (Hinh et al., 2023) integrates that the concept of financial literacy includes: (1) knowledge of financial concepts, (2) the ability to manage personal finances, (3) financial decision-making skills, and (4) confidence in future financial planning (Remund, 2010).

(iii) Digital financial competency

Studies (Hinh et al., 2023) have distinguished “digital financial competency” (DFC) for citizens in general and for employees of banks. Specifically:

-According to Morgan et al.,(2019), DFC is a multidimensional concept. While earlier OECD (2017) mentioned different aspects of DFC. Even so, there is no standard definition of DFC. In this context, Morgan et al.,(2019) propose four dimensions of DFC, including knowledge of digital financial products and services, awareness of digital financial risks, knowledge of on digital financial risk control, consumer rights knowledge, and procedures or remedies.

Research (Ala-Mutka, 2011b) shows that technology is increasingly popular in modern society and the economy; Every citizen has been able to benefit from digital tools and media in many areas of life. Furthermore, the ways in which individuals use digital technologies and benefit from them vary widely;

Significantly, the use of digital technology is unlikely to lead to the improvement or development of enhanced digital capabilities; This explains why, not all groups of citizens have enough interest, confidence, support or opportunities to develop their digital capabilities. Studies also imply that ensuring digital literacy in the digital age is all about ensuring social equality (Ala-Mutka, 2011b; Hinh et al., 2023). Research (Prete, 2021) indicates that digital literacy and financial literacy need to be linked together in assessing the impact of digitalization on financial instrument users.

-Several researches (Ala-Mutka, 2011b; Murawski et al., 2020) have recommended components for DFC. However, these proposals still exposed lacking completeness compared to the definition of digital competencies that are multi-faced or cross-cutting structures: Studies by Ala-Mutka (Ala-Mutka, 2011b) seems to be about generalizability, which could not follow the convergence and more detailed trend of digital finance, including the economic field (digital economic competency), associated with the social field (digital social competency). Meanwhile Murawski et al. (Murawski et al., 2020) proposes components/aspects of digital financial competency and trends including information technology, computing, and digital data capabilities.

- Gomber et al., (2019) show that DFC is often a matter of concern of banks (Deloitte_Insights, 2017). Black et al., (2018) pointed that recruiting capable staffs for digital banking is not easy for any bank. Research (Buvat et al., 2017) shows that in the digital transformation movement, the banking sector is one of the first sectors facing the challenge of digital human resources compared to other industries.

- There are evidences that what kind of digital competency (which digital competency areas) are needed and required in the “digital financial competency” is still unclear. Shahlaei (2017), and then Murawski et al., (2020), from an information systems perspective propose digital capabilities of the media or data industries. However, the proposed components are considered be inadequate and further studies are needed. Additionally, there is an argument (Murawski et al., 2020) that the digital competency of bankers is very new and specific, so the lack of academic research is a natural matter. Building an appropriate digital financial competency framework for bankers is quite at the very beginning

Berruti (2017) implies that up to now, when entering the banking industry, an individual needs technological skills, data analysis skills, and workforce needs. advanced

technological skills will increase. Murawski et al., (2017) also show that banks are lacking in data processing experts.

Deloitte (2017) states that future financial leaders will have to acquire new capabilities to shape functionality in an environment rife with technology; Moreover, there is a drastic change in the tasks of staff in financial analysis, forecasting, or human resources related to banking and finance.

In the context that the structure of digital financial competency is unclear both to the definition of digital financial competency in general and to bankers, Morgan et al., (Morgan et al., 2019) propose four aspects or aspects of digital financial competency. This proposal has not been tested but can be considered quite advanced compared to previous views. This proposal implies based on the professional characteristics of bank employees such as: directly managing and operating a large number of financial assets, system linkage, and many traditional risks; The digitization process is increasingly challenging, and the requirements are higher and higher in every job position due to the diversity and complexity of financial products and services...

On that basis, the proposal of Morgan et al., (Morgan et al., 2019) digital financial capabilities including knowledge of digital financial products and services, awareness of digital financial risks, knowledge of digital financial risk control, knowledge of consumer rights and troubleshooting procedures: (+) Knowledge aspect of digital financial products and services, ensuring a basic understanding of digital financial products and services. (+) Understanding and perception of digital financial risks. (+) Digital financial risk control aspect: (+) The knowledge aspect of consumer rights and remedial procedures.

This content is an understanding of consumer rights and remedial procedures in the event a DFS user becomes a victim of the risks mentioned above. DFS users should understand their rights and know where they can go and how to get redress if they become victims of fraud or other loss. They should also understand their rights regarding their personal data and how they can remedy unauthorized use... (Morgan et al., 2019). The above views are quite consistent with the definition DFC (FinEQUITY, 2021).

2.1.4. Related studies in Vietnam

Literature review shows that, in Vietnam, there are several studies separately on digital competency (Hinh & Vân, 2022; Nguyen et al., 2022) and personal financial management capacity (Anh, 2020; Vân & Hinh, 2019; Vân et al., 2021). Though, the number and scope of research is still quite modest compared to the orientation of the Government (ĐCSVN, 2019; Thủ_Tướng, 2017, 2020c, 2022a, 2022b) on digital transformation towards a digital society and Strategy for the development of Vietnam banking industry to 2030 (Thông_Độc, 2018; Thông_Độc, 2019a, 2019b, 2021; Thủ_tướng, 2018a).

2.2. Research hypothesis

Based on the literature review, the author proposes the following research hypotheses:

(i) Component competencies or factors A, B, C, D, E, F, G, H, I, K, L (as described in Figure 1) have a statistically significant impact on “digital financial competency” (DFC) (+)

(ii) There is a statistically significant difference in DFS among the groups by demographi (gender, education, position, IT training, digital training) (+/-).

3. Theoretical framework, research model & measurements

3.1. Theoretical framework

The theoretical framework of competency, explains the learning process (formal and informal) in which knowledge, skills, and attitudes are accquised by individuals, and personal competencyis obtained (Deursen & Van Dijk, 2009; Janssen et al., 2013a; Kaba & Ramaiah, 2020; Martin & Grudziecki, 2006; Moir, 2015; Murray & Perez, 2014; Vodă et al., 2022); And it is consistent with definieton of DFC(FinEQUITY, 2021; Morgan et al., 2019). Ít is also inherited from studies (Janssen et al., 2013a; Jisc, 2014; Murray & Perez, 2014; Pérez & Murray, 2010). Some adjustments were also made to suit the conditions of Vietnam. The diagram in Figure 1 (Janssen et al., 2013b) is consisting of 11 components (areas/ domains) of digital competency; These 11 components are consistently the multi-faceted, multi-dimensional and cross-cutting structure of “digital competency”; It would be noted that 11 components, (competent areas) have also integrated two respective competencies (digital literacy and financial literacy) as the definition of DFC (FinEQUITY, 2021; Morgan et al., 2019).

3.2. Research model

Based on the above theoretical framework, the proposed research model is illustrated in Figure 1. It can be understood that the DFC is explained by the respective components in a multidimensional and synergistic manner. As stated, the intersection between digital literacy and financial literacy is DFC (FinEQUITY, 2021; Morgan et al., 2019). Eleven (11) competency dimensions (domains) reflecting DFC are taken into designing the questionnaires for information collection. Therefore, the questionnaire is integrated with measures of digital competency and measures of financial literacy.

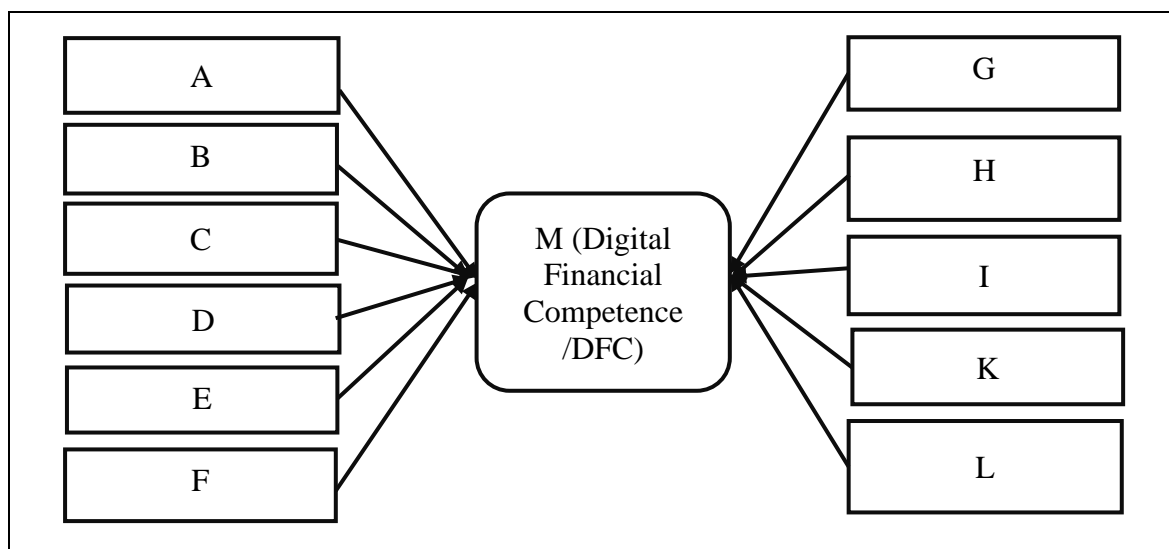


Figure 1. Proposed model for the study of “digital capabilities” [Authors modified from “Digital building blocks of digital competency”) (FinEQUITY, 2021; Janssen et al., 2013b; Morgan et al., 2019; Vodă et al., 2022)

Where (Figure 1), the digital financial competency areas/domains are as follows (FinEQUITY, 2021; Janssen et al., 2013b; Morgan et al., 2019; Vodă et al., 2022):

- (A) General digital knowledge and functional skills associated with daily personal finance;
- (B) Using digital technology associated with personal financial activities in daily life;
- (C) An in-depth and advanced competency to work and demonstrate digital creativity associated with personal finance;
- (D) Communication and cooperation through digital means for personal financial activities;
- (E) Processing and managing information digitally related to personal financial operations;
- (F) Digital privacy and security in personal finance;
- (G) The relevant legal and ethical perspective on digital aspects of personal finance;
- (H) Have a balanced attitude towards financial-related digital technology;
- (I) Understanding and awareness of the role of ICT (digital) in relation to financial performance;
- (K) Learning about and with digital technologies associated with personal finance;
- (L) The capability to make analyzed decisions about digital technologies associated with personal finance;
- (M) Seamless use, demonstrating self-efficacy of digital technology for personal finance.

- Scale (M or DFC): is the dependent variable in the econometric model; This scale is a measure of the degrees of "Simplified and systematic use of demonstrating self-confidence" in operating digital technology for personal financial activities. It is obvious that this measure reflects an individual's proficiency or digital competency.

It should be clarified that the proposed research model is based on the skill acquisition process (in the digital and financial areas) that results in professional maturity (Kaba & Ramaiah, 2020). Taking the definition of DFC (FinEQUITY, 2021; Morgan et al., 2019) the measurement of DFC could be reflected in the outcome of the skill acquisition process by the individual, referred to as "career maturity" or "personer job maturity" (Barendse, 2015; Kaba & Ramaiah, 2020; Qonitatin & Kustanti², 2021; Rahim, Jaafar, & Arsad, 2021).

3.3. Variable description and values

As illustrated in Figure 1; the scales (variables) are measures of digital financial capacity corresponding to aspects (domains). Eleven (11) scales to measure 11 dimensions of digital financial competency; Each of those scales is integrated with digital literacy and financial literacy (FinEQUITY, 2021; Morgan et al., 2019). The scales are used to design the questionnaire to collect information. Therefore, the questions in the questionnaire are integrated with digital literacy and financial literacy; At the same time, those scales are divided into 5 levels, reflecting the 5 levels of professional maturity (from the novice to the expert) as stated (Kaba & Ramaiah, 2020).

Values and scales of component competencies are coded with letters (A,B,C,D,E,F,G,H,I,K,L). As noted above, the measures reflect the intersection of financial literacy and digital literacy (FinEQUITY, 2021; Morgan et al., 2019) simultaneously measure aspects of digital literacy in relation to financial literacy; These scales measure competencies on five levels reflecting professional maturity (Deursen & Van Dijk, 2009; Janssen et al., 2013a; Kaba & Ramaiah, 2020; Martin & Grudziecki, 2006; Murray & Perez, 2014; Vodă et al., 2022); Therefore, the values of the corresponding observed variables in the components (A,B,C,D,E,F,G,H,I,K,L) are the determinants of DFC; and their values would be range from 1 to 5 (where “5” is the best). Similarly, the M scale, is also divided into 5 levels corresponding to 5 levels of professional maturity. And therefore, the observed component values of the M-scale also range from 1 to 5.

3.4. Data collection and processing

Data obtained through the survey questionnaire. In which, the questions are designed with 5 levels (similar to the 5-level Likert scale) reflecting 5 levels of professional maturity respectively. Such professional maturity questions correspond to 11 digital financial competency dimension. This question is designed based on research by Janssen et al., (Janssen et al., 2013a) as well as benefited from studies on digital financial capacity (FinEQUITY, 2021; Morgan et al., 2019). In addition, the questions are designed in the form of a behavioral scale (Behaviorally Anchored Rating Scale -BARS) (Debnath, Lee, & Tandon, 2015; joboko, 2020; Kaba & Ramaiah, 2020; Klieger et al., 2018; McCoy, 2020).

Interviews were conducted face-to-face and emailed (in google form) to about 500 people. The data obtained by responded by 431 employees working in the banking sector in Vietnam;

As mentioned, a total of 431 interviewees came from the Northern provinces and cities (Hanoi, Vinh Phuc, Hai Phong) and the South (Ho Chi Minh City, Binh Duong, Dong Nai, Ninh Thuan). In which: 24.1% from the State Bank of Vietnam - representing policymakers and supervisors of banks in Vietnam, 24.8% from state-owned commercial banks (SOCBs); 26.2% from joint-stock commercial banks (JSCs); 24.8% from other credit institutions.

SPSS25 software is used to process and test the research hypotheses with the data obtained.

3.5. The econometric model and its variables

3.5.1. The econometric model

(.) Exploratory factor analysis (EFA). The procedures include: descriptive statistics; Evaluate the reliability of the scale according to Cronbach's Alpha index; exploratory factor analysis (EFA); Multivariate regression analysis...(.) In addition, testing the mean difference according to individual characteristics is done by one-way analysis of variance (One-way ANOVA), in-depth test ANOVA (Post Hoc)...In which, the variables measuring the component competencies (competency area) and the variable "digital competency" are measured by the behavioral scale (BARS, as mentioned) on the basis of a 5-level scale.

corresponding to 5 levels of professional maturity; Demographic variables are also included in the test model appropriately according to the requirements of the study and inherited from previous studies.

The variables in the econometric model: the study is expected to estimate the impact of the factors (specific competency areas) as independent variables (A,B,C,D,E,F,G,H,I,K,L) affects DFC which is the dependent variable (**M**). It is also hypothesized that demographic factors have statistically significant relationship with DFC.

Then the econometric model could be as follows:

$$f(M_i) = \beta_0 + \sum_{i=1}^{11} \beta_i X_i + \epsilon \quad (1)$$

Where: β_i là are the coefficients; X_i corresponds to variable A, B, C, D, E, F, G, H, I, K, L (independent variable)

Where: β_i are the coefficients; X_i corresponds to variables A, B, C, D, E, F, G, H, I, K, L (independent variables) respectively,

3.2.2. Econometric model variables

- Dependent variable (**M**): as mentioned above, it represents the ability "Seamless use demonstrating self-efficacy" about digital technology for personal financial activities. This measure reflects an individual's level of proficiency in DFC, which is the intersection between digital literacy and personal financial literacy (FinEQUITY, 2021; Morgan et al., 2019). Values range of **M** from 1 to 5 reflecting 5 levels of professional maturity.

- Independent variables. As mentioned above (A,B,C,D,E,F,G,H,I,K,L), they reflect the component or domains competency (Janssen et al., 2013a). In addition, it is noted that, they also reflects the multifaceted characteristic of DFC (which integrated digital literacy and personal financial literacy) (FinEQUITY, 2021; Morgan et al., 2019). Similar to dependent variable, values of independent variable also range from 1 to 5, reflecting 5 levels of professional maturity of each domains of DFC;

- Demographic factors (gender, age, income, education, occupation ...) are considered as control variables that affect the population's intellectual level due to different characteristics of each individual. ANOVA analysis is used to assess the difference in DFC between groups or within these groups.

4. Results

4.1. Research results

4.1.1. Exploratory factor analysis (EFA)

The econometric model includes 12 variables (scales): 11 independent variables (corresponding to 32 observed variables measuring different aspects of DFC; and 1 dependent variable (corresponding to 4 observed variables measuring digital DFC in term of levels of maturity). The results of the scale reliability testing (Cronbach's Alpha in Table 1) show that the condition for EFA is satisfied (Trọng & Ngọc, 2008).

Table 1. Scales reliability (Cronbach Alpha test results)

No	Scale (variables) of digital financial competencies as domains/ dimensions	Number of characterized variables	Cronbach Alpha
1	(A) General digital knowledge and functional skills associated with daily personal finance;	A (1-4)	0.723
2	(B) Using digital technology associated with personal financial activities in daily life;	B(1-4)	0.818
3	(C) An in-depth and advanced competency to work and demonstrate digital creativity associated with personal finance;	C(1-4)	0.776
4	(D) Communication and cooperation through digital means for personal financial activities;	D(1-4)	0.848
5	(E) Processing and managing information digitally related to personal financial operations;	E(1-4)	0.665
6	(F) Digital privacy and security in personal finance	F (1-4)	0.732
7	(G) The relevant legal and ethical perspective on digital aspects of personal finance	G(1-4)	0.636
8	(H) Have a balanced attitude towards financial-related digital technology	H(1-4)	0.854
9	(I) Understanding and awareness of the role of ICT (digital) in relation to financial performance;	I (1-4)	0.940
10	(K) Learning about and with digital technologies associated with personal finance	K (1-4)	0.809
11	(L) The capability to make analyzed decisions about digital technologies associated with personal finance	L (1-4)	0.751
12	(M) Seamless use, demonstrating self-efficacy of digital technology for personal finance	M (1-5)	0.871
<i>Source: A, B, C, D, E, F, G, H, I, K, respectively, are characterized variables; M is the dependent variable (Janssen et al., 2013a); and Cronbach Alpha test results by author</i>			

MO & Bartlett's test results show that the observed variables in the population are correlated with each other and factor analysis (EFA) is appropriate: KMO and Bartlett's test for Sig.= 0.000 (sig.<0.05); The KMO value is 0.938 with the method of factor extraction (principal component), the method of factor rotation (Varimax) allows to extract 8 factors from 32 observed variables that meet the requirements of loading factor > 0.55 and extracted variance cumulative is 66.933 (>50%), that is, these 8 factors explain 66.933% of the variation of the data and correspond to Initial Eigenvalues from 1,033 to 17.022. The EFA results are described in Table 2.

Table 2. EFA analysis results: Factors affecting digital financial capacity

Observed variables	Factors							
	1	2	3	4	5	6	7	8
H1	.755							
H2	.711							
H3	.662							
H4	.574							
I1	.846							
I2	.804							
I3	.843							
I4	.794							
G2		.736						
G3		.756						
G4		.733						
K1		.577						
K2		.680						
D1			.726					
D2			.686					
D3			.687					
D4			.595					
K3			.589					
C1				.745				
C3				.663				
C4				.700				
B1					.632			
B2					.688			
F1						.665		
F2						.568		
F3						.595		
E1							.577	
E3							.556	
E4							.742	
A1								.684
A2								.809
Eigenvalue (5)	38.686	7.368	6.114	3.953	3.028	2.973	2.463	2.347
- Cumulative Extracted Variance/ Initial Eigenvalues (%): 66.933								
-KMO and Bartlett's Test: 0.938; Sig = 0.000								

Source: EFA/SPSS results by author

4.1.2. Multivariate regression

EFA analysis converges to 08 factors containing observed variables. The variables for multivariate regression would be as follows: $x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8$,

It is hypothesized that the independent variables: $x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8$ are correlated with the dependent variable (M or DFC). Given the results of the Spearman test are satisfied (sig. < 0.05, respectively), it could be concluded that these independent variables: $x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8$ are linearly correlated with the dependent variable DFC. Therefore, these variables: $x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8$ could be possible inputs of the multivariable regression model to explain the variable "digital financial capacity" (DFC).

To explore factors affecting DFC or level maturity of digital finance; and to test the suitability of independent variables (factors that reflect the areas of DFC) and dependent variables (DFC), the author uses multi-variable regression to test the impact of many independent variables to dependent variable in quantitative research model as follows:

$$DFC = \beta_0 + \sum_{i=1}^n \beta_i x_i + \varepsilon \quad (1)$$

$$DFC = \beta_0 + \sum_{i=1}^8 \beta_i x_i + \varepsilon \quad (2)$$

In which DFC is dependent; And independent variables include variables: $x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8$ and β_i ($i=1..,7$) are coefficients. Considering in factors $x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8$ which factors really affect the level of maturity in personal digital finance or the degree in "Seamless use, demonstrating self-efficacy of DFC directly will be done by linear regression equation; illustrated as above (2).

Table 4. Variable as domains of DFC and Multi -variable regression results

Domains of digital financial competency explain for variables	Independent variables	Coefficient
	Intercept	1.463E-16
(H) Have a balanced attitude towards financial-related digital technology and (I) Understanding and awareness of the role of ICT (digital) in relation to financial performance	x_1	.095 ***
(G) The relevant legal and ethical perspective on digital aspects of personal financial and (K) Learning about and with digital technologies associated with personal finance	x_2	.437***
(D) Communication and cooperation through digital means for personal financial activities;	x_3	.216***
(C) An in-depth and advanced competency to work and demonstrate digital creativity associated with personal finance;	x_4	.224***
(B) Using digital technology associated with personal financial activities in daily life;	x_5	.054

Domains of digital financial competency explain for variables	Independent variables	Coefficient
(F) Digital privacy and security in personal finance	x_6	.104**
(E) Processing and managing information digitally related to personal financial operations;	x_7	.318***
(A) General digital knowledge and functional skills associated with daily personal finance;	x_8	.207***
R Square	.455	
Adjusted R Square	.444	
Sig F	0,000	
Durbin - Watson	2.124	

Note: (*) statistically significant at 10%, (**) statistically significant at 5%; (***) statistically significant at 1 %; Source: multi -variable regression results (by author)

4.3.4. Hypotheses testing

The research hypothesized that 11 factors statistically significant impact on DFC. However, the EFA analysis has converged on 8 factors that are somewhat different from the expectations.

Referring to the results of EFA and the regression coefficients (Table 4), except x_5 , there are 07 independent variables ($x_1, x_2, x_3, x_4, x_6, x_7, x_8$) with the positive coefficients, togetwitd sig, <0.05. These standardization coefficient of these variables is positive and has statistical significant at sig. <0.05. It means that the hypotheses of $x_1, x_2, x_3, x_4, x_6, x_7, x_8$ are accepted at 95% statistical significant (except x_5).

The description of the variables in the model in Table 4 reflects the multifaceted nature of the DFC as its definition.

As the regression result, $x_1, x_2, x_3, x_4, x_6, x_7, x_8$ impact on DFC would be explained by the following model:

$$DFC = -1.463e^{(-16)} \left[+ 0.095x_1 \right] + 0.437x_2 + 0.216x_3 + 0.224x_4 + \left[0.104x_6 \right] + 0.318x_7 \left[+ 0.207x_8 \right]$$

4.2. Discuss the results of multivariate regression

(i) Unnormalized regression coefficient:

According to the variables $x_1, x_2, x_3, x_4, x_6, x_7, x_8$ we can discuss as follows:

Variable x_1 has a regression coefficient of + 0.095, positively related to personal DFC. It could be explained that when x_1 increases by 1 point, the personal DFC increases by 0.095 points (corresponding to the unnormalized correlation coefficient of 0.095);

Variable x_2 : has a regression coefficient + 0.437, positively related to personal DFC. It could be explained that when the factor x_2 increases by 1 point, the personal DFC increases by 0.437 (corresponding to the unnormalized correlation coefficient of 0.437);

Variable x_3 : has a regression coefficient + 0.216, and has a positive relationship with DFC. It could be explained that when the factor x_3 increases by 1 point, the personal DFC increases by 0.216 points (corresponding to the unnormalized correlation coefficient of 0.216);

Variable x_4 : has a regression coefficient + 0.224, having a positive relationship with personal DFC. It means that when the factor x_4 increases by 1 point, the personal DFC increases by 0.224 points (corresponding to the unnormalized correlation coefficient of 0.224);

Variable x_6 : has regression coefficient + 0.104, has a positive relationship with personal DFC. It means that when the factor x_6 increases by 1 point, the personal DFC increases by 0.104 points (corresponding to the unnormalized correlation coefficient of 0.104);

Variable x_7 : has a regression coefficient of +0.318 that is positively related to personal DFC. It means that when the factor x_7 increases by 1 point, the personal DF increases by 0.318 points (corresponding to the unnormalized correlation coefficient of 0.318).

Variable x_8 : has regression coefficient + 0.207, has a positive relationship with personal DFC. It means that when the factor x_8 increases by 1 point, the personal DFC increases by 0.207 points (corresponding to the unnormalized correlation coefficient of 0.207)

(ii) Standardized regression coefficient:

The normalized regression coefficients could be expressed as a percentage reflecting the contribution of or factors (independent variables) to DFC (Table 5):

Table 5. Contribution of variables affecting digital financial competency

Name of variables as dimension of digital financial competency	Variables	Contributions	
		Valoue	%
(G) The relevant legal and ethical perspective on digital aspects of personal financel and (K) Learning about and with digital technologies associated with personal finance	x2	0.437	27.2%
(E) Processing and managing information digitally related to personal financial operations;	X7	0.318	19.8%
(C) An in-depth and advanced competencyto work and demonstrate digital creativity associated with personal finance;	X4	0.224	14.0%
(D) Communication and cooperation through digital means fore personal financial activities;	X3	0.216	13.5%
(A) General digital knowledge and functional skills associated with daily personal finance;	X8	0.207	12.9%
(F) Digital privacy and security in personal finance	X6	0.104	6.5%
(H) Have a balanced attitude towards financial-related digital technogyl and (I) Understanding and awareness of the role of ICT (digital) in relation to financial performance	X1	0.098	6.1%
Total		1.604	100%

The variable x_2 contributes 27.2 %, followed by the variable x_7 (19.8%) followed by the variable x_4 (14.0%); followed by x_3 (13.5%); followed by x_8 (12.9%); followed by x_6 (6.5%) and finally the variable x_1 (6.1%), by that order of impact from stronger to weaker on DFC.

Conclusion, it could be concluded that: the factors affecting the personal DFCs are in the order of importance respectively $x_2, x_7, x_4, x_3, x_8, x_6$ and x_1 . The description of variables are illustrated in Table 6.

4.5. Test the mean difference in digital financial competency

Inheriting hypothesis from previous studies (Vodă et al., 2022), given Histogram plot showing the normally distributed pattern of DFC, One way ANOVA analysis are carried out with control variables. Using Levene's Test (Levene's Test sig. >5%; ANOVA sig.<5%); and Duunet T3 (Levene's Test sig. =<5%), results as follows:

-There is a statistically significant difference in DFC: (+) between staff groups of different educations. Specifically, the staff groups of higher-level education have higher DFC; and (+) between staff groups of different positions. In which, the staff group of positions/ duties associated with the business activities of the credit institution have better DFC than the other groups.

-While the test does not find a statistically significant difference in DFC of staff grouped by gender, institutions, majors, head office-branch; IT, digital economy as well as digital finance training.

5. Conclusions & Implications

5.1. Conclusions

Inheriting previous studies on the digital competency framework; the structural definition of the digital financial competency (DFC); Data collected through interviews with 431 domestic bank employees. Exploratory factor analysis resulting 7 factors determine the DFC of bank employees. Additionally, the ANOVA analysis shows that there are statistically significant differences in DFC between groups of education among employees (the higher level of education will be the higher level of DFC); and the group positions associated with profit-making has better DFC than the other groups. While analysis could not find statistically significant difference in DFC grouped by some demographic characteristics, and IT, digital economy or finance training.

5.2. Implications

Benefiting from the estimated results, authors have the following relevant policy implications:

- Relevant agencies should accelerate the implementation of the National Strategy on Digital Human Resource Development (Thủ tướng, 2022b, 2022c); building a digital competency framework for all citizens in general and then for workers in important fields (such as the banking sectors, including policymakers). There is a need for a basic digital competency training program as a foundation to develop advanced capabilities for employees in specific industries such as the banking industry, where a strong digital transformation is taking place. It is suggested that training courses should focus on legal and ethical issues related to the digital aspects of personal finance and promote personal

motivation in learning digital technologies related to personal finance. These are fundamental elements and therefore they will contribute strongly to the improvement of DFC as the regressed results.

- It is necessary to define a specific digital finance competency framework (DFC) for employees in the financial industry before conducting relevant training. As mentioned, DFC has a broad and multifaceted structure of digital literacy and financial literacy. Currently, however, state agencies seem to be focusing on training IT and digital skills simply and separately. As mentioned, currently, there is no (widely recognized) digital financial competency framework as a guideline for training implementation. Several studies have linked digital competency with personal financial literacy (Prete, 2021); and DFC has a multidisciplinary, interdisciplinary structure; This is also a controversial issue (FinEQUITY, 2021; Morgan et al., 2019; WEF, 2015).. Regression results have shown that a number of important knowledge and skill areas have a multi-faceted, multidisciplinary/field structure that affects DFC. Therefore, in developing a DFC framework for bank employees, the characteristic of the cross-cutting structures of DFC should be taken into consideration, before implementing the training programs oriented by the Government (Thủ_tướng, 2022a, 2022b).

- Strengthen innovation capacity training for bank CEOs to improve organizational capacity of new technologies absorption; create a foundation to strengthen DFC and promote digital transformation in the banking sector. ANOVA analysis shows that profit-making employees have better DFCs than CEOs and other departments. This suggests that the DFC training for the bank's directors, deputy directors, and related officers is required. To this end, training is needed to improve the capacity for new technology absorption that underpins the DFC promotion. This orientation certainly not only supports the digital transformation process but also ensures safe and effective banking operations in the current context of digital transformation domestically and internationally.

- There should be policies for internal exploitation and external absorption of qualified human resources for digital transformation in the banking sector. The results of the ANOVA analysis show that the higher the education level of the group, the higher the corresponding DFC. This suggests taking advantage of existing high-quality digital human resources as well as attracting investment. This makes sense because DFC is a multi-faceted and cross-cutting structure, and therefore highly educated staff often go hand in hand with better DFC as their better at accessing and absorbing technology. In addition, this team will certainly be the starting point for employees' digital transformation; and in that, specifically when they are used as lecturers on digital transformation in government programs (Thông_Đức, 2022a; Thủ_tướng, 2022b, 2022c).

- More large-scale studies on DFC are needed to develop a specific DFC framework for bankers in Vietnam. Despite many efforts, it can be admitted that the research still has certain limitations. Studies (Murawski et al., 2020) also show a lack of consistency in DFC; and there are controversies about the DFC framework for banks' employees./.

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THE INFLUENCE OF AUTHENTIC LEADERSHIP ON INNOVATIVE WORK BEHAVIOR OF EMPLOYEES IN THE BANKING SECTOR IN VIETNAM: A LITERATURE REVIEW AND A PROPOSED MODEL

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Abstract

The purpose of this paper is to review previous research and to propose a conceptual framework for the influence of leadership styles on innovative work behavior (IWB) of employees. This provides the foundation for the authors to conduct further empirical research in the banking sector in Vietnam. A model and hypothesis are developed based on a review of previous research. It is proposed that authentic leadership has a positive direct influence on IWB. Not only that, but those said leadership style is also expected to have an indirect relationship with the IWB through the mediating roles of knowledge sharing. The study contributes theoretically as it extends current knowledge of the impact of leadership styles on IWB, which contributes to further developing an integrated framework of leadership-related factors for enhancing IWB in organizations, especially in the banking sector.

Keywords: *Leadership style, Innovative work behavior, Authentic leadership, Knowledge Sharing*

1. Introduction

The cultivation of Innovative Work Behavior (IWB) and the concomitant motivation of employees to exhibit greater creativity and innovation in the workplace is widely regarded as a strategic objective for businesses across various sectors, both financial and non-financial. In addition, the IWB of employees is a crucial factor in determining the success of enterprises, as it enables them to establish a competitive edge in the market (Wang et al., 2015; Jiang & Gu, 2016; Shin et al., 2017). Enhancing the innovative capacity of employees is considered a sustainable approach for organizations to enhance operational efficiency, as per the findings of Janssen et al. (2014). Therefore, understanding the characteristics that influence employees' IWB is crucial for firms across numerous industries (Savelsbergh et al., 2012; Somech & Khalaili, 2014).

In contemporary times, scholarly research has predominantly examined the significance of innovation as a crucial asset for ensuring the sustained expansion of business organizations (De Jong & Den Hartog, 2010). Numerous studies have been conducted to investigate the various internal and external factors that influence the IWB of employees. Among these factors, the most significant seems to be the influence of leadership styles. Therefore, many research has focused on assessing the direct and indirect impacts of leadership style on employees' IWB. However, research on the Innovative behavior of

employees is still limited because most comments are one-way subjective about the impact of leadership styles on IWB's employees. There is still a lack of consistency in the factors affecting the IWB of employees (Walumbwa & Schaubroeck, 2009). Consequently, there is a call for a study that conducts more precise and detailed investigations regarding the influence of leadership on employees' IWB. Which includes an extensive analysis of the factors that affect such behavior. Additionally, there is a necessity for a broader range of research areas concerning this subject, as suggested by Brown et al. (2005); Brown & Treviño (2006).

Amidst the current trend of global integration and the impact of the Covid-19 pandemic, fostering innovative behavior among employees is widely regarded as a key principle in the operational strategy of commercial banks. Hence, commercial banks are inclined towards promoting novel concepts aimed at enhancing operational procedures and augmenting the performance of their workforce. Innovation initiatives undertaken by enterprises are likely to yield a plethora of innovative products and services, enable prompt responsiveness to consumer demands, and enhance the competitive standing of said enterprises. The advancement of leadership styles and the encouragement of IWB among employees in commercial banks have contributed significantly to the innovation of enterprises. Numerous prior researchs has demonstrated that Authentic possesses a direct influence and an indirect influence on the IWB of employees. However, yet there is limited research looking at how authentic leadership style affects employees' IWB in the banking industry, particularly in the Vietnam context. Consequently, it is imperative to assess the effects of leadership on the innovation behaviors exhibited by employees in the banking sector in Vietnam.

Therefore, we must continue to study the influence of leadership styles on the IWB of employees in the banking sector. More precisely, this study will focus on reviewing the literature review and propose a model and measure instruments that would be the base for further empirical research.

The present paper is structured as follows: Section 2 provides a comprehensive review of prior research on the direct and indirect impact of leadership styles on innovative work behavior. In Section 3, a model, hypotheses, and recommended scales for future research are presented. Finally, Section 4 outlines the conclusions and implications of the study.

2. Literature review and Hypotheses

2.1. Literature review

Authentic Leadership

According to Luthans et al. (2003), authentic leaders are confident, optimistic, ethical, and focused on developing successors. The fundamental components of authentic leadership are self-awareness, self-regulation, trust in personal characteristics, emotional stance, and intelligence, as indicated by Luthans et al. in 2003. Authentic leaders tend to promote diversity of thought among their employees (Avolio, 2007). Authentic behavior and authentic relationship orientation are believed to aid leaders in objectively accepting

situations, prioritizing the well-being of their employees, and striving toward favorable outcomes for the organization. Authentic leadership has been defined by Walumbwa et al (2008) in various dimensions, one of which is self-awareness. Self-awareness is defined as an individual's introspective assessment of their own personality traits, behaviors, and attitudes, which allows them to gain insight into their own identity and perception of the world around them. It is important for individuals to have an awareness of their personal strengths and weaknesses in order to comprehend their influence on others. (2) Transparency in the relationship. The act of being transparent in interpersonal relationships is considered a manifestation of one's innate self-expression. The concept of transparency in leadership pertains to the practice of openly communicating and disclosing a range of information, as well as expressing genuine emotions, which in turn fosters trust among followers. (3) Balanced Processing, which refers to the conduct of leaders who demonstrate the ability to evaluate all available information in a fair and impartial manner prior to arriving at a decision. (4) Internalized Moral Perspective. The process of internalizing a moral perspective pertains to an individual's capacity to exercise self-control or self-regulation. Therefore, the practice of authentic leadership results in decision-making that aligns with established ethical norms.

Knowledge Sharing

Knowledge is an important organizational resource that provides a sustainable competitive advantage in a competitive and dynamic economy (Davenport & Prusak, 1998; Foss & Pedersen, 2002; Grant, 1996; Spender & Grant, 1996). Knowledge sharing refers to providing mission information and experiences to help and collaborate with other members to solve problems, develop new ideas, or implement policies (Cummings, 2004; Pulakos et al., 2003). Sharing knowledge within the company has a positive effect on cost reduction, speeding up the completion of new product projects, team performance, and company performance, and especially has a positive effect on a firm's innovation capacity (Arthur & Huntley, 2005; Cummings, 2004; Hansen, 2002; Mesmer-Magnus & DeChurch, 2009; Collins & Smith, 2006). According to Cummings, (2004), knowledge sharing including knowledge sharing inside the organization or sharing knowledge outside the organization has an important role in improving work efficiency. This means that employees have a better chance of achieving job performance when knowledge is shared between members of the organization and with people outside the organization in their social relationships. Knowledge sharing within the organization may include providing information to customers or providing project information feedback to management (Cummings, 2004).

Innovative Work Behavior

According to Janssen (2000), IWB is the creative, purposeful application of new ideas in order to benefit the performance of that role. IWB was also defined by Dorenbosch et al. (2005) as the willingness of employees to produce innovation, such as improving the way they work, utilizing computers, or creating new services or products. On the other hand, IWB is also defined as a multi-stage process in which an individual realizes a problem, generates

new ideas and solutions, then works to promote and build support for it, and at the same time creates a model that can be applied to its use and enhance the benefits of the organization (Carmeli et al., 2006).

Shalley et al. (2004) asserted that in order to foster employee performance, companies must engage in innovation due to the ever-evolving nature of the contemporary work environment. According to Chen & Huang (2009), innovation activity is regarded as a significant input factor in the crystallization process of enterprise values. The innovative work behavior (IWB) exhibited by employees is a crucial determinant of competitive advantage and success for enterprises, as highlighted by several studies (Wang et al., 2015; Jiang & Gu, 2016; Shin et al., 2017;). According to Rank et al. (2004), the identification of employee innovation behavior is contingent upon their involvement in activities that promote their professional growth and development as well as their efforts to innovate and enhance their work performance within the organizations they are affiliated with. In the workplace, obstacles and hindrances necessitate that employees generate more innovative concepts to enhance operational efficacy and align with contemporary trends. According to Janssen et al. (2004), innovation plays a crucial role in enhancing organizational efficiency. Enterprises that are able to capitalize on opportunities resulting from positive changes brought about by innovation are likely to achieve remarkable success.

The impact of IWB on businesses is contingent upon the innovative capacity of employees, thereby resulting in enhanced operational efficiency (Janssen, 2000). Previous studies mostly identified employees as the source of innovation, through which scholars mainly focus on assessing the importance of IWB for organizational success. According to Janssen (2000), businesses can effectively integrate, keep up with trends, and adapt to the rapid changes of today's world when their employees possess the willingness and the ability to innovate. Janssen (2000) also indicated that the innovation of a firm is significantly impacted by the actions of its individual employees. Not only that, the idea of research on the importance of employee IWB is emphasized in many managerial theories around the world such as total quality management or enterprise entrepreneurship (Sharma & Chrisman, 1999). Consequently, researchers globally have exhibited a growing interest in identifying the determinants that impact the IWB of employees (Woodman et al., 1993; Scott & Bruce, 1994).

Research has indicated that the internal and external variables have a significant impact on the employee's IWB within the organizational setting. A number of studies have also shown that one of the effective ways to increase employees' IWB is by encouraging their creativity in the working process (De Jong & Den Hartog, 2010). It is imperative for the organization to incentivize its workforce to leverage their innovative potential and endow them with the autonomy to suggest novel ideas. This helps to increase employees' confidence in their personal abilities, and at the same time, promotes the desire to contribute many innovative ideas to improve working processes that have many gaps, and improve products and services that are not suitable (Janssen, 2000).

In addition, many scholars who have studied IWB in enterprises have shown that there exist many different factors affecting employees' IWB. Many studies have shown the internal and external factors affecting employees' IWB, in which the most prominent is the impact of leadership styles. The impact of leadership style on employee's innovative work behavior has been extensively studied, with Authentic leadership emerging as two prominent factors frequently examined in the literature.

2.2. Hypotheses

Authentic leadership

Authentic relationship orientation necessitates honesty, directness, and trustworthiness in interpersonal connections. The theory of authentic leadership is based on the leader's ethical behavior in making decisions based on a high degree of self-awareness and establishing transparent relationships with subordinates for optimal performance (Avolio & Gardner, 2005). Research has demonstrated that authentic leadership has a beneficial impact on various aspects of work life. This is due to the fact that target leadership traits foster a positive work attitude and enhance employee motivation toward their work. Authentic leaders possess the capacity to inspire their subordinates to attain objectives, enhance their performance, and foster innovative conduct. According to Kim (2014), it is imperative for leaders to enhance trust and mutual trust among their subordinates, foster collaboration, and attain optimal levels of work innovation. Effective leaders demonstrate a willingness to foster trust within the organization and promote positive attitudes among employees (Edú-Valsania et al., 2016). This is achieved through the transmission of motivation and encouragement of innovative behavior, ultimately leading to positive outcomes in the workplace. According to George (2003), authentic leaders play a significant role in enhancing the psychological capital, hope, and positive emotions of their subordinates, thereby motivating them to exert greater effort in their work. When employees have confidence in their leader, they are more likely to engage in proactive behaviors such as seeking out novel approaches to tasks and striving for improved work outcomes, resulting in enhanced performance (Kim, 2014).

The model incorporates the authentic leadership style, which has been derived from prior research conducted by Scott & Bruce (1994), Oldham & Cummings (1996), Walumbwa et al (2008), Oke et al., (2009), Purwanto et al (2020), and Sengupta et al (2020). Empirical research has substantiated a direct correlation between authentic leadership and the IWB of employees. According to Oke et al. (2009), leaders have the ability to improve employee innovation behavior and foster attitudes that are favorable to engaging in innovative activities. According to authentic leadership theory, authentic leaders can stimulate innovation by encouraging their followers to become bolder and more imaginative (Walumbwa et al., 2008). Authentic leadership style has a positive relationship with employee creativity and innovative behavior, and employee creativity also has a positive effect on organizational innovation (Müceldili et al., 2013).

Thus, the first hypothesis of this research is

H1: Authentic Leadership has a positive impact on employee IWB

Authentic leadership and knowledge sharing

Avolio & Gardner (2005) indicated that authentic leaders encourage the open sharing of information with their employees, which will increase the effective interaction among employees, thereby promoting knowledge sharing (Cabrera & Cabrera, 2005). Peterson & Peterson, (2012) stated that fairness, motivating employees to share knowledge of authentic leadership styles contributes to encouraging knowledge sharing in the organization. In addition, research by Rego et al (2013) and research by Walumbwa et al. (2011) also suggest that sharing knowledge will help employees accumulate knowledge and learn new skills. Thus, employees will be more confident in their abilities and capabilities (Rego et al., 2013; Kirkman & Rosen, 1999).

Thus, the following hypothesis is proposed:

H2: Authentic leadership has a positive impact on knowledge sharing.

Knowledge sharing and innovative work behavior

Knowledge has a positive effect on innovation (Hulsheger et al., 2009). Sharing knowledge within the company has a positive effect on cost reduction, speeding up the completion of new product projects, team performance, and company performance, and especially has a positive effect on a firm's innovation capacity (Cummings, 2004; Hansen, 2005). Sharing knowledge within the organization will also help protect valuable heritage, new techniques, technologies, enhancing the capacity to solve problems and propose new ideas (Hsu, 2008; Hu et al., 2009; Huang et al., 2010). According to Cummings (2004), increasing knowledge sharing in organizations leads to creativity and innovation that helps to develop new working methods, and new processes, and change traditional methods and practices. While sharing their knowledge with colleagues, individuals not only provide them with information but also synthesize and develop that knowledge into useful knowledge for work (Hansen et al., 2005). Likewise, when an individual acquires knowledge from others, he/she improves his/her ability to innovate (Hsu, 2008). Woocheol & Jiwon, (2017) also showed that knowledge sharing enhances innovative behavior.

Thus, the following hypothesis is proposed:

H3: Knowledge sharing has a positive impact on IWB.

A proposed research model and Hypotheses

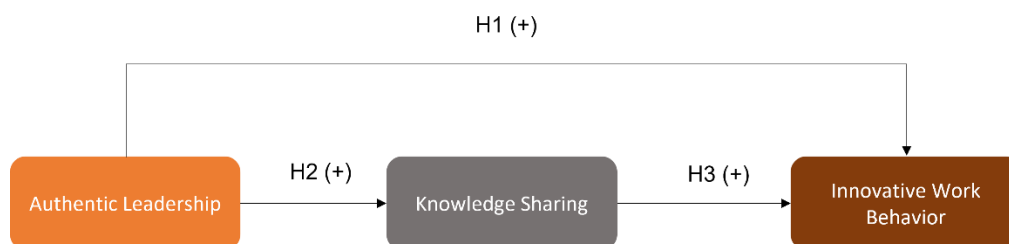


Figure 1: Proposed research model

Source: Proposed by Author

Measurement

Authentic leadership

To measure authentic leadership, the author uses a scale developed by Neider & Schriesheim (2011), which consists of 16 questions assessing 4 components: Self-awareness, Relational Transparency, Internalized Moral Perspective, and Balanced Processing.

Self-Awareness: (1) My leader solicits feedback for improving his/her dealings with others. (2) My leader describes accurately the way that others view his/her abilities. (3) My leader shows that he/she understands his/her strengths and weaknesses. (4) My leader is clearly aware of the impact he/she has on others.

Relational Transparency: (1) My leader clearly states what he/she means. (2) My leader admits mistakes when they occur. (3) My leader openly shares information with others. (4) My leader expresses his/her ideas and thoughts clearly to others.

Internalized Moral Perspective: (1) My leader shows consistency between his/her beliefs and actions. (2) My leader uses his/her core beliefs to make decisions. (3) My leader resists pressures on him/her to do things contrary to his/her beliefs. (4) My leader is guided in his/her actions by internal moral standards.

Balanced Processing: (1) My leader asks for ideas that challenge his/her core beliefs. (2) My leader carefully listens to alternative perspectives before reaching a conclusion. (3) My leader objectively analyzes relevant data before deciding. (4) My leader encourages others to voice opposing points of view.

Knowledge sharing

The author references the scale of Carmeli et al. (2013), adapted from Lee (2001) and Lu (2006). The scale evaluates two factors, including knowledge-sharing behavior within the organization and knowledge-sharing behavior outside the organization (Carmeli et al., 2013). 8 observation items include: (1) Meet with my colleagues in this organization and exchange ideas with them regularly (2) Access my colleagues in this organization and exchange new ideas and developments with them. (3) Interact with my colleagues in this organization to discuss suggestions and ideas. (4) Make sure to be available for sharing experiences with my colleagues in this organization and meet and exchange ideas regularly with people outside this organization. (5) Access people outside this organization and exchange new ideas and developments with them. (6) Interact with people outside this organization to discuss suggestions and ideas. (7) Available for sharing experiences with people outside this organization.

Innovative work behavior

To evaluate innovative work behavior, the author inherits the scale of Scott & Bruce (1994), which includes 6 observation items: (1) I search for new technologies, processes, techniques, and/or product ideas. (2) I generate creative ideas. (3) I promote and champion ideas to others. (4) I investigate secure funds needed to implement new ideas. (5) I develop adequate plans and schedules for the implementation of new ideas. (6) I am innovative.

3. Conclusion and implications

Authentic leadership is the factor that are frequently examined in IWB studies. The results of previous studies are also quite consistent, saying that the factor has a positive effect on IWB. This paper examined the characteristics of authentic leadership style in relation to the IWB of employees through a literature review of previous research. The suggestion is that leaders should adopt authentic leadership in their leadership style since it is significant in predicting the innovation capabilities of employees and organizations.

In addition, the paper also indicated the mediating role of knowledge-sharing in fostering the impact of authentic leadership style on IWB. Authentic leadership is a leadership style that emphasizes transparency, authenticity, and honesty. Authentic leaders focus on building strong relationships and instilling trust and motivation in their employees. It also helps employees to be more open in sharing knowledge. Sharing knowledge between employees inside and outside the organization would help employees improve their professional capacity, experience, and skills, thereby having a positive impact on work performance and innovative behavior. As a result, in enhancing the innovation capacity of the organization, leaders should be aware of the roles of employees' knowledge sharing.

Despite the limitation that there may be other leadership styles that also have significant relationships to employees' innovative behavior beyond authentic leadership styles, as well as there may be other potential mediating factors that govern the influence of leadership style on IWB, research has provided an adequate research model on the influence of leadership style to IWB. The model takes into account the direct and indirect impacts of authentic leadership styles on employees' IWB through the mediating factor, knowledge sharing. Besides, based on the study of previous studies, the author has also proposed a scale for the research model. We hope that the research model proposed in this paper will contribute to the further development of an integrated framework of leadership-related factors for enhancing IWB in organizations, especially in the banking sector.

We suggested that further empirical research should be conducted to apply the above conceptual framework to study banking employees in Vietnam to reconfirm or reject the relationship between those said factors with IWB in this specific context. Therefore, it will point out the good points as well as the drawbacks of the research model.

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A STAKEHOLDER PERSPECTIVE ON THE ADOPTION OF INTERNATIONALLY RECOGNIZED QUALITY CERTIFICATES OF SMES IN VIETNAM

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Abstract

Obtaining internationally recognized quality certifications has become a valuable means for manufacturing companies to exhibit their dedication to excellence, ultimately reducing market uncertainties stemming from incomplete information and deficiencies. Acquiring such certifications demonstrates the organization's commitment to quality, diminishes trade barriers, and endows a competitive edge in global markets, positively impacting business performance. Nevertheless, existing literature remains silent on the rationale behind why SMEs in emerging contexts seek internationally recognized quality certifications. This study employs stakeholder theory and data obtained from the SME Survey conducted in Vietnam during 2015, analyzing approximately 2,500 enterprises in ten provinces, to investigate the motivations behind Vietnamese SMEs' adoption of internationally recognized quality certifications with regard to the viewpoints and expectations of multiple stakeholders including customers, business associations, regulators and competitors. By shedding light on the intricate interplay of factors that affect SMEs' decisions in this particular domain, the study offers a unique perspective and approach to contribute to the ongoing discourse on the adoption of quality certifications in emerging markets.

Keywords: *internationally recognized quality certificates, stakeholder, SMEs, Vietnam*

1. Introduction

Quality management is a critical aspect of maintaining competitiveness and ensuring customer satisfaction in businesses. Internationally recognized quality certificates such as ISO 9001 and ISO 14001 can provide numerous benefits for SMEs as they demonstrate the organization's commitment to meeting globally recognized standards (Psomas & Antony, 2017). Studies have shown that adopting such certificates can lead to increased operational efficiency, customer loyalty, and market share (Doerga, 2021; Kakouris & Sfakianaki, 2018; Lazibat et al., 2022). However, studies also indicate that the adoption rate of international quality certificates among SMEs in developing countries like Vietnam remains relatively low.

Small and Medium Enterprises play a crucial role in the economy of Vietnam, constituting more than 97% of the total enterprises (Nguyen & Ngo, 2022). These SMEs contribute significantly to job creation, economic growth, and reducing poverty. Despite their importance, Vietnamese SMEs face several challenges, including limited

access to finance, inadequate managerial skills, and a lack of awareness about international quality certificates.

Understanding stakeholder perspectives on the adoption of internationally recognized quality certificates is essential, as stakeholders such as customers, employees, suppliers, and regulatory bodies can significantly influence the decision-making process. Research has shown that businesses that consider the expectations and needs of stakeholders are more likely to implement effective quality management practices (Montiel et al., 2019). Some studies have explored stakeholder perspectives on quality management among SMEs in Vietnam (Nguyen & Ngo, 2022); however, the focus on the adoption of international quality certificates remains limited.

Given SMEs' vital role in the global economic landscape and their unique challenges in accessing resources and complying with international standards, understanding the drivers of certification adoption among these enterprises is of paramount importance for both industry stakeholders and policymakers. The present study aims to bridge this gap in the literature by employing stakeholder theory to investigate the adoption of internationally recognized quality certificates among SMEs in Vietnam.

2. Literature review and hypotheses development

A growing body of literature highlights the importance of adopting internationally recognized quality standards for businesses, particularly for SMEs, to remain competitive and successful in global markets (Barbosa et al., 2021). Previous studies have emphasized the crucial role of stakeholders in influencing organizational decision-making, particularly in the area of quality management (Kim & Lee, 2012; Qi et al., 2012) and identified several types of stakeholder pressures. The following sections will discuss these stakeholder pressures in detail and their potential impact on the adoption of quality certificates among Vietnamese SMEs.

Customer Pressure

Customers, as primary stakeholders, can significantly influence the adoption of quality standards. Studies by Anderson et al. (1999), Jahn et al. (2005), and Tarí et al. (2014) demonstrated that customer demand for higher-quality products and services could act as a driver for organizations to acquire internationally recognized quality certifications. In Vietnam, consumer awareness of product quality and safety is growing, which may lead to increased pressure on SMEs to adopt such standards (Van et al., 2020).

Business Association Pressure

Industry groups and trade associations can play a significant role in promoting the adoption of international quality standards among their members. Font (2002) found that peer pressure from other firms or industry groups adopting quality certifications leads to increased adoption among the members of the same network. In Vietnam, the Vietnam Association of Small and Medium Enterprises (VINASME) has been actively promoting the importance of quality certification to its members.

Politicians and Civil Servants Pressure

Regulators and government agencies can also influence the adoption of quality certification. Ltd, (2010) and Santos et al. (2016) highlighted the role of regulatory pressures in motivating firms to adopt the ISO 9001 standard. In the context of Vietnam, it is important to consider the role of government initiatives, such as the National Quality Award, in promoting the adoption of international quality standards among Vietnamese SMEs.

Politicians and Civil Servants Pressure

Market competition is another factor that may influence the adoption of international quality certificates. Otrachshenko et al. (2023) and Santos et al. (2016) suggested that industries with higher levels of imported or foreign competition face greater pressure to adopt quality management systems to maintain competitiveness. Vietnamese SMEs facing competition from state-owned enterprises, non-state informal enterprises, and legal imports/foreign competition may be more inclined to adopt internationally recognized quality certificates.

Therefore, the following hypotheses are developed:

H1: Customer pressures positively correlate with the adoption of internationally recognized quality certificates of SMEs in Vietnam.

H2: Business association pressures are positively correlated with the adoption of internationally recognized quality certificates of SMEs in Vietnam.

H3: Regulator pressures positively correlate with adopting internationally recognized quality certificate SMEs in Vietnam.

H4: Level of competition from state enterprises, non-state informal enterprises and legal imports/foreign competition positively correlates with adopting internationally recognized quality certificate SMEs in Vietnam.

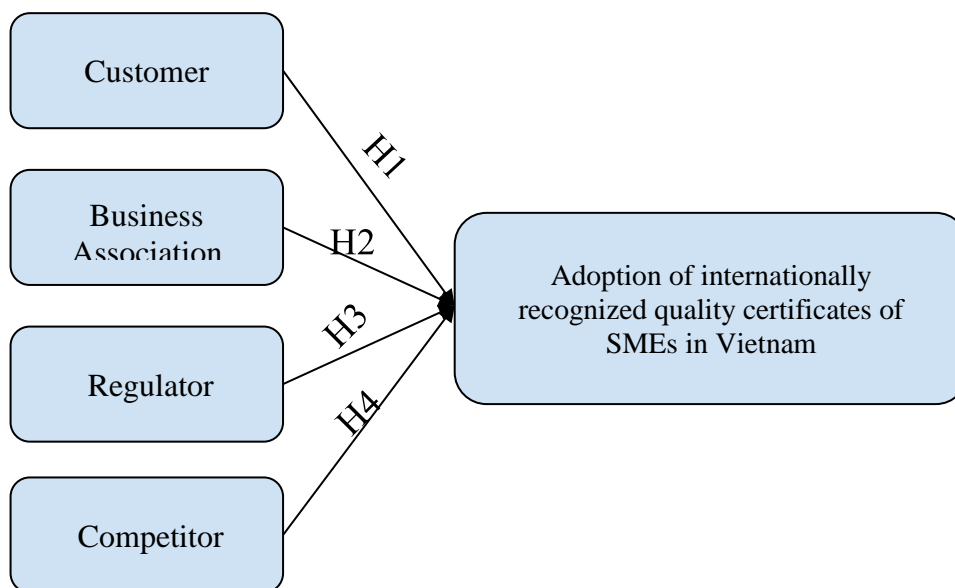


Figure 1. Proposed model

3. Method

To complete this research, data from the SME Survey in Vietnam from 2005 to 2015 was collected, covering approximately 2,500 enterprises in ten provinces such as Ha Noi, Quang Nam, Hai Phong, Phu Tho, and Khanh Hoa, Long An, Lam Dong and Ho Chi Minh City. It is the result of a collaboration between three entities: the Vietnamese Institute for Labor Sciences and Social Affairs (ILSSA), the Ministry of Labor Invalids and Social Affairs (MOLISA) and the Development Economics Research Group (DERG) at the University of Copenhagen in Denmark along with the World Institute for Development Economics Research at United Nations University (UNU-WIDER).

This study's unit of analysis is the owner/manager reporting on their SME after excluding "do not know" and missing values from the regression analysis; this results in a final sample of 417 valid observations. The logit model has been adopted in order to predict an organization's likelihood of obtaining an internationally recognized quality certificate. The binary variable is represented by the value of 1, which indicates that the surveyed organization has obtained an international certificate. The logarithm: $\text{Logit}(P) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_m X_m$, where m is the number of independent variables. These independent variables are survey questions evaluated on a 7-point scale (from very little to very much).

Table 1. Description of research variables

Variable label	Variable name	Variable description
IQC	International Quality	Firm has an internationally recognized quality certificate
DQC	Domestic Quality	Firm has a domestically recognized quality certificate
CUSTOMER	Pressure from customer	How important were buyers/customers for standards
ASSOCIATION	Pressure from association	How important were business associations for standards
INSTITUTION	Pressure form institution	How important were politicians and civil servants for standards
STATE	Pressure from state competition	Level of competition from state enterprises
NONSTATE	Pressure from non-state competition	Level of competition from non-state informal enterprises
FOREIGN	Pressure from foreign competition	Level of competition from legal imports/foreign competition

Table 2 demonstrates that around 3.82% of surveyed businesses have acquired the internationally recognized quality certification, while 12.73% have obtained the domestically recognized quality certification. A majority of these are small and medium-sized enterprises that are limited liability companies (23.99%). 89.25% of businesses possess

only one owner, who generally have the highest completed professional technical level without a certificate. 87.65% express that they face competition in their field of activity, with 61.12% indicating that competition levels have increased compared to 2 years ago.

Table 2. Descriptive statistic

Factors	Description	Freq.	Percent
Legal status	Household	1,663	62.83
	Private/sole proprietorship	167	6.31
	Partnership	4	0.15
	Collective/Cooperative	50	1.89
	Limited liability company	635	23.99
	Joint-stock company with state	10	0.38
	Joint stock company without state	118	4.46
One or multiple/owners	One owner	2,283	86.25
	Multiple owners	364	13.75
Ethnicity	Kinh	2,487	93.96
	Hoa	143	5.4
	Other	17	0.64
Professional education	Unskilled	86	3.25
	Technical level without certificate	893	33.74
	Vocational elementary	528	19.95
	Vocational secondary	234	8.84
	Professional secondary	192	7.25
	Vocational college	51	1.93
	College	139	5.25
	University and higher	524	19.8
Internationally recognized quality certification	No	2,546	96.18
	Yes	101	3.82
Certification recognized domestically (only in Vietnam)	No	2,310	87.27
	Yes	337	12.73

Factors	Description	Freq.	Percent
Competition in the field of activity	No	327	12.35
	Yes	2,320	87.65
Level of competition compared to 2 years ago	Increased	1,418	61.12
	Same	839	36.16
	Decreased	63	2.72

4. Results

4.1. Empirical analysis

To assess our hypothesis, a binomial logistic regression model was employed with the adoption of internationally recognized quality certificates as the dependent variable to analyze the effect of independent variables on the possibility of choosing to adopt or not adopt them.

Table 3. Regression results

	Internationally recognized quality certification
CUSTOMER	0.868595*
ASSOCIATION	1.566138***
REGULATOR	0.8334028***
STATE	0.6273231***
NONSTATE	1.378628*
FOREIGN	0.60381***
_cons	2.871999
Number of obs	417
Pseudo R2	0.2486
McKelvey and Zavoina's R2	0.426
-Log-likelihood	167.21607
Prediction	80.34%

*** $p \leq .01$; ** $p \leq .05$; * $p \leq .1$

*Indicates significance at 10%; ** indicates significance at 5%; ***indicates significance at 1%

Table 3 showcases the outcomes of the binomial logistic regression analysis. These coefficients reveal each variable's impact on the likelihood (expressed as a ratio of two probabilities) of acquiring or not acquiring the globally accredited quality certification. To interpret the odds ratios accurately, consider the following: A coefficient greater than one (or above zero) suggests that the respective variable heightens the likelihood of being in the specified category as opposed to the "adopt" group. Conversely, a coefficient of less than one indicates that the variable lessens the likelihood of being in the specified category compared to the "not adopt" group.

According to the model fit test outcomes, a significance level of less than 0.01 reveals a strong correlation between the dependent and independent variables. With a McFadden's R² of 0.426, the model accounts for 42.6% of the variation in the dependent variable, while the remaining percentage can be attributed to unaccounted factors. The Prob>LR value of 0.000 signifies that the relationship between variables is statistically significant, exceeding the 99% confidence interval. Boasting an average correct prediction of 80.34%, this model is deemed suitable for professional academic use.

4.2. Discussion

Pressure from *buyers/customers* significantly influences the enterprises' adoption of internationally recognized quality certification. Customers are like the compass that guides a business toward success. Unsurprisingly, companies strive to maintain a good rapport with their customers, as they can make or break a business's profitability and revenue. In order to keep up with customers' evolving demands, companies need to provide them with high-quality products and services. One of the ways companies achieve this is by implementing a quality certification program. For Vietnamese customers, international certificates are particularly appealing as they are often perceived as being superior to domestic ones. To win over customers, businesses must ensure they adhere to internationally recognized standards. In Vietnam, there's a struggle with consumer awareness of quality standards. This lack of awareness can impact businesses' decisions to adopt these standards. To bridge the gap, policymakers should explore various communication channels, from national TV to social media, to educate and inform consumers. When shoppers have an understanding of quality standards, they can make better purchasing decisions. In turn, businesses are motivated to apply such standards to meet customer needs.

The decision to adopt quality certifications can be heavily influenced by formal and informal regulatory pressures. Politicians, civil servants, and business associations can play a significant role in driving continued participation by individual firms. These associations can include groups like professional bodies and activist organizations, and they can be powerful motivators for enterprises seeking to meet internationally and domestically recognized standards. Certification standards serve as a worldwide guideline that puts specific requirements on firms that aim to earn recognition. Implementing these regulations go beyond traditional regulatory guidelines in the industries they serve. Companies investing in these standards are able to showcase their accomplishments to key external groups such as regulators, clients, and financial institutions (Berliner & Prakash, 2014). As a result, it's

essential for policymakers to promote the creation of industrial unions in businesses and support the development of trade associations.

The impact of competition on a company's decision to gain internationally recognized quality certification is paramount. It's no secret that being certified can significantly improve a company's marketability and competitive edge. When a company achieves such certification, it shows customers its products or services meet high standards, increasing confidence and support. However, when it comes to domestic quality certification, the pressure from competitors is less significant, as these certifications are less prestigious and provide lower credentials. Essentially, the push to obtain the best certification possible is driven by the desire to stand out in an increasingly crowded market. By adopting international quality certificates, companies meet domestic standards and a competitive advantage that can be crucial in today's market. As a result, more and more businesses are adopting these practices, creating a domino effect that puts pressure on non-adopters to follow suit (Guler et al., 2002). This type of competition is not limited to businesses but can also be seen in social systems where members may imitate each other for competitive reasons. To encourage an environment of healthy competition, policymakers can establish legal frameworks and non-enduring mechanisms. By doing so, the benefits of competition can be promoted, and businesses can thrive in an environment that fosters innovation and growth.

5. Conclusion

By employing stakeholder theory as a theoretical lens and utilizing a mixed-methods research design, this study seeks to contribute to the extant literature on quality certification adoption in the context of emerging markets. The study highlights the significance of customers, business associations, politicians and civil servants and competitors as key drivers in the decision-making process for SMEs. Findings from this research have the potential to enrich not only an academic understanding of the factors influencing SME decision-making in relation to quality certifications but also provide valuable insights for industry professionals, certification bodies, and policymakers as they seek to encourage and support the pursuit of internationally recognized quality standards among SMEs in Vietnam and similar emerging market settings.

This research study has achieved some results, yet several limitations must be considered in order to direct future research. Firstly, the study focuses on small and medium-sized enterprises within the Vietnamese market, suggesting that results may not necessarily be applicable to other settings. Secondly, data is only evaluated from 2015, thus limiting the assessment of changes in the dependent variable over time; a more comprehensive approach would involve a time series analysis across several eras. Thirdly, this study solely concentrates on the stakeholder perspective, omitting various firm-driven determinants that could impact implementation. In light of these points, future investigations should adopt diverse theoretical models to include external factors in addition to using panel data from multiple countries and time periods.

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DISCLOSURE OF CUSTOMER PROTECTION IN COMMERCIAL BANKS IN VIETNAM

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Abstract

Customer satisfaction and customer protection is the central of serving customer in any industry. Yet the financial industry seems to lag behind other peer by not being recognised as transparent as the others. This calls for the awareness of both the users and the service providers. Good customer protection not only helps the banking industry to develop sustainably, but also constructs a basis for investors, regulators, depositors to build their trust in banks. This comparative research marks the first attempt in measuring and contrasting customer protection operation within Vietnamese commercial banks. On doing so, the research builds an customer protection index which is based on the Good Practice developed by the World Bank, which then is calculated based on data of 8 commercial banks of different sizes and ownership structures in Vietnam. Our findings indicate that there is a disparity between the level of Vietnamese commercial banks' customer protection. Results of this study call for improvement in customer protection in Vietnamese commercial banks, their peers and challengers.

Key words: *consumer empowerment, market conduct, customer protection, customer satisfaction*

1. Introduction

According to the World Bank (Ardic et al. 2011), consumer protection framework generally includes the introduction of greater transparency and awareness about the goods and services, promotion of competition in the marketplace, fraud prevention, customer education, and elimination of unfair practices.

Therefore, customer protection is a subjective and qualitative term and expressed in terms of general principle or in code of conduct. “*Customer protection in financial service can be derived from various sources; direct from generic legal terms, indirect from laws or voluntary standards aimed at protecting the consumer in general and customers of financial service in particular*” (Customer International, 2013). Protecting consumers from abusive practices and enabling them to make well-informed decisions regarding the use of financial products and services is an important goal. Besides, better customer protection also has implications for the healthy development of the financial sector on general, and banks in particular.

There is relationship between customer satisfaction and customer protection. Reaching these two goals should come hand in hand for any companies. The customer who is satisfied with a product or service is more likely to repeat the purchase and to recommend the consumption experience to other persons. Similarly, financial consumer protection frameworks, properly designed, implemented and supervised will instill trust in consumer products and services of the banks. products and services. However, customer satisfaction has received much attention, especially from companies, because it seems to directly affect a firm's revenue. Research on customer protection has lagged behind that on customer satisfaction, eventhough customer protection contributes to customer satisfaction and also to the loyalty of the customer on the firm. In developing country like Vietnam, customer protection term is quite new, especially on the field of the financial market (*Hoang & Nguyen, 2019, Hoang et al., 2020*).

This paper, thus, to fill the gap on the literature on customer protection on the financial market in a developing country, which experiences increasing competitiveness. Specifically, this paper builds an index which is based on the World Bank Good Practices on Customer Protection on financial services, examines how banks in Vietnam conduct customer protection. This paper achieve this aim by doing several steps. First, we develop a set of criteria that reflect customer protection which are based on the Good Practices developed by the World Bank. Then we collect information on customer protection practices by commercial banks in Vietnam and map these practices of Vietnam to the World Bank criteria. Finally we calculate the total points to a score and compare the level of customer protection performance between groups of commercial banks based on this final score.

Vietnam is an interesting case for the analysis of financial customer protection as the country is now experiencing un upsurge of the market in terms of users, the volume of transactions, and also the number of fraud cases, and disputes and complaints.

In term of legislation structure, the legal framework for financial customer protection is still limited. The Law on Customer Protection were in 2010 which did not involve specific sections for financial service consumption. In the Law on Credit Institutions 2010 there is one point (Number 10th principle) that refers to customer protection yet it is very general. There are other principles introduced by Ministry of Finance, Ministry of Industry and Trade, and State Security Commission of Vietnam, but still lack of specific regulations of financial customer protection.

In 2020, complaint and dispute cases sent to Competition and Customer Protection Authority mainly in the field of finance, insurance, banking, and consumption credit (which account for 12.5% of all cases). The leading cause of this situation is that the service providers either do not disclose sufficient information, or violate the right of the customer, or even hazard the customers, i.e. consumer loan services (*Duong et al., 2021*).

2. Literature review

2.1. Rationale for financial customer protection

Market discipline reduces information asymmetries, and facilitates financial market expansion

One of the essential characteristics of the financial market, especially the market for retail customers, is asymmetry of information between professional market actors and retail clients (Akerlof, 1970, Stiglitz and Weiss, 1980). This happens when the suppliers of financial products understand better all characteristics of what they about to provide, while the opposite is for the buyers who may be biased and/or have cognitive limitation to optimize their financial situation even if presented with all the information that in principle is required to do so (Velliscig, 2018, Campbell et al., 2011). That may be worse for the retail buyers if the sellers of the products do not have the intention to put the buyers on the priority when designing and selling the products. Therefore, consumer protection is becoming more and more important regarding an efficient financial market. Actually, due to the now greater complexity of financial instruments, the chance that customers, especially retail customers, do not adequately grasp structure, characteristics and risks of products is real.

Consumers who demand information play an important role in ensuring transparency among financial institutions. Transparency in the market encourages institutions to compete on the basis of better products and services and lower costs. Ultimately the availability of quality information of retail financial services will draw in new customers and expand the market (World Bank, 2008), and to gain trust from the customers (Safari, 2012).

Consumers need information to make good decisions

Customer protection is also important for the financial customers because some of their decisions are only made infrequently, for example, the decision to ask for a bank loan to buy a house or a student loan. That makes it hard for them to learn from the past experiences. Besides, financial decision is very individual, so one can not learn from other success and failures.

In order to correct this information asymmetry and to allow the customer to make an informed decision, the traditional approach has been based on disclosure obligations requiring the professional party to provide the client with all relevant information to make proper choices. More recently, in the financial market regulation, due to a more interventionist strategy, conduct of business rules at the point of sale have been associated with the duty of disclosure to enhance the protection of retail customers. An appropriate system of transparency and conduct regulation would assure an efficient allocation of available resources in the financial market and thus prevent failures in customer decisions (Campbell et al., 2011, Velliscig, 2018).

Customer protection requires the sellers to disclosure, which enables consumers to make decisions that are more informed. Thus, customer protection aims to anticipate the protection of retail customers from the point of sale to the product design and development phase. In this perspective, the suppliers has to evaluate the conformity of the financial

products with the needs of an identified target market before products are sold to customers and should act in the clients' best interests during all the stages of the life cycle of products or services. Structured financial products are one of the current issues discussed by legislators and regulators, because their complexity and the related lack of transparency can lead to the risk that retail customers could not correctly identify the characteristics of products (Velliscig, 2018). This is especially true when the customer financial literacy is limited, which is true when taking into account the basis knowledge, even in developed countries (Campbell et al., 2011).

Consumer protection becomes indispensable element of contemporary financial markets because of existing imbalances in access to knowledge, power, information and resources between consumers and their financial service providers, placing consumers at a disadvantage (Rutledge, 2010). This situation creates asymmetric information problem causing consumers to make financial decisions in the conditions of insufficient knowledge and information, while a bank knows its product and has comprehensive information about real profits and costs of using it. This means that in the relation: a bank and its customer, a bank can take an advantage of its under-informed client, what constitutes a serious problem, especially in the context of some financial institutions' practice of intentional providing their customers with insufficient information. It leads to making the customers vulnerable to unfair and abusive practices by financial institutions.

Without adequate consumer protection, the benefits of financial inclusion can be lost

Customer protection also can reduce financial fraud, which severely reduces the trust of customers in financial institutions. Even in a very developed market, US, about 16% of consumers are victimized yearly (Anderson, 2019, Raval, 2021), with similar rates of victimization internationally (Dijk *et al.*, 2007). That may be far more severe in a developing market, like Vietnam. In a paper discussing population victimised by fraud in the US, Raval (2021) finds out that financial services are among fields that have higher proportions of fraud cases. This research also gives evidence that people who are better in terms of financial literacy, being younger, and having higher credit rating scores have fewer chances of being victimized. That being said, not all customers hold all these characteristics. That means customer protection needs to be more effective in order to reduce financial victimisation (Schicks, 2013). A strong consumer protection regime is very important to ensure that expanded access to financial services benefits consumers, enabling them to make well-informed decisions on how best to use financial services, building trust in the formal financial sector, and contributing to healthy and competitive financial markets (Ostalecka, 2013).

2.2. Good practices for financial customer protection

The World Bank's Good Practices for Financial Consumer Protection (the Good Practices) was first developed in 2012 as an attempt to build a global set of tools on financial consumer protection. Since then, international guidance and country practices regarding financial consumer protection have substantially evolved. The 2017 Good Practices is

designed to serve as a comprehensive reference and assessment tool for policymakers that consolidate the latest research, international guidance, and country examples.

The Good Practices is designed as both a comprehensive reference and an assessment tool for country-level policymakers and regulators. It is intended to serve as a practical, helpful collection of good practices in financial consumer protection, drawing from successful practices seen around the world and consolidating, complementing, and expanding upon high-level international principles and guidelines.

The 2017¹ Good Practices follows a functional structure, which includes four chapters, namely (1) Deposit and Credit Products and Services; (2) Insurance; (3) Private Pensions; and (4) Securities. Each chapter lays out good practices in the following areas:

- Disclosure and transparency: format and manner of disclosure, disclosure of terms and conditions, key facts statements, etc.
- Fair treatment and business conduct: unfair terms and conditions, unfair practices, product suitability, sales practices, agents, compensation, etc. Principle 3 of the G20 High Level Principles on Financial Consumer Protection states that “all financial consumers should be treated equitably, honestly and fairly at all stages of their relationship with financial service providers.”
- Data protection and privacy: lawful collection and usage of customer data, confidentiality and security of customer information, sharing customer information, etc.
- Dispute resolution mechanisms: internal complaints handling, out-of-court formal dispute resolution mechanisms, etc.

Each good practice is accompanied by detailed explanatory notes that expand on its intent, purpose and provide practical guidance as well as country examples of implementation, including considerations for trade-offs, proportionality, and compliance costs. The Good Practices also propose tools and methods to achieve their objectives and recognize that implementation needs to take into account of national specificities.

3. Method

3.1. Methodology

Good practices for financial customer protection include (4) items, which are covering different aspects: Disclosure and Transparency, Fair Treatment and Business Conduct, Data Protection and Privacy, Dispute Resolution Mechanisms. It is expected that commercial banks and other financial institutions incorporate these practices in their operations, from strategies to actions, and disclosed accordingly. However, in fact, due to

¹ Actually, there are 6 categories, which we have dropped two out of the range to make 4 for this research. These two are Legal and Supervisory Framework (Regulation on Customer Protection), and Guarantees Scheme. These are left out of the scope of this paper because they are general requirements from the Authority as such, therefore the information on these should be similar for all banks, which do not bring much meaning for comparison.

different reasons, the institutions may undertake this endeavor in different levels, which raises the question which institution does it better.

In order to find the answer for the above question, this research attempt to built an index and measure the customer protection score of each bank. Specifically, we first generate a Financial Customer Protection Index (FCPI), which is a combination of 4 categories of the Good Practices, which then break into a set of 77 attributes:

- 1 - B: Disclosure and Transparency (37 attributes)
- 2- C: Fair Treatment and Business Conduct (29 attributes)
- 3 - D: Data Protection and Privacy (2 attributes)
- 4 - E: Dispute Resolution Mechanisms (9 attributes)

For each attribute:

- “1” is assigned if the commercial bank discloses the according information;
- “0” is assigned if the commercial bank doesn’t disclose the according information.

We have used the unweighted method in constructing the financial customer protection index where the items score “1” if it is disclosed and score “0” if it is not disclosed. The FCPI is then calculated by summing up unweightedly all the scores as follows:

$$FCPI_n = \sum X_{in} / \sum Y_{in}$$

Where,

FCPI_n = Financial Customer Protection Index for bank n

$$\sum X_{in} = \text{disclosed items by bank n}$$

$$\sum Y_{in} = \text{full items expected to be disclosed by bank n}$$

Consequently, we calculate the FCPI of each bank by searching the bank’s annual reports and the bank’ website for the inclusion of 77 possible information items. For example: With Category 1- Disclosure and Transparency, attribute No3 “Format and manner”, the annual reports and other sources of the selected banks should be examined. All of the materials we find that the banks actually provide easy to follow documents, materials, and use appropriate, simple language that the customer can be easy to find the information. For this criteria, all banks we mark full 7. Annual reports of banking institution provide stakeholders with relevant information, operational and strategic information. Hence disclosure of information relating to the banks’ relationship with customers and the way the banks treat its customers is expected to be included. The annual reports have been obtained from the banks websites. We also collect information through other disclosed information on the banks’ websites, such as forms of contracts. Nowadays, as customers are more and more engaged with the banks electronically, banks have had the intention to voluntary disclose information on their websites.

This content analysis method is a valid way to describe and make the inferences about the characteristics of banks annual reports content and comparing it to the above mentioned

practices. The unit of analysis used are words and sentences for examining the qualitative disclosure while the index is reflecting a checklist of disclosed items in our sample banks in which we can measure the level of customer protection. We expect to observe some differences in terms of customer protection between the chosen banks. This method has been followed by some empirical research in the field, such as Mulugeta (2015), Nguyen et al. (2022).

3.2. Data and the banking context of Vietnam

The research used secondary data from the full annual reports of Vietnamese banks. The list of the banks are selected based on banks' owners capital levels. We selected a group of four large banks, two medium banks, and two small banks in terms of owner capital. Of which half of the banks are State-owned partially or wholly owned. The annual reports have been obtained from the banks websites.

We compare the FPCI index within the three groups of banks, large, medium, and small banks to see which group is better in terms of customer protection. We also do the same for each category to analyse in detail. Similarly, we compare the difference of customer protection between State-Owned banks and non State-Owned banks. The banks are listed in the Table 1.

Table 1. List of the banks

No.	Code of the banks	Size	State-owned (partially or wholly) or Non-State owned
1	LB1	Large	State-owned (partially or wholly)
2	LB2	Large	State-owned (partially or wholly)
3	LB3	Large	State-owned (partially or wholly)
4	LB4	Large	State-owned (partially or wholly)
5	MB1	Medium	Non-State owned
6	MB2	Medium	Non-State owned
7	SB1	Small	Non-State owned
8	SB2	Small	Non-State owned

From 2017 up to now Vietnamese banking system has been comprised of different ownership types. There are four government-owned banks with their owner's equity comes 100% from the state budget. These are Agribank, GP Bank, Ocean Bank, and Construction Bank. There are 31 joint-stock banks,² 9 commercial banks which has 100% foreign capital, 2 joint-venture banks, and 51 branches of foreign banks in Vietnam. Most Vietnamese commercial banks focus on retail business, so retail loans account for 90% of loan volumes of the whole system. Banks with owners' capital above 30 thousand billion Vietnamese dong are considered big banks, medium banks own from 10 thousand Vietnamese dong up to 30 thousand Vietnamese dong, and the quality of owners' capital for small banks is under 10 thousand Vietnamese dong.

² Including 3 joint stock banks which 51 percent is owned by the State budget

The strength of Vietnamese commercial banks are traditional services such as providing deposit services, lending, and payment services. Nevertheless, some large commercial banks have expanded their activities to investment banking, mortgage banking, insurance services.

4. Results

Table 2 below shows the financial customer protection score (the FPCI Index) of 8 selected banks in Vietnam. As can be seen in the Table, there are four categories, B. “Disclosure and Transparency”, C. “Fair treatment and Business Conduct”, D. “Data Protection and Privacy” and E. “Dispute resolution mechanisms”. In which, there are 5 subcategories in B, nine subcategories in C, two categories in D, and there is not any subcategories in E.

Overall, we can see that the non-State-owned banks have the higher average score than the State - owned banks. To be more specific, the FCPI Index for the State-owned banks and the non-State-owned banks is 47.5 and 50.75, respectively. This can be explained due to the fact that State-owned banks take the direct intervention from government, their policies may affect the concentration of banks in customer protection. In contrast, non-State-owned banks can focus more on financial customer protection.

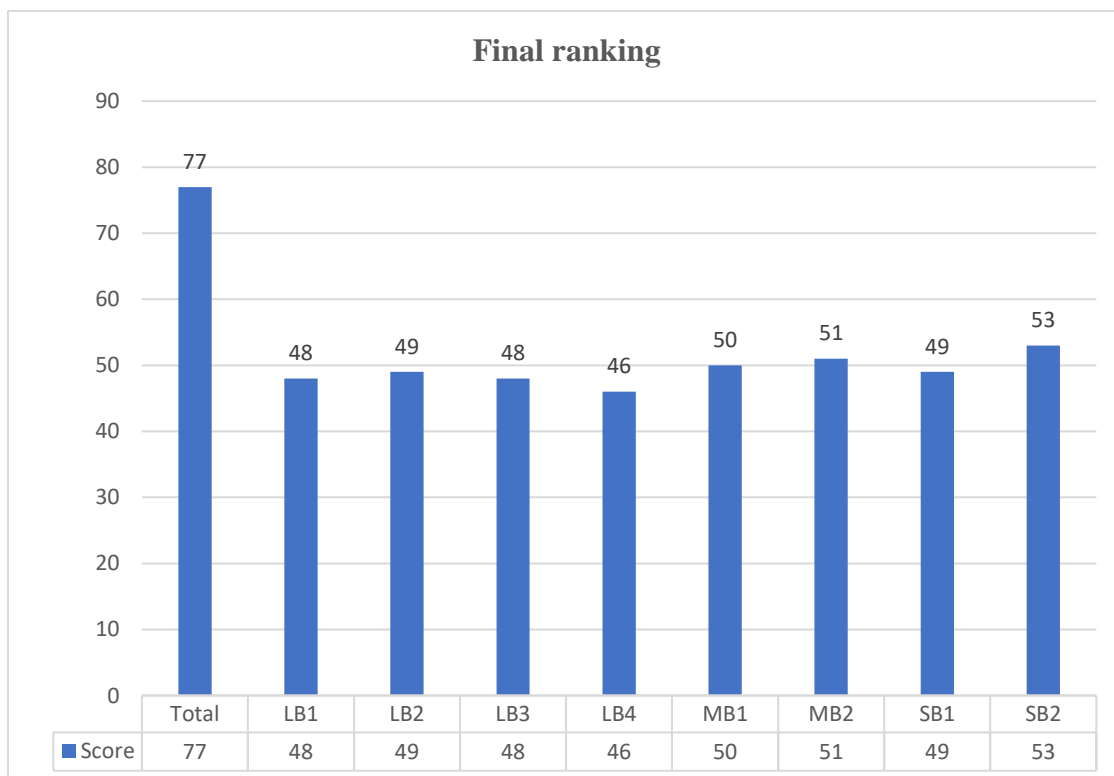
Table 2. Customer protection scores - Results

Category	Benchmark point	Large				Medium		Small	
		LB1	LB2	LB3	LB4	MB11	MB12	SB1	SB2
B. Disclosure and Transparency	37	32	32	32	29	32	33	32	32
<i>B1. Format and Manner</i>	8	7	7	7	7	7	8	7	7
B1.1 Form of communication	2	2	2	2	2	2	2	2	2
B1.2. Highlighting disclosure of key features	3	3	3	3	3	3	3	3	3
B1.3. Form and format	3	2	2	2	2	2	3	2	2
<i>B2. Disclosure of terms and conditions</i>	18	14	14	14	11	14	14	14	14
B2.1. Account agreement	8	8	8	8	8	8	8	8	8
B2.2 Loan agreement	10	6	6	6	3	6	6	6	6
<i>B3. Key fact statement</i>	3	3	3	3	3	3	3	3	3

Category	Benchmark point	Large				Medium		Small	
		LB1	LB2	LB3	LB4	MB11	MB12	SB1	SB2
		<i>B4. Statements</i>	5	5	5	5	5	5	5
<i>B5. Notification of changes in rates, terms, and conditions</i>	3	3	3	3	3	3	3	3	
C. Fair treatment and Business conduct	29	9	9	10	10	11	11	10	13
<i>C1: Unfair terms and conditions</i>	6	1	1	1	1	2	1	1	2
<i>C2: Unfair Practices</i>	7	0	0	1	1	0	0	1	0
<i>C3: Sales practices</i>	4	2	2	2	2	2	2	2	3
<i>C4: Product Suitability</i>	1	1	1	1	1	1	1	1	1
<i>C5: Customer Mobility</i>	2	0	0	0	0	0	0	0	0
<i>C6: Professional Competence</i>	2	2	2	2	2	2	2	2	2
<i>C7: Compensation of Staff and agents</i>	2						1		1
<i>C8: Fraud and Misuse of customer assets</i>	3	2	2	2	2	3	3	2	3
<i>C9: Debt collection</i>	2	1	1	1	1	1	1	1	1
D. Data Protection and Privacy	2	2	2	2	2	2	2	2	2
<i>D1: Lawful collection and usage of customer data</i>	1	1	1	1	1	1	1	1	1
<i>D2: Confidentiality and security of customers' information</i>	1	1	1	1	1	1	1	1	1

Category	Benchmark point	Large				Medium		Small	
		LB1	LB2	LB3	LB4	MB11	MB12	SB1	SB2
E. Dispute resolution mechanisms	9	5	5	4	5	5	5	5	6
E1: Internal complaints handling	9	5	5	4	5	5	5	5	6
Total	77	48	49	48	46	50	51	49	53
Percentage	%	62.34%	63.64%	62.34%	59.74%	64.94%	66.23%	63.64%	68.83%
Average %		61.69%				65.91%			
Average		47.5				50.75			

Results in table confirm that non-state-owned banks tend to be more customer-centered than the non-state-owned banks. The average score of state-owned banks is 47.5(61.69%), 3.25 points less than the average score of non-state-owned banks, which stood at 50.75(65.91%). However, this difference between the scores of the 2 groups of bank is not high compare to the total score. The score range of non-state-owned banks is from 46 to 49 and the score range of the non-state-owned banks is from 49 to 53.



The figure above shows a clear difference in the total number of financial customer protection score in 8 banks in Vietnam. The lowest point - 46 (59.74%) belong to the bank,

which is, strangely, a large bank - LB4. In contrast, the smallest bank (SB2), owns the highest score 53 (68.83%). The highest score of the state-owned bank belongs to LB2 at 49, but this only equals to the score of SB1 - which is the lowest score in the non-state-owned group. In the non-state-owned group, the two banks that have not been mentioned, MB1 and MB12, reach score of 50 and 51 respectively. LB1 and LB3 in the state-owned group both equally have 48 score.

The results show that even for the highest score bank, there is a huge distance to the benchmark, which the Good Practices have suggested the bank to follow in order to generate a long-term financial stability and ensure the sustainable market. The highest score is 53, which is 24 points lower than the benchmark. That shows that the Vietnamese banks still have large room to improve in terms of customer protection.

5. Conclusion

Effective customer protection has many positive impacts on the development of the financial market. It provides the customers with more equal opportunities in the relation with the financial service provider in terms of access to relevant information, and decreasing information asymmetries. Well-informed customers constitute an important source of market discipline, because they force banks and other financial institutions to offer better, safer products and services which better fitted to their needs and opportunities. Financial consumer protection plays a significant role in creating and maintaining public confidence, which is in turn a condition for financial markets safety and stability. Last, but not least, it constitutes an essential instrument of reducing financial exclusion.

However, customer protection has just received the attention of the service provider only recently. This is very true for the developing context like Vietnam. There is not yet a comprehensive regulation on customer protection for the financial market. That is the reason for the fact that banks have taken this endeavour differently. This research, in line with not many others, attempts to assess the customer protection performance in different commercial banks in Vietnam. Based on the Good Practices introduced by the WB, this research builds and measures the FCPI Index from the disclosed information on the banks' annual reports and their websites. The results show that customer protection has been incorporated into the action of the bank, but there is still much room for improvement for the banks in Vietnam./.

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DETERMINANTS OF HIGH-PERFORMANCE WORK SYSTEM AND ITS IMPACTS ON ORGANIZATIONAL PERFORMANCE: EMPIRICAL STUDY OF LISTED COMPANIES IN VIETNAM

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Abstract

The current study investigates the influence of organizational characteristics on the adoption of a high-performance work system (HPWS) and the impacts of such practices on the organizational performance of listed companies in the Ho Chi Minh Stock Exchange (HOSE), Vietnam. Using a sample of listed companies provides an objective measure of organizational performance and reduces common method bias caused by a single source of data. Survey questionnaires were filled in by managers in charge of HR to ensure the accuracy of information. The final sample included 145 firms of the total 318 listed firms. Results suggested that firm characteristics were positively associated with the adoption of Ability-Motivation-Opportunity bundles of HPWS. The influence of HPWS on organizational performance was confirmed by the data. Moreover, the mediating impacts of employee creative behaviors and customer-oriented behaviors were also established.

Keywords: *high performance work system, organizational performance, listed companies, objective measures, mediation, Vietnam.*

1. Introduction

Human resource has long been widely recognized as the most important asset of the firms in surviving and thriving in the ever-increasing competitive environment (Pfeffer, 2007; Hitt, Bierman, Shimizu, & Kochhar, 2001). Human resource can be the source of sustainable competitive advantages (Kundu & Gahlawat, 2016), however, it requires the effective implementation of HRM practices (Collins, 2007; Chew and Basu, 2005). Previous research suggested that a set of HRM practices may play a critical role in promoting organizations' competitive advantage and enhance their performance (Becker and Huselid, 1998; Bello-Pintado, 2015; Delery & Shaw, 2001). These HRM practices are often referred to as "HRM best practices" (Pfeffer, 1998), "strategic HR practices" (Delery and Doty, 1996), "high performance work practices" (Huselid, 1995), "high performance work system" (Boxall and Macky, 2007) or "progressive HRM practices" (Delaney and Huselid, 1996). The current study adopts the term high performance work system (HPWS) to refer to "a set of HR practices that enhance the ability, motivation, and opportunity of employees to make contributions to the success of the organization" (Rabl, Jayasinghe, Gerhart, & Kuhlmann, 2014).

While most of the literature on HPWS was still in developed countries, there are evidences that organizations in emerging economies have started to adopt high

performance work systems to enhance effectiveness (Kundu and Gahlawat, 2016). However, the adoption and implementation of HPWS in the developing countries remains largely underresearched (Osman, Ho and Galang, 2011). Previous research suggested that the implementation and effectiveness of HPWS is dependent on a number of factors from national level factors such as culture (Kundu and Gahlawat, 2016), and level of economic growth (Lawler, Chen, Wu, Bae, and Bai, 2011) to industrial factor such as industry (Combs, Liu, Hall, & Ketchen, 2006).

The current study investigates the implementation of HPWS among Vietnamese companies and the impacts of HPWS on organizational performance. Vietnam provides an interesting context for HPWS study for a few reasons. First, Vietnam has been culturally and economically influenced by both Eastern and Western styles. During its history, Vietnam was under long colonization periods under China and French. The culture of Vietnam consists of both Chinese characteristics such as “respect for seniority” and “middle of the road” and French notions of “elite system” and “individualism” (Quang and Thang, 2004). Moreover, the economic revolution of Vietnam since 1986 has turned the country into a market-oriented economy, but characteristics of the old “egalitarianism” system are still ubiquitous (Thang and Quang, 2007). As a result, it could be an interesting question of whether or not HPWS could improve the performance of Vietnamese companies. Second, Vietnam is an economy in transition, with only 30 years of experience since the structural reform from a strictly centralized system to a market-oriented economy. High economic growth has attracted waves of foreign direct investment as well as the growing number of private companies (Bartram, Stanton and Thomas, 2009). These businesses have implemented a number of HRM practices primarily used by companies in Western cultures (King-Kauanui, Su and Ashley-Cotleur, 2006). On the other hand, Thang and Quang (2005) found that HRM practices in Vietnamese firms are diverse with a number of patterns of HRM practices across ownership forms. Specifically, companies in the private sector shows a lower level of adoption of HRM practices than State owned enterprises. Similarly, Bartram et al., (2009) studied HRM practices in Vietnam and concluded that there were significant differences between firms of different ownership forms regarding the application of HRM practices. Specifically, state-owned enterprises still employed personnel management practices rather than HRM. Joint ventures placed strong emphasis on cost-based HRM practices. On the other hand, private enterprises were experiencing a wide range of HRM practices including strategic HRM practices. The situation signifies the need for an empirical research on the application of HPWS among Vietnamese firms and its impacts on firms’ performance.

The current study examines the influence of organizational characteristics on the uses of HPWS and impacts of HPWS on the performance of the firms listed on the Ho Chi Minh City Stock Exchange (HOSE). The study’s contributions can be two fold. First, the selection of

listed firms on the stock exchange provides objective measures of company performance. Because most studies on the impact of HPWS used self-assessment of business performance, these studies might be subject to common method bias. The current study

collects data on company performance based on listed figures which may improve objectivity and validity of the results. Second, although studies on HPWS have been widespread over the last two decades, most of these studies used these practices as a priori and assessed the impacts of these practices on the performance of the business. Researchers have pointed to different views on HPWS (Delery and Doty, 1996), in which the universal view is that there are a number of HRM practices, if applied, will bring high achievements to all organizations. Meanwhile, contingent and configurational views assert that effectiveness of the HPWS should be dependent on organizational characteristics. Quang and Thang (2005) studied the antecedents and consequences of HRM practices in Vietnam and concluded that although the data seems to support the universal school of thought about the direct impacts of HRM practices on firm performance, it would be necessary to examine the relationship between the characteristics of the firms and the adoption of HRM practices. The current study responds to the need by investigating the influence of organizational characteristics on the adoption of HPWS among listed firms in Vietnam.

2. Literature review and Theoretical framework

Human resource is the most important resource of the firms and can be the main catalyst for the success of the firms (Pfeffer, 1998). Resource-based view asserts that in order for human resource to create competitive advantage for the firms, it should be valuable, rare, and inimitable (Wernerfert, 1984). As a result, the main challenge facing a manager is to use HRM policies and practices to turn human resource in to an engine for organizational success. Previous research supports the consensus that a high-performance work system (HPWS) can contribute to the success of the firm. It is, however, more interesting to investigate the mechanism through which HPWS influences organizational performance. One of the ways to look into this “black box” is through the lens of the Ability-Motivation-Opportunity framework (Appelbaum, Bailey, Berg, and Kalleberg, 2000; Delery and Shaw, 2001; Lepak, Liao, Chung and Harden, 2006). This theory suggests that HRM system can influence employees’ performance and discretionary efforts towards organizational goals by enhancing their skills and knowledge, motivating and inspiring them to put in additional effort to the work and offering opportunities for them to make best use of their competency to perform and contribute (Hyde, Harris, Boaden, & Cortvriend, 2009). In the current study, HPWS is operationalized in to three categories: ability enhancing practices, motivation enhancing practices and opportunity enhancing practices. Because there is no consensus list of HRM practices which comprise a high performance work system, the current study includes effective HRM practices used in previous literature adopting the AMO framework (Appelbaum et al., 2000; Jiang et al., 2012a, Bello-Pintado, 2015; Delery and Gupta, 2016; Kundu and Gahlawat, 2016). Ability enhancing practices including selective hiring, and extensive training; motivation-enhancing practices include participative performance appraisal, performance-based compensation and promotion, and opportunity enhancing practices include career support, participative decision making, and delegation.

2.1. Influence of firm characteristics on the use of HPWS

Firm's capital

Although the positive impacts of HPWS on organizational performance has received supports from a wide range of research (Comb et al., 2006), there are evidences that the effectiveness of such practices are dependent on the fit between HPWS and organizational characteristics (Datta, Guthrie and Wright, 2005). Firm size is one of the organizational characteristics that may influence the adoption of HPWS by businesses. Previous research reported the differences in the adoption of human resource management practices between small and large firms (Wiesner and McDonald, 2001). However, the impacts of firm size, measured by the number of employees, on the implementation of HPWS were usually explained by the availability of resource associated with firm size (de Kok, Uhlaner, L. and Thurik, 2006; Patel and Conklin, 2012). The current research investigates the impact of firm's resource, measured by charter capital of the listed firms, on the adoption of HPWS practices. Resource-poverty perspective (Welsh and White 1981), proposes that the availability of resource influences the implementation of HR practices. While HPWS may improve the overall performance of the firms, the design and application of HPWS requires investment of resources. Resource is of great importance for firms to recruit HR experts who could ensure successful implementation of HPWS (Patel and Conklin, 2012). Availability of resource enables firms to implement all bundles of HPWS practices. Therefore, it can be hypothesized that:

H1: Firms' charter capital is positively associated with the implementation of ability-enhancing practice, motivation enhancing practices and opportunity-enhancing practices.

Firm age

Literature suggests that firms go through several stages during their development. HRM practices, as a component of the organizations, must also change to meet the needs of the organizations (Baird and Meshoulam, 1988). The authors suggest five stages of HRM practices development: initiation, functional growth, controlled growth, functional integration and strategic integration. At the initial stages, HRM practices focused mainly on basic salary and benefit administration and housekeeping. At the growth stages, new HR programs and practices are added into the portfolio such as training, budgeting and management control. Finally, at the integration stages, HRM requires the integration of activities, with the introduction of productivity improvement, change management and succession planning. Moreover, the focus is now on the long-term needs of the organizations. The author also reported that HRM practices in later stages should incorporate previous stages and, thus, more complex in earlier stages. Smith, Mitchell & Summer (1985) also reported that as firms move through various stages of development, different management skills are needed to address different problems. Ibrahim and Shah (2013), on the other hand, argued that at the early stage of organizational development, commitment HR system could be important. But as the firm grows, the increasing size of the organization may require the application of traditional HR system to control the more complex organizational structure.

It can be argued that at the start-up phase, the firms are small in size and usually limited in resource, so, in order for the firm to survive and growth, the commitment of the founders and first-generation employees is of great importance. Therefore, at this stage, firms would focus more on motivation-enhancing practices. At the later stages, on the other hand, the firms grow in both size and complexity, it could be necessary to ensure that all the employees have the required abilities to perform. Moreover, available resource would enable the firms to focus on training and selective hiring. Therefore, we hypothesized that:

H2: Firm age will be positively related to the adoption of ability-enhancing practices.

CEO's education

Research indicated that the owners or CEOs of the firms may have decisive influences on the adoption of HPWS. Kim and Mauborgne (1997), for example, found that entrepreneurial oriented managers tend to implement growth-fostering HR activities. Kroon, Van De Voorde, and Timmers (2013) found positive relationship between entrepreneurial orientation and the adoption of ability-enhancing practices. Another characteristic of the top manager that influence the use of HPWS was awareness of HPWS (Colbert, Rynes and Brown, 2005). They proposed that lack of awareness about HPWS was one of the explanations for the ignorance of many firms in implementing HR best practices. Kroon et al., (2013) argued that if managers know about HR best practices, they are more likely to adopt HPWS practices. They also suggested that delegation and empowerment would likely be applied by managers who are well aware of the potential of HPWS practices. Manager who understand about HR best practices know how to make their employees exert maximum efforts by influencing their motivation. Barringer, Jones and Neubaum (2005) reported that educational level of the managers can be used as a proxy of their understanding of HR practices. The third hypothesis is therefore:

H3: CEO' educational level will be positively related to the implementation of motivation and opportunity bundles of HPWS practices.

The impacts of HPWS practices on firm performance

A large body of literature provided supports for the role of high-performance management practices in improving firms' performance (Huselid, 1995; Delaney and Huselid, 1996; Delery and Doty 1996; Bartram, 2005; Combs et al., 2006). We also hypothesized that:

H4: Ability, Motivation and Opportunity bundles of HPWS positively influence organizational performance.

2.2. The mediating impact of employee creativity and satisfaction on the relationship between HPWS and organizational performance

While it was widely accepted that HPWS can have significant impacts on firm performance, it is more important to understand the mechanism or "black box" through which such influences realize. The "black box" has attracted numerous research efforts for the last two decades (Mao, Song and Han, 2013). Bowen and Ostroff (2004) proposed two

approaches to understand the link between HR practices and organizational performance, the content approach and process approach. Content approach argues that HRM practices improve employees' goal-

directed behaviors, which in turn leads to increased organizational performance. The process approach suggests that human resource management practices influence employee perspectives, changes in perspective then influence their behavior and performance. A number of attitudinal and behavioral factors has been found to serve as the mechanism of the relationship between HPWS and organizational performance such as job satisfaction, and affective commitment (Gong, Law, Chang, and Xin, 2009), service-oriented citizenship behaviors (Sun, Aryee, and Law, 2007), and social exchange (Takeuchi, Chen, and Lepak, 2009). In support of the content approach, we propose that HPWS would influence employees' creative behaviors and customer service-oriented behaviors, which in turn improve organizational performance. In particular, we propose that ability-enhancing practices influence employee's creative behaviors and motivation-enhancing practices impact customer-oriented behaviors. Therefore:

H5a: Employee's creative behaviors will mediate the influence of ability enhancing practices on organizational performance.

H5b: Employee's customer-oriented behaviors will mediate the influence of motivation-enhancing practices on organizational performance

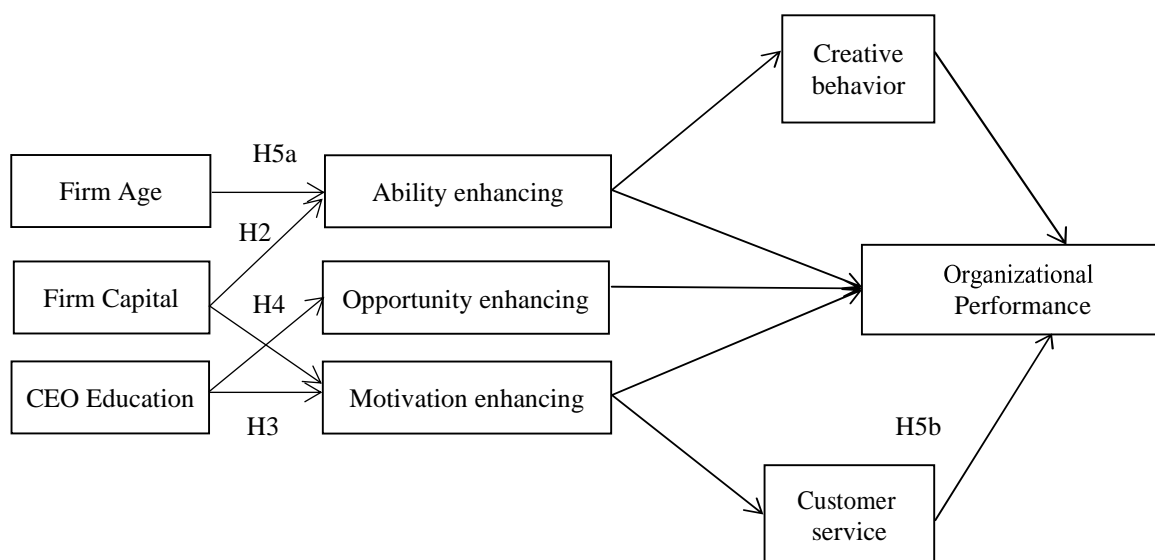


Figure 1. The operational model

3. Method

The survey was conducted from July to September 2016. Self-administered questionnaires were e-mailed to the entire of 318 companies listed on the Ho Chi Minh City Stock Exchange (HOSE) based on information listed on the official website of the stock exchange. Contacts via telephone were initially made with a person in charge of HRM of the companies such as HR director, HR manager or general manager to request them to

participate in the survey. Because the study examines HRM aspects, the most suitable person to respond to the questionnaire should be the top HRM executive of the companies. In order to ensure that the questionnaires have been received, emails confirming receipt status were followed in 1 week. For unsolicited or unanswered responses, the questionnaires were sent a second time to the email address of the respondents. The authors then telephoned the companies who did not respond to the confirmation email to make sure the questionnaires were sent to the correct address. After the above steps, the author confirmed that 283 enterprises have received the questionnaires. The author required that the respondents fill out questionnaires and send them back within 15 days. After that deadline, subsequent emails and phone reminders were made to ensure the response rate of the questionnaire. After one month, there were 164 questionnaires returned by the surveyed firms, with a response rate of about 58%, an acceptable rate for sociological surveys.

After checking the information, the author identified 12 questionnaires with missing information. In order to ensure that the questionnaire could be used, the author contacted the participants to request for supplement information. Next, to ensure that the information in the questionnaire accurately reflects the reality of the business, this study required that questionnaires to be filled by senior executives of the company or the HR manager. Therefore, questionnaires which were filled in by other personnel were discarded. After eliminating the questionnaires which were not completed by senior executives or the director/ head of human resources function (19 observations), the dataset used for the analysis included 145 responses from the listed companies.

Of the 145 companies, the shortest firm age was 7 years and the longest was 27 years. Average age of the companies in the sample was 12.8 years. The average charter capital of the firms in the sample at the time of the survey is VND 1616 billion. Of which, the lowest chartered capital is VND 80 billion and the highest of over VND 37000 billion. The average number of employees in the survey sample is 1530, with the lowest is 29 and the highest is 21403 at the time of the survey.

Measures

High performance work system (HPWS): the instrument asked the manager to respond to the degree to which the practices of HPWS were implemented at their respective companies. Response to these items ranged from 1: “to a very little extent” to 5: “to a very large extent”. In the current study, HPWS was categorized in to 3 components: ability-enhancing practices, motivation enhancing practices and opportunity enhancing practice. A list of HRM practices was developed to cover the three components based on previous research (Appelbaum et al., 2000; Jiang et al., 2012a, Kroon, Van De Voorde, and Timmers, 2013). Ability enhancing practices consisted of 5 items focusing mainly on selective hiring and extensive training. The first two items measured the number of rounds in the hiring process and application-per-placement ratio. The remaining three items concerned the extent of training including budget for training, training for current needs and training for future needs. The reliability for this scale was 0.864.

Motivation enhancing practices referred to the application of participative performance appraisal, fair performance rating, the degree of pay-for-performance, the extent of performance based promotion and competitive compensation. This 5-item scale had good reliability (Cronbach's alpha 0.733).

Opportunity enhancing practices referred to the degree of delegation at work and the extent of participation in the decision-making process. The scale consisted of 5 items. The first two items measured the degree to which the employees have autonomy at work through the mechanism of delegation. The next two items concerned the employees' awareness and participation in the decision-making process at work. The final items mentioned the supports offered to employees by the organization. The reliability for this scale was 0.772.

Firm capital: In the current study, we used the firm's charter capital at the time of survey (Cap) as an indicator of firm capital.

Firm age (Age): In this study, the total time in year from the establishment of the companies was used to measure firm age.

CEO's education (Education): We measure CEO's education by the highest degree that the manager achieved with 5= Ph.D degree, 4= Master Degree, 3= University/college degree, 2= High school/vocational school diploma, 1 = less than high school and 0 = did not go to school.

Organizational performance (Profit): An objective measure of organizational performance was used in the current study. Pre-tax profit figures of the companies were obtained for the 3- year period from 2013 to 2015. Pre-tax profit figures were publicly announced on the companies' website as well as on the annual reports. The 3-year averaged pre-tax profit was used to represent company performance.

Employee's creative behavior (*Creativity*): This variable was measured by the HR manager's subjective evaluation of employee's creative behaviors. Response to these items ranged from 1: "strongly disagree" to 5: "strongly agree". The scale consisted of 4 items an example which is "Many of our new products and service are from our employees" and "We are receiving many creative ideas from our employees". The reliability coefficient for the scale was .765

Employee's customer-oriented behavior (*Customer service*): This variable was also measured by the HR manager's opinions on a series of statement regarding customer-oriented behavior. Response to these items ranged from 1: "strongly disagree" to 5: "strongly agree". The scale consisted of 4 items including "The employees at my company always put customer first" and "Customers' evaluation of our employees are positive". The reliability coefficient for the scale was .806

4. Results

Descriptive statistics including mean, standard deviation and correlations between pairs of variables was showed in table 1. There were significant relationships between 3 bundles of HPWS practices. Furthermore, significant correlations were observed between profit and the 3 bundles of HPWS practices. Moreover, creativity was significantly correlated with ability- enhancing practices and customer service was correlated with motivation enhancing practices, which enabled mediation analysis for testing H5a and H5b.

Table 1. Means, standard deviations and correlations between variables

Variable	Mean	SD	1	2	3	4	5	6	7	8
1. Firm age	12.81	4.921								
2. Capital	2.6471	.55954	.125							
3. Education	3.42	.603	-.084	.174*						
4. Ability	3.8092	.86674	.299**	.481**	.121					
5. Opportunity	4.2458	.50393	-.030	.255**	.214**	.277**				
6. Motivation	3.9660	.60602	.019	.220**	.313**	.177*	.368**			
7. Profit	4.8968	.76077	.138	.677**	.223**	.288**	.321**	.312**		
8. Creativity	3.9782	.52798	.097	.224**	-.054	.319**	.066	.059	.230**	
9. Customer service	3.9804	.49888	.051	.127	-.038	.030	-.145	.266**	.208*	.417**

Notes: N=145. *, ** Correlation significant at the 0.05 and 0.01 levels respectively (two-tailed)

Discriminant validity of the research constructs

We conduct a factor analysis of all research variables to examine discriminant validity of the construct. A five-factor solution has been found from factor analysis with principle component extraction and Varimax rotation method. Five factors accounted for nearly 70% of the variance. There have been no items that cross load on multiple factors. The results indicated discrimination validity of the A-M-O constructs and employee behaviors.

Table 2. Factor analysis of research variables Items

	Ability	Motivation	Opportunity	Creativity	Customer oriented
Ability enhancing practices					
Regular budget for training is maintained in every department.	.912				
Training for current demand is being conducted regularly.	.895				
Training for future demand is being implemented regularly.	.888				
Hiring process contains multiple rounds.	.694				
The company require high application-to- placement ratio.	.631				
Motivation enhancing practices					
Employees are given autonomy at work.		.825			
The company has policy to delegate authority to the employees.		.728			

	Ability	Motivation	Opportunity	Creativity	Customer oriented
Employees are involved in the decision-making process.		.685			
Employees are informed about the changes in the company.		.684			
The company offers career support for the employees.		.593			
Opportunity enhancing practices					
Participative performance appraisal is conducted in my company.			.721		
Performance ratings are subject to force distribution rating system.			.698		
Pay and bonus are based on work performance.			.668		
Work performance serves as the basis for promotion decision.			.636		
My company maintains competitive compensation schemes.			.535		
Customers oriented behavior					
The employees at my company always put customer first.				.764	
Customers' evaluations of our employees are positive.				.746	
Employees at my company exert a great deal of efforts to serve our customers well.				.692	
My staff focuses on satisfying both internal and external customers.				.679	
Creativity behavior					
Employees of my company are showing creativity at work.					.857
Many of our new products and service are from our employees.					.795
We are receiving many creative ideas from our employees.					.728
My staff is trying to find new and creative ways to do the job					.725

Note: N=145. Principal component analysis with factor extracted based on Eigen value >1, rotated solution based on Varimax method.

Hypothesis testing

The first three hypotheses predicted the influence of organizational characteristics such as firm capital, firm age and CEO educational level on the adoption of HPWS by business. The results of the multiple regressions were showed in table 2.

Table 3. Influence of organizational characteristics on the adoption of HPWS

Independent	Model 1		Model 2		Model 3	
	Ability enhancing practice		Motivation enhancing practice		Opportunity enhancing practice	
	Coefficient	VIF	Coefficient	VIF	Coefficient	VIF
Constant	1.020*		3.277***		7.03***	
CEO Education	.094	1.05	.142*	1.05	.287***	1.05
Firm age	.074***	1.04	.007	1.04	.004	1.04
Firm capital	.679***	1.03	.208**	1.03	.181*	1.03
F (3, 141)	20.63***		5.32**		7.20***	
R ²	.293		.100		.127	

Note: N=145, *: $p < .05$, **: $p < .01$, *** $p < .001$.

Hypothesis 1 proposed that firm' capital would have positive influence on the implementation of all three bundles of HR. Results of multiple regression indicated that firm's capital had significant impacts on the implementation of all three bundles of HPWS: ability ($\beta = .679$, $P < .001$), motivation ($\beta = .208$, $p < .01$) and opportunity practices ($\beta = .181$, $P < .05$). Therefore, the data provided full support for hypothesis 1.

Hypothesis 2 suggested that firm age will have positive impacts on the firm's investment on ability-enhancing practices. The figures in Table 3 indicated that with firm capital and CEO educational level controlled, firm age had positive influence on ability enhancing HRM practices ($\beta = .074$, $p < .001$). H2 was supported by the data.

Hypothesis 3 which predicted that CEO's educational level would positively influence the implementation of motivation and opportunity bundles of HPWS practices also received support from the data ($\beta = .142$, $p < .05$ for motivation) and ($\beta = .287$, $p < .001$ for opportunity).

Table 4. Influence of HPWS on organizational performance and mediating impacts of creativity and customer services

Variable	Model 1	Step 1		Model 2	Step 1	
		Coefficient (Step 1)	Coefficient (Step 2)		Coefficient (Step 1)	Coefficient (Step 2)
Ability enhancing	.174*		.130	.174*		.155*

Variable	Model 1	Coefficient (Step 1)	Coefficient (Step 2)	Model 2	Coefficient (Step 1)	Coefficient (Step 2)
Motivation enhancing	.253*		.246*	.253*		.175
Opportunity enhancing	.298*		.308*	.298*		.377*
Step R-square		.181				
F (3, 141)		10.379***				
Step 2						
Creativity			.230*			
Customer service						.288*
R-square change		.023*			.031*	
Sobel coefficient		.078*			.082*	

*Note: N=145, *: p<.05, **p<.01, ***p<.001. Dependent variable: Profit*

Analysis results for hypothesis 4 and 5 were detailed in table 4. Model 1 was used to test the mediating effect of creative behaviors on the relationship between ability enhancing practices and organizational performance. Model 2 was used to test the mediating impacts of customer service on the motivation bundle-performance relationship. The results showed that ability- enhancing practices ($\beta=.174$, $p<.05$), motivation-enhancing practices ($\beta=.253$, $p<.05$) and opportunity-enhancing practices ($\beta=.298$, $P<.05$) positively predicted organizational performance. Therefore, hypothesis 4 was supported.

For model 1, when creativity was added into the model, the influence of ability-enhancing practices on organizational performance became insignificant ($\beta=.130$, n.s.) while the impact of creativity on organizational performance was significant ($\beta=.230$, $p<.05$). Moreover, the Sobel statistics confirmed the mediating impact of creativity (Sobel coefficient= $.078$, $p<.05$). Therefore, H5a was fully supported.

For model 2, when customer service was added into the model, the influence of motivation-enhancing practices on organizational performance became insignificant ($\beta=.175$, n.s.) while the impact of creativity on organizational performance was significant ($\beta=.288$, $p<.05$). Moreover, the Sobel statistics confirmed the mediating impact of customer service (Sobel coefficient= $.082$, $p<.05$). Therefore, H5b was fully supported.

5. Discussion and Conclusion

The results of analysis suggested that organizational capital had profound impacts of HPWS application. Implementation of such practice as comprehensive training, pay-for-performance and providing support and opportunity are often accompanied by high costs. Enterprises that have the financial ability to afford are more likely to invest on HPWS than those with lesser financial capability.

The CEO's level of education is an important feature of the business. Education is often regarded as a variable representing knowledge, human capital, or intellectual ability.

High-level CEOs are often said to be more intelligent and able to handle information (Hambrick & Mason, 1984). High-performing CEOs are also well aware and receptive to new ideas (Hitt & Taylor, 1991). Highly qualified CEOs are ready for change and actively engage in innovative ideas and apply modern management methods (Bantel and Jackson, 1989). Highly educated CEO may apply performance-based compensation and promotion rather than the outdated tenure-based system. Highly qualified CEO would be more aware of the role of empowerment, delegation, and team building. Proper delegation may also help the CEO to focus resources on the strategic and important issues of the enterprises rather than day-today matters.

Older enterprises are often large in scale and more complex so human resource management need to be done to improve efficiency and reduce costs. Therefore, enterprises with longer operating times are more likely apply higher development training and selective hiring measures.

The impacts of HPWS on organizational performance were also verified and confirmed in this study. In particular, ability-motivation-opportunity bundles of HPWS had positive impacts on organizational performance. Moreover, creative behavior was the mechanism through which ability-enhancing practices influences organizational performance. Similarly, customer-oriented behavior mediate the impact of motivation enhancing practices.

Although the research confirmed the positive impacts of HPWS on firm's performance, it also provided some evidence against the universalistic view of HPWS practices. Instead, the study supports the contingent view of HRM best practices in which organizational characteristics play a very important role in the adoption of HPWS. CEO's awareness of HRM best practices would be of utmost important for the implementation of HRM best practices. Because there were evidences that managers who read scientific papers are more likely to accept findings and understand the impacts of HPWS on organizational performance. Cooperation between businesses and University in general and between academia and manager would be of mutual benefit for both parties.

Because ability-enhancing practices are strongly associated with creative behaviors, it could be suggested that firms that operate in innovative markets should apply more of such practices to foster employees' creative behaviors.

On the other hand, firms operating in service industry must be able to serve their customers extremely well. Because motivated employees may exert more efforts to satisfy customers, it is suggested that such company should invest on motivation enhancing practices.

The first limitation of the current study was its sample; the use of listed companies in the survey limited the representativeness of the sample. While it is estimated that there are over 600,000 enterprises in Vietnam, only more than 300 of those are listed on the stock exchange. Furthermore, we were able to collect data from only 145 of the 318 listed firms; the sample could not be considered a perfect representative of the listed companies. These weaknesses reduced the generalizability of research findings.

The second limitation was that the data were collected from human resource manager or top management in charge of human resource. The opinion of these people may or may not be the same as the employees' views on the use of HPWS. Moreover, using manager's evaluation of employees' creative behaviors and customer-oriented behaviors may be biased. Multiple data sources, from both employees and manager, if applied would be much better.

The final limitation lies in the cross-sectional research design. Because it may take time for the application of HPWS to influence performance, cross-sectional design was unable to test this influence. It is difficult to identify the date at which HPWS practices were initially applied. Therefore, longitudinal research may yield more interesting results.

This study supplements significant empirical support for the link between high-performance work systems and firm's performance. This study also suggests specific organizational characteristics which influence the application of HPWS. Finally, some insight into the "black box" about the mechanism through which HPWS influences organizational performance was provided.

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**SESSION 3:
INFORMATION TECHNOLOGY
AND DIGITAL ECONOMY**

THE ROLE OF DIGITAL TRANSFORMATION IN THE COMPETITIVE CAPACITY OF VIETNAMESE ENTERPRISES

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Abstract

Digital transformation is a concern and one of the main directions of the business community in the digital age. This article uses econometrics models to evaluate the impact of digitization on the competitive capacity of enterprises. The research results show that if an enterprise fully digitizes at least 50%, it will have a positive impact on its competitive capacity. In addition, other factors such as digital orientation, digital capability, exporting/importing, or experience working with FDI enterprises also contribute to higher competitive capacity compared to other business groups.

Key words: *Digital transformation, digital orientation, digital capability, competitive capacity.*

1. Introduction

The enterprises are important part of the economy, especially in contributing to economic growth and creating employment opportunities for workers. The Covid-19 pandemic has caused serious consequences for people, the economy, and society in most countries around the world, including Vietnam. To survive and overcome the pandemic, the competitive capacity of the enterprises is extremely necessary. One of the solutions that enterprises have been applying to maintain their operations is to integrate digital technologies into their activities. The application of digital technologies has become one of the major directions for economic and social activities in general and for the business community in particular.

On the other hand, in an era where digital technology is developing strongly, the application of information technology and digital transformation in enterprises is a common and necessary trend. To take advantage of digital opportunities, businesses need to quickly develop capabilities that can help them adapt and survive changes in their circumstances and environment. These capabilities are related to specific organizational processes and strategies, such as redeveloping products, identifying new working methods, and making strategic decisions to create value in a dynamic environment. From there, enterprises can leverage existing resources into new value-creating strategies. Therefore, the ability to transform digitally is one of the key factors for innovation and competitive operations of

enterprises in the business environment. Enterprises are increasingly relying on information technology, including process technology, knowledge, and communication, to improve their agility (Sambamurthy et al., 2003).

Rupeika-Apoga et al. (2021) investigated the direct impact of digital orientation and digital capability on digital transformation, as well as exploring the intermediary impact of digital transformation on the performance of SMEs in Latvia. The results of the study showed that both digital orientation and digital capability have a positive direct impact on digital transformation. At the same time, digital transformation has an intermediary impact from digital orientation on revenue and business models, as well as from digital capability on revenue.

There have also been some studies on the digital transformation capabilities of businesses in Vietnam in general, as well as SMEs in particular, but these studies have mostly stopped at synthesis, comparison, descriptive statistical analysis of survey data, and expert interviews (Luong et al., 2020; Bui & Nguyen, 2021). The study by Luong et al (2020) showed that in the context of the Covid_19 pandemic, awareness of digital transformation in Vietnamese businesses has shown positive signs through a high proportion of businesses applying digital technology before the Covid_19 pandemic occurred. At the same time, this study also showed that the majority of businesses have only applied digital transformation to management, logistics, marketing, etc., and have not focused on applying digital transformation in production. Meanwhile, the study by Bui & Nguyen (2021) indicated that the obstacle to SMEs' digital transformation is due to the lack of bold changes and limitations in digital transformation awareness of business leaders.

This study is different from the above studies in that the authors simultaneously used parametric and non-parametric regression methods, so the research results will be more reliable. At the same time, this study will use a quantification method to analyze the impact of digital transformation on the competitiveness of businesses. The authors hope that this study will contribute to enriching the research on digital transformation of business groups, and at the same time, the study is useful for business managers and state management agencies in planning policies to develop and improve digital transformation capabilities in business groups.

2. Method

2.1. Data

In this article, the author used survey data on "The status of digital transformation in enterprises in the context of Covid-19 pandemic" conducted by the Vietnam Chamber of Commerce and Industry. The questionnaire consisted of 28 questions divided into three sections including: general questions about businesses, questions about the impact of Covid-19 on business operations, and questions about digital transformation of businesses. The data was collected online from July to August 2020. The results included 403 completed questionnaires from businesses nationwide, with the largest concentration in the Red River Delta accounting for 38% and the Southeast region accounting for 31.8%. This can be

explained by the fact that these are the areas with the highest concentration of businesses in the country. In terms of business scale, the proportion of micro, small, and medium-sized enterprises (SMEs) accounted for the majority at 64%, including 36.1% of businesses with less than 50 employees, 13.4% with 51-100 employees, and 14.4% with 101-200 employees. Among the 36% of large enterprises (over 200 employees), 24.6% had more than 500 employees, which is also in line with the fact that SMEs make up the majority of businesses.

2.2. Research method

Interval regression model

Interval regression model can be represented as follows:

$$y_i = x_i' \beta + u_i$$

in which:

- 1) y_i is the dependent variable, taking values in the interval [a,b]
- 2) x_i is $J \times 1$ matrix of factors that affect y_i of observation i
- 3) u_i is random error that follows Standard Normal Distribution law, $u \sim N(0, \sigma^2)$
- 4) β is coefficient that need to be estimated

Stewart (1983) pointed out that the combination of the first step, which is an approximate estimation of the maximum likelihood function, with the second step, which is the method of moments or least squares, is as follows:"

Step 1:

In the first step, the logarithm of the likelihood function is defined by:

$$\text{Log}L = \sum_{k=1}^K \sum_{i \in (k)} \log(F[(A_k - x_i' \beta) / \sigma] - F[(A_{k-1} - x_i' \beta) / \sigma]) = \sum_{i \in (k)} \log(F_k - F_{k-1})$$

With F is the cumulative function of standard normal distribution, σ is the constant variance of residual u_i , also is a parameter that needs to be estimated, and the k -th observation of y falls within the interval (A_{k-1}, A_k) . The notation $i \in (k)$ implies that all observations make the variable y take values in the interval (A_{k-1}, A_k)

Step 2:

The method proposed by Stewart (1983) is based on the iterative estimation formula, and the regression coefficients will be estimated using the OLS method. Stewart (1983) has shown that the estimates obtained by this method are robust and efficient (Stewart, 1983)."

Kernel non-parametric regression method

Two methods commonly used in non-parametric kernel regression are the local constant method and the local linear method. The local constant method was introduced simultaneously by Nadaraya (1964) and Watson (1964), so it is also called the N-W (Nadaraya-Watson) estimator. The non-parametric method does not require assuming a

specific form of the regression function $m(\cdot)$, but a set of x neighboring data points containing some information about the value of $m(x)$. Therefore, a visual estimation tool for the conditional mean function $m(x)$ is the local average, which is implemented. The new improved method is the weighted local average. Suppose K is a weight-assigned real-valued function. K is usually a symmetric density function and is called the Kernel function. Let h be a partitioning parameter (also known as a smoothing parameter), which is a non-negative number controlling the size of the neighborhood.

At each neighborhood of a given observation point x , instead of assuming that y takes on a constant value as in the N-W method, it is assumed y to be linear within that neighborhood. Specifically, at each x_i in the neighborhood of x , determine the coefficient vector α, β such that:

$$\text{Min}_{\alpha, \beta} \sum_{i=1 \rightarrow n} (y_i - \alpha - \beta'(x_i - x))^2 K(x_i, x, h) \quad (*)$$

where n is the total number of observations x_i in the neighborhood of x , and the summation is taken over the observations x_i such that $|x_i - x| \leq h$ with h being the chosen bandwidth in the estimation process.

Where $K(x_i, x, h)$ is defined as follows:

$$K(x_i, x, h) = \prod_{j=1 \rightarrow k} K_j(x_{ij}, x_j, h_j)$$

with k being the dimension of vector x_i . The Kernel function for continuous variable x_i takes the form:

$$K_j(x_{ij}, x_j, h_j) = k_j\left(\frac{x_{ij} - x_j}{h_j}\right)$$

The research team used the Epanechnikov Kernel function, which is commonly used in many documents. Specifically:

$$k_j(z) = \begin{cases} \frac{3}{4\sqrt{5}} \left(1 - \frac{1}{5}z^2\right) & \text{for } |z| \leq \sqrt{5} \\ 0 & \text{eslewhere} \end{cases}$$

The Kernel function for discrete variable x_i takes the form:

$$K_j(x_{ij}, x_j, h_j) = \begin{cases} 1 & \text{for } x_{ij} = x_j \\ h_j & \text{eslewhere} \end{cases}$$

If the bandwidth is too large, there will be many observations in the estimation of (*), resulting in small variance but large bias in the estimation. If the bandwidth is too small, there will be only a few observations for the estimation, resulting in large variance but small bias in the estimation. To balance the trade-off between bias and variance, the research team used the cross-validation method proposed by Li and Racine (2004) to choose the bandwidth for each variable

3. Results

The quantitative economic model in this section aims to evaluate the impact of digital transformation and other factors on the competitiveness of businesses. Some studies suggest that digital transformation is very important for modern economies because it has many business implications (Rupeika-Apoga et al., 2022). Other studies have shown that applying digital capabilities and knowledge to improve service delivery and customer integration increases the value of products and services provided, while also increasing long-term profitability (Daub & Wiesinger, 2021; Kuzmina-Merlino & Saksonova, 2018). In addition, scientists have also agreed that the positive impact of digitization on revenue growth, cost reduction, and financial efficiency (Osmundsen et al., 2018).

Digital transformation is a process of changing almost the entire business model and must be supported by an ecosystem, a specialized digital strategy, and digital skills. When evaluating the business model, the popular business model framework proposed by Osterwalder & Pigneur (2010) suggests that it can be divided into four main business areas, including infrastructure, value proposition, customers, and financial capacity. This study explores financial capacity. Some of the most commonly used indicators that can help measure a company's financial capacity are revenue, net income, gross profit margin, current assets, etc. (Ziółkowska, 2021). This article chooses revenue because in the survey table, revenue represents financial capacity. In addition, revenue is a suitable measure for measuring the financial capacity of enterprises for the following reasons: First, it is one of the three measures, along with the number of employees and assets, used to determine types of businesses. Second, revenue is a subjective measure of how much a business can use its core business assets to generate profits. Third, revenue is the total income received from selling goods or services related to a enterprises' core activities. Selling goods or services is the backbone of any enterprises activity, while digital transformation has almost completely changed the way businesses operate. In this section, the study will further confirm the impact of digital transformation and factors on the competitiveness of enterprises.

3.1. Regression models and variables

Interval regression model

The interval regression model for evaluating the impact of digital transformation and other factors on competitive capacity is as follows:

$$Revenue_i = \alpha + X_i' \beta + u_i \quad (1)$$

Non-parametric regression model

The non-parametric regression model evaluates the impact of digital transformation and factors on competitiveness in the following form:

$$E(Revenue_i | X_i) = m(X_i) \quad (2)$$

Which,

$$X_i = \left(\begin{array}{c} Export_i, FDI_exp_i, Digital_trans_i, Over_impact_i \\ Product_impact_i, Digital_orient, Sales_market_i, Enter_type_i \end{array} \right)$$

is vector of factors affecting the competitiveness of Vietnamese enterprises in the context of the Covid-19 pandemic. Competitive capacity of enterprise i is notated by $Revenue_i$

In model (1), u_i is random error, α is the intercept, and β is the vector of coefficients that need to be estimated.

In model (2), the function $m(.)$ is unspecified functional form.

Revenue: This is dependent variable and a categorical variable, measured in %. The revenue of enterprises is measured by the increase or decrease in revenue in the first six months of 2020 compared to the same period in 2019. Businesses are required to report their actual revenue (net revenue) in 2020 with suggested answers: *Revenue decreased by more than 50%*; *Revenue decreased from 25% to 50%*; *Revenue decreased from 1% to 25%*; *Revenue did not change*; *Revenue increased from 1% to 25%*; *Revenue increased from 25% to 50%*; *Revenue increased by more than 50%*

Digital_trans: It reflects the digital transformation capability of enterprises, measured by the percentage increase in digital technology applications on a scale of 1-5: 1 = below 10%; 2 = from 10-25%; 3 = from 25-50%; 4 = from 50-75%; 5 = above 75%. In this model, *Digital_trans* is the main independent variable to determine the role of digital transformation in the competitiveness and sustainable development strategy of enterprises. The coefficient of this variable is expected to be positive (Daub & Wiesinger, 2021; Kuzmina-Merlino & Saksonova, 2018; Osmundsen et al., 2018).

Export: The variable representing import-export enterprise that has a value of =1 if the enterprise is engaged in import-export activities, and =0 if the enterprise is not engaged in import-export activities

FDI_exper: The variable assigns a value of 1 to groups of businesses with experience working with FDI businesses, and 0 to businesses without experience working with FDI businesses.

Over_impact: The variable representing the 'impact of Covid_19 on overall operations' is a categorical variable with a value of =1 if the enterprise is facing difficulties due to Covid_19, and =0 if the enterprise is not facing any difficulties.

Product_impact: is a variable that receives a value of 0 if the business is not affected by the Covid-19 pandemic on production activities, and 1 if the business is affected by Covid-19 on production activities.

Digital_orient: The variable representing 'digital orientation' is a categorical variable with a value of =1 if the enterprise had already applied digital technologies before Covid-19; =2 if the enterprise started applying digital technologies since the outbreak of Covid-19; =3 if the enterprise has not yet applied digital technologies

Sale_impact: The variable representing 'impact of Covid_19 on sales activities' is a categorical variable with a value of =1 if the domestic market is contracted due to Covid_19, and =0 if the domestic market is not contracted due to Covid_19.

Enter_type: is a variable that receives a value of 1 for non-FDI businesses, and a value of 2 for FDI businesses."

Table 1. Descriptive statistic of dependent variable in the model

Revenue	1	2	3	4	5	6	7	Total
Frequency	69	138	121	35	12	2	2	379
Percentage	18.21	36.41	31.93	9.23	3.17	0.53	0.53	100

Source: The author's calculations on VCCI survey data.

According to the statistical data in Table 1, the proportion of businesses with a decrease in revenue during the pandemic of 25 to 50 (%) is the highest at approximately 36.41%, followed by the percentage of businesses with a revenue decrease of 25-50 (%) compared to before the pandemic at about 31.93%. Meanwhile, the proportion of businesses with unchanged or increased revenue during the pandemic compared to before the Covid-19 pandemic is relatively small. This is also evidence of the negative impact of the Covid-19 pandemic on the competitiveness of businesses.

Table 2. Descriptive statistic of independent variables in the model

Variable	Value	Percentage	Total (%)
Export	1	58.58	100
	0	41.28	
FDI_exper	1	31.4	100
	0	68.6	
Digital_trans	1	14.51	100
	2	28.56	
	3	32.98	
	4	18.21	
	5	5.54	
Overl_impact	0	87.07	100
	1	12.93	
Product_impact	0	71	100
	1	29	
Digital_orient	1	51.45	100
	2	29.02	
	3	19.53	
Sale_market	0	55	100
	1	56	
Enter_type	1	76	100
	2	24	

Source: The author's calculations on VCCI survey data.

3.2. Result of interval regression

The summary of the regression results for Model (1) is presented in Table 3. Based on the estimation results shown in Table 3, the variable *Chuyendoiso* is significant at the 5% level for levels 4 and 5; the variable *Nhanthuc_KTS* is significant at the 5% level for perception levels 3. The variables *Xuatnhapkhau*, *Tacsdong_SX*, and *Banhang* are all statistically significant at the 1% level, while the remaining variables are significant at the 10% level. Overall, all variables in the model are statistically significant.

Overall, the regression coefficients of the independent variables are consistent with expectations and reality. The coefficient of the variable *Export* is -14.8 indicates that, in the context of the Covid-19 pandemic, firms without import-export activities have a competitiveness capability lower than the average of about 14.8% compared to firms with import-export activities. This is consistent with the fact that firms with import-export activities have a larger and more potential market, and although their competitiveness may decrease during social distancing, it remains strong. The coefficient of the variable *FDI_exper* is -5.7 shows that firms without experience working with foreign direct investment (FDI) have a competitiveness capability lower than the average of about 5.7% compared to firms with experience working with FDI. This is entirely consistent with the fact that firms with experience working with FDI have a wider market and access to enterprises from developed countries with modern technology, giving them more experience and advantages in competition.

Table 3. Results of the regression model assessing the impact of factors on competitiveness

Biếndộc lập	Coefficient	Robust Std. Err.	95% conf. Interval	
<i>Export 0</i>	-14.7***	4.3	-23	-6.3
<i>FDI_exper 0</i>	-5.7*	3.3	-12.2	0.8
<i>Digital_trans</i>				
2	2.1	3.8	-5.4	9.7
3	3.0	3.6	-4.0	10.0
4	8.2**	4.2	0.05	16.4
5	14.9**	6.9	1.4	28.5
<i>over_impact 1</i>	5.7**	2.5	-0.49	10.1
<i>Product_impact 1</i>	-7.2***	2.6	-12.6	-2.5
<i>Digital_orient</i>				
2	-3.0	2.8	-8.3	2.5
3	-7.0**	3.3	-13.4	-0.59
<i>Sale_maket 1</i>	-11.9***	4.0	-19.7	-4.1
<i>Enter_type 2</i>	-6.1*	3.5	-12.9	0.6
<i>Cons.</i>	-11.7**	5.9	-23	-0.11

***, **, and * correspond to the significance level of 1%, 5%, and 10%, respectively.

Source: The author's calculations on VCCI survey.

The coefficient of the variable *Digital_trans* shows that at three levels of digital transformation (level 1, level 2, and level 3), i.e., the ability to convert digital below 10%, from 10-25%, and 25-50%, the coefficients are not statistically significant, meaning that the competitiveness of firms at these levels of transformation is the same. However, compared to firms with a level of digital conversion below 10%, firms with a level of digital conversion from 50-75% have a competitiveness capability higher than the average of about 8%, and firms with a level of digital conversion above 75% have a revenue higher than the average of about 15%. This result is consistent with many previous studies and with the fact that firms with a high level of digital transformation have a large competitiveness capability, as expected by resource-based theory.

The coefficient of the variable *Production_impact* is -7.2 shows that compared to firms not affected by the Covid-19 pandemic in production activities, firms affected by the pandemic in production activities have a revenue lower than the average of about 7.2%. This is entirely consistent with the fact that firms affected by the pandemic in production activities do not have enough input materials or input materials that have increased in price, leading to decreased revenue.

The coefficient of the variable *Sale_market* -12 shows that firms with a domestic market that has shrunk have a revenue lower than the average of about 12% compared to firms with a domestic market that has not shrunk. This can be explained by the fact that when the domestic market shrinks, the demand for the firm's products decreases, which affects its revenue.

The coefficient of the variable *Digital_orient* indicates the awareness of businesses towards digital technology's impact on digital transformation during the Covid-19 pandemic. Specifically, a coefficient of awareness at level 2 is not statistically significant, indicating no difference in revenue between businesses that had already implemented digital technologies prior to Covid-19 and those that started using digital technologies since the pandemic. However, a coefficient of awareness at level 3 is -7 and statistically significant, showing that businesses that had not applied digital technologies had lower revenue than those that had implemented digital technologies, with an average difference of about 7%. This is consistent with the fact that businesses that had already applied digital technologies had the resources to easily undergo digital transformation, and their revenue still increased even during the pandemic.

3.3. Result of non-parametric regression estimation

Table 4 on the estimation results shows that the average revenue level of businesses is forecasted to decrease by about 17%. The signs of the coefficients of the independent variables in the non-parametric regression model are completely consistent with the results in the parametric regression model. This confirms the reliability of the research results.

Table 4. Results of the non-parametric regression model assessing the impact of factors on competitive capacity

Doanh thu	Observed Estimate	Bootstrap Std. Err.	Percentile 95% conf. Interval	
<i>Mean_Revenue</i>	-17.6***	0.8	-19	-16
<i>Export 0</i>	-2.6***	1.0	-4.7	-1.3
<i>FDI_exper 0</i>	-0.9	0.7	-2.1	0.1
<i>Digital_trans</i>				
2	0.06	0.3	-0.5	0.5
3	0.53	0.6	-0.9	0.9
4	1.2**	0.6	0.1	2.0
5	1.1**	0.5	0.2	1.8
<i>Over_impact 1</i>	1.0	0.5	-0.5	1.7
<i>Product_impact 1</i>	-1.0*	0.6	-1.6	-0.1
<i>Digital_orient</i>				
2	-0.9**	0.39	-1.5	-0.1
3	-1.47**	0.77	-2.7	-0.2
<i>Sale_market 1</i>	-0.2	0.7	-1.6	0.7
<i>Enter_type 2</i>	-0.4	0.6	-0.9	0.6
<i>R_sq</i>	0.15	Number of obs.	379	

***, **, and * correspond to the significance level of 1%, 5%, and 10%, respectively.

Source: The author's calculations on VCCI survey data

4. Discussion and Conclusion

The consequences of the Covid-19 pandemic have had a serious impact on business operations, serving as a warning to companies to quickly grasp the trend of digital transformation in order to quickly overcome the pandemic. The research results also support the resource-based theory, with companies having strong digital resources, such as a workforce with high digital skills and the ability to bear the costs of digital transformation, having a higher ability to transform digitally than companies with weaker digital resources.

The regression results assessing the impact of factors on competitiveness and statistical analysis show that the Covid-19 pandemic has had a negative impact on the revenue of businesses, with the average revenue of businesses decreasing by 17%. The results also show that businesses with a digital transformation capability of 50% or more have a positive impact on revenue, specifically those with a digital transformation capability

of 50%-75% or above 75% have a corresponding ability to increase revenue by about 8% or 14% compared to businesses with a digital transformation rate below 50%.

From the above results, it can be seen that digital transformation is one of the main directions to help businesses overcome crises and develop sustainably. To help the community of businesses overcome difficulties while quickly maximizing the application of digital technology in business activities, the author proposes the following recommendations:

To the government

The government needs to have policies that support credit packages for the block of businesses to create conditions for them to expand their infrastructure capable of applying high-tech applications in business operations. In addition to the government's support for legal procedures, administrative procedures, replacing traditional paper forms, transparency of rules and regulations on data management can be hoped for significant changes in the digital transformation trend at Vietnamese enterprises in the coming time.

On the enterprises

Businesses should also retrain their workforce before implementing digital transformation to improve the digital expertise of workers to meet the requirements of using and applying digital technology, as well as help them understand the role of digital transformation in the business block. At the same time, businesses also need a system of consulting experts to ensure that the digital transformation process maintains the security of personal and corporate data. Businesses should expand foreign markets or partner with foreign-invested enterprises to enhance their competitiveness. From there, businesses can take significant steps in digital transformation, promoting sustainable development in the current context.

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FACTORS AFFECTING ENTERPRISE'S DIGITAL TRANSFORMATION

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Abstract

The purpose of this research is to answer the questions of what is the enterprise's digital transformation, and what factors affect the digital transformation of enterprises in Vietnam. The research model is tested on survey data using SmartPLS technology. Three factors were verified as having a statistically significant impact on the enterprise's digital transformation, including corporate culture, digital business strategy, and technology infrastructure, whereas three others were not, which include an employee competence in information technology, governance, and competitive pressure. This research is a piece of information on enterprise's digital transformation in Vietnam contributed to the literature and is useful for enterprise management.

Keywords: *Enterprise's digital transformation, employee competence in information technology, success of an enterprise's digital transformation.*

1. Introduction

In recent years, especially after the COVID-19 pandemic, Vietnamese businesses have realized the importance of digital transformation and have applied digital technologies in internal management, input procurement, logistics, production, marketing, sales, and payment. I-Cloud is the most widely used tool in internal management, with 60.6% of enterprises in the survey sample conducted by VCCI in 2020, followed by online conferencing systems, task management systems, and processes, approximately 30% of enterprises. In the banking sector, digital transformation has been implemented starting with IoT applications allowing customers to access and use banking services, connect with other digital ecosystems on the Internet, or provide online banking services via applications installed on mobile phones (Luong Minh Quan et. al., 2020). Digital transformation has brought specific benefits to businesses, consumers, and society. The purpose of this research is to answer the question of what digital transformation is, and what factors affect the success of businesses' digital transformation in Vietnam. Two main contents of the article are a literature review on digital transformation, and an empirical analysis of the factors determining the success of Vietnamese enterprise's digital transformation, then management and policy implications drawn.

2. Literature review

2.1. The concept of digital transformation

Digital transformation has received more and more attention; however, it is hard to find a unified definition of it in literature and in practice. Liu *et al.* (2011) argue that the digital transformation of enterprises is the integration of digital technologies into business processes. Bharadwaj *et al.* (2013) consider digital transformation as an organizational strategy built and implemented by leveraging digital resources to create differentiated value. According to Fitzgerald *et al.* (2013), digital transformation is the use of digital technologies to create major improvements in business. Lucas *et al.* (2013) define digital transformation as fundamentally changing traditional ways of doing business by redefining business capabilities, processes, and relationships. According to Mithas *et al.* (2013), digital transformation is the extent to which an organization participates in an information technology activity. Westerman *et al.* (2014b) define digital transformation as the use of technology to radically improve the operational efficiency or reach of an enterprise. Henriette *et al.* (2015) argue that digital transformation is a business model driven by changes associated with the adoption of digital technology in all aspects of human society. According to Piccinini *et al.* (2015b) digital transformation is characterized by the use of new digital technologies to create great improvements in business. Schuchmann & Seufert (2015) define digital transformation as the reorganization of technology and new business models to more effectively engage digital customers at every touch point in the customer experience lifecycle. According to Chaniias & Hess (2016), digital transformation reflects the pervasiveness of changes caused by digital technologies throughout an organization. Hess *et al.* (2016) refer to digital transformation as the changes that digital technology can bring in a company's business model, resulting in a changed product or organizational structure, or in automation of processes. According to Gobbe (2018) digital transformation is the transformation of an organization's business and activities, processes, capabilities and models to make the most of the change and opportunities of digital technologies, and their increasingly rapid impact on society in a strategic and priority manner.

In general, digital transformation is considered to be the incorporation of digital technology into all areas of an enterprise, fundamentally changing operations and management processes, transferring value to customers and company culture.

Digital transformation reduces costs in production and sales processes because the unified digital-based management helps smooth information flow, eliminating unnecessary clues (Mikalf *et al.*, 2020). Digital transformation increases labor productivity because automation reduces labor intensity (Brynjolfsson, 2017), supports dynamic decision-making based on data (Athey, 2017), and overall improvement due to optimization of organizational restructuring (Li, Li, Guo & Li, 2018). Digital transformation increases the efficiency of company assets. Björkdahl (2020) believes that the digital transformation of companies is focused on improving operational processes, that is, reducing actual costs and increasing work efficiency in key business activities.

However, digital transformation also increases the operating costs of businesses because investment must be made in digital resources such as infrastructure (introducing software and hardware related to digital technologies and their maintaining and updating afterward to enable the digital transformation of business activities); outsourcing certain digital services; establish independent branches to exploit digital business in some cases. However, what we are interested in digital transformation is the net benefits to business operations. The research by Guo and Xu (2021) confirms the U-shaped relationship between digital transformation and the financial performance of profit organizations. When revenue reaches a certain level, it creates a synergy to improve the performance of the firm.

According to Morakanyane, Grace & O'Reilly (2017), the characteristics of digital transformation are the behavioral characteristics exhibited by this phenomenon. The behavior of digital transformation is radical, disruptive, evolutionary, continuous, and complex. Digital transformation drivers are the factors that influence and facilitate the digital transformation process. Digital capabilities and maturity, digital technologies, strategies, business models, and so on are the drivers of digital transformation in organizations. Digital transformation impacts are the effects that business organizations experience as a result of digital transformation. These impacts have been categorized as customer-focused and organization-focused. Customer-focused is the impact on customers and organization-focused is the effect on the organization itself. These impacts can be either positive or negative, but the ultimate impact of digital transformation that organizations want to capitalize on is value creation - for both the organization and the customer. The company's three key transformational areas are customer experience, operational processes, and business models (Morakanyane, Grace & O'Reilly, 2017).

According to the Digital Transformation 2017 Report conducted by Microsoft (Microsoft, 2017), the four dimensions of digital transformation are strategy, people, process, and technology; There is a consensus among senior executives interviewed that customer engagement is the most important aspect of all aspects of digital transformation, and they all agreed that digital transformation has great potential in increasing operational effectiveness.

2.2. Factors affecting digital transformation

A lot of pieces of research have been done to identify the factors that influence the success of digital transformation in organizations. Mhlungu, Chen & Alkema (2019) found four groups of factors affecting the success of digital transformation initiatives in organizations, including customer-centricity, governance, innovation, and input procurement. These authors also pointed out that IT and non-IT managers share a common perception of the factors that influence the overall success of an organization's digital transformation. Nguyen Thi Mai Huong and Bui Thi Sen (2021) identified five factors affecting the intention to implement digital transformation of small and medium-sized enterprises in Hanoi, level of technology use, the business culture, technological infrastructure, financial capacity of the enterprise, purpose, and goal of digital transformation. According to Tungpantong, Nilsook, and Wannapiroon (2022), factors affecting the success of digital transformation in universities include strategy, process,

human product/service, data, and technology. Jovica Stanković and Jelena Z. Stanković (2022) confirmed three groups of factors affecting the application of information technology in e-insurance, the first group is technological factors, and the second group is the e-insurance organizational factors, and the third group is environmental factors. According to Ko, Kovacs and Szabó (2022) digital innovations are strongly influenced by corporate and management commitment, less by strategy. In digital transformation, the role of information technology and services departments is less relevant. Nguyen Thi Kim Anh (2022) has drawn from previous studies factors (and scale) affecting the digital transformation of enterprises, including governance, digital business strategy, ability of employees, corporate culture, technology infrastructure, and pressures on the business.

2.3. Research model

Inheriting previous studies, we propose the research model shown in Figure 1.

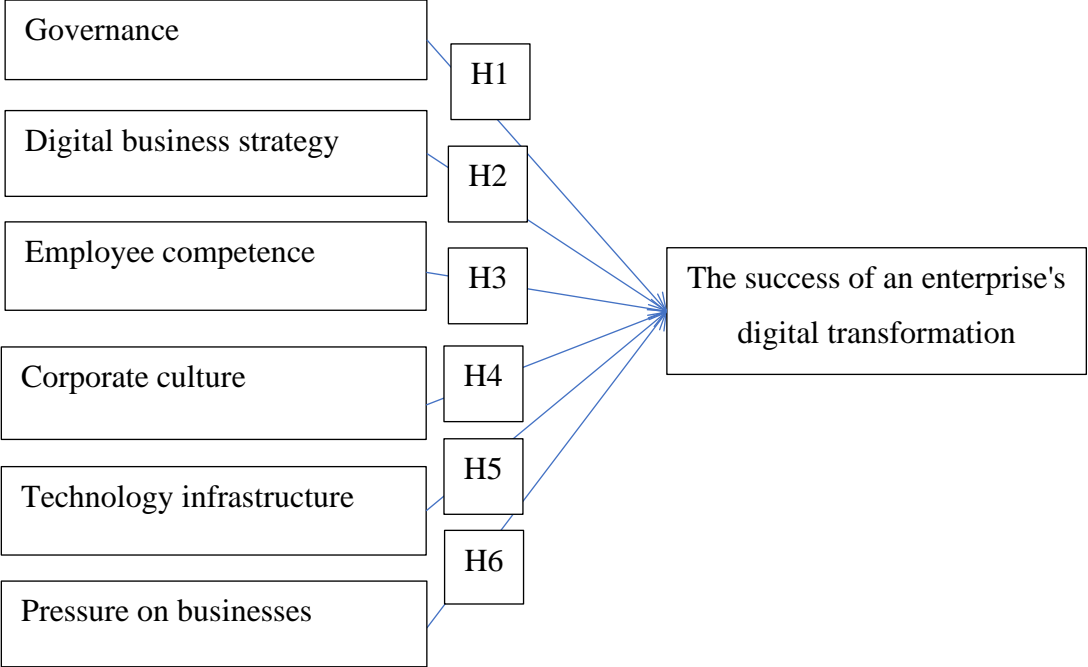


Figure 1. Research model

Governance

Governance is crucial to the success of an organization’s digital transformation. Business leaders are those who are interested in and have a positive attitude towards business's digital transformation, use new digital applications in interacting with employees, constantly learn to develop competence to meet the requirements of digital transformation, and support any digital transformation initiatives and be ready to handle any concern arising from the dark side of the digital transformation process, then the success will be likely. Therefore, we hypothesize that

H1: The enterprise’s governance positively relates to the success of an enterprise's digital transformation.

Digital business strategy

Strategy is the set of decisions made by leaders about the long-term objectives of the organization, and the means, ways, and how to achieve those objectives. If objectives of digital transformation are mentioned in the business strategy, aiming to change the operating model to create new value for customers and businesses, towards optimizing the customer experience on a digital basis, the enterprise has the plan to set up (or has) an electronic office and use the database in decision making, the digital transformation will likely succeed. Thus, we hypothesize that

H2: Digital business strategy positively relates to the success of an enterprise's digital transformation.

Employee competence

Human resources are an important factor in any operation. Digital transformation requires hardware, software, and people to operate. Therefore, enterprises need training programs to create staff specialized in IT, and competent in using IT applications, and employees have a positive attitude toward new technological applications in fulfilling jobs. Thus, we hypothesize that

H3: Employee competence positively relates to the success of an enterprise's digital transformation.

Corporate culture

Digital transformation in organizations is influenced by organizational culture. In the enterprise, if the spirit of learning is always promoted, individuals are active in work, ready to share knowledge and experience with each other, and have cooperative behavior in work, all activities, including with digital conversion will be highly effective. Moreover, it is of great significance to the success of digital transformation if stored information is treated as an enterprise property, and its data is always verified before storing and sharing. Therefore, we hypothesize that

H4: Corporate culture positively relates to the success of an enterprise's digital transformation.

Technology infrastructure

Digital transformation is impossible without a technology infrastructure. A technology infrastructure that allows businesses to use the website to post information and promote their image, employees to use personal electronic devices to do work, use internal interaction systems such as email, OTT tools (Zalo, Viber, Facebook...), and electronic office software to reduce direct communication. The technology infrastructure allows businesses to use iCloud in internal management and create a digital workspace. Thus, we hypothesize that

H5: Technology infrastructure positively relates to the success of an enterprise's digital transformation.

Pressure on businesses

In a fiercely competitive environment, to thrive businesses must attract and "retain" customers, not lose customers to competitors. Digital technologies will help businesses communicate with customers better so that they can provide goods/services that match customer needs, and in many cases, goods/services that businesses provided may be customized. Digital technology allows businesses to optimize business and management processes, create better linkages between departments, use resources more efficiently, and increase transparency and effectiveness in business. management, and innovation in creating products/services for customers. Therefore, we hypothesize that

H6: Pressure on businesses positively relates to the success of an enterprise's digital transformation.

3. Method

Six hypotheses were tested by a quantitative survey on the factors affecting the digital transformation of enterprises in Vietnam, applying structural equation modeling. Details of the research design are provided in the following sections. First, a description of the development of the survey instrument and an introduction of sample subjects. This is followed by identifying measures employed to assess the variables and the scale reliability and validity data are reported. Next, the structural modeling results associated with this survey are presented.

Survey instruments

Based on the extensive literature review, the design a questionnaire was made. The first part of the questionnaire includes questions about a participant's information and the second consists of six multivariate/item scales measuring factors that affect enterprise's digital transformation, using a 5-point Likert scale with increasing agreement from "Not agree at all" to "Completely agree".

Data for this research are collected from a non-probability convenience sample. The online survey was conducted using the Google Form application. The internet address (URL) of the survey was sent to participants via e-mail and uploaded to groups on social networks (Facebook, Zalo, i-Messeges, MS Teams...). The survey was carried out from January to February 2023, and 183 valid responses have been collected, which fulfills the requirement of sample size (Hair *et. al.*, 2014).

The majority of participants are SMEs, accounting for 52%. 135 enterprises own offices registered in Hanoi, 8 in HCM city, and the rest in northern provinces. 20 enterprises operate in the manufacturing industry, accounting for 10.9%, 43 in commerce accounting for 21.5%, 8 in information and communication accounting for 4.4%, 14 in information technology, accounting for 7.7%, 35 in finance and insurance, accounting for 19.1%, and 63 in others, accounting for 34.4%.

Research methods

The research model (Figure 1) was tested by applying structural equation model-based PLS methodology (using SmartPLS software version 4.0.8.9).

Measurement model estimation

Model estimation is the first step in data analysis. An estimation of the internal consistency and the convergent and discriminant validity of the instrument items was conducted to test the measurement model. When reliability measures were above the level recommended of 70 internal consistency is demonstrated (Fornell & Bookstein, 1982; Nunnally & Bernstein, 1994). All reliability measures were above .70 (Table 1), indicating adequate internal consistency. The AVE ranging from 0.783 to 0.834 (Table 1) was above the target of .05 (Chin, 1998; Fornell & Larcker, 1981). The variance shared with the construct and its measures is greater than the error when $AVE > .50$. For all model constructs this level is reached.

When the item loads highly (loading is greater than .50) on their associated factors, convergent validity is demonstrated. If individual reflective measures correlate more than .70 with the construct they intend to measure then they are considered to be reliable.

Table 1. Convergent and discriminant validity of the model constructs

Variable	Outer loading	Variable	Outer loading
Governance		CUL1	0.875
IC = 0.96		CUL2	0.92
AVE = 0.834		CUL3	0.902
GOV1	0.919	CUL4	0.846
GOV2	0.922	CUL5	0.848
GOV3	0.898	CUL6	0.882
GOV4	0.915	Technology infrastructure	
GOV5	0.923	IC = 0.892	
GOV6	0.902	AVE = 0.687	
Digital business strategy		TEC1	0.848
IC = 0.924		TEC2	0.767
AVE = 0.764		TEC3	0.871
STR1	0.86	TEC4	0.794
STR2	0.857	Pressure on businesses	
STR3	0.881	IC = 0.936	
STR4	0.897	AVE = 0.757	
STR5	0.877	PRE1	0.788
Employee competence		PRE2	0.906
IC = 0.889		PRE3	0.88

Variable	Outer loading	Variable	Outer loading
AVE = 0.743		PRE4	0.889
COM1	0.875	PRE5	0.884
COM2	0.863	PRE6	0.868
COM3	0.863	Success of an enterprise's digital transformation	
COM4	0.848	IC = 0.908	
Corporate culture		AVE = 0.783	
IC = 0.942		SUC1	0.887
AVE = 0.773		SUC2	0.896
		SUC3	0.880
		SUC4	0.876

IC = internal consistency (Composite reliability (ρ_a); AVE = average variance extracted

Source: authors extracted from the processed data

Discriminant validity was assessed by comparing the square root of the AVE for each construct with the correlation between the construct with other constructs in the model (Chin, 1998; Fornell & Larcker, 1981). All constructs in the estimated model satisfied the condition of discriminant validity (Table 2).

Table 2. Correlation among construct scores (Discriminant validity - Fornell-Larcker criterion)

	Corporate culture	Employee competence	Governance	Pressure on corporate	Digital business strategy	Success of a enterprise DT	Technology infrastructure
Corporate culture	0.879						
Employees' competence	0.792	0.862					
Governance	0.705	0.661	0.913				
Pressure on corporate	0.708	0.629	0.706	0.87			
Digital business strategy	0.758	0.8	0.776	0.625	0.874		
Success of a enterprise DT	0.742	0.725	0.679	0.654	0.777	0.885	
Technology infrastructure	0.654	0.669	0.752	0.666	0.719	0.739	0.829

Note: The boldface figures in the diagonal represent the square root of the AVE figures. They should be higher than the correlation figures.

Source: authors extracted from the processed data

Table 3. Collinearity statistics - VIF - inner model

Success of an enterprise's digital transformation	
Corporate culture	3.626
Employees' competence	3.695
Governance	3.579
Pressure on corporate	2.553
Digital business strategy	4.219
Technology infrastructure	2.809

Source: authors extracted from the processed data

4. Structural model results

R² for dependent constructs

The results indicate that the structural model explains 70 percent of the variance in the success of an enterprise's digital transformation (Figure 2). The percentage of variance explained for the dependent variable was greater than 10 percent, indicating the satisfactory value of the PLS model (Falk & Miller, 1992).

Structural coefficients

The results of the estimated model show that three of six constructs hypothesized to affect the success of an enterprise's digital transformation were significant, which includes corporate culture (CUL), digital business strategy (STR), and technology infrastructure (TEC), and were supported at $p < .050$. The employees' competence in information technology (COM), governance (GOV), and pressure on enterprises (PRE) were not significant (Table 4).

Table 4. Structure (inner) model results

	Path coefficients	T statistics (O/STDEV)	Sig. level
Effects on the success of a enterprise digital transformation (adjusted R = 0.70)			
Corporate culture	0.222	2.28	**
Employees' competence	0.067	0.722	ns
Governance	-0.082	0.944	ns
Pressure on corporate	0.102	1.404	ns
Digital business strategy	0.341	3.556	****
Technology infrastructure	0.298	3.679	****

**** $p < .001$, ** $p < .050$

ns = not significant

Source: authors extracted from the processed data

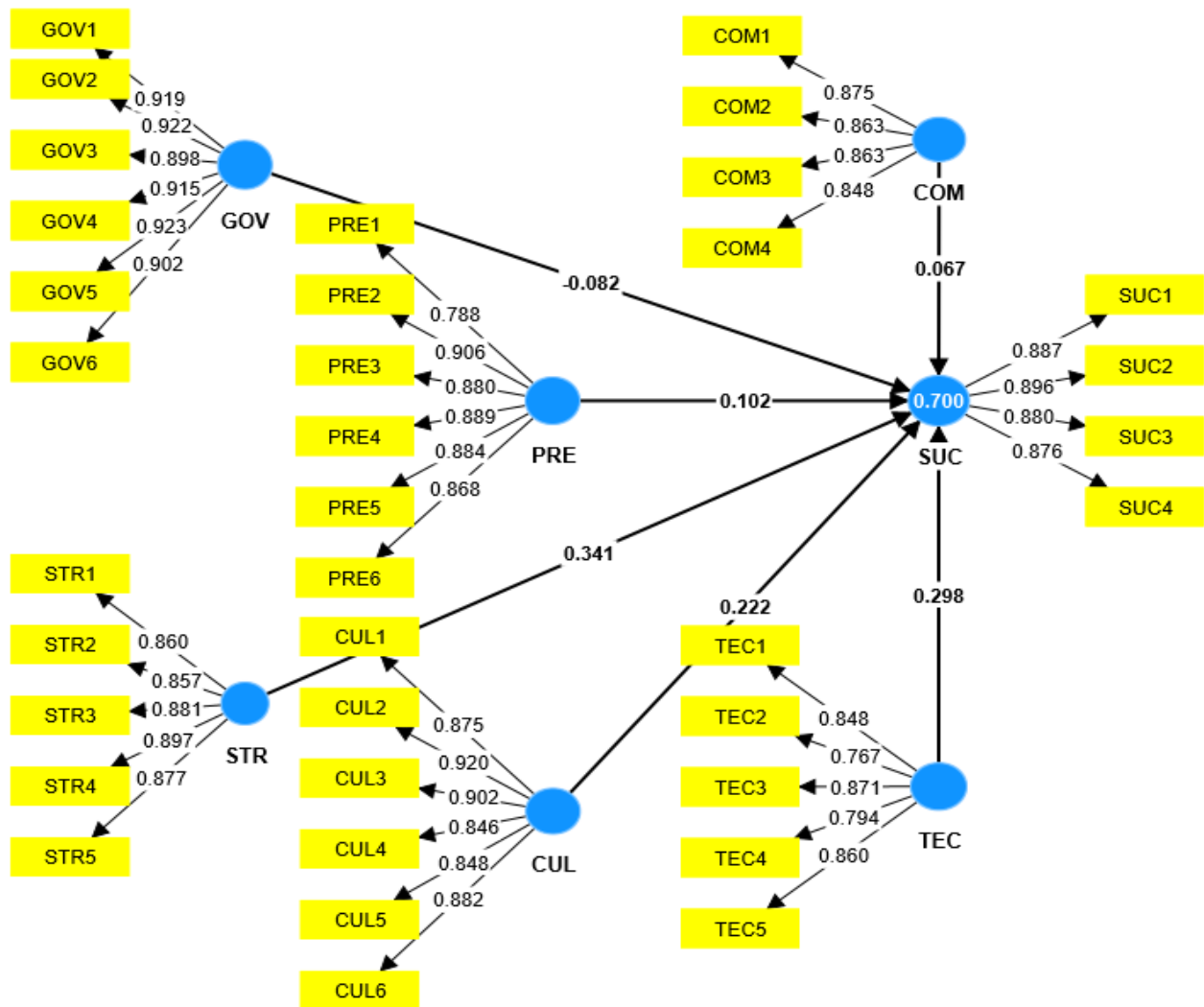


Figure 2. Structural (inner) model results

Effect size (f square)

f square indicates the effect size of independent variables on dependent variables. According to Cohen (1988), $f\text{ square} < 0.02$ indicates an extreme small effect, $0.02 \leq f\text{ square} < 0.15$: shows a small effect; $0.15 \leq f\text{ square} < 0.35$ implies a medium effect; and $f\text{ square} \geq 0.35$: represents a large effect. In the estimated model results demonstrate that corporate culture, digital business strategy, and technology infrastructure have a medium effect, while employee competence, governance, and pressure on the enterprise have a small effect on the success of an enterprise's digital transformation (Table 4).

5. Discussion and conclusion

This research examined factors affecting an enterprise's digital transformation. The model was tested on survey data using SmartPLS technology. Three of the six hypotheses were supported by the data. *Corporate culture*, *digital business strategy*, and *technology infrastructure* significantly affect the enterprise's digital transformation. This is partly in accordance with the findings of Nguyen Thi Mai Huong and Bui Thi Sen (2021),

Wannapiroon (2022), Tungpantong, Nilsook, and Wannapiroon (2022), and Jovica Stanković and Jelena Z. Stanković (2022).

In contrast with previous pieces of research, we found that *employees' competence*, *governance*, and *competitive pressure on corporate* insignificantly influence the enterprise's digital transformation. Mhlungu, Chen & Alkema (2019) found *governance* was one of four groups of factors affecting the success of digital transformation initiatives in organizations; Tungpantong, Nilsook, and Wannapiroon (2022) ascertained *strategy* significant success factor of digital transformation in universities; Jovica Stanković and Jelena Z. Stanković (2022) confirmed *environmental factors* affect the application of information technology in e-insurance.

Practical implications

The research model results imply that corporate culture, digital business strategy, and technology infrastructure influence the success of an enterprise's digital transformation. They are organizational, therefore, to leverage the advantages of digital transformation, enterprises must focus on building a learning organization, sharing knowledge with each other within the organization, and ensuring that stored information is treated as an enterprise property and that its data is always verified before storing and sharing. To ensure the success of the enterprise's digital transformation enterprise's digital business strategy is necessary in place. In addition, enterprises should invest in their own technology infrastructure.

Limitations and directions for further research

No grants were awarded for this research therefore data are collected from a non-probability convenience sample, which may cause bias. Moreover, employee competence, governance, and competitive pressure on corporate theoretically have an impact on the enterprise's digital transformation, therefore further research in the future would examine situations in which they affect the enterprise's digital transformation.

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Appendix

Survey questions

Governance

GOV1 = Business leaders are very interested in digital transformation

GOV2 = Leaders have a positive attitude toward business digital transformation

GOV3 = Business leaders use new technology applications in interacting with employees

GOV4 = Business leaders strongly support the application of digitalization of operational and management processes in the enterprise

GOV5 = Leaders are constantly learning to develop their capacity to meet digital transformation requirements

GOV6 = Leaders are ready to address concerns arising from the dark side of digital transformation

Digital business strategy

STR1 = Digital transformation goals are mentioned in the enterprise's business strategy

STR2 = The enterprise determines the plan to establish an electronic office in its strategic plan

STR3 = The enterprise deploys the database system

STR4 = The enterprise's strategy is to change the operating model to create new value for customers

STR5 = The enterprise aims to optimize customer experience on digital platforms

Employee competence

COM1 = Employees have good skills in using information technology applications

COM2 = Enterprise has training programs, equipping employees to use process digitization applications

COM3 = Employees have a positive attitude towards new technology applications in their work

COM4 = Enterprise has employees specialized in the field of information technology

Corporate culture

CUL1 = Each individual in the business is willing to share knowledge and experience with colleagues

CUL2 = The spirit of learning is always appreciated

CUL3 = Each individual is active in the work

CUL4 = The stored information is a common property of the business

CUL5 = Your data is always verified before storing and sharing

CUL6 = The work coordination in the enterprise is very good

Technology infrastructure

TEC1 = Enterprise uses the website to give information and promote its images

TEC2 = Enterprise creates conditions for employees to use personal electronic devices to perform work

TEC3 = Enterprise uses internal interaction systems to reduce face-to-face communication (calling, meeting) such as email, OTT tools (Zalo, Viber, Facebook...), and electronic office software.

TEC4 = Enterprise uses iCloud (which is a computing model using computer technology developed based on the internet) for internal management

TEC5 = Enterprise has created a digital workspace in its working environment

Pressure on enterprise

PRE1 = Enterprise needs digital technologies to better communicate with customers

PRE2 = Enterprise needs optimization of business and management processes

PRE3 = Enterprise needs better alignment between departments

PRE4 = Enterprise needs the more efficient use of resources

PRE5 = Enterprise needs to increase transparency and efficiency in governance

PRE6 = Enterprise needs innovation in creating products/services for customers

Enterprise's digital transformation possibility

SUC1 = Enterprise is fully capable of digital transformation of all business and management processes

SUC2 = Enterprise can completely bring new values and experiences to customers on digital technology platforms

SUC3 = Enterprise is fully capable of successful digital transformation

SUC4 = Enterprise can achieve higher business efficiency after successful digital transformation

FACTORS AFFECTING ORGANIZATIONAL ENGAGEMENT OF EMPLOYEES IN THE CONTEXT OF THE DIGITAL TRANSFORMATION: AN EMPIRICAL EVIDENCE

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Abstract

The aims of the study are to evaluate the factors affecting employee engagement in the organization in the context of digital transformation. Using a survey sample of 198 employees living and working in Hanoi, using regression analysis using SPSS software, the research results confirm that the digital transformation does not impact on the employee engagement in the organization. However, the level of promotion, education and training have a positive impact on the engagement of individuals in the organization. In addition, income, and co-worker relationship do not have any impact on engagement through this study. Finally, the study discusses some managerial implications to improve employee engagement in the organization.

Keywords: *Employee, engagement, regressions.*

1. Introduction

Enterprise is considered an important entity in the economy to create jobs, generate income for employees, source of budget revenue and the economic development. The contribution of enterprises to the economy also lies in their ability to contribute to the digital transformation, renew the growth model and especially restore production due to the impacts of the pandemic and macroeconomic instability in recent times. As known, Vietnam in particular and the world in general are heavily affected by the pandemic in the period of 2020 - 2021, which has disrupted supply chains, production, and economies in most of the developing countries that felt into recession. In addition, the world has significantly faced the oil crisis, high oil prices lead to many countries not having enough energy sources for production, including Vietnam since 2022. As a result, the role of enterprises in restoring production and socio-economic development is extremely large.

To create the output of business development, the production function Cobb - Douglas believes that there are three factors that should be considered, respectively: capital, human resources and technology. Human factor is related to employees when they use their health, knowledge and skills to meet production in an enterprise. However, the socio-economic development helps workers with skills and qualifications also have the ability to improve, so workers have many opportunities in finding new jobs to satisfy their own needs. It is likely to affect the cohesion of employees in the enterprise and affect the sustainable development of the enterprise in the long term. However, the country has just experienced

the impact of the pandemic and the economic difficulties in 2022, there have been many impacts on the income, promotion and development of workers and thus have to the employee's commitment to the organization, which is the reason for the formation of this study. At the same time, the rapidly occurring digital transformation context is associated with the transformation of economic activities because the impact of the industrial revolution 4.0 may also have an impact on the cohesion of employees in the organization. .

Previous studies have studied the employee's commitment to the organization and said that income factors, working environment, promotion opportunities and a number of other factors are likely to affect employee commitment to the organization. Cheah et al. (2016) suggested that training and development, organizational equity, and incentives have a significant influence on employees' organizational commitment. Or Ceylan et al (2021) once affirmed the importance of work, relationships at work have a great influence on employee engagement. However, training, promotion and work motivation become important as mentioned in the study by Booth-Kewley et al. (2017).

However, the socio-economic context has changed a lot in Vietnam in recent years, the economy has recovered from the impact of the pandemic, and the industrial revolution 4.0 has been taking place strongly, it has changed the behavior of workers and their level of commitment to the organization. Employees have more opportunities in career development, seeking a favorable working environment. However, there has been no research evaluating the impact of digital transformation on employee engagement, which is the reason for this study.

2. Literature Review

The cohesion of employees is shown by employees feeling excited about the working environment in the enterprise and they always want to accompany and develop together with the enterprise. Employees attached to the business are usually satisfied with the development of the organization and always want to bring their efforts and wisdom to contribute to the development of the organization. It can be said that an enterprise that has the ability to have loyal and engaged employees must be a good and developed enterprise, then the enterprise has the ability to perform well the role of creating and developing business in the market.

Dinh (2020) aimed to develop a research framework to evaluate the factors affecting the commitment to the organization of employees working in foreign direct investment (FDI) enterprises. The study was conducted and sent to 312 employees in FDI enterprises; using quantitative analysis through scale reliability analysis through Cronbach's Alpha, Exploratory Factor Analysis to check internal consistency, reliability, size and value of each variable. Research results show that leadership style has the strongest influence on organizational commitment, followed by job satisfaction and work performance. However, there is no statistical evidence that job satisfaction has an impact on job performance. In addition, the study also showed that leadership style has no indirect impact on job results through job satisfaction, but it indirectly affects organizational commitment through job results.

Research by Cheah et al. (2016) suggests that the biggest challenge that organizations face is changes in the attitudes and working behavior of employees, especially employees of Generation X. Further, Cheah et al. (2016) conducted a study to determine the factors affecting organizational commitment through survey data of 300 Generation X employees and using regression analysis, the authors found that training and development, organizational equity, task orientation, knowledge sharing, compensation and incentives are significantly influencing workers' organizational commitment. This sets out for businesses to always pay attention to training and development, creating a fair competitive environment in the business to create motivation for business development in the volatile business environment nowadays.

Another possibility, Ceylan et al (2021) assessed the influence on commitment and engagement in organizations based on a sample conducted with 205 participants working in an organization. The key findings of the study showed that job commitment is positively affected by organizational trust, the importance of work, relationships at work and negatively affected by self-confidence. Organizational trust and relationship at work have a negative effect on employee's intention to leave. The results of this study can be used by organizations in making strategic decisions about one of their most valuable assets, employees and employee engagement.

Research by Booth-Kewley et al (2017) suggests that organizational commitment is a psychological state that has a strong impact on the likelihood that employees will stay with the organization. In particular, organizational commitment can predict a number of important outcomes, including job performance, morale and perceived readiness, and commitment and engagement in the organization. Booth-Kewley et al (2017) conducted a survey of 1597 people in the United States and performed a quantitative analysis, showing that a number of factors affect the commitment of individuals in the organization, including: motivation, positive perception of training, confidence about promotion, confidence in career ability, social support. In addition, Hirschi & Spurk (2021) suggested that employees often have ambitions to achieve important results and advance at work. Research suggests that ambition to achieve is positively related to organizational commitment, especially when there are many career opportunities in the organization. Overall, employee ambition is generally positive and indirectly beneficial to the assessment of individual job performance, but also poses some risks to organizational retention management.

According to Saha (2016) on a study factors affecting organizational commitment, namely job satisfaction, leadership style and organizational environment. Specifically, a business has the ability to maintain and enhance employee performance and company productivity, the business becomes more efficient. To do that, factors such as working environment, working conditions, salary management, promotion opportunities, job security, relationship with manager, relationship with colleagues and the relationship between managers and employees is the core factor affecting job satisfaction and it is the foundation of employee engagement in the organization. Moreover, the study also confirmed that leadership incentives will encourage employees to commit more to their organizations.

Aspects of the organizational environment that lead to organizational commitment namely training and development, communication satisfaction, performance evaluation, employee empowerment and employee motivation, work. According to the group, trust between employees and managers, employee health and the image of the organization are all important factors affecting employee commitment in the organization.

In the rapidly changing business environment, businesses and the state always face different challenges at work in order to improve labor productivity and at the same time maintain employee engagement in the workplace. Estigoy and Sulasula (2020) conducted a study to evaluate the factors affecting employee commitment in the employee's workplace. The research results emphasize the employee's current working relationship with the manager, colleagues and perception of employee commitment in the workplace and this is a group of factors that affect the employee's commitment to the organization. The study also found that the organization is able to maintain individual beliefs about the working relationship, based on leadership commitment and full awareness from the business, there is an influence on the level of engagement.

Sangperm (2017) researched the level of commitment and factors affecting organizational commitment of employees based on a sample included with 384 employees collected by sampling method. stratification rate. Through survey questionnaires, data is collected and errors are processed, multiple regression analysis is performed and research results are obtained: the level of organizational commitment of employees is affected by the organizational justice, job satisfaction and organizational commitment to job performance. In which, the study confirms that compensation policy, and communication have an influence on organizational commitment at 20.1% with statistical significance at 1%, while variables expressing satisfaction in job (ownership, job description, environment, interpersonal and salary) has an effect on organizational commitment at 35.7% with statistical significance at 1%.

3. Method

3.1. Data source

According to Hoang Trong and Chu Nguyen Mong Ngoc (2008), the sample size must be equal to 5 times the number of variables in the factor analysis. With the number of observed variables of 22, the minimum sample size should be 110. However, this study conducted a survey on a sample size of 202 people. After removing the faulty questionnaires, the number of usable questionnaires was 198. The sample size in this case satisfied the conditions of the quantitative analysis. Data collection time is carried out in February 2023 for employees working at enterprises in the city of Hanoi. The authors conduct the survey by distributing questionnaires to employees working in Hanoi by random method.

3.2. Research Methodology

Based on the research of Sangperm (2017), the study has an extension of the research, the regression equation is as follows:

Regression:

$$Ganket_i = \beta_{0i} + \beta_1 thunhap_i + \beta_2 thangtien_i + \beta_3 congngheso_i + \beta_4 dongnghiep_i + \beta_5 daotao_i + \mu_i$$

Where,

Ganket, which is a variable reflecting individual engagement in the organization, is developed through the research of Saha (2016), Booth-Kewley et al (2017), Hirschi & Spurk (2021);

Thunhap, which is a variable reflecting income, is developed through the study of Saha (2016), Sangperm (2017);

Thangtien, which is an independent variable reflecting the promotion ability of employees, is developed in the study of Saha (2016), Booth-Kewley et al (2017);

Congngheso, which is an independent variable reflecting digital transformation, digital environment and employee engagement, is proposed in this study;

Dongnghiep, which is an independent variable reflecting the relationship between employees and colleagues, is discussed in the study of Saha (2016), Estigoy and Sulasula (2020);

Daotao, which is an independent variable reflecting employees' training and retraining during their work, is mentioned in the study of Saha (2016);

The study used quantitative analysis through multiple regression. In order to do this, the research first conducts the analysis of the scale reliability in order to select a scale with a reliable level and use it in the analysis. Next, study EFA analysis and rotation matrix, then correlation and regression analysis. The results from the regression analysis are used to discuss the results and the managerial implications to increase employee engagement in the organization. In this study, we use the ordinary least squares (OLS) regression analysis.

4. Results

4.1. Descriptive statistics

Table 1. Descriptive statistics

Variable	Obs.	Min	Max	Min	Std.dev
Gender	198	0	1	.55	.499
Age	198	1	4	2.36	.805
Level of qualification	198	1	4	2.46	.778
Job	198	1	4	2.28	1.048
Income	198	1	4	2.35	1.025

Source: The analysis

According to the results of descriptive statistical analysis of the variables, it can be seen that 55% of men and 45% of women participated in this survey. For the age group, the survey sample has the middle age group mainly participating in the survey (corresponding to the mean value of 2.36). Qualifications are mainly college and university graduates, with an average value of 2.46. The average income is quite good, the average value is only 2.35 compared to the largest level of 4.

4.2. VIF Cronbach's alpha test

Table 2. The test of Cronbach's alpha

Variable	Questionnaire	Scale mean if item deleted	Scale variance if item deleted	Corrected item total correlation	Cronbach's Alpha if item deleted	Cronbach's alpha
thunhap1	Employees feel that they are properly compensated	11.09	3.058	.667	.701	0.787
thunhap2	Employees are evaluated fairly	11.19	2.988	.572	.746	
thunhap3	Employees get an annual salary increase	11.11	3.064	.576	.743	
thunhap4	The development of the business helps to improve employee's income	11.18	3.002	.569	.748	
thangtien1	Working environment can encourage promotion	10.97	2.821	.585	.657	0.742
thangtien2	Employees are recognized for their achievements	11.04	2.846	.433	.748	
thangtien3	Employees have the opportunity to develop and be recognized	10.98	2.761	.581	.658	
thangtien4	The company has a clear and transparent evaluation policy	11.11	2.806	.559	.670	
congngheso 1	The company always implements management technology into operations	11.17	3.033	.902	.880	0.927
congngheso 2	Workers are exposed to working technology	11.15	3.236	.771	.925	
congngheso 3	The company intends and implements a number of new technologies to improve productivity	11.18	3.365	.781	.920	

Variable	Questionnaire	Scale mean if item deleted	Scale variance if item deleted	Corrected item total correlation	Cronbach's Alpha if item deleted	Cronbach's alpha
congngheso4	The company regularly reviews the production process and makes appropriate modifications	11.17	3.138	.868	.892	0.633
dongnghiep1	Colleagues are united	11.71	3.132	.294	.639	
dongnghiep2	The company has many activities to connect colleagues	11.37	2.457	.487	.505	
dongnghiep3	Teambuilding has the ability to increase the level of cohesion	11.34	2.702	.442	.543	
dongnghiep4	Always get help from colleagues and share work experiences	11.34	2.572	.431	.550	
daotao1	Training policy always encourages employees to participate	7.29	1.376	.580	.594	0.685
daotao2	Training and retraining are maintained regularly	7.32	1.386	.476	.622	
daotao3	The company encourages employees to train themselves to improve their qualifications and skills	7.39	1.406	.449	.658	
ganket1	Employees want to work long-term at the company	7.23	1.824	.640	.722	0.796
ganket2	Introduce relatives and friends to apply for the company	7.24	1.758	.607	.758	
ganket3	Employees feel satisfied and want to continue working at the company	7.27	1.712	.673	.686	

Source: The analysis

Through Cronbach's alpha analysis, it shows that the variables as thunhap, thangtien, congngheso, dongnghiep, daotao all have coefficients greater than 0.6, thus ensuring the reliability of the scale. For the ganket dependent variable, there is also Cronbach's alpha coefficient greater than 0.6 and therefore it can be confirmed that this variable is reliable. At the same time, the correlation coefficient of the total variable is greater than 0.3, so the reliability level is more assured.

4.3. EFA analysis

Table 3. KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.832
Bartlett's Test of Sphericity	Approx. Chi-Square	1598.758
	df	171
	Sig.	.000

Source: The analysis

KMO coefficient is achieved when this index must be greater than 0.5, showing that this coefficient reaches 0.832 and is greater than 0.5, so it is guaranteed for EFA analysis. Through Bartlett's test, there is statistical significance, showing that the observed variable has a linear correlation in each factor.

Table 4 presents the total variance extracted, usually above 50% to be satisfied, in this case the cumulative value is 64.699% and greater than 50%, these factors reflect 64.699% of the variation of the variables participating in EFA.

Table 4. Total variance explained

Com.	Eigenvalue			Extraction sums of squared loadings			Roration sums of squared loadings		
	Total	% of variance	Cumu.%	Total	% of variance	Cumu.%	Total	% of variance	Cumu.%
1	5.331	28.056	28.056	5.331	28.056	28.056	3.318	17.462	17.462
2	2.990	15.739	43.795	2.990	15.739	43.795	2.556	13.453	30.916
3	1.511	7.955	51.750	1.511	7.955	51.750	2.495	13.131	44.047
4	1.290	6.789	58.540	1.290	6.789	58.540	1.980	10.422	54.469
5	1.170	6.159	64.699	1.170	6.159	64.699	1.944	10.230	64.699
6	.806	4.241	68.940						

Source: The analysis

4.4. Correlation analysis

Through correlation analysis, the independent variables have low correlation with each other, so there may be no multicollinearity phenomenon and therefore the quality of the regression results becomes more reliable.

Table 5. Correlation analysis

Variable	Items	ganket	thunhap	congngheso	thangtien	dongnghiep	daotao
ganket	Pearson Correlation	1	.363**	.170*	.645**	.285**	.417**
	Sig. (2-tailed)		.000	.017	.000	.000	.000
	N	198	198	198	198	198	198
thunhap	Pearson Correlation	.363**	1	.183*	.474**	.417**	.433**
	Sig. (2-tailed)	.000		.010	.000	.000	.000
	N	198	198	198	198	198	198
congngheso	Pearson Correlation	.170*	.183*	1	.097	.296**	.202**
	Sig. (2-tailed)	.017	.010		.175	.000	.004
	N	198	198	198	198	198	198
thangtien	Pearson Correlation	.645**	.474**	.097	1	.378**	.393**
	Sig. (2-tailed)	.000	.000	.175		.000	.000
	N	198	198	198	198	198	198
dongnghiep	Pearson Correlation	.285**	.417**	.296**	.378**	1	.262**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	198	198	198	198	198	198
daotao	Pearson Correlation	.417**	.433**	.202**	.393**	.262**	1
	Sig. (2-tailed)	.000	.000	.004	.000	.000	
	N	198	198	198	198	198	198

Note: **, * correspond for the significant level of 5%, 1%

Source: The analysis

4.5. Regression results and discussions

Table 6. Regression results

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.	Multicollinearity	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.090	.346		.261	.794		
thunhap	.005	.075	.004	.067	.947	.653	1.532
congngheso	.084	.061	.078	1.384	.168	.890	1.123
thangtien	.668	.075	.566***	8.858	.000	.696	1.436
dongnghiep	.000	.076	.000	.003	.998	.735	1.360
daotao	.203	.071	.176***	2.863	.005	.752	1.330

Note: * correspond for the significant level of 1%

Source: The analysis

Through the results of the regression analysis, it can be confirmed that the ability for promotion and retraining has an impact on the cohesion in the organization. Income, digital technology, and co-worker relationships had no effect on engagement in this case study.

The promotion has a positive effect on engagement, meaning that employees who feel able to advance in their work will increase their engagement in the organization. However, the possibility of promotion only occurs when the enterprise is able to create a clear working environment and has a mechanism to evaluate, encourage and recognize employees at work. When an enterprise has a clear policy to encourage the promotion of employees, they will be motivated to strive for the overall development of the organization and they will become more engaged with the organization. Hirschi & Spurk (2021) suggested that employees often have ambitions to achieve important results and career advancement, and that achievement ambitions are positively related to organizational commitment, especially many career opportunities in the organization.

Training and retraining are considered as a good policy that any business must maintain regularly in order to improve the quality of human resources in the enterprise and to help employees improve production better, have better labor productivity. Through this study, once again, the policy of training and retraining is the right policy capable of improving employee engagement in the organization. The process of training and fostering can take place on the job when the more experienced person trains the less experienced person or the newcomer. Or refresher training can take place through training courses organized by enterprises and through courses that can help businesses improve knowledge, skills and working attitudes. Saha (2016) also asserted that the aspect of organizational environment leads to organizational commitment in particular training and development and can help employees to be satisfied with the working environment in the organization and increase their employee engagement in the organization.

5. Conclusions

The level of employee engagement in the organization shows that the enterprise has maintained a friendly working environment and helps employees feel secure in their work and develop themselves in the organization. Researching on 198 employees working at enterprises in Hanoi, using quantitative analysis, the research results once again confirm that promotion and training have a positive impact on career development and individual engagement in the organization. However, the digital transformation process has not yet affected the cohesion of employees in the organization, similarly, income and co-worker relationships have not had an impact on cohesion. Through the research, there are some managerial implications for enterprises as follows:

Firstly, businesses should continue to maintain an employee evaluation policy based on the encouragement and recognition of employees for the organization's achievements. Policies need to be implemented clearly and transparently and help employees feel confident in the recognition of their achievements and advancement in the business. Secondly, businesses need to improve their training and fostering policies

towards practicality, serving the needs of learning to improve qualifications, training skills and attitudes of employees and thereby helping qualified employees to best meet the assigned tasks in the organization and that is also the foundation to help employees increase their engagement with the organization.

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STUDYING CREDIT SCORING MODELLING BY MACHINE LEARNING APPROACHES

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Abstract

With the huge growth of financial institution databases, the evaluation of credit issuance decisions begins to improve the decision-making methods of manual judgment and statistical analysis, which greatly improves the reliability and efficiency of credit issuance decisions. Machine learning algorithms, as one of the most important statistical tools, have witnessed increasing importance in supporting credit approval decisions. However, based on the different algorithms of each model and the selection of corresponding parameters in each model, the prediction performances have varied among prediction models. To better evaluate the prediction performance of prevalent models and improve the model construction in the credit approval process, this paper focuses on selection and building a machine learning model that help bank predict the possibility of a customer whether can get the credit card by Python. The experimental models involved in the analysis include Logistic Regression, Random Forest, Logistic Regression, and Support vector machine (SVM). As a result, machine learning is effective for credit card approval prediction, but machine learning cannot completely replace traditional credit approval.

Keywords: *credit scoring modelling, machine learning algorithm, credit issuance decision, credit approval process.*

1. Introduction

Topic: “Studying credit scoring modelling by machine learning approaches” is significant both theoretically and practically. In detail:

- *Theoretically*

Credit risk refers to the risk that a borrower may not repay a loan and that the lender may lose the principal of the loan or the interest associated with it. It is one of the major risks faced by financial institutions. Lenders seek to manage credit risk by designing measurement tools to quantify the risk of default, then by employing mitigation strategies to minimize loan loss in the event a default does occur. One such tool is credit scoring, which is a popular and effective way to control credit risk in the financial industry.

Credit scoring is a statistical analysis performed by lenders and financial institutions to determine the creditworthiness of a person or a small, owner-operated business. It is done

based on credit data such as repayment history, delinquency history, length of credit history, and total debt. For new customers, this data is aggregated from credit agencies and credit groups. A credit scoring model is a mathematical model used to estimate the probability of default - that is, the probability that customers may trigger a credit event such as bankruptcy, obligation default, failure to pay or cross-default events 34. In a credit scoring model, this probability of default is normally presented in the form of a credit score. Credit scoring is a statistical analysis performed by lenders and financial institutions to assess a person's creditworthiness. It is used by lenders to help decide whether to extend or deny credit. A credit score can impact many financial transactions, including mortgages, auto loans, credit cards, and private loans. A good credit score is important if customers plan to borrow for a big-ticket item like a car or a house or sign up for a credit card. Their credit score will determine their down payment, interest rate and ultimately their monthly obligation. It is a measurement of their overall financial health and creditworthiness. Because their credit is a key piece of their financial identity, it's crucial to build good credit early on. Good credit habits include paying their bills on time - which is crucial to growing their scores - and light but regular use of their credit accounts. In summary, having a good credit score can provide many benefits such as access to better loan terms and lower interest rates. It follows them forever and plays a huge role in many major financial situations throughout their life.

Therefore, the topic has systematized the theory of credit risk and machine learning approaches in the financial field. In particular, the topic gives evaluations on the effectiveness of the models, then we choose the most suitable machine learning models for credit scoring. In other words, the topic emphasizes the applicability of machine learning models and evaluates how effective they are for the development of the credit sector.

- *Practically*

In Vietnam, credit is a major activity of commercial banks and interest income accounts for over 50% of total bank income. Therefore, controlling credit risk is one of the main tasks of banks. In this context, research on machine learning approaches in credit risk has practical significance in making policy recommendations for commercial banks in Vietnam.

Besides that, machine learning is a rapidly growing field of artificial intelligence that enables computers to learn and improve their capabilities through data input in the form of real-world interactions and observations. This technology has taken the world by storm and is making significant contributions to many different aspects of modern life. One area where machine learning is having a big impact is in finance and banking. Researchers are working hard to incorporate machine learning techniques into this industry to help detect scams, frauds, and defaulters. Complex decisions are being made every day using pattern recognition algorithms. Machine learning's ability to recognize anomalies and patterns is being heavily used for proper oversight of financial institutions. For example, author KY Tam (1991) showed in his paper that neural networks can be used to assess the performance of banks and help them prepare for bankruptcy. This study helps evaluate the financial condition of a bank and shows the effectiveness of using neural networks over other models. Another example comes from R.H. Davis et al. (1991), who discussed the use of machine

learning algorithms in assessing credit card risk. They performed a comparative analysis of accuracy scores using neural networks and other classifiers. The paper concluded that all the algorithms used had similar accuracy, but time complexity was higher for neural networks. Therefore, our paper wants to find the best machine learning model which can help financial institutions make better decisions.

The research topic focuses on the current state of machine learning model applications in controlling credit risk and evaluating their effectiveness in credit scoring. The goal of this research is to find the most optimal model for this field by analyzing and comparing different machine learning approaches. Based on the results of this research, appropriate policy recommendations can be made to improve and further develop the credit field of commercial banks. This could include suggestions for implementing specific machine learning models or techniques to better control credit risk and accurately assess creditworthiness. By using machine learning to improve credit risk management, banks can make more informed decisions about lending and reduce their exposure to potential losses. This can help strengthen the overall financial stability of the banking industry and support economic growth.

The subject of the study is the set of individual customers along with information about credit history at a foreign bank. Although this audience does not best reflect the situation of banks in Vietnam, the data on the credit history of individual customers in Vietnam is difficult to access and incomplete. So, the authors took a large data set of offshore banks to evaluate the effectiveness of the machine learning approach in credit scoring.

2. Literature review

Credit risk is the risk of loss resulting from a default that does not satisfy its obligations under the terms of the contract, causing the holders of creditor's loss. These responsibilities emerge as a result of loan operations, trade and investment activities, payment and settlement of securities trading on its own and foreign accounts, and so on. (Jílek, 2000) There may be instances where a counterparty fails to respect its obligation and fails to repay completely or partially due principale and interest on schedule.

Most balance-sheet assets and off-balance-sheet transaction series include credit risk (bank acceptances or bank guarantees). Credit risk comprises credit risk default, guarantor risk, and derivative counterparty risk. This risk exists in all sectors of the financial market, although it is particularly prevalent in banks, owing mostly to credit activity and off-balance-sheet transactions such as guarantees. Entering derivative transactions, securities lending, buyback transactions, and negotiation all introduce credit risk. For derivative transactions, an examination of counterparty creditworthiness was performed, and changes were monitored.

Credit appraisal is a critical component in bank credit management decisions. This procedure entails gathering, assessing, and categorizing various credit factors and characteristics in order to make credit choices. Bank loan quality is a crucial factor in competition, survival, and profitability (Abdou & Pointon, 2011).

Credit risk is essential for financial institutions. However, banks and financial organizations need something to evaluate customers' credit situation before digging deeper into the customers' financial insight. This is when they use credit scores, as the first base evaluation.

Credit scoring can be simply defined as the application of statistical models to turn relevant data into numerical metrics that inform credit decisions (Abdou & Pointon, 2011). In the research of Anderson in 2007, it is the commercialization of trust; a natural future evolution of the subjective credit ratings, driven by a demand for objective, rapid, and consistent choices, and enabled by technological improvements.

Credit scoring, which is a credit risk management technique, describes statistical models used to evaluate a person's or a firm's creditworthiness. They have gradually superseded judgmental systems and are now commonly utilized by financial and banking establishments that assess the borrower's credit rating and ability before approving a loan. As a result, credit scoring is at the core of the credit decision-making system. This is especially true in the case of consumer credit (mortgage, credit card, personal loan, etc.). Credit scoring models are also utilized by commercial businesses; however, the results are usually insufficient to make a judgment. For example, they can be completed with the relationship manager's understanding of the firm.

Every financial institution has its credit scoring system. Credit scoring is normally calculated by a system of numerical numbers (differentiate ranges depend on the models each financial institution uses).

These numerical scores are calculated by: Payment history: late payment on credit accounts means a lower credit score, and on time and in full meaning increases in credit score; Public records: bankruptcies, judgments, and collection items might affect the score; The amount owed and loan purpose: level of debt might have an impact on the score, and the purpose of the loan may be linked to creditworthiness; Length of credit history; Credit bureau checks: recent reports might be an impact; New accounts: opening various accounts in a short period might be a bad sign; Social media data: might have an impact on creditworthiness based on personal activity; Mobile data: may provide detailed, defined information and insights into consumer behavior; Utility data: A consistent, organized record of payments may contribute to one's credit score; Commercial data: Working capital loans, financial statements, and operational data might indicate the creditworthiness of a business; Macroeconomic data: A change in the unemployment rate or GDP of a region may affect the credit scores of consumers and businesses in that region. Each financial institution divides its credit scoring system and estimated risk perimeters differently (*Credit Scoring Approaches Guidelines*, 2020).

Khandani et al. (2010) have employed machine learning techniques to build nonlinear non-parametric forecasting approaches to measure consumer credit risk. To identify credit cardholders' defaults, the authors used a credit office data set and commercial bank customer transactions to establish a forecast estimation. Their results indicate cost savings from 6% to 25% of total losses when machine learning forecasting techniques are employed to estimate

the delinquency rates. Besides, their study opens questions of whether aggregated customer credit risk analytics may improve systematic risk estimation.

Yap et al. (2011) used historical payment data from a recreational club and established credit scoring techniques to identify potential club member subscription defaulters. The study results demonstrated that no model outperforms the others among a credit scorecard model, logistic regression, and a decision tree model. Each model generated almost identical accuracy figures.

Zhao et al. (2015) examined a multi-layer perceptron (MLP) neural network's accuracy regarding estimating credit scores efficiently. The authors used a German credit dataset to train and estimate the model's accuracy. Their results indicated an MLP model containing nine hidden units achieved a classification accuracy of 87%, higher than other similar experiments. Their study results proved the trend of MLP models' scoring accuracy by increasing the number of hidden units.

In Addo et al. (2018) the authors examined credit risk scoring by employing various machine and deep learning techniques. The authors used binary classifiers in modeling loan default probability (DP) estimations by incorporating ten key features to test the classifiers' stability by evaluating performance on separate data. Their results indicated that the models such as the logistic regression, random forest, and gradient boosting modeling generated more accurate results than the models based on the neural network approach incorporating various technicalities.

Petropoulos et al. (2019) studied a dataset of loan-level data of the Greek economy of examining credit quality performance and quantification of probability default for an evaluating period of 10 years. The authors used an extended example of classifications of the incorporated machine learning models against traditional methods, such as logistic regression. Their results identified that machine learning models had demonstrated superior performance and forecasting accuracy through the financial credit rating cycle.

Provenzano et al. (2020) introduced machine learning models to compose credit rating and default prediction estimation. They used financial instruments, such as historical balance sheets, bankruptcy statutes, and macroeconomic variables of a Moody's dataset.

Galindo and Tamayo (1997) conducted a comparative analysis, which was done on different statistical and machine learning methods using a mortgage loan dataset to understand their limitations and potential. More than 9,000 models were built using state-of-the-art techniques. The results showed that CART decision-tree models provided the best estimation for default with an average error rate of 8.31%. Neural Networks had an average error rate of 11.00%, while K-Nearest Neighbor had an average error rate of 14.95%. These results outperformed the standard Probit algorithm which had an average error rate of 15.13%.

Kruppa et al (2013) examined a general framework for estimating individual consumer credit risks using machine learning methods such as random forests (RF), k-nearest neighbors (kNN), and bagged k-nearest neighbors (bNN). These methods were applied to a large dataset of complete payment histories for short-term installment credits.

The results showed that regression RF performed better than the optimized logistic regression model, kNN, and bNN on the test data.

Kim, J., & Kang, S. (2018) corporate insolvency can negatively impact the economy. Objective measures and analysis of data can help identify a company's financial risk. With advancements in technology, it has become easier to gather and store data about corporations. The challenge is to mine relevant information from this data to forecast insolvency. Machine learning methods can be used to recognize patterns in the data with high accuracy. He conducted a study on corporate bankruptcy of manufacturing companies in Korea and Poland using experts' opinions and financial measures. The results showed that predictions with accuracy greater than 95% were achievable using machine learning techniques when informative features like experts' assessment were used. However, when using only financial factors to predict bankruptcy, the correlation was not as strong.

Zu Li (2019) discussed the use of machine learning techniques to evaluate the creditworthiness of customers. The study focuses on using the XGBoost algorithm to distinguish between customers who are likely to repay their loans and those who are not. The performance of XGBoost is compared with logistic regression and found to be superior.

Ma and Lv (2018) found that the development of science and technology has led to changes in consumer finance and an increase in financial credit risk. This is particularly true for internet finance, where credit risk can be difficult to control. To address this issue, they introduced an improved machine learning algorithm called MLIA. The MLIA algorithm decomposes the objective function into weighted sums of several basis functions and its performance is compared with logistic regression using three test functions. The study also evaluates the performance of the MLIA algorithm using data from an internet financial company and uses the AUC value as a measure of model performance. The results show that the MLIA algorithm has good predictive ability for financial credit risk and can provide a theoretical reference for future research.

David Mhlanga (2021) used a literature review approach to investigate the impact of machine learning and artificial intelligence on credit risk assessment. It found that these technologies can use alternative data sources to address issues like information asymmetry, adverse selection, and moral hazard. This allows lenders to better assess customers' creditworthiness and enables less privileged people to access credit. The study recommends that financial institutions invest more in these technologies to help financially excluded households obtain credit.

Using machine learning models, the authors observed excellent out-of-sample performance results to reduce the bankruptcy probability or improve credit rating.

3. Method

Machine learning-based systems are growing in popularity in research applications in most disciplines. Considerable decision-making knowledge from data has been acquired in the broad area of machine learning, in which decision-making tree-based ensemble techniques are recognized for supervised classification problems. Thus, classification is an

essential form of data analysis in data mining that formulates models while describing significant data classes (Rastogi and Shim 2000). Accordingly, such models estimate categorical class labels, which can provide users with an enhanced understanding of the data at large Han et al. (2012) resulted in significant advancements in classification accuracy.

Motivated by the preceding literature, we evaluated a large number of machine learning algorithms in our work on credit risk. A set of algorithms that performed well in numerical experiments with real data is explained in more details below:

3.1. Logistic regression

Logistic regression is a type of statistical model that is often used for classification and predictive analytics. It estimates the probability of an event occurring based on a given dataset of independent variables. For example, it can be used to predict whether someone voted or didn't vote in an election based on data such as their age, income, and education level. Since the outcome of logistic regression is a probability, the dependent variable is bounded between 0 and 1. In other words, the predicted probability can never be less than 0 or greater than 1. To make these predictions, logistic regression applies a logit transformation to the odds of the event occurring. The odds are calculated by dividing the probability of success by the probability of failure. The logit transformation involves taking the natural logarithm of these odds. The result of this transformation is known as the log odds or natural logarithm of odds. This value can then be used to make predictions about the likelihood of an event occurring. This is also commonly known as the log odds, or the natural logarithm of odds, and this logistic function is represented by the following formula:

$$\log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1x_1 + \dots + \beta_qx_q$$

3.2. Decision tree

A decision tree is a type of machine learning algorithm that can be used for both classification and regression tasks. It is a non-parametric supervised learning method that has a hierarchical tree structure with different levels and branches. The tree structure consists of a root node, internal nodes, and leaf nodes. The root node represents the top-level decision based on the most important feature. The internal nodes represent decisions based on other features and the leaf nodes represent the final outcome or class.

Decision tree classifiers have been widely implemented in numerous distinct areas due to their ability to provide detailed decision-making knowledge based on the data set used. The tree flow display is comparable to a progress diagram, with cases being arranged based on their feature values. To create a decision tree, a training set of objects is used. Each object in the training set is associated with one of several classes. If all objects in the training set belong to the same class, then the decision tree for that set consists of a single leaf identified with that class. If not all objects belong to the same class, then a test is applied to divide the training set into subsets based on their outcomes for that test. This test becomes the root of the decision tree and this process is repeated for each subset until all objects in each subset belong to a single class.

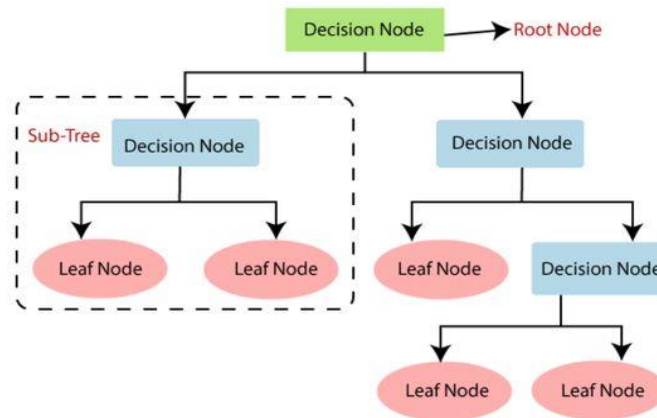


Figure 1. Decision tree

Source: Compiled from the author's team

3.3. Random forest

A random forest is a type of machine learning algorithm that consists of a collection of decision trees. It is an ensemble method that combines the predictions of multiple decision trees to improve the accuracy and robustness of the model. Each tree in the random forest is created using a bootstrap sample drawn from the training data with replacement. This means that some data points may be included multiple times in the sample while others may not be included at all. One-third of this sample is set aside as test data, known as the out-of-bag (oob) sample. To add more diversity to the dataset and reduce correlation among decision trees, feature bagging is used. This involves randomly selecting a subset of features for each tree in the ensemble. This adds randomness to the process and helps prevent overfitting. The way predictions are made depends on whether the problem is a regression or classification task. For regression tasks, the individual decision trees are averaged to make a prediction. For classification tasks, a majority vote is used to determine the predicted class based on which class has been predicted by most trees in the ensemble. The oob sample is then used for cross-validation to finalize the prediction and estimate model performance

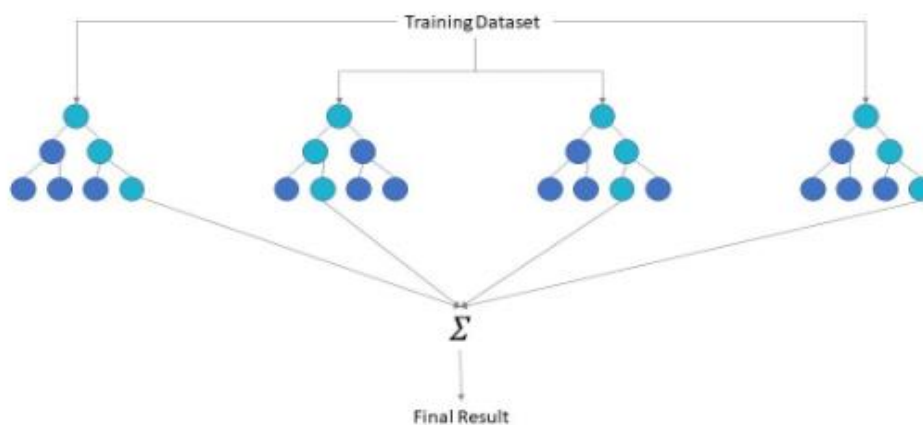


Figure 2. Diagram of Random Forest Classifier

Source: Compiled from the author's team

3.4. Support Vector Machine

A Support Vector Machine (SVM) is a supervised machine learning algorithm that can be used for both classification and regression. The objective of the SVM algorithm is to find a hyperplane in an N-dimensional space that distinctly classifies data points. To do this, the algorithm selects the hyperplane that maximizes the margin between the two classes. The margin is defined as the distance between the hyperplane and the closest data points from each class. These closest points are called support vectors. SVMs are powerful tools because they can handle non-linearly separable data by transforming it into a higher dimensional space where it becomes linearly separable. This transformation is done using kernel functions. However, SVMs have some limitations. Their compute and storage requirements increase rapidly with the number of training vectors. The core of an SVM is a quadratic programming problem (QP), separating support vectors from the rest of the training data.

3.5. Adaboost

Freund and Schapire (1995) developed AdaBoost is a powerful classification algorithm. It is a meta-algorithm, meaning that it can be used in conjunction with many other types of learning algorithms to improve their performance. The basic idea behind AdaBoost is to combine the output of several weak learners into a weighted sum to create a final boosted classifier. AdaBoost is adaptive in the sense that it adjusts subsequent weak learners to better classify instances that were misclassified by previous classifiers. This means that the algorithm focuses on harder-to-classify examples as it progresses. In some cases, this can make AdaBoost less susceptible to overfitting than other learning algorithms. While AdaBoost is typically used with weak base learners such as decision stumps (one-level decision trees), it has been shown that it can also effectively combine strong base learners such as deep decision trees. This can produce an even more accurate model. One of the strengths of AdaBoost is its versatility. Every learning algorithm has its strengths and weaknesses and tends to suit some problem types better than others. AdaBoost can be used with many different types of base learners and has many different parameters and configurations that can be adjusted to achieve optimal performance on a given dataset.

AdaBoost is a specific technique for training a boosted classifier. A boosted classifier is a type of classifier that combines the output of several simpler classifiers (known as weak learners) into a weighted sum to create a final, more powerful classifier. AdaBoost is one way to train such a classifier following the form:

$$F_T(x) = \sum_{t=1}^T f_t(x)$$

where each $f(x)$ is a weak learner that takes an object x as input and returns a value indicating the class of the object.

3.6. XGBoost

XGBoost is a powerful machine learning algorithm that is an implementation of gradient-boosting decision trees. It has been widely used by data scientists and researchers

to improve the performance of their machine learning models. XGBoost can help you understand your data better and make more informed decisions based on it. XGBoost is a machine learning algorithm that is designed to be fast and easy to use. It delivers high performance on large datasets and does not require extensive parameter tuning or optimization. This means that you can start using XGBoost right away without any additional configuration.

XGBoost is a widely used implementation of gradient boosting that has several features that make it attractive to users. One of these features is regularization, which helps prevent overfitting by adding L1/L2 penalties on the weights and biases of each tree in the model. This means that the model is less likely to memorize the training data and instead focuses on finding patterns that generalize well to new data.

Another feature of XGBoost is its ability to handle sparse data sets efficiently using the weighted quantile sketch algorithm. This algorithm allows XGBoost to deal with non-zero entries in the feature matrix while retaining the same computational complexity as other algorithms like stochastic gradient descent. This makes it a good choice for datasets with many missing or zero values.

XGBoost also has a block structure for parallel learning, which makes it easy to scale up on multicore machines or clusters. This means that you can train your models faster by taking advantage of multiple processors or nodes. Additionally, XGBoost uses cache awareness to reduce memory usage when training models with large datasets. This helps prevent your computer from running out of memory during training.

Finally, XGBoost offers out-of-core computing capabilities using disk-based data structures instead of in-memory ones during the computation phase. This means that you can train models on datasets that are too large to fit into memory by storing some of the data on disk and loading it into memory as needed.

3.7. LightGBM

LightGBM is a gradient boosting framework that uses decision trees to increase the efficiency of the model and reduce memory usage. It employs two novel techniques called Gradient-based One Side Sampling (GOSS) and Exclusive Feature Bundling (EFB) to overcome the limitations of the histogram-based algorithm used in most GBDT frameworks.

GOSS is a technique that focuses on data instances with larger gradients, which are under-trained instances that contribute more to information gain. Instead of uniformly random sampling, GOSS keeps these instances with large gradients and randomly drops those with small gradients to retain the accuracy of information gain estimation. This approach can lead to more accurate gain estimation than uniformly random sampling, especially when the value of information gain has a large range.

EFB is another technique used by LightGBM that takes advantage of the sparsity of high-dimensional data. In a sparse feature space, many features are mutually exclusive, meaning they never take nonzero values simultaneously. EFB bundles these exclusive

features into a single feature called an Exclusive Feature Bundle. This nearly lossless approach reduces the number of features and improves efficiency.

Together, these two techniques make LightGBM an efficient and powerful GBDT framework that offers several advantages over other implementations.

4. Results

In this section a comparative analysis will be made between the supervised learning models based on the performance metric discussed above. The results will be discussed in using PCA using train test split (pure test set).

4.1. Using pure test set

In this case as we have discussed above the performance metrics will be measured after the train test split where SMOTE has been applied on only on the training set keeping the test set pure.

Table 1. Model prediction results

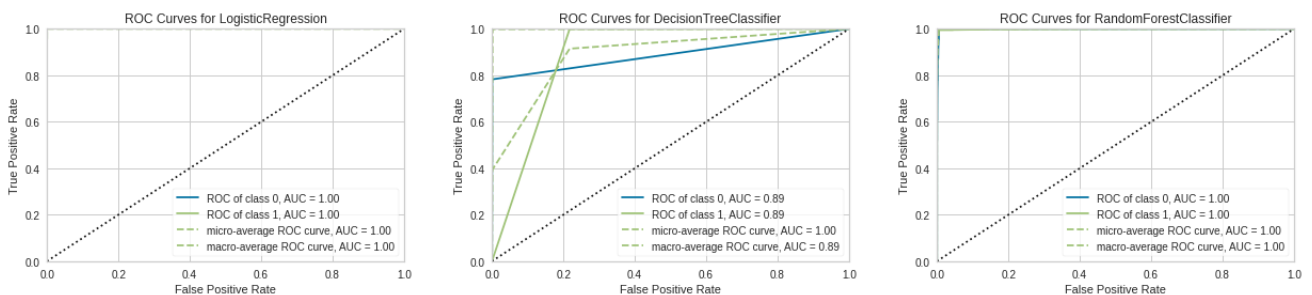
Details	PCA						
	LR	Decision tree	Random forest	SVM	Adaboost	XGboost	LightGBM
Precision	1	0.9988	0.9965	0.5977	0.9997	0.9996	0.9997
Recall	0.9996	0.9984	0.9999	0.5544	0.9995	0.9994	0.9996
F1 Score	0.9998	0.9986	0.9982	0.5693	0.9996	0.9995	0.9996
AUC Score	1	0.8728	0.9969	0	0.9988	0.9999	0.9998
Accuracy	0.9996	0.9973	0.9965	0.5541	0.9992	0.999	0.9993

Source: Compiled from the author's team

The train test split helps to understand the generalizability of the model and measures the adaptability of the model on new data. In this regard, we see that the tree-based models followed by the logistic regression model produces the best accuracy.

4.2. ROC Curve Analysis

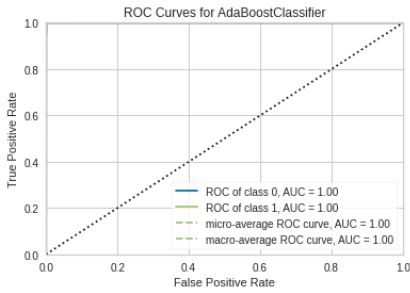
Below we have shown a comparative analysis of all the models using the ROC curves.



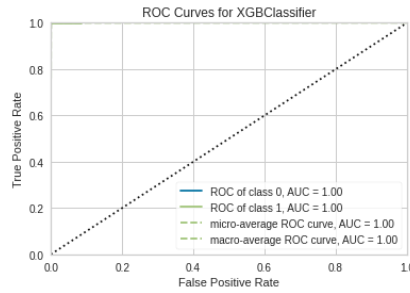
(a) ROC Curves for Logistic Regression using PCA

(b) ROC Curves for Decision Tree using PCA

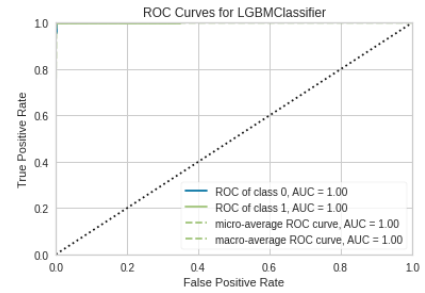
(c) ROC Curves for Random Forest using PCA



(d) ROC Curves for AdaBoost using PCA



(e) ROC Curves for XGboost using PCA

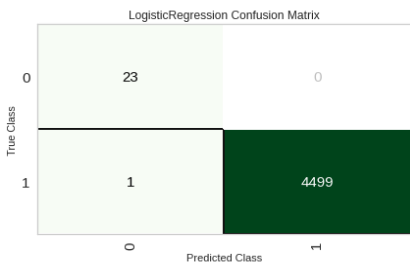


(f) ROC Curves for LightGBM using PCA

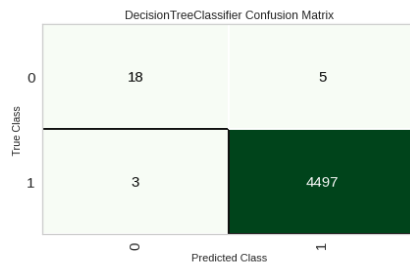
Source: Compiled from the author's team

4.3. Confusion Matrix Analysis

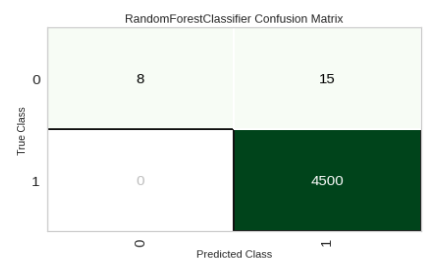
There is a need to look at the confusion matrix to assess a classification model's quality of classification. For an ideal confusion matrix, we expect to get values only on the leading/principal diagonal, since they represent correct classification; values off-diagonal are those that were misclassified. Hence, the figures below illustrate the confusion matrix for each of our ensemble classifiers.



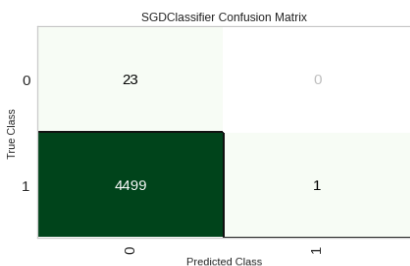
(a) Confusion Matrix for Logistic Regression using PCA



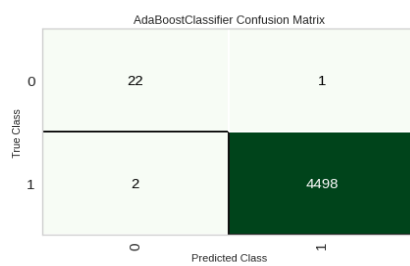
(b) Confusion Matrix for Decision Tree using PCA



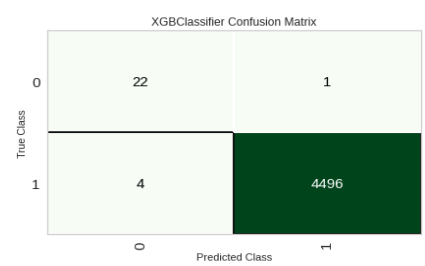
(c) Confusion Matrix for Random Forest using PCA



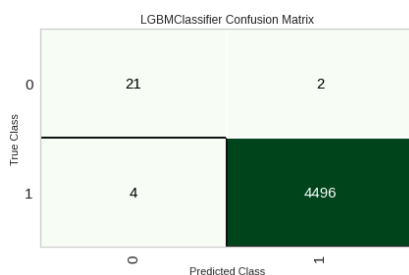
(d) Confusion Matrix for SVM using PCA



(e) Confusion Matrix for AdaBoost using PCA



(f) Confusion Matrix for XGboost using PCA



(g) Confusion Matrix for LightGBM using PCA

Source: Compiled from the author's team

The figures above show that most of the values lie along the principal diagonal for all the ensemble classifiers, and the more values we record on the principal diagonal, the more evidence we have of correct classification.

According to the graph, it can be seen that the number of correct bad debt predictions of Logistic Regression and SVM model is the highest. Logistic Regression's number of correct non-performing loan predictions is also the highest. The number of false bad debt predictions of Logistic Regression and SVM is the lowest. Random Forest's number of false predictions is the lowest. Overall, the Logistic Regression model is the most optimal machine learning model.

5. Discussion and Conclusion

5.1. Recommendations for Vietnamese Commercial Banks

First, machine learning is an effective tool for assessing a customer's credit score. Therefore, banks need to promote development and update the latest technology trends to perfect their operational apparatus and improve operational efficiency.

Second, however, machine learning is only a supporting tool, but has not really replaced traditional methods because its accuracy is still not completely absolute. Therefore, banks should not overuse machine learning, instead they should combine machine learning with traditional ways to ensure accuracy and efficiency.

Third, banks need to properly and fully understand customer information because this is a valuable resource that helps banks create highly accurate machine learning models and make credit decisions. correct use for each customer.

5.2. Conclusion

The topic has used secondary data sources provided from a foreign bank and Python to evaluate the model and find the most suitable model for this dataset, to test the effectiveness of machine learning in credit card approval prediction.

The results show that machine learning is effective for credit card approval prediction, but it is not the best choice in all cases. Compared with traditional methods, machine learning can only handle low-complexity jobs and those with automation processes. Therefore, machine learning cannot completely replace traditional credit approval. However, the application of machine learning for credit card approval prediction will become an important premise to develop the financial technology industry in the future in Vietnam.

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INVESTIGATING INFLUENTIAL FACTORS OF BLOCKCHAIN INTEGRATION IN THE LOGISTICS INDUSTRY: A CASE STUDY OF VIETNAM

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Abstract

This article aims to examine the influence of individual factors of the UTAUT model combined with the Top Management Support on the behavior of applying Blockchain technology in Logistics enterprises in Vietnam. The study was conducted throughout Vietnam, with a special focus on enterprises located in major cities and provinces of Vietnam such as Hanoi, Ho Chi Minh, Da Nang, Hai Phong, and Quang Ninh. The SEM model was used to test the hypothesis. Based on 508 observations, the research results show that all personal factors (Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions) and Top Management Support have a positive effect on the behavior of adopting Blockchain technology in Logistics enterprises. In addition, the study also shows that demographic factors including Age and Experience influence the behavior of applying Blockchain technology in businesses.

Keywords: *Vietnam Logistics, Top Management Support, Blockchain adoption, UTAUT*

1. Introduction

Logistics was invented and applied for the first time not in commercial activities but in the military field. In the beginning, Logistics was merely considered a new business method, bringing high efficiency to businesses (Nguyen Thi Thuy Hong, 2023). Along with the development process, Logistics has been specialized and developed into a service industry that plays a very important role in international trade. Therefore, the development of Logistics activities in countries in general and enterprises in particular is an inevitable

trend of the world. Currently, Logistics is being pushed to develop very strongly with the emergence of new technology and digital transformation.

In Vietnam, Logistics plays a substantial part as a pioneering service industry with high added value, as a foundation for trade development, and as a means of improving the economy's competitiveness. This creates a requirement for businesses that need to stay active in a world where the most important thing right now is to accelerate the digital transformation process. Cao Cam Linh, Strategic Director of Viettel Post Joint Stock Corporation, pointed out in the study on "Digital transformation in the Logistics service industry in Vietnam" that the process of implementing technology during the digital transformation period brings many benefits such as eliminating operating costs, attracting more customers, resulting in faster and more accurate decision-making, thus enhancing operational efficiency and business competitiveness (2020). Among the technologies used in the digital transformation era, Blockchain has gained a lot of attention because of the positive attributes it offers to Logistics.

Blockchain technology today is applied to many segments of the supply chain, although not necessarily to the same extent. However, to maximize the benefits and utility of Blockchain, Logistics companies need a variety of detection methods, including multiple sensors, in almost every segment. This requires coordination and cooperation between many players in a typical post-discrete ecosystem. So, the question here is what variables will contribute to the successful application of Blockchain technology for Logistics businesses. Consequently, the authors decided to investigate the topic "*Investigating influential factors of Blockchain integration in the Logistics industry: a case study of Vietnam*".

2. Literature review and hypothesis development

2.1. Literature review

2.1.1. Blockchain Technology

In 1991, Stuart Haber and W. Scott Stornetta released their research on cryptographically safe chains of blocks, which is when the concept of Blockchain technology first emerged. When the Bitcoin white paper was released in 2008 under the alias Satoshi Nakamoto, Blockchain technology became significant. In the scientific literature, there is still no consensus on the exact definition of Blockchain because there exist different scientific directions, such as economics, computer science and law, conflict, and simultaneous terms used in the actual application of the technology.

Blockchain can be defined as a distributed ledger technology that can securely and permanently record transactions between parties. By "sharing" the database between multiple parties, the original Blockchain eliminates the verification of trusted transactions from the middleman (such as transactions through a bank) and records it. By facilitating migration from a centralized point to a distributed system, Blockchain efficiently releases data that was previously kept in secure data stores.

Businesses and consumers are becoming more concerned about social and environmental sustainability (Groening et al., 2018). Through decentralized and immutable

data, trustworthy data, transparency, traceability, smart contracts, and incentives, Blockchain helps to solve several elements of sustainability (Nandi et al., 2020a). Blockchain benefits recovery tactics for the transport chain, particularly through cooperation, agility, speed, and visibility (Hewa et al., 2020; Lohmer et al., 2020).

2.1.2. Logistics Activities

In the world, the term Logistics has been used since the 90s of the 19th century, Logistics is defined as transportation activities serving the military during the war (Simpson and Weiner, 1989; Luttwak, 1971). Over time, Logistics emerged in the business field, defined as a process of gathering materials, manufacturing, and delivering products to the right destinations in the right quantities. Rushton et al. (2009) argue that Logistics is concerned with the efficient movement of goods from the source of production through the place of production to the point of consumption while ensuring cost-effectiveness and quality of service for the customer.

Although there are many different Logistics concepts, they share some common characteristics. First, Logistics is a structured, strict, and ongoing process. Second, Logistics is a series of continuous activities from planning, managing, implementing, and checking the flow of goods, information, capital, etc. throughout the process from input to output of products. Third, Logistics is the process of planning and controlling the flow and storage of goods and services from the point of origin to customer satisfaction. Lastly, Logistics encompasses all raw materials, fuel, resources, and inputs required to produce a product or service (Nguyen Thi Thuy Hong, 2023).

Logistics plays an essential part in economic growth and globalization in Vietnam, accounting for 20.9% of the country's GDP at a scale of 20-22 billion USD per year (GSO). According to Cao Cam Linh (2020), Logistics, as a key service industry with high added value, is the foundation for goods trade, contributing to the economy's competitiveness. With the explosion of digital technology and Industry 4.0, the Logistics industry has many game-changing opportunities to contribute more to the economy if digital transformation is accelerated.

2.1.3. Technology Adoption

The Unified Theory of Acceptance and Use of Technology (UTAUT) was developed by Venkatesh et al. (2003) to explain user intention and behavior toward IT. The UTAUT model is developed based on the following models: Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975, 1980), Theory of Planned Behavior (TPB) by Ajzen (1985, 1991), Technology Acceptance Model (TAM) by Davis et al. (1989, 1993), TPB and TAM integration model by Taylor and Todd (1995), theoretical model Innovation Diffusion Theory (IDT) of Rogers (1995), Motivational Mode (MM) of Davis et al. (1992), model of computer usage (Model of PC) Utilization (MPCU) by Thompson et al. (1991), and Social Cognitive Theory (SCT) by Compeau and Higgins (1995). TRA, TPB, and TAM have the most influence on UTAUT.

UTAUT identified determinants such as Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), and regulatory factors such as Gender, Age, Experience, and Voluntariness of Use. Where PE is defined as the ease with which the system is used; EE is defined as the degree to which an individual believes that using new systems will help him or her to be productive at work; SI refers to the degree to which an individual perceives the importance of being influenced by the beliefs of those around him that the individual should use the new system; FC is defined as the degree to which an individual has confidence that the technical infrastructure of the organization is qualified to support the system (Venkatesh et al., 2003).

UTAUT provides a useful tool for managers to assess the success of new technology introductions and helps them understand the factors that influence the acceptance or rejection of new technology. On that basis, they actively design interventions (including training, marketing, etc) aimed at users, especially those who are afraid of change.

2.2. Hypothesis development

To explore the factors affecting the application of Blockchain technology in Logistics enterprises in Vietnam, the authors built a model based on the UTAUT model of Venkatesh et al. (2003), adding the Top Management Support variable (Figure 1 below). According to Hofstede's Six Dimensions of Culture, Vietnamese culture has a high score in the Power distance dimension, showing that top management significantly influences business activities (Hofstede-insight, 2023). Based on the original UTAUT model combined with the additional variable will help the authors build a general model to assess the factors affecting the behavior of applying Blockchain technology and ensure its relevance to the research context of Vietnam.

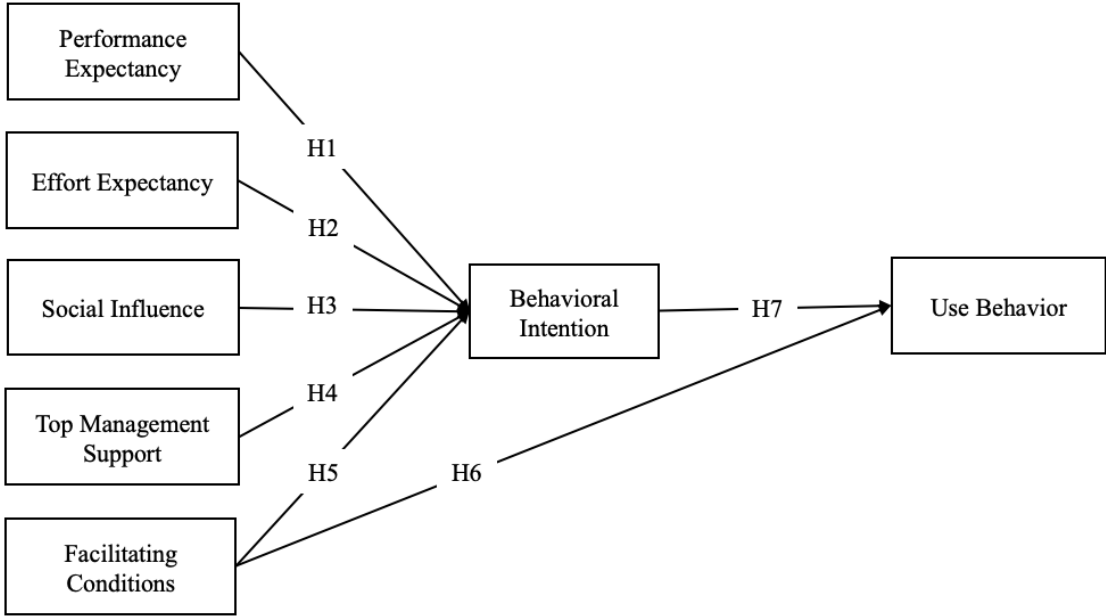


Figure 1. Research model

The proposed research model includes variables in the Unified Theory of Technology Acceptance and Acceptance (UTAUT), adding the variable "Top Management Support" proposed, published by Wu et al. (2003). The authors propose that Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Top Management Support affect the behavioral intentions of users, thereby determining the behavior of users to apply technology. From there, the research hypotheses proposed by the authors:

H1: Performance Expectancy has an effect on Behavioral Intention to apply Blockchain technology.

H2: Effort Expectancy has an effect on Behavioral Intention to adopt Blockchain technology.

H3: Social Influence has an effect on Behavioral Intention to adopt Blockchain technology.

H4: Facilitating Conditions have an effect on Behavioral Intention to adopt Blockchain technology.

H5: Top Management Support has an effect on Behavioral Intention to apply Blockchain technology.

H6: Facilitating Conditions have an effect on Use Behavior.

H7: Behavioral Intention to adopt Blockchain technology has an effect on Use Behavior.

3. Method

The research team clarified the issues raised through two phases. In the first stage, the research team builds the model and preliminary scales. Then, the team conducted in-depth interviews with 15 individuals currently working at Logistics enterprises that have been applying Blockchain technology. The qualitative research results are the basis for the research team to verify the quality of the scales, and adjust and complete the questionnaire. Then, the authors continued to test the adjusted questionnaire with 116 respondents. At the end of phase 1, the authors used quantitative survey results to test the reliability of the scale reliability and validity through Cronbach's Alpha and Confirmatory Factor Analysis CFA to continue to adjust the questionnaire before it was available.

In the second stage, the authors conducted large-scale formal quantitative interviews. The official questionnaire is divided into two parts, the first part is demographic information including gender, age, education level, and several years of experience. The second part is the structured questionnaire which studies the factors influencing the adoption of Blockchain technology. There are 44 questions and each scale is measured on a 5-point Likert scale.

About the optimal sample size, Gorsuch (1983) suggested that the number of samples should be 5 times larger than the number of observed variables to ensure reliability. Since the number of observed variables is 44, the minimum sample size required to ensure reliability and stability when studying the factors affecting the application of Blockchain technology in Logistics enterprises is 220. The authors conducted a survey and collected 508 samples. Survey subjects are randomly selected

from Logistics enterprises that have been applying Blockchain technology in Vietnam. It ensures randomness and limits possible biases.

Of the 508 valid responses, the majority of participants were female, with an average age of 18-25 years old. Regarding the experience of the participants, 57.9% have less than 5 years of experience, 27.8% have 5-10 years of experience, and the rest have more than 10 years of experience. Most of the respondents are staffs or expert, with a rate of 74.6%, following by Team Leader/Head of Department/Manager (17.9%) and Board of Directors/Director/President (5%).

4. Results

4.1. Measurement of Reliability and Validity

The reliability of the scales was tested through Cronbach's Alpha coefficient. According to Hair et al. (2014) have shown that with Cronbach's Alpha coefficient, if it is in the range [0.7, 0.8], it means that the scale is good, and with the coefficient $\alpha \geq 0.06$, the scale is eligible to use (acceptable in terms of reliability).

After conducting the test of scale reliability and obtaining a Cronbach's Alpha coefficient of over 0.6 for all factors, as well as all Corrected Item-Total Correlation coefficients being greater than 0.3, the conclusion can be drawn that all scales are suitable for being retained in the Exploratory Factor Analysis (EFA) analysis.

Based on the Rotated Component Matrix factor rotation table, all factor loading coefficients are greater than 0.5, ensuring their significance. Therefore, no variables are excluded. The Eigenvalue coefficient is $1.000 \geq 1$, representing the proportion of variance explained by each factor. This indicates that the extracted factors effectively summarize the information. The total variance extracted, as represented by the Extraction Sums of Squared Loadings (Cumulative %), is 72.243%, which is greater than 50%. This indicates that the six independent factors explain 72.243% of the research model.

The convergent validity shows whether the observed variables of a latent variable are positively correlated with each other and how strong the positive correlation is. To evaluate the convergent validity, the team considers the external load coefficients of the observed variables, as well as the average extracted variance (AVE), where the AVE value needs to be greater than 0.5 (Hair et al., 2014). In this study, the AVE values of the variables reached above the threshold, except for the Facilitating Conditions variable whose AVE value was $0.3 < 0.5$. However, the authors believed that the elimination of this factor is not necessary. It is because the formula for calculating AVE (Average Variance Extracted) does not take into account the contribution of each indicator but rather focuses on representativeness. If the observed variables set any variable with a normalized factor loading less than 0.7, but the remaining observed variables have high factor loadings and are included in the AVE calculation formula, the index is still guaranteed to be 0.5 or higher, demonstrate the overall convergence of the measurement scale.

Table 1. Measurement of Reliability and Validity

Construct	Item	Cronbach's alpha	Factor loadings	Composite reliability	AVE
Performance Expectancy	PE1	0.658	0.747	0.839	0.511
	PE2	0.679	0.814		
	PE3	0.611	0.739		
	PE4	0.597	0.784		
	PE5	0.657	0.806		
Effort Expectancy	EE1	0.743	0.869	0.799	0.500
	EE2	0.681	0.821		
	EE3	0.641	0.775		
	EE4	0.798	0.898		
Social Influence	SI1	0.725	0.818	0.878	0.514
	SI2	0.756	0.822		
	SI3	0.768	0.855		
	SI4	0.694	0.896		
Facilitating Conditions	FC1	0.703	0.862	0.848	0.390
	FC2	0.659	0.823		
	FC3	0.755	0.920		
Top Management Support	TMS1	0.765	0.823	0.891	0.537
	TMS2	0.746	0.849		
	TMS3	0.754	0.903		
	TMS4	0.778	0.873		

To measure the distance between latent variables, the team continued to test discriminant validity. The discriminant index in all variables is larger than the correlation values of the corresponding latent variables, showing that the discriminant validity test results are statistically significant.

Table 2. Discriminant Validity

	BE	PE	EE	TMS	SI	FC	IN
BE	0.796						
PE	0.461	0.714					
EE	0.234	0.245	0.791				
TMS	0.495	0.229	0.254	0.820			
SI	0.340	-0.008	0.160	0.533	0.802		
FC	0.585	0.255	0.162	0.623	0.500	0.806	
IN	0.795	0.402	0.341	0.630	0.506	0.586	0.808

4.2. Hypothesis testing

After conducting a reliability analysis of the measurement scale using Cronbach's Alpha, exploratory factor analysis (EFA), and confirmatory factor analysis (CFA), the research team proceeded with structural equation modeling (SEM) to test the hypotheses.

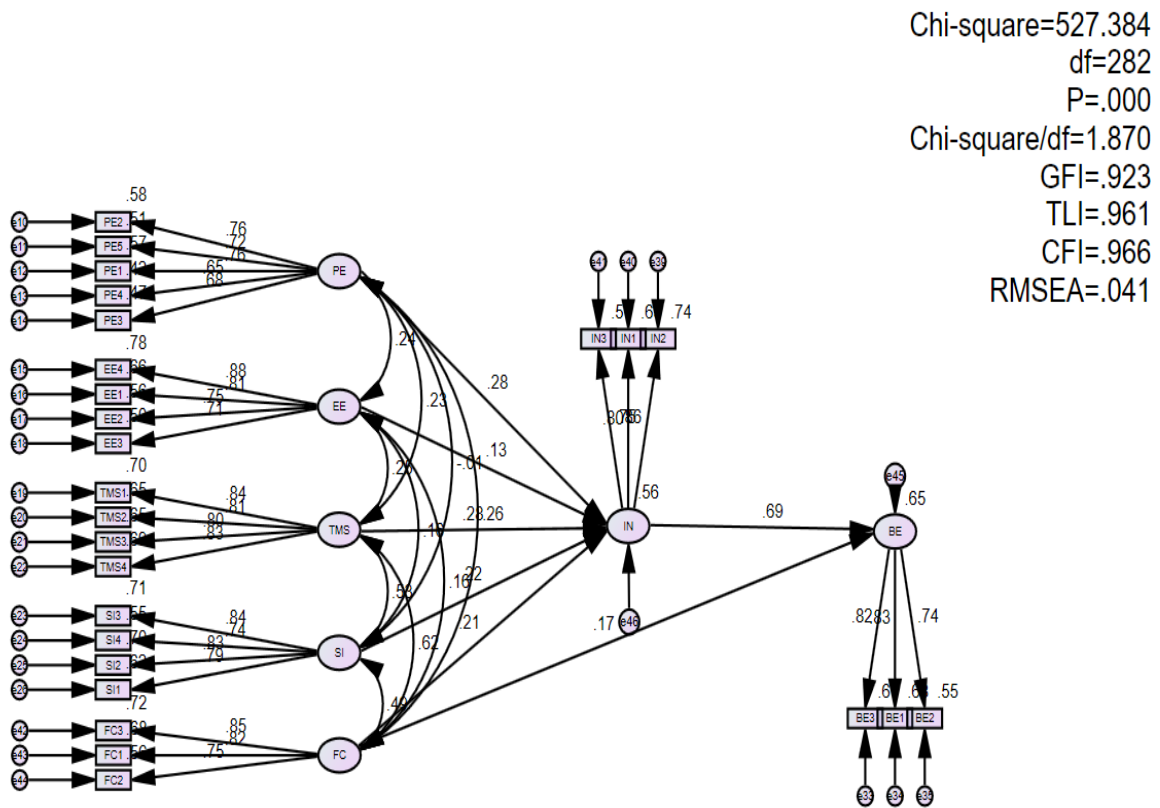


Figure 2. Result of SEM analysis

The SEM analysis provides the model fit index as follow:

- Chi-square/df = 1.870 < 2
- TLI = 0.961 > 0.9
- CFI = 0.966 > 0.9
- GFI = 0.923 > 0.9
- RMSEA = 0.041 < 0,08

Based on the analysis of the Model Fit index using SEM software, the authors concluded that the model is consistent with the theory and the data collected from our previous research. The researchers then proceeded to test the hypothesis of the impact of independent variables on "Behavioral Intention" and "Use Behavior".

After examining the mediating variable "Behavioral Intention" (IN), it can be observed that all independent factors (PE, EE, TMS, SI, FC) have a P-value less than 0.05. Therefore, these independent factors have a positive impact on the dependent variable (IN) and this relationship is positive as the signs of the relationships are all positive. These

independent factors explain 56.5% of the variance in behavioral intention (considered the Standardized Regression Weights)

Regarding the applied behavior, it can be seen that both independent factors (IN, FC) have a P-value less than 0.05. Therefore, both independent factors (IN, FC) have an impact on the dependent variable (BE) and this relationship is positive as the signs of the relationships are all positive. These independent factors explain 65.1% of the variance in applied behavior (considered the Standardized Regression Weights).

After all the tests performed, the authors obtained the following results of the hypothesis testing as in the table:

Table 3. The result of hypothesis testing

No.	Hypothesis	Test result
H1	Performance Expectancy has an effect on Behavioral Intention to apply Blockchain technology.	Supported
H2	Effort Expectancy has an effect on Behavioral Intention to adopt Blockchain technology.	Supported
H3	Social Influence has an effect on Behavioral Intention to adopt Blockchain technology.	Supported
H4	Facilitating Conditions have an effect on Behavioral Intention to adopt Blockchain technology.	Supported
H5	Top Management Support has an effect on Behavioral Intentions to adopt Blockchain technology.	Supported
H6	Facilitating Conditions have an effect on Use Behavior.	Supported
H7	Behavioral Intention to adopt Blockchain technology has an effect on Use Behavior.	Supported

5. Discussion and Conclusion

5.1. Discussion

The results of this study show that there are six factors affecting the application of Blockchain technology in Logistics enterprises in Vietnam, including Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Top Management Support.

The Performance Expectancy factor has the most impact on the intention to adopt Blockchain technology, with an influence of 32.1%. This shows that in applying technology, individuals are most interested in the possibility that Blockchain technology can help them improve and enhance their work efficiency. Users place the highest expectations on the ability to save costs and improve the online transaction capacity of Blockchain technology. This result is consistent with previous studies by Gausdal, Czachorowski, and Solesvik (2018), Li (2019), Jagtap et al. (2020), and Dowelani, Okoro, and Olaleye (2022). These

authors argue that Blockchain technology makes a great contribution to reducing administrative costs as well as coordinating Logistics activities.

It is worth noting that the Top Management Support factor, which was further suggested by the researchers, has the second largest influence on behavioral intention, with a level of 23.8%. Management's support is reflected in the willingness to participate in the transition and adoption of technology, take risks during the testing process, communicate with employees to understand the need for adoption, and consider Blockchain as a resource to create competitive advantages for businesses. Compared with the previous research results of Orji et al. (2020), Bekrar et al. (2021), and Bag et al. (2022), the above authors also confirmed that top management support is an important factor affecting the application of Blockchain technology in the Logistics industry. The active participation in each stage of the digital transformation process and the application of technology by leaders and managers in Logistics businesses will help provide direction and meet the necessary support requirements in and after the application process (Clohessy and Acton, 2019).

The factors Social Influence, Facilitating Conditions, and Effort Expectancy have a positive influence on behavioral intention to apply Blockchain technology, with the influence level of 20.2%, 19.1%, and 11.1%, respectively. It shows that when employees perceive that colleagues in the same working environment show a positive attitude when applying Blockchain technology, they will be motivated to apply this technology in their work. In addition, to promote the application of Blockchain technology, businesses need to focus on preparing favorable conditions such as infrastructure or equipping employees with knowledge. In addition, Facilitating Conditions can also directly affect adoption behavior with a level of 15.3% on adoption behavior. It is consistent with previous studies. The previous research of Venkatesh (2003) built two hypotheses about the impact of Facilitating Conditions on Adoption Behavior. Even in the work of Thompson (1991) and Venkatesh (2000) Facilitating Conditions even have no effect on predicting Behavioral Intention but directly affect Use Behavior.

Finally, the results of the mean difference test show that individuals of different ages and experience groups will have different Use Behavior. It is consistent with the previous work of Venkatesh (2003). However, the study results showed that gender did not affect Use Behavior, which is different from the results of this study. It may be the influence of the social development process and cultural characteristics of Vietnam, as gender equality become more and more obvious (Nguyen, 2012; Dineen and Le, 2015). Therefore, the thoughts and opinions of the respondents may be less affected by prejudices or gender differences. Future studies may continue to explore and test whether there are differences between men and women in technology adoption.

The overall contribution of this study is to propose a comprehensive model based on applying Venkatesh's UTAUT model (2003), combined with the independent variable Top Management Support. Since then, the study has found the factors affecting the adoption of technology and at the same time indicated the degree of influence of each factor. Not only that, but the study also found that there is a difference in the technology adoption behavior

of respondents of different ages and experiences. This can suggest for administrators and executives deploy technology application plans to different target groups.

5.2. Implication

To deploy Blockchain technology effectively, it is necessary to successfully apply this technology in the management and operation of Logistic enterprises. A smart, simple, transparent, and fast management system will improve the operational efficiency of the business. Therefore, the research team gives some recommendations for Blockchain technology applications in business operations.

First, businesses should consider when choosing to apply Blockchain technology. It is necessary to consult with experts in the field of information technology, combined with the actual operation of enterprises to be able to apply technology appropriately. In addition, the application of Blockchain technology must take place synchronously, between departments and units to achieve consistency and avoid unnecessary deviations. Management needs to closely monitor the process of applying technology at different units in the company. Second, it is necessary to consider the application of Blockchain technology with trading partners from which to draw lessons for their businesses. Moreover, the top management board needs to pay attention to the application of Blockchain technology in the business. Employees should be encouraged to actively adopt the technology. Implement policies to support material or spiritual to motivate employees. Thereby achieving effective management as well as the dissemination of Blockchain technology.

5.3. Limitations and Recommendations

The research has set clear goals, which have been explored and solved by the authors, but there are limitations and difficulties that the group encountered. Firstly, research data may not guarantee coverage and a broad spectrum. The main reason for this limitation is that Blockchain technology is not popular in Vietnam, especially in the production and business activities of Logistics enterprises. Secondly, the group has learned a lot about the factors that can affect the behavior of applying Blockchain technology to the business activities of Logistics enterprises. However, the researchers found that, besides the theoretical bases that we researched, there are still many factors that can affect the behavior of applying Blockchain technology in practice. Further research is needed based on practice specifically based on the business activities of Logistic enterprises.

The existing limitation is also an important gap as well as a foundation for further research related to Blockchain technology. In the future, work can be done with different sizes and spaces so that the research topic can be completed in a more detailed and objective way. Research development direction can be specified in terms of research scale and space. Thereby, studies should also clearly show how the denominators with different scales and spatial scales affect and differ. At the same time, the measurement scales also need to be clearly and correctly defined for more accurate research. Further studies can also apply the Blockchain model in this study to other fields or topics besides Logistics.

5.4. Conclusion

Based on the UTAUT model, combined with the variable 'Top Management Support', this study tried to investigate the factors affecting the application of Blockchain technology in Logistics enterprises in Vietnam. The results show that Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Top Management Support influence the Behavioral Intention of individuals in adopting Blockchain technology. Besides, not only Behavioral Intention but Facilitating Conditions can also directly affect the Use Behavior of respondents. Therefore, this study will help technology developers and businesses better understand the behavioral characteristics of individuals in applying Blockchain technology and encourage Logistics businesses to understand the importance of Blockchain technology. These findings provide valuable information for governments, businesses, and individuals promoting Blockchain technology adoption in Logistics operations.

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FACTORS AFFECTING DECISION TO USE MOBILE PAYMENT OF NORTHERN VIETNAMESE UNDERGRADUATE STUDENTS

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Abstract

The research aims to analyze and evaluate the factors influencing the decision to use mobile payment of Northern Vietnamese university students. The article uses a combined research model, inherited from the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), Theory of Planned Behavior (TPB), and previous studies. The research uses a combined qualitative and quantitative method based on data collected from 327 observations. The results show that Perceived Usefulness (PU) has the strongest impact on the decision to use mobile payment among Northern Vietnamese university students, followed by Perceived Security (PS), Social Influence (SI), Perceived Ease of Use (PEOU), Perceived Behavioral Control (PBC), and Trust (T). With these results, the study highlights the importance of paying attention to the above factors when formulating policies, building promotional campaigns, and operating mobile payment technology.

Keywords: *decision, mobile payment, student, technology.*

1. Introduction

The rapid development of technology and internet services in such an globally integrated economy is considered to be the driving force behind mobile phones' popularity. This device is becoming an effective tool with many features that integrate online products

and services (Bauer, Reichardt, Barnes & Neumann, 2005; Hsu & Kulviwat, 2006; Varshney & Vetter, 2002). The development of e-commerce opens up a new platform that meets the divergent needs of customers (Skeldon, 2011), in which mobile payments make an important contribution as leverage for the rise of e-commerce. Mobile payments allow people to make money transfers quickly and conveniently (Mallat, Rossi & Tuunainen, 2004). Technological gadgets such as e-banking are gradually gaining consumer acceptance (Barutcu, 2008; Xu, Teo, Tan & Agarwal, 2009). But it's online payments' popularity that really roared after the pandemic. Hence, the question for businesses providing mobile payment services is what factors significantly contribute to the decision to use mobile payments? Therefore, exploring the factors influencing decision to use mobile payment is essential (Dahlberg, Mallat, Ondrus & Zmijewska, 2008). Regulators and researchers are focusing on navigating the use of mobile payments in e-commerce because it can greatly benefit commercial organisations, payment service providers, software service providers, and third parties (Lim, 2008 and Ondrus & Pigneur, 2006). As such, mobile payment has become a widely contested topic in the world. However, the number of studies on factors affecting the decision to use mobile payment has recently been insufficient in Vietnam.

The structure of the article consists of five parts: (1) Introduction, (2) Literature review and theoretical framework, (3) Research methodology, (4) Results and discussion, and (5) Conclusions and recommendations.

2. Literature Review and Theoretical Framework

2.1. Literature Overview

The study of knowledge about users' decision to use a technology, here is mobile payment, is always practical, especially in the 4.0 era. This is because understanding what factors users base their decision to use a device can help service providers continue to improve their own technology model, thereby building a more efficient technology ecosystem. Understanding this, many foreign researchers have chosen to use mobile payment as the main direction for their scientific work (Dahlberg et al., 2015). When studying mobile payments, Slade, Williams, & Dwivedi (2013) categorised researches into three main areas, including: research on decision-making and usage behaviour of mobile payments; research on the development, classification, evaluation, and comparison of mobile payment types or between mobile payments and other payment methods; and market analysis research on mobile payments.

Studies relating to factors influencing decision to use mobile payment typically employ the Technology Acceptance Model (TAM) when examining mobile payments (de Luna & colleagues, 2020; Nguyen, Cao, Dang, & Nguyen, 2016). Additionally, the Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB), and the Unified Theory of Acceptance and Use of Technology (UTAUT) are also often ubiquitously used (Abrahão, Moriguchi, & Andrade, 2016; de Luna & colleagues, 2020). For instance, de Luna and colleagues combined theories from the TAM, TRA, and TPB to propose a research model (de Luna et al., 2020). However, there are also some less commonly used theories, which

limit the depth of investigation into the factors impacting mobile payment usage. This is a major limitation that few studies have addressed, which creates a research gap that needs to be filled in the future.

Factors can be categorised into three groups: user-related factors, technology-related factors, and environmental factors (Oliveira, Thomas, Baptista, & Campos, 2016). Regarding user characteristics, trust in a technological system is a critical factor (Shankar & Datta, 2018). For example, when a user has trust in an online payment system from a service provider, that user is likely to choose the mobile payment service of that provider due to the established trust (Cao, Yu, Liu, Gong, & Adeel, 2018). In addition, regarding technology-related factors, a study suggests that mobile payment promotion campaigns should focus on emphasising the applicability of this technology, such as quick payment during shopping, transaction security, and increased efficiency. Regarding environmental factors, a study on mobile payment adoption in Malaysia suggests that cultural factors should be emphasised (Hiram, Yusman, Lona, Wee, 2015).

However, there still exist some limitations in the previous published studies. The most common limitation is the demographic nature of study samples (de Luna et al., 2020; Shankar & Datta, 2018). Additionally, other limitations can be identified, such as the restriction in selecting factors for investigation (Abrahão, Moriguchi, & Andrade, 2016), or relatively small sample sizes compared to the total number of payment service users (Cao et al., 2018). Therefore, the emergence of studies examining different impacting factors and diverse demographic characteristics of surveyed samples is necessary, as this is a limitation that is difficult to resolve due to the barrier of collecting and statistically analysing information on a large scale. Moreover, it is because of the infinite nature of knowledge that cannot be encapsulated in a single study.

2.2. Mobile Payments

Clarifying the definition of mobile payment holds great primacy when investigating the decision to use this payment method. Mobile payment (m-payment), firstly, is a form of online payment. It is defined as a transaction activity in which at least one stage is carried out by a mobile device capable of conducting financial transactions securely via mobile networks or wireless technologies (Ghezzi, Renga, Balocco, and Pescetto, 2010). In particular, this service allows users to solve their need for cash at checkout (Pham & Ho, 2015). Thus, it can be said that the introduction of mobile payment systems benefits both providers and consumers (Oliveira, Thomas, Baptista, Campos, 2016).

Mobile payment transactions can be classified into 5 main directions: Business to Business (B2B), Business to Customer (Business to Consumer - B2C), Customer to Customer (Consumer to). Consumer - C2C), Business to Government (B2G), and Person to Person (P2P) (Singh & Jasmine, 2012).

For B2B mobile payments, there are three types of payment systems: alternative payments for the traditional services of banks or financial companies, payments made in conjunction with banks and financial companies to provide services to end users, and pay

using the ACH system (Valcourt, Robert, & Beaulieu, 2005). In Vietnam, a number of B2B payment systems, including mobile banking applications, are widely available. Regarding mobile payments between Business and Customers (B2C), it is necessary to mention the payment methods of e-commerce platforms. This process includes stages: customers collect information, pay for physical goods or informational goods, and then receive goods. Some units that develop this type of payment in Vietnam may include Shopee, Grab, or Lazada. For mobile Customer-to-Customer (C2C) transactions, such transactions typically take place between end users through an enterprise platform created for transactions (Singh & Jasmine, 2012). In terms of B2G mobile payments, web-based payment policies increase the clarity of payment processes and reduce the risk of duplication. And finally, P2P mobile payments are transactions between two individuals and are often SMS-based.

There are many methods of making mobile payments. In essence, a GSM mobile device can send or receive information (mobile data service) through three channels including SMS, USSD or WAP/GPRS. Channel choice impacts how mobile payment programs are implemented (Singh & Jasmine, 2012). Talking about mobile payment methods, the first thing to mention is SMS - Short Message Service. SMS is used to provide transaction or account status information (Singh & Jasmine, 2012). Furthermore, Unstructured Supplementary Service Data (USSD) can be mentioned. Regarding WAP (Wireless Application Protocol) and GPRS (General Packet Radio Service), Internet services are provided through these gateways, through which mobile payments are made. Another form of mobile payment method can include payment via QR code. A QR code is a storage system that uses a dot matrix or two-dimensional barcode. Alternatively, QR codes can be printed or displayed on a screen and interpreted by a special reader (Denso Wave, 2000) to provide more information than traditional barcodes. In addition, there are a number of other methods to make mobile payments such as NFC (Near Field Communication) or e-wallets (Mobile Wallet).

Mobile payments can be categorized into a number of distinct types. Transactions made at the Point of Sale (POS) are the first type of mobile payment (Valcourt et al., 2005). The consumer can use this method at the point of sale (POS) to pay with a mobile phone. Customers must be able to synchronize with the merchant system in order to complete a transaction. In situations where the customer has run out of currency, mobile devices at the point of sale are helpful for micropayments. The mobile phone must be able to communicate with the merchant system, which is a drawback of this strategy. Mobile platforms are yet another type of mobile payment (Stiller et al., 2012). The fundamental benefit of this approach is that customers can make purchases at a virtual point of sale whenever and wherever they want. It is a mobile-based extension of internet commerce (Valcourt et al., 2005). In the past, a disadvantage of this mobile payment form is that the current mobile phone technology is not 100% appropriate to mobile commerce (Valcourt et al., 2005). However, as technology continues to evolve, it is observed that this type of mobile payment is getting more holistic day by day. There are also several other types of mobile payment, such as Direct Carrier Billing, or Closed Loop Mobile Payment (Stiller et al., 2012).

2.3. Factors influencing the decision to use mobile payments and research hypotheses

There are many factors that have been proven to influence a person's decision to use mobile payments. The majority of these factors are derived from several study models or from the observations of researchers. The primary and most empirically supported factors are Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Trust (Trust), Perceived Security (PS), Perceived Risk (PR), and Social Influence (SI) or Social Influence (SI) (Karsen, Chandra & Juwitasary, 2019). For example, Perceived Ease of Use (PEOU) is defined as the ease with which a person perceives to be familiar with using a type of technology. Perceived Ease of Use is thought to have a rapid and indirect influence on intention to use a technology through Perceived Usefulness (PU) (Kim, Mirusmonov & Lee, 2010). This is a factor that has been shown to influence the decision to use mobile payments in various studies. In addition, there are also a number of researched factors that have an impact on Perceived Ease of Use (PEOU), thereby indirectly affecting the decision to use mobile payments. Liu et al (2019) demonstrated that Perceived Mobility has a direct positive impact on Perceived Ease of Use (PE). In addition, user-subjective factors also affect Perceived of Ease of Use (PE). Subjective factors can be mentioned such as Innovation and M-payment Knowledge (Kim, Mirusmonov and Lee, 2010).

There are many factors that have been shown to have an impact on users' decisions to use mobile payments. These factors are mostly derived from various research models or through the observation of researchers. In general, the main factors that have been most frequently mentioned and studied are: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Social Influence (SI), Perceived Behavioral Control (PBC), Perceived Security (PS), and Trust (T).

2.3.1. Perceived Usefulness (PU)

Perceived Usefulness (PU) is defined as the degree of improved performance that a person perceives they will attain by accepting the use of a technology (Kim, Mirusmonov & Lee, 2010). Davis (1989) states that the trend of using a service or an information technology device can largely be predicted by Perceived Usefulness. Furthermore, previous studies have shown that Perceived Usefulness has a direct and significant impact on the decision to use mobile payment services (de Luna et al., 2020; Shankar & Datta, 2016). Therefore, the research team hypothesised that Perceived Usefulness (PU) has a positive impact on the decision to use mobile payment services among students in the Northern region of Vietnam. Thus, the proposed research hypothesis is:

H1. Perceived of usefulness (PU) has a positive impact on the decision to use mobile payment among Northern Vietnamese undergraduate students.

2.3.2. Perceived Ease of Use (PEOU)

Perceived Ease of Use (PEOU) is defined as the degree of ease with which a person perceives becoming familiar with the use of technology. Perceived ease of use is believed to have a quick and indirect impact on the intention to use technology through Perceived

Usefulness (PU) (Kim, Mirusmonov & Lee, 2022). Many studies have shown that Perceived Ease of Use has an impact on the decision to use m-payment by users (Chen and Lei, 2008; Kit, Jenn, & Kelly, 2018). Therefore, the authors hypothesize that Perceived Ease of Use (PEOU) has a positive impact on the decision to use mobile payment services by users. Accordingly, the proposed research hypothesis is:

H2. Perceived Ease of Use (PEOU) has a positive impact on the decision to use mobile payment among Northern Vietnamese undergraduate students.

2.3.3. Social Influence (SI)

Social Influence (SI) refers to the degree to which users perceive that important others (e.g., family, friends) believe they should use a technology (Venkatesh, 2012). It reflects the influence of environmental factors such as the opinions of a friend, relative, and superior on behavior (Venkatesh et al., 2003). Previous studies have shown that Social Influence has a direct impact on the decision to use m-payment (Abrahão, Moriguchi, & Andrade, 2016; Lin, & Ding, 2020); therefore, the authors hypothesize that this factor also has a positive impact on the decision to use mobile payment services among students in the northern region. Accordingly, the proposed research hypothesis is:

H3. Social Influence (SI) has a positive impact on the decision to use mobile payment among Northern Vietnamese undergraduate students.

2.3.4. Perceived Behavioral Control (PBC)

Perceived Behavioural Control (PBC) is a factor developed in the Theory of Planned Behavior (Ajzen, 1988), which influences both the intention to perform a behavior and the actual behavior. PBC has been shown to have an impact on the decision to use mobile payments in various studies (Ting, Yacob Liew & Lau, 2016; Sun, Law, & Schuckert, 2020). Therefore, the authors hypothesize that this factor also has a positive effect on the decision to use mobile payment services among students in the Northern region. The proposed research hypothesis is:

H4. Perceived behavioral control (PBC) has a positive impact on the decision to use mobile payment among Northern Vietnamese undergraduate students.

2.3.5. Perceived Security (PS)

For mobile payment services, Perceived Security (PS) refers to the extent to which a person believes that transactions through this service are secure in terms of both financial and personal information (Hartono et al., 2014). Perceived Security has been shown to have an impact on the decision to use mobile payment (Zhang, Luximon, & Song, 2019; Wai & Wing, 2019). Therefore, the authors believe that this factor has a positive impact on the decision to use mobile payment services among students in the Northern region. Accordingly, the proposed research hypothesis is:

H5. Perceived of security (PS) has a positive impact on the decision to use mobile payment among Northern Vietnamese undergraduate students.

2.3.6. Trust (T)

Trust (T) can be defined as a positive expectation of consumers toward a service provider (Mayer, Davis & Schoorman, 1995). For electronic services, Trust is considered the most essential factor influencing users' perceptions (Mallat, 2007). For mobile payment services, several studies have also demonstrated the impact of this factor on users' adoption decisions (Shankar & Datta, 2018; Cao et al., 2018). Based on this, the authors believe that Trust has a positive effect on users' decision to use mobile payment services. Therefore, the research hypothesis is proposed as follows:

H6. Trust has a positive impact on the decision to use mobile payment among Northern Vietnamese undergraduate students.

2.4. Model recommendation

Based on the theories and hypotheses mentioned above as well previous related studies, the proposed research model is as follows:

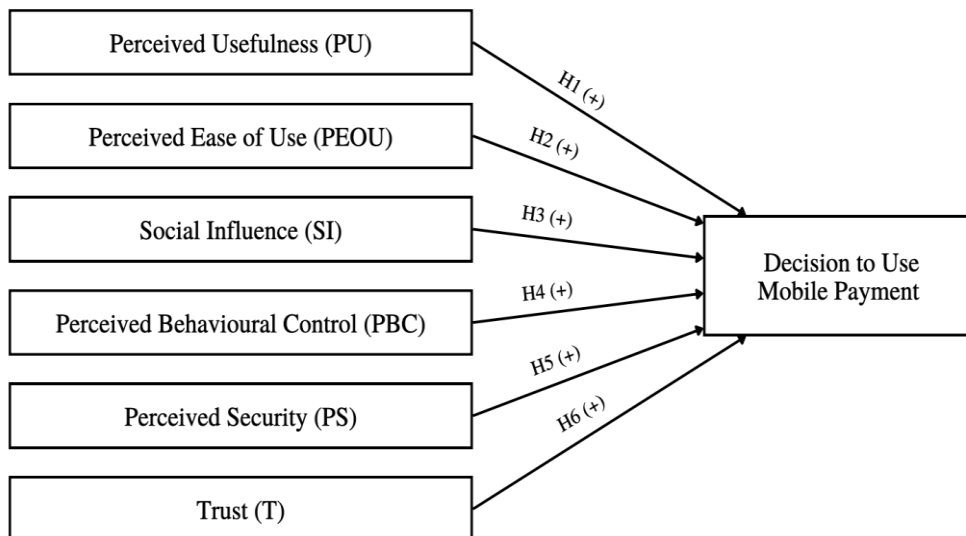


Figure 1. Proposed Research Model

Source: Authors proposed

3. Method

3.1. Data collection methods and research samples

3.1.1. Data collection

The authors chose to investigate Northern Vietnamese undergraduate students to study factors affecting their decision to use mobile payment for some reasons. Firstly, Northern Vietnamese undergraduate students are a large community ensuring that the authors have enough data samples to evaluate and analyze the factors. Secondly, in Northern Vietnam, there are many large companies, businesses, as well as big stores, supermarkets, and shopping centers, this can create a favorable environment to collect information and user data on mobile payments.

The main method used in the research project is the quantitative research method, aiming to evaluate the correlation between factors and the decision to use mobile payment of Northern Vietnamese undergraduate students. The content of the quantitative research method presented by the authors includes (1) Research model and hypothesis, (2) Scale development and survey questionnaire, (3) Quantitative research design and sample, (4) Data collection, (5) Data analysis.

The questionnaire was designed on Google Forms and sent to survey subjects via social networks. With this method, the authors obtained 350 answer votes. However, of those, 23 respondents were disqualified due to incorrect respondents or uncooperative respondents (with the same answers to all questions or questions with opposite meanings). After the unsatisfactory questionnaire was eliminated, 327 questionnaires were formally put into data processing.

After distributing survey forms, the research group received 350 responses. Among the 350 responses, 53.14% were female and 46.86% were male. The survey respondents were mainly aged from 18 to 26 years old, with the highest proportion being the age group from 18-20 years old (51.1%), followed by the age group from 21-23 (42.3%), then the age group under 18 years old (4.9%), from 24-26 years old (1.4%), and the age group over 26 years old accounted for only 0.3% of the total study population.

3.1.2. Research sample

Clarification of the number of samples is extremely necessary to increase the accuracy of the study results. The sample size depends on many factors such as the processing method (regression analysis, EFA discovery factor analysis,...), and reliability,... To use EFA exploratory factor analysis, large sample sizes are usually determined based on the minimum size and number of measurement variables included in the analysis (Nguyen Dinh Tho, 2013). Multivariate regression analysis achieves the best results, the sample size must satisfy: $n \geq 8k + 50$ (where n is the sample size and k is the number of independent variables) (Tabachnick & Fidell, 1996). Meanwhile, Hair et al. (1998) estimated that the number of samples needed was 5 times the number of variables, while Hoang Trong & Chu Nguyen Mong Ngoc (2008) suggested that the ratio was 4 or 5. In this study, the sample size was scaled so that the multivariate regression model makes sense. There are 29 variables in which factor analysis is required, so the minimum sample size required is $29 \times 5 = 145$ observations.

To ensure the reliability of the study results, the authors developed an initial sample of 327 questionnaires. This number of observations both satisfies the sample size requirement and is similar to some similar studies in the same field as the study. The survey was conducted in the North of Vietnam, the respondents were students of universities and colleges in the North of Vietnam, mainly aged 18-26 years, young people who can access information technology early and are sensitive to changes in the times, so the authors consider this a reasonable choice.

3.2. Survey construction

The authors proceeded to develop study measurement:

The Likert 5 scale, from a score of 1 (strongly disagree) to a score of 5 (strongly agree) is used to measure factors that impact mobile payment intent for 6 related variables: Perceived Usefulness (PU), Perceived Ease Of Use (PEOU), Social Influence (SI), Perceived Behavioral Control (PBC), Perceived Security (PS), and Trust (T) inherited and developed from the research of de Luna & cộng sự, 2020; Shankar & Datta, 2016; Kim, Mirusmonov & Lee, 2022; Humbani & Wiese, 2019; Nguyễn, Cao, Đăng, Nguyễn, 2016.

Scale development process:

From the results summarised in the previous sections on the research overview, theoretical basis and qualitative research, the authors proposed a formal research model. To fit the proposed model and research goals, the authors develop the scale following these steps:

- Overview of related studies.
- Qualitative research.
- Preliminary quantitative study on 20 students in the North of Vietnam on factors influencing the decision to use mobile payments.
- Complete the scale for formal quantitative research.

Thus, the authors synthesize the survey items according to the variables and previous scales as follows:

Table 1. Summary of research variables, indicators, scales, and origins

Element	Observation variables	Source	Encode
Perceived usefulness	1. Mobile payments make it easier for me to pay so I decided to use mobile payments.	Bhattacharjee (2001), Devaraj et al. (2002), van der Heijden (2003)	PU
	2. Mobile payments allow me to make payments at a higher speed, so I decided to use mobile payments.		
	3. Mobile payments give me more purchase options, so I decided to use mobile payments.		
	4. Mobile payment is a useful service, so I decided to use mobile payment.		

Element	Observation variables	Source	Encode
Perceived Ease of Use	1. Mastering mobile payments was easy, so I decided to use mobile payments.	Bhattacharjee (2001), Davis (1989), Taylor & Todd (1995), Venkatesh & Davis (2000)	PEOU
	2. The method of using mobile payments is clear and easy to understand, so I decided to use mobile payments.		
	3. The steps of paying via mobile payment were easy to follow so I decided to use mobile payments.		
	4. The steps of using mobile payment are easier to follow than other payment methods so I decided to use mobile payment.		
	5. Making transactions for different sectors became easier with mobile payments so I decided to use mobile payments.		
	6. I found mobile payments easy to manipulate, so I decided to use mobile payments.		
	7. I found mobile payments clear and easy to understand so I decided to use mobile payments.		
Social Influence	1. My relatives advised me to use mobile payment so I decided to use mobile payment.	Taylor & Todd (1995), Venkatesh & Davis (2000), Srinivasan (2015); Edwards & Eriksson (2014)	SI
	2. My relatives felt that using mobile payments brought many benefits so I decided to use mobile payments.		
	3. Friends who I know advised me to use mobile payments so I decided to use mobile payments.		

Element	Observation variables	Source	Encode
	4. Websites and social networks encourage the use of mobile payment, so I decided to use mobile payment.		
Perceived Behavioural Control	1. I have enough knowledge and skills to use mobile payments so I decided to use mobile payments.	Kim & Kim (2022); Pavlou & Fygenon (2006); Venkatesh & Zhang (2010); Venkatesh et al. (2012)	PBC
	2. I have the ability to decide my own transactions when using mobile payments so I decide to use mobile payments.		
	3. I believe that mobile payments can be used well so I decided to use mobile payments.		
	4. I intend to use mobile payments so I decided to use mobile payments.		
	5. I want to make mobile payments in the near future so I decided to use mobile payments.		
Perceived Security	1. I felt safe sending sensitive information via mobile payment so I decided to use mobile payment.	Cheng, Lam, & Yeung (2006); Luarn & Lin (2005), Parasuraman & Associates (2005)	PS
	2. I felt comfortable providing personal information via mobile payment so I decided to use mobile payment.		
	3. Mobile payments are secure enough to store sensitive information so I decided to use mobile payments.		
	4. Mobile payments are highly secure so I decided to use mobile payments.		

Element	Observation variables	Source	Encode
	5. The risk of exposing my mobile payment account information is low so I decided to use mobile payments.		
	6. The risk of being monitored by a third party when using mobile payments is low so I decided to use mobile payments.		
Trust	1. The mobile payment system is reliable so I decided to use mobile payments.	Kim et al. (2022)	T
	2. I believe that mobile payment providers will do what they promise, so I decided to use mobile payment.		
	3. I believe that mobile payment providers value users' opinions, so I decided to use this service.		

3.3. Data analysis methods

To research the decision to use mobile payments, this study encodes and enters official questionnaire data, then processes it using SPSS software version 22. Descriptive statistical methods used frequency statistical analysis to characterise the demographic characteristics of the sample: gender, age, education level, and income. The numbers from the remaining variables are analysed through steps: Cronbach's Alpha scale reliability test, EFA discovery factor analysis, correlation analysis, and linear regression analysis.

Step 1: Verify the reliability of the scale: If Cronbach's Alpha is greater than or equal to 0.6 and the overall correlation coefficient of the variable is greater than 0.3, that scale is reliable for further testing (Nunnally and Bernstein, 1994).

Step 2: The authors will conduct a factor analysis to explore EFA, to review and remove factors that do not fit the model. From there, the authors perform EFA tests with the following results should note as follows:

- The KMO value (Kaiser-Meyer-Olkin) is an indicator used to consider the appropriateness of factor analysis; it is necessary to reach a value from 0.5 to 1 as a condition for factor analysis to be appropriate.

- The Bartlett test is statistically significant (Sig. < 0.05) i.e. uses appropriate factor analysis.

- Eigenvalue greater than or equal to 1.

- Percentage of variance > 50%: Showing the percentage of variation of observed variables, i.e. whether the variation is 100%, how much the factor analysis explains. With a factor load factor of ≥ 0.5 , the observed variable was determined to be statistically significant (Hair et al., 2009). Variables that do not guarantee a load factor (< 0.5) will be eliminated (Othman & Owen, 2002).

Step 3: The authors use correlation analysis to better understand the correlation between variables and provide information about their relevance (D. R. Hardoon, S. Szedmak, and J. Shawe-Taylor, 2004). The Pearson correlation coefficient (r) is used to evaluate the linear relationship between the dependent variable and the independent variables. The value of r ranges from -1 to 1.

- If the Sig. value < 0.05 , the absolute value of r indicates how tight the linear relationship is.

- If the absolute value of r is as close as possible or -1, then the two variables are more closely correlated, and vice versa, moving towards 1 is a positive correlation, and towards -1 is a negative correlation.

- If $r = 1$ degree of absolute linear correlation.

- If $r = 0$ then there is no linear correlation, it is possible that there is no relationship between the two variables, or that there is a nonlinear relationship between them.

When the absolute value of r is large, it demonstrates that the relationship between the two variables is tighter and is suitable for using linear regression analysis. (Hoang Trong & Chu Nguyen, Mong Ngoc, 2008).

Step 4: After determining the linear relationship between two variables, we can use the linear scale method to model the causal relationship between them (Hoang Trong & Chu Nguyen Mong Ngoc, 2008). To test the research hypotheses and the degree of influence of the independent variables on the dependent variable, multivariate regression analysis with the Enter method and 95% confidence level are conducted. In addition, the evaluation indicators used include the corrected R-factor, which indicates the percentage of variability of the dependent variable that can be explained by the independent variables, the F-test to confirm the scalability of the h-model, and the T-test to refute the regression coefficient hypothesis of a population of zero.

4. Results

4.1. Scales evaluation

The results of Cronbach's Alpha coefficient analysis of the scales used in the topic are greater than 0.7 and the total variable correlation coefficient is greater than 0.4. With this result, no observed variables were eliminated. Thus, the scale of factors influencing the decision to use mobile payments including Perceived Usefulness (PU), Perceived Ease Of Use (PEOU), Social Influence (SI), Perceived Behavioral Control (PBC), Perceived Security (PS), and Trust (T) all meet the required reliability for subsequent analysis.

Table 2. Results of scale reliability assessment of research concepts

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item - Total Correlation	Cronbach's Alpha if Item Deleted
1. Perceived Usefulness (PU): Cronbach's Alpha: $\alpha = 0.822$				
PU1	11.02	4.273	0.692	0.756
PU2	11.04	4.443	0.625	0.786
PU3	11.02	4.070	0.666	0.767
PU4	11.00	4.494	0.604	0.795
2. Perceived Ease of Use (PEOU): Cronbach's Alpha: $\alpha = 0.917$				
PEOU1	21.23	21.093	0.742	0.905
PEOU2	21.24	20.817	0.782	0.901
PEOU3	21.17	21.245	0.729	0.906
PEOU4	21.43	21.202	0.723	0.907
PEOU5	21.39	20.454	0.735	0.906
PEOU6	21.38	20.654	0.765	0.902
PEOU7	21.31	20.742	0.738	0.905
3. Social Influence (SI): Cronbach's Alpha: $\alpha = 0.761$				
SI1	11.40	6.045	0.409	0.746
SI2	11.04	6.348	0.589	0.693
SI3	11.24	5.738	0.567	0.701
SI4	11.11	6.107	0.608	0.680
4. Perceived Behavioural Control (PBC): Cronbach's Alpha: $\alpha = 0.772$				
PBC1	15.06	10.405	0.491	0.748
PBC2	15.10	9.984	0.601	0.710
PBC3	15.02	9.727	0.615	0.704
PBC4	14.80	11.287	0.429	0.766
PBC5	15.19	9.708	0.583	0.716

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item - Total Correlation	Cronbach's Alpha if Item Deleted
5. Perceived Security (PS): Cronbach's Alpha: $\alpha = 0.924$				
PS1	16.16	18.776	0.782	0.910
PS2	16.16	18.705	0.798	0.908
PS3	16.31	18.228	0.755	0.913
PS4	16.37	18.209	0.775	0.910
PS5	16.28	18.019	0.766	0.912
PS6	16.30	17.721	0.812	0.905
6. Trust (T): Cronbach's Alpha: $\alpha = 0.860$				
T1	7.59	2.089	0.716	0.821
T2	7.61	2.152	0.756	0.785
T3	7.56	2.032	0.734	0.804

Source: Authors

Scales of 29 observed variables, after scale reliability verification using Cronbach's Alpha, are included in the EFA factor analysis.

The analysis of the EFA factor shows that there are 6 factors extracted at an Eigenvalue of 1.531 and the deduction variance of 66.426%. Moreover, $KMO = 0.915 > 0.5$ proves that the model is consistent with the data. KMO coefficient = $0.915 > 0.5$ also verifies that the EFA factor is relevant to the study. In addition, the individual load factor is more than 0.5, so the observed variables have good statistical meaning and are important in the factors, which have practical significance. $Sig.$ (Bartlett's Test) = $0.000 < 0.05$ demonstrate that observed variables are correlated in the population.

Table 3. Independent variable KMO and Bartlett test results

Factors	Result	Comparison
KMO coefficient	0.915	$0.5 < 0.915 < 1$
Sig. value in the Bartlett test	0.000	$0.000 < 0.05$
Extraction variance	66.426%	$66.426\% > 50\%$
Eigenvalue	1.531	$1.531 > 1$
Approx. Chi-square	4982.527	
df	406	

Source: Authors

4.2. Results Analysis

The regression results of factors influencing the decision to use mobile payments are presented in Table 4.

Table 4. Regression results

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
Constant	0.767	0.171		4.474	0.000		
PU	0.413	0.040	0.367	10.354	0.000	0.689	1.451
PEOU	0.158	0.037	0.158	4.262	0.000	0.632	1.583
SI	0.189	0.032	0.197	5.965	0.000	0.798	1.253
PBC	0.145	0.033	0.149	4.367	0.000	0.745	1.342
PS	0.226	0.031	0.253	7.214	0.000	0.704	1.421
T	0.129	0.035	0.119	3.730	0.000	0.855	1.170

Source: Authors

The authors used the Pearson coefficient to analyse the correlation between quantitative variables. The Pearson correlation coefficients between variables run from 0.136 to 0.680. This demonstrates the distinguishing value achieved, showing that the relationship between the dependent variable (MobilePayment Decision) and the independent variables is statistically significant (Sig. <0.05). Dependent variables impact the decision to use mobile payments is positively correlated with the variables Perceived Usefulness, Perceived Ease of Use, Social Influence, Perceived Behavior Control, Perceived Security, and Trust. So other statistics can be used to find the relationship between independent variables and dependent variables.

The linear regression equation with the dependent variable is the Decision to use mobile payments:

$$Y = 0.767 + 0.413PU + 0.158PEOU + 0.189SI + 0.145PBC + 0.226PS + 0.129T$$

Where:

PU: Perceived Usefulness

PEOU: Perceived Ease of Use

SI: Social Influence

PBC: Perceived Behavioural Control

PS: Perceived Security

T: Trust

Based on the normalised Beta coefficient, it was found that Perceived Usefulness factors had the strongest impact on mobile payment decisions (Beta = 0.413), followed by Perceived Security (Beta = 0.226), Social Influence (Beta = 0.189), Perceived Ease of Use (Beta = 0.158), Perceived Behavioural Control (Beta = 0.145), and Trust (Beta = 0.129). At the same time, the Sig. values of the factors are less than 0.05, and all hypotheses are accepted. Thus, the level of performance gains that North Vietnamese undergraduate students perceive will be achieved by adopting one type of technology (Kim, Mirusmonov & Lee, 2010) is extremely important, having a significant impact on this demographic's decision to use mobile payments. This result proved to Davis (1989) that the trend of using an information technology service or equipment can largely be predicted thanks to the perception of the usefulness of the product. However, North Vietnamese undergraduate students' trust, or positive expectations of a mobile payment provider (Mayer, Davis & Schoorman, 1995) did not have as significant an impact as Mallat (2007) or Yan & Colleagues (2009) stated.

5. Discussion and Conclusion

5.1. Implications

In terms of theoretical contribution, this study is tapping into a new research target with a model that has repeatedly proven effective. Currently, in Vietnam, the number of studies on mobile payment using models with similar factors is still not large. In addition, none of the studies focused on northern Vietnamese students. Hence, the authors believe that the study will expand the treasure trove of knowledge about user behaviour and intent toward using mobile payments. In addition, the model built in this study will provide directions to further research in the field of mobile payment, as well as knowledge related to users' decisions to use mobile payment in developing countries in general and Vietnam in particular. Moreover, considering practical implications, the authors believe that this study has provided basic information for mobile payment providers and the government to use for developing mobile payments. From the results of the study, the authors have provided more information about the factors affecting the decision to use mobile payment, helping mobile payment providers and the state and policymakers to refer to the development of mobile payment in general.

5.2. Recommendations

In Vietnam, mobile payment has tended to develop positively in recent years. More and more people are starting to use mobile payment apps. From the research results, the authors make some suggestions to improve the quality of mobile payment services in Vietnam, as well as attract new users, helping mobile payment service businesses expand domestically and internationally.

For the authority, taking the rise of mobile payment in consideration, an advent of a National Cybersecurity Association guided by the government is needed more than ever before. Given that cybersecurity is one of the most staggering threats to mobile payment providers and users, the government should create such an association in order to supervise

and assist security quality of service providers, as well as distribute information to users on cyber frauds targeting mobile payment transactions. Moreover, officials can also help a hand in popularizing mobile payment through facilitating this type of payment in different kinds of administrative procedures.

In Vietnam, mobile payment has tended to develop positively in recent years. More and more people are starting to use mobile payment apps. From the research results, the authors make some reference suggestions to improve the quality of mobile payment services in Vietnam and attract many new users, helping mobile payment service businesses expand domestic and international markets.

For official organisations such as the State Bank, the Ministry of Finance, the Ministry of Industry and Trade, and the Information and Communications Ministry,... it is necessary to study and propose policies and regulations related to mobile payment to strengthen management and protect the interests of users. Authorities should strengthen inspection, supervision, and handling of violations related to mobile payments such as illegal goods trading, money laundering, and fraud, to safeguard mobile payment providers' and users' cyber rights. In addition, strengthening the construction of payment infrastructure such as data centres, payment networks, and cybersecurity systems should also be focused on to generate a positive usage experience, which indirectly promotes the country's digital economy. In addition, raising people's awareness about mobile payment services also needs special attention.

For mobile payment providers, such businesses should invest and upgrade technical systems, ensuring users' safety and personal information security. Security technology for personal information and bank accounts such as data encryption, SSL, two-factor authentication, and fingerprint and face authentication will be integrated into mobile payment applications to ensure user security and safety. Moreover, mobile payment service providers also need to strengthen promotional activities to drive awareness of their services; expand cooperation between service providers to create new, and diversified products that meet market needs as well. Finally, mobile payment businesses should pay attention to quality assessment activities and take into account users' feedback to capture the needs and understand the desires of target customers. Especially when customers are undergraduate students, businesses should focus on offering convenient services and reasonable prices to increase competitive ability toward winning this target customer segment.

5.3. Limitations and future researches' proposals

Regarding research limitations, firstly, this research focuses mainly on factors affecting the decision to use mobile payment by students in the North. Hence, the overview of factors affecting the decision to use mobile payment of people nationwide, in general, was neglected. Secondly, some other important factors that influence the decision to use mobile payments such as Perceived Risk (PR), Effort Expectancy (EE), and Performance Expectancy (PE),... have not yet been considered in this study. In addition, the authors have only developed a simplified research model in this study. Although this does not lessen the research result's accuracy, the research has not achieved the desired thoroughness.

Further studies may apply previously used research models to evaluate users' decisions to use different types of mobile payments, thereby comparing differences in the importance of technological characteristics for different types of mobile payments. Moreover, it is also a good idea to research on other issues related to mobile payments, rather than focusing on the determinants of mobile payments usage. Studies on mobile payments have also been worldwide ubiquitous (Bauer, Reichardt, Barnes & Neumann, 2005; Ondrus & Pigneur, 2006) with factors influencing mobile payment decisions as one of the most popular research directions (Dalhberg et al., 2015). This, unfortunately, limits research on other issues of mobile payments and indirectly leads to undue limits on human knowledge.

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DETERMINANTS OF DECISION TO USE FINTECH FOR MANAGING PERSONAL FINANCE IN VIETNAM

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Abstract

The study aims at identifying the factors that affect the decision to use Fintech for the purpose of managing personal finance. Data collection was conducted by surveying Vietnamese residents in 63 provinces and municipalities, which were divided into two groups: users (N=648) and non-users (N=333). Besides, the research model was designed mainly based on TAM and UTAUT2, with 18 hypotheses to be tested. After verifying the validity of the model by Confirmatory Factor Analysis (CFA), the authors derived the Structural Equation Model results by bootstrapping method. Specifically, Operational Risk, Observability, Hedonic Motivation were among the factors with strongest impact on the Decision to Use of both groups. However, while Social Influence showed remarkable influence in the user group, it was proved insignificant in the non-user group. From the aforementioned findings, recommendations were given for governors and Fintech providers. For the government, they should focus on enhancing the legal framework and promoting high-tech environment for Fintech to thrive in Vietnam. For Fintech companies, it is advisable that they ensure the security of their customers, create user-friendly interfaces, as well as improve the productivity of the Fintech applications.

Keywords: *Decision to use, Fintech, Personal finance, Vietnam*

1. Introduction

Although people's ability to create material wealth has increased significantly and reached unprecedented milestones in history, the ability to manage finances has not caught up with such a speed (Fogarty, 2012). In some cases, it can be observed that a lot of people

often fall into financial exhaustion and become hopeless when emergency situations happen, even though they have enough income and assets. Fintech was born as a “savior” to make financial management more effective.

According to Van Loo (2018), the use of Fintech in personal financial management can increase consumer benefits and reduce the likelihood of a financial crisis. In particular, benefits for individuals made by Fintech can be achieved by allowing them to control their finances in real time (Brainard, 2016). Many applications and services available on the market easily connect with consumers' financial tools to make simple and accurate spending and financial budgeting plans, thereby helping them have a more accurate perspective in spending and saving (Banks of International Settlements, 2018). These often break down into a lot of categories, including groceries, paying bills, and dining out, then the app will calculate how much you save. This overview provides consumers with detailed information about the main expenditures for a certain period of time, giving them a clearer and more accurate perspective in spending and saving decisions in personal financial management.

The benefits of Fintech have been proven clearly, but is Fintech really reliable in managing personal finances? Users may face a number of disadvantages in adopting Fintech products, including the risk of financial loss and privacy concerns (Liébana-Cabanillas et al., 2014). The decision to use Fintech services in financial management is influenced by the customer's perception of risk: Financial Risk, Legal Risk and Operational Risk have a significant influence on the decision to use (Tang et al., 2020). Using survey data collected from 244 Fintech users, Ryu (2018) has shown that regulatory risk has the most significant negative impact, while convenience had the most positive influence on the decision to use Fintech in personal financial management. Therefore, it is extremely important to investigate the factors affecting the decision to use Fintech in personal financial management.

Therefore, the study with the topic “*Determinants of Decision to Use Fintech for Managing Personal Finance in Vietnam*” was chosen by the research team. Theoretically, the study will systematize the theoretical basis, concepts related to personal finance, personal financial management and Fintech services and the factors affecting the decision to use Fintech in personal financial management. This study will also help to enrich the scholarly treasure of this subject for Vietnam. In practical terms, the results of the study will provide the advantages and disadvantages of Fintech, which determine the use of Fintech by individuals in financial management and serve as a basis for businesses and companies. Fintech service providers can optimize products, satisfy customer needs and contribute to the development of the economy in general.

2. Literature reviews and Theoretical frameworks

2.1. Literature reviews

Overseas research on Fintech adoption intention often focuses on the intention to use a particular Fintech product like the following studies: robo-advisor (Casaló et al., 2010; Belanche, 2019); online payment (Caldeira et al., 2021); digital banking (Marakarkandy, 2017) rather than Fintech in general. Their research models are based on TAM or UTAUT2,

which means they include Performance Expectation, Ease of Use, Facilitating Conditions will be considered key predictors. The benefit-risk framework is similarly popular (Ryu, 2018; Tang et al., 2020).

In Vietnam, most studies on the subject were carried out on a small sample size (which mainly consists of students between the age of 18 to 24), namely Nguyen Dang Tue (2020), Nguyen Vinh Khuong et al. (2022). The former uses UTAUT to determine the major obstacles preventing the continuation of Fintech payment services usage. The results indicate that Perceived Usefulness, Technical Concern, Social Influence, Perceived Information, Perceived Need of Minimalism all have profound influence on the continual use of Fintech payment services. Due to being one of the first studies on Fintech adoption in Vietnam, it's possible that other unique factors of Vietnam are not yet considered. The benefit-risk framework can be seen in the study of Nguyen Vinh Khuong et al. (2022), which includes the benefits (Perceived Benefit, Economic Benefit) and risks (Perceived, Financial, Legal, Security, Operational Risk). Social Influence is also cited as a key factor in Fintech adoption intention, due to the 4.0 industrial revolution.

In conclusion, while the potential of Fintech in personal finance management is undeniable, considering the number of studies on related subjects (payment, online banking, robo advisors), up to now there have been very few studies directly related to personal finance done in a developing country like Vietnam. There is not yet any thorough qualitative research to identify the potential factors unique to Vietnam and its condition. Additionally, the research population is often not diverse while also being limited in size and scale, affecting the ability to generalize the result.

2.2. Theoretical frameworks

Unified Theory of Acceptance and Use of Technology (UTAUT2)

The Theory of Acceptance and Use of Technology (UTAUT) proposed by Venkatesh et al. (2003) is considered the combination of other models on users' new technology adoption, including Technology Acceptance Model (TAM). UTAUT posits that Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions are determining factors and Gender, Age, Experience, Voluntariness of Use are moderators. Based on UTAUT, Venkatesh et al. (2012) developed UTAUT2, which further includes Hedonic Motivation, Price Value and Habit as factors, to explain users' behaviors toward technological products.

Benefit-Risk Framework

The benefit-risk framework is also used to explain users' intention to use Fintech. According to Peter and Tarpey (1975), users will consider the benefits and risks of a product before making decisions that will maximize the net benefit. Lee (2009) attempted to identify the factors affecting online banking acceptance by proposing a model based on TAM and Theory of Reasoned Action (TAM). Perceived risk was considered a multi-dimensional construct (including security, financial, social and operational risk) while perceived benefit was not.

3. Method

3.1. Research model and hypotheses

Chain of hypotheses H1 → H6: Perceived Efficiency, Ease of Use, Social Influence, Facilitating Conditions, Hedonic Motivation, Price Value positively affect the decision to use Fintech for managing personal finance in Vietnam.

Chain of hypotheses H7a → H7d: Financial Risk, Security Risk, Legal Risk, Operational Risk negatively affect the decision to use Fintech for managing personal finance in Vietnam.

Hypothesis H8: Relative Advantage positively affects the decision to use Fintech for managing personal finance in Vietnam.

Hypothesis H9: Observability positively affects the decision to use Fintech for managing personal finance in Vietnam.

Hypothesis H10a: Compatibility positively affects Perceived Efficiency.

Hypothesis H10b: Compatibility positively affects Ease of Use.

Hypothesis H10c: Compatibility positively affects the decision to use Fintech for managing personal finance in Vietnam.

Hypothesis H11a: Innovation positively affects Perceived Efficiency.

Hypothesis H11b: Innovation positively affects Ease of Use.

Hypothesis H11c: Innovation positively affects the decision to use Fintech for managing personal finance in Vietnam.

3.2. Data collection and analysis

Secondary data

We employed the secondary research method by using available documents, articles as well as domestic and foreign research related to this topic. Besides, databases were also taken from reliable websites such as World Bank, General Statistics Office, General Population Census, etc.

Primary data

Step 1: Design the questionnaires for the research

The research team built a questionnaire referenced from previous research documents. The final questionnaire consists of 3 distinct parts: general knowledge about Fintech, questions about demography and measurement related to the research model.

Step 2: Determine the sample size for the study

Sample size is determined by using the inverse square root method of Kock and Hadaya (2018) with a mean of 5%. As Huber et al (2008) suggested that if the path system is at least 0.1, the correlation between the two variables will have a significant impact on the model, so the desired minimum path system is defined as 0.1. The formula would be:

$$n_{min} = \left(\frac{2.486}{|0.1|} \right)^2 = 609.1024$$

Therefore, a minimum of 610 observations is needed for the research.

Step 3: Distribute the questionnaire to targets

As the survey's subjects were identified as individuals nationwide, the research team decided to expand the study participants to have the most comprehensive view of the use of Fintech in personal financial management in Vietnam. To conduct the research, the research team applied the convenience sampling method. From there, we asked people to spread the word and refer the questionnaire to others. In addition, the research team distributed the questionnaire to online public community groups to collect more answers. In total, 1017 valid research samples were collected.

Step 4: Data analysis

Data was updated into Excel to perform analysis of descriptive statistics and then transformed to SPSS 20 software and SmartPLS 4.0.8.2 software for measurement models as well as linear structural equations.

Proposed Model

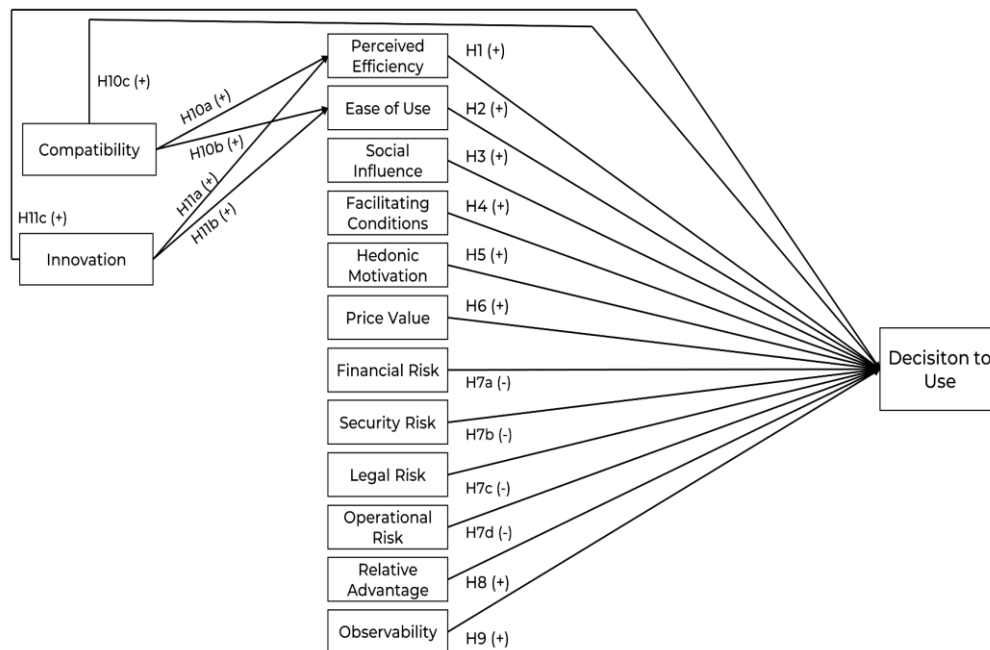


Figure 1. Proposed Hypothesis Model

3.3. Participants

The survey has received 1017 valid responses from residents across Vietnam. The descriptive statistics of the sample is listed in Table 1. The age group 18-25 accounted for the highest percentage (29.9%), and above half of the respondents belong to the younger part of the population (18-35). Regarding career, students and civil servants comprised the majority of the sample, with the proportion of 27.6% and 22.8%, respectively. Meanwhile,

the percentage of users doubled that of non-users, and the most popular family size was the nuclear family of 3-4 members. The two major monthly income groups were 10-20 million (31.3%) and below 5 million (24.9%).

Table 1. Demographic information of the sample

Characteristics		N	%	Characteristics		N	%
Gender	Male	603	59.3	Usage	Used	684	67.3
	Female	414	40.7		Not used	333	32.7
	Total	1017	100		Total	1017	100
Age	Below 18	90	8.8	Monthly income (million VND)	Below 5	253	24.9
	18 - below 25	304	29.9		5 - below 10	184	18.1
	25 - below 35	302	29.7		10 - below 20	318	31.3
	36 - below 50	274	26.9		20 - below 30	191	18.8
	Above 50	47	4.6		Above 30	71	7.0
	Total	1017	100		Total	1017	100
Career	Student	281	27.6	Family size			
	Civil servant	232	22.8		1 - 2 members	321	31.6
	Self-employed	154	15.1		3 - 4 members	481	47.3
	Finance	159	15.6		5 - 6 members	166	16.3
	IT	144	14.2		Above 7 members	49	4.8
	Pension	47	4.6		Total	1017	100
	Total	1017	100				

Source: Summary of the authors' results

4. Results

4.1. Confirmatory Factor Analysis (CFA)

Reliability: The assessment of Cronbach's Alpha showed that the model reached significantly high reliability (>0.8) for both groups. Additionally, Composite Reliability (CR) indices of the two groups exceeded 0.897, hence satisfying the threshold (>0.7) proposed by Nunnally and Bernstein (1994). Besides, Average Variance Extracted (AVE) results for two groups were higher than 0.688, which met the standard (>0.5). Therefore, all of the constructs were sufficiently reliable for the model.

Convergent validity: Considering outer loadings, the values for all independent variables satisfied the threshold of 0.708 (Hair et al., 2017). Next, AVE of every independent variable surpassed 0.5 in both groups, proving the convergent validity of the model.

Discriminant validity: All the constructs met the Fornell and Larcker (1981) standard when the AVE of one construct in the cross line exceeded every correlation

coefficient with other constructs in the same column. In addition, the highest HTMT ratio among the factors in the model was $0.697 < 0.9$, which achieved discriminant validity, according to Henseler et al. (2015). As a result, the proposed measurement model reached the discriminant validity.

4.2. Structural Equation Model (SEM)

The research employed the bootstrapping method with $N = 5000$ to measure the accuracy of the original path coefficient estimates (β). The results from bootstrapping would determine which observable variables were statistically significant in the model. Bootstrapping was conducted on the statistics of two groups: used and not used, then the results (shown in **Table 3**) would be used to analyze and compare between the two groups.

Table 3. The results for Structural Equation Model (SEM)

	Paths	Used (N=684)				Not used (N=333)			
		β	t-value	P-value	Results	β	t-value	P-value	Results
H01	PE \rightarrow DU	0.168	3.607	0.000	Pass	0.002	0.024	0.981	Reject
H02	EE \rightarrow DU	0.059	0.952	0.341	Reject	0.048	0.753	0.451	Reject
H03	SI \rightarrow DU	0.018	0.58	0.562	Reject	0.259	5.267	0.000	Pass
H04	FC \rightarrow DU	0.176	5.987	0.000	Pass	-0.013	0.308	0.758	Reject
H05	HM \rightarrow DU	0.209	6.852	0.000	Pass	0.265	5.879	0.000	Pass
H06	PV \rightarrow DU	-0.031	1.103	0.270	Reject	-0.062	1.029	0.304	Reject
H07a	FR \rightarrow DU	-0.144	5.29	0.000	Pass	-0.166	3.654	0.000	Pass
H07b	LR \rightarrow DU	-0.168	6.431	0.000	Pass	-0.142	3.512	0.000	Pass
H07c	SR \rightarrow DU	-0.173	6.505	0.000	Pass	-0.151	3.734	0.000	Pass
H07d	OR \rightarrow DU	-0.345	2.756	0.006	Pass	-0.389	5.419	0.000	Pass
H08	RA \rightarrow DU	0.17	5.695	0.000	Pass	-0.004	0.11	0.913	Reject
H09	O \rightarrow DU	0.251	5.53	0.000	Pass	0.193	2.668	0.008	Pass
H10a	C \rightarrow PE	0.141	3.036	0.002	Pass	0.145	2.802	0.005	Pass
H10b	C \rightarrow EE	0.138	2.345	0.019	Pass	0.296	3.402	0.001	Pass
H10c	C \rightarrow DU	0.071	2.283	0.022	Pass	0.136	2.621	0.009	Pass
H11a	I \rightarrow PE	0.498	9.887	0.000	Pass	0.526	7.868	0.000	Pass
H11b	I \rightarrow EE	0.417	5.889	0.000	Pass	0.232	2.24	0.025	Pass
H11c	I \rightarrow DU	0.135	3.715	0.000	Pass	0.165	3.156	0.002	Pass

Source: Summary of the authors' results

Note: Pass (P-value > 0.05); Reject (P-value < 0.05)

5. Discussion and Conclusion

5.1. Summary

Firstly, the group systematized the theoretical basis of the Unified Theory of Acceptance and Use of Technology (UTAUT2) and Benefit-Risk Framework, synthesizing relevant research papers related to the decision to use Fintech for managing personal finance.

Secondly, the group proposed a research model with 12 independent variables and 3 dependent variables.

Finally, based on the results from 1017 surveys, the group tested the significance of the factors affecting the decision to use Fintech for managing personal finance.

5.2. Discussion

The findings show that factors relating to risk have significant impact on the decision to use in both groups. Specifically, Operational Risk (OR) proves the greatest influence ($\beta = -0.345$) among the risks. This may be because Fintech remains fairly new in Vietnam, resulting in the doubt within users as to whether the Fintech applications are sufficiently well-built. Additionally, Financial Risk (FR) has the second highest impact on the decision of the non-users, yet slightly influences that of users. Ryu (2018) explained this result by arguing that the impact of financial risk may be demonstrated indirectly through other risks.

Hedonic Motivation (HM) and Observability (O) are the factors of major impact on the Fintech adoption for personal finance in both groups. For those who already used, observability ranked second in the impact ($\beta = 0.251$). This means that the practical experience of Fintech in managing personal finance of other people around them may promote their decision to use. For those who have not used, observability merely ranked fourth in impact ($\beta = 0.193$), lower than hedonic motivation ($\beta = 0.265$). It is predicted that the non-users are more concerned about their own enjoyment in using Fintech, rather than only observing that feeling in other people.

With regard to Perceived Expectation (PE), Innovation (I) positively contributes to the influence on this factor in both users and non-users, with path coefficients of 0.498 and 0.526, respectively. The implication is that Fintech products that can resolve the current difficulties in personal finance management can meet the expectation of the target customers. In the context of this research, the respondents mainly belong to the working age population, with 83.5%, and most come from families of 3-4 members. This demographic group tends to make the chief financial decision as they are the main financial supporter of the whole family. Indeed, some common mistakes in decision-making are unavoidable, for example, losing track of expenditures, having no saving plans or failing to identify investment risks (Nguyen Tien Thanh, 2020). For that reason, they are in need of an innovative solution to enhance their financial management skills. If Fintech providers are able to fulfill those requirements, they can gain higher satisfaction from current users, while promoting the motivation to access the products of potential customers.

The most distinguishable difference between the user and non-user group lies in Social Influence (SI), as this factor remarkably influences non-users, whereas shows hardly

any relevance in the decision of users. Perhaps people who have experience in using Fintech for their personal finance are not affected by others around them, since they have gathered enough knowledge and information about Fintech to reach their own decision. Meanwhile, non-users may be confused among different opinions about Fintech, as they lack the full awareness of the benefits brought about by Fintech. This finding resembles that of Lin et al. (2020) in investigating the adoption of mobile payment in Taiwan, at the time when this technology was not widely popular.

However, Ease of Use (EE) was reported with insignificant impact on the decision to adopt Fintech for personal finance in both research groups. This result contrasts various studies using the TAM model such as Kim et al. (2010), Kim et al. (2015), Chuang et al. (2016), Patel (2018), Nguyễn Vĩnh Khương et al. (2022). Taking the similar finding into consideration, Davis et al. (1989) explained that ease of use tended to show little influence in usage behaviors on the emergence of new technology as users still lacked a comprehensive experience of it. Therefore, Fintech providers should not direct their main focus on designing easy-to-use products at the market penetration stage in Vietnam.

5.3. Conclusions

As regards the group of people who have already used Fintech in financial management, based on 684 samples, Observability and Hedonic Motivation have the greatest positive influence on the decision to use Fintech, followed by Relative Advantage, Perceived Efficiency, Facilitating Conditions, Innovation, and Compatibility. On the contrary, the factors Ease of Use, Social Influence, and Price Value are sought to have no bearing on the Decision to Use. The relationship between Risk and Decision to Use is inverse with Operational Risk having the most detrimental effect, followed by Security Risk, Legal Risk, and Financial Risk. Two dependent variables Perceived Efficiency and Ease of Use are both affected by Innovation and Observability, these effects are in the same direction.

Among 333 samples for the Fintech non-user group, Hedonic Motivation and Social Influence most positively influence on Decision to use, followed by Observability, Facilitating Conditions and Compatibility. Ease of Use, Perceived Efficiency, Relative Advantage, Facilitating Conditions and Price Value are considered to have little significance to Decision to Use. The Decision to Use is adversely affected by Operational Risk, Security Risk, Legal Risk, and Financial Risk, with Operational Risk having the biggest impact. In terms of dependent variables, Efficiency Expectations, Innovation Motivation have a greater favorable impact than Observability. Observability, however, has a higher beneficial impact on the dependent variable Ease of use.

5.4. Recommendations

Recommendation for the Government

Firstly, the Government must first create a business environment with a clear legal framework to provide ease and fairness to competition. Objectives and regulations should support the interests of the Fintech sector while maintaining market integrity and

safeguarding consumers and investors. Managers and supervisors must behave in a neutral, zero-tolerance manner and keep a check for illicit activity. To prevent the exploitation of legal discrepancies, particularly in the setting of an expanding number of Fintech enterprises, monitoring and supervisory operations need to be intensified. The research team recommended that researchers and supervisors should create legislative laws after investigating and analyzing business desires so that the most relevant terms and conditions could be created in the circumstances.

Secondly, the Government must re-examine, alter, supplement, and adopt new policies as needed in order to create favorable conditions, encourage, and timely assist Fintech enterprises. The research team also suggests expanding on existing research and applying the “Regulator Sandbox” model for Fintech companies, which would allow them to experiment with new concepts and ideas in an environment free from contractionary regulations. Yet, the experiments continue to adhere to fundamental Fintech rules and guarantee customer security. Managers therefore will have a clear awareness of the feasibility of projects to make a decision regarding whether or not to alter current regulations.

Finally, the Government needs to upgrade the technology infrastructure to meet the requirements of high-tech development, especially security technology. User privacy and data security should be protected from cyberattack. Building a culture of trust with consumers about Fintech products and add-ons like personal financial management advisory services is also of primary concern. Users should be encouraged in accessing and using Fintech. In addition, the digitalization of personal identity or the integration of personal information into electronic devices need to be carefully examined. Steps involved in registering and using Fintech software must be publicly available via standardized guidelines to create the conditions for users to independently learn more about Fintech.

Recommendation for Fintech company

Firstly, Fintech companies must first enhance their technological infrastructure with a focus on user account security to gain customers' trust in utilizing fintech to manage their personal finances.

Secondly, to enhance productivity and operations, Fintech companies may consider utilizing state-of-the-art technologies. When users link their bank accounts with the application, for instance, eKYC (electronic Know Your Customer) technology can be used to identify clients electronically, verifying their accounts promptly and precisely in order to reduce the risk of confusion, data loss, or disclosure.

Thirdly, Fintech businesses that offer consulting and personal financial management services can collaborate with financial intermediaries (banks, financial companies, etc.) to build customer databases as well as transfer information between Fintech service providers and payment intermediates.

Lastly, the development of financial management application interfaces is also of importance where Fintech companies must place the emphasis on. These interfaces must be simple to use, have a clear design, stress brand recognition, and follow scientific layout principles.

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THE IMPACT OF COMMUNICATING WITH CONSUMERS THROUGH INSTANT MESSAGING ON POSITIVE WORD-OF-MOUTH: RESEARCH IN VIETNAM

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Abstract

This study examines the impact of communicating with consumers through instant messaging on positive word-of-mouth using the SOR model. The study employs Cronbach's Alpha analysis, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modeling (SEM) on 720 observations in Vietnam. The results show that the relationship between social perception, involvement, media richness, arousal, pleasure, and positive word-of-mouth all have a positive impact on each other. The study also indicates that social awareness has no significant influence on positive word-of-mouth. Based on the findings, the study provides suggestions for retail businesses today.

Keywords: *Mobile instant messaging (MIM), positive word-of-mouth (WOM), SOR model*

1. Introduction

Society is changing, which leads to some new trends in the process of goods from producers to consumers. In the past, consumers were marketed products through face-to-face interactions with salespeople, watching TV ads, or word-of-mouth among consumers. At the same time, sellers also found it very difficult to manage information and access buyers. However, today, everything has been improved on the digital platform and the Internet (Acai Sudirman, 2022). Therefore, consumer communication methods have also

differed significantly. The difference is reflected in the fact that many new forms of communication have emerged, such as personal communication (phone, instant messaging, email, etc.); social communication (based on the power of popular social media's spreading and interaction: Facebook, YouTube, LinkedIn, Blog, Forum, etc.) (Baran, Stanley J, 2021). Consumer communication has also taken new steps. This research focuses on the form of Mobile Instant Messaging (MIM).

As email marketing becomes more intrusive, social media advertising like Facebook and YouTube makes users lose interest, a different innovative solution is needed. With the "pop-up window" mechanism to display messages as soon as they are received, user-created lists can be seen by other users, which indicates when friends are online and ready to receive messages. They also can send and receive messages with images, text, video, location, voice messages, too (Delia Vazquez et al., 2017) ..., MIM stands out as a new and convenient way of communication that researchers have paid little attention to, although the level at which smart retailers can effectively communicate with consumers is very high (Delia Vazquez et al., 2017).

Recognizing the objective situation of society and the subjective nature of instant messaging on mobile phones - MIM, the student group has chosen the topic "The impact of communicating with consumers through instant messaging on positive word-of-mouth". From there, a solution is proposed to improve the communication activities of retail businesses today.

2. Literature review and Theoretical background

2.1. Literature review

Since its appearance, MIM has been a media revolution that is changing the way people communicate with each other (Sara H. Hsieh & Timmy H. Tseng, 2017). MIM applications have a strong impact, as they combine multiple services on one platform and allow users to update information in real-time, anywhere (Oghuma et al., 2015). Previous research on MIM has mainly focused on its benefits, functions, tasks, or social interaction (Sara H. Hsieh & Timmy H. Tseng, 2017). When studying the functionality of MIM, de Vos et al. (2004) showed the impact of usefulness on the application, how workers apply instant messaging in organizational situations (Isaacs et al., 2002), or how productivity loss can occur due to interruptions and distraction with MIM (Thatcher et al., 2008).

From the perspective of the benefits that MIM brings, Oghuma et al. (2015) developed a model to confirm the benefits of consumers to test the intention to continue using MIM of previous users. At the same time, research on the benefits of MIM for developing ELS has shown that MIM is a powerful educational tool because it encourages second language interaction among participants and has great potential to activate student participation (Alberto Andujar, 2015). Ying Tang & Khe Foon Hew (2017) studied the usefulness of MIM in education and showed that MIM improves learning by supplementing course content through dialogue activities and making social presence more easily developed through various computer-mediated communication channels (e.g., discussion forums). Daewon Kim (2018) concluded that the net welfare gain of texting via MIM exceeds the cost incurred when using it with LTE networks.

Starting from the social interaction aspect of MIM, Huang & Yen (2003) discussed how friends communicate to enhance their friendship; Sara H. Hsieh & Timmy H. Tseng (2017) also investigated the influence of emoticons and text messages on social interaction. In addition, some studies have examined consumer reactions to MIM. For instance, Deng et al. (2010) proposed that satisfaction and loyalty are influenced by trust and service quality; Gan (2017) analyzed the motivations driving the liking of MIM (WeChat) using the satisfaction theory; Zhang et al. (2017) examined the relationship between MIM (WeChat) social interaction and its impact on perceived value; Peng et al. (2016) investigated Chinese consumers' MIM conversion behavior, and specifically, Delia Vazquez et al. (2017) explored the environmental stimuli factors affecting emotions that then influence WOM activity.

Although previous studies have examined specific aspects of MIM usage and some studies have investigated the links between MIM and WOM, there has been no comprehensive study on the linkage between MIM and WOM. This study is conducted in the context of Vietnamese consumers and expands the survey sample. Additionally, it adds qualitative research. Building on previous studies, this study continues to address the relationship between social perception, media richness, involvement, arousal, and eWOM in the context of Vietnam. Furthermore, this study provides recommendations and solutions for retail businesses in Vietnam.

2.2. Theoretical Background

The environmental psychology theory proposes that stimulations from the environment are related to human behavioral and emotional responses (Mehrabian & Russell, 1974). Psychologists Mehrabian and Russell suggest that environmental stimuli (S) lead to emotional responses (O), which in turn drive consumer behavior (R), predicting the stimulus-organism-response (S-O-R) model. In the retail industry, Vieira (2013) used the S-O-R model to explain and present evidence of the relationship between various environmental cues and their impact on consumer responses. Li and Yeh (2009) studied the level of satisfaction, decision-making, trust, and positive responses of customers toward the e-commerce environment. Gan (2017) called for new approaches to enhance the current theoretical approach by integrating aspects of social influence theories. Wang and colleagues (2007) integrated the social response theory and S-O-R model, which creates a conceptual model to test the impact of web social cognition on pleasure and arousal. Building on the existing research, this study uses the S-O-R framework, combining social response theory and media richness theory, to clarify the impact and influence on consumer emotions.

Based on the theoretical framework, the following hypotheses are constructed and selected to fit the practical context of Vietnam:

Socialness Perception (XH)

Wang and colleagues (2007) argued that Socialness Perception directly and positively influences the emotions, behaviors, and actions of consumers. Social awareness is defined as the phenomenon in which humans perceive computerized machines as social agents (Reeves & Nass, 1996; Steuer & Nass, 1993). Short and colleagues (1976) stated that the

interaction between humans and computers is directly and positively affected by social consciousness, an individual's loyalty is improved through high-quality social interaction and social environment (Oliver, 1997).

H1: Socialness Perception has a positive impact on pleasure when using messenger.

H2: Socialness Perception has a positive impact on arousal in messenger.

H9: Socialness Perception has a positive impact on involvement in messenger.

H11: Socialness Perception has a positive impact on word-of-mouth communication in messenger.

Involvement (TG)

Involvement is a state that affects the goal aroused in the specific object that consumers are experiencing. Huang & Li (2013) argue that engagement reflects the level of consumer focus on the actions they are experiencing during use. Richins & Bloch (1986) assert that engagement is related to situational or long-term aspects. When consumers engage, they focus on the experience, chatting with friends, enjoying messages from the retailer's messenger or connecting with the retailer (Delia Vazquez et al., 2017). This focus leads to improved communication effectiveness and improved user experience (Huang & Li, 2013), positively affecting the emotions of users connected to each other during use. Individuals who are engaged in long-term shopping can directly experience the joy of exploring the shopping environment (Machleit & Eroglu, 2000; Wakefield & Baker, 1998). Studies show that high engagement leads to high emotional arousal and increases consumption experience (Wakefield & Blodgett, 1994). Engagement is stimulated by pleasure and interest when experiencing the online shopping environment. Therefore, the research team proposes the following hypotheses:

H3. Involvement has a positive effect on pleasure during the use of Messenger.

H4: Involvement has a positive effect on arousal during the use of Messenger.

Media Richness (DD)

Messenger has many practical and useful functions that are suitable for users, such as sending text, images, and text messages with multiple images, voice chat, news alerts, in-app shopping, collecting brand messages, alerting new music, and so on (Deng et al., 2010). Multimedia communication media have many benefits in transmitting more complex messages, thereby improving task performance (Pollach, 2008). Users focus more on the ability to disseminate and spread information on media than on the sender's emotional state (Pollach, 2008), and richer media communication leads to more positive emotional states when emotions and feelings can be shared in the process of information exchange (Pollach, 2008; Daft and Lengel, 1986; Daft et al., 1987; Lengel and Daft, 1989). Therefore, consumers using new multimedia mobile technology can enrich their mobile experience and improve their enjoyment and excitement in using it (Li et al., 2012; Davis, 2010). This leads to the following hypotheses:

H5: Media Richness has a positive effect on pleasure in using Messenger

H6: Media Richness has a positive effect on arousal in using Messenger

H10: Media Richness has a positive effect on involvement in using Messenger.

Pleasure (NV)

The SOR model of Mehrabian and Russell indicates that emotions are influenced by stimulating from the environment and impact of human behavior and decision-making (Russell and Mehrabian, 1977). Russell and Mehrabian (1977) developed the PAD emotional state model, which includes joy, arousal, and dominance. It has been applied many times in the context of consumer emotions. However, recent research by Koo, D. M., & Ju, S. H. (2010) on online retailing excludes the dominance aspect, as joy and arousal can capture the full range of appropriate emotions in consumer decision-making.

H7: Pleasure has a positive effect on positive WOM

Arousal (KT)

Recent studies have also demonstrated and tested the positive relationship between emotion and behavioral intention (Lin & Liang, 2011). Arousal is the personal feeling of excitement, motivation, and enthusiasm when shopping online (Koo, D. M., & Ju, S. H. (2010)). Experimental studies have also provided arguments to verify the positive relationship between emotion (joy, arousal) in mobile commerce and consumer behavioral intention (positive WOM) (Deak, 2011; Thuy, 2019). This leads to the following hypotheses:

H8: Arousal has a positive effect on positive WOM

H13: Arousal has a positive effect on Involvement

After adjusting for preliminary research feedback in real conditions in Vietnam, the proposed research model by the research group is as follows:

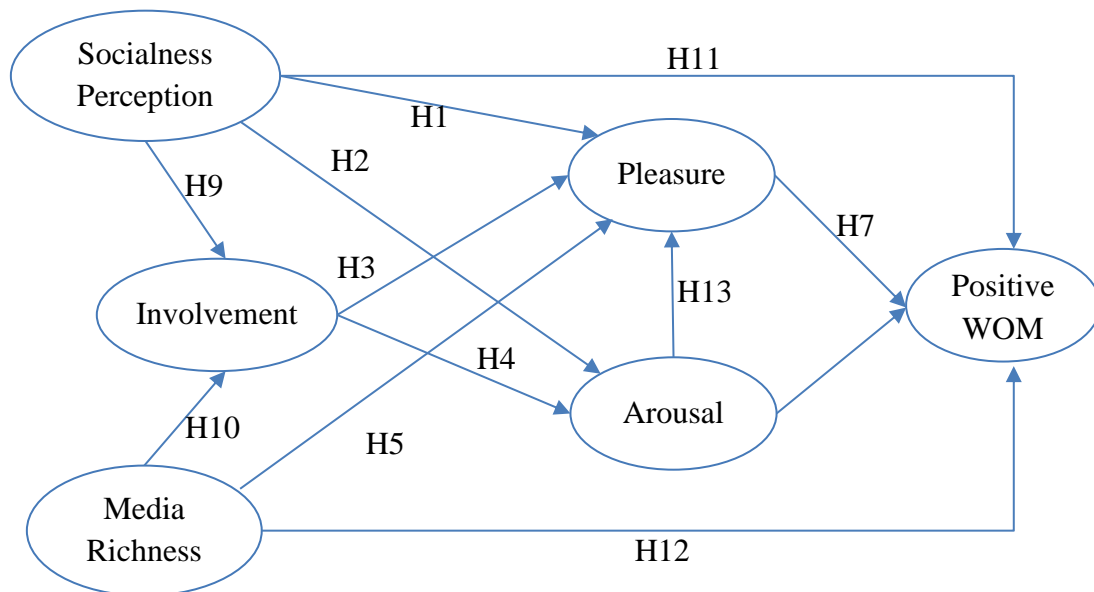


Figure 1. Proposed research model

Source: Compiled by the research team.

3. Method

3.1. Data Collection

Primary data is collected through online and offline surveys from consumers who use Facebook in Vietnam and have purchased from retailers through this channel.

Secondary data is collected from articles, relevant studies, as well as from the General Statistics Office of Vietnam, the Telecommunications Bureau of the Ministry of Information and Communications of Vietnam, and the White Book of E-commerce in Vietnam.

3.2. Scale Development

The variables used in this study include Socialness Perception, Involvement based on Zaichkowsky's (1985) study, Media Richness based on Daft and Lengel's (1986) study, Pleasure based on Raghunathan and Irwin's (2001) study, Arousal based on Mehrabian and Russell's (1974) study, and WOM based on Maxham and Netemeyer's (2002a, 2002b, 2003) and Delia Vazquez et al.'s (2017) studies. The study also discusses moderating variables such as Gender, Age, Shopping Field, and Income.

All measurement scales were based on previous English-language studies, and the authors of this study performed back-translation to ensure equivalence. The authors also discussed and adjusted the measurement scales to ensure clarity and suitability for the research context in Vietnam. A preliminary study is conducted with 10 consumers, and adjustments are made to ensure the logic and understandability of the survey questionnaire.

3.3. Data processing

For primary data: The authors select and filter the answers from the questionnaire table. Invalid answers such as selecting a missing answer or respondents who do not belong to the research group are removed. Information in the questionnaire table is encoded for convenient data processing, for example, 'Male' is assigned as 0, and 'Female' is assigned as 1. Questions about cognition are measured on a 5-point Likert scale, with scores ranging from 1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree. Then, the data is entered into the SPSS version 20.0 and AMOS version 20.0 software in the following sequence: (1) Descriptive statistics of the observed sample, (2) Reliability testing with Cronbach's Alpha; (3) Exploratory Factor Analysis (EFA); (4) Confirmatory Factor Analysis (CFA); (5) Structural Equation Modeling (SEM) analysis.

4. Results and discussion

4.1. Research findings

4.1.1. Descriptive statistics

Table 1. Descriptive statistics results.

Quota	Amount	Proportion (%)
Gender		
Male	181	25.14
Female	539	74.86
Age range		
Under 20 years old	137	19.03
20 - 40 years old	472	65.56
40 - 60 years old	99	13.75
over 60 years old	12	1.66
Education		
Under college	185	25.7
University	498	69.16
Postgraduate	37	5.14

Source: Compiled by the research team.

4.1.2. Reliability testing of the scales

After conducting Cronbach's Alpha analysis for the scales, the results showed that the social perception, involvement, media richness, pleasure, arousal, and positive word-of-mouth scales had Cronbach's Alpha coefficients of 0.916, 0.876, 0.902, 0.896, 0.883, and 0.856, respectively. All of them indicate good scales because they are greater than 0.8 (Nawai et al., 2020). The inter-item correlation coefficients for the total variables were all greater than 0.3. Therefore, the scales were used in the subsequent analysis.

Table 2. Results of reliability testing of the scales.

No.	Names	Number of items	Cronbach's Alpha
1	Socialness Perception	3	0.916
2	Involvement	4	0.876
3	Media Richness	3	0.902
4	Pleasure	4	0.896
5	Arousal	4	0.883
6	Positive WOM	3	0.856

Source: Compiled from SPSS 20.0

4.1.3. Exploratory factor analysis (EFA)

The Kaiser-Meyer-Olkin (KMO) measure is 0.941, greater than 0.5, and $p = 0.001 < 0.005$, indicating high significance. All 26 observed variables is extracted into 6 factors with eigenvalues greater than 1. The total extracted variance is 73.435%, which exceeds the threshold of 50%. The factor loadings of all variables is greater than 0.5 and suitable to continue with confirmatory factor analysis (CFA) to ensure the quality of the scales before testing hypotheses in subsequent steps.

Table 3. Results of Exploratory Factor Analysis

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.941
Bartlett's Test of Sphericity	Approx. Chi-Square	12984.036
	df	325
	Sig.	.000

Source: Compiled from SPSS 20.0

4.1.4. Confirmatory factor analysis (CFA)

After conducting EFA to determine the appropriate observed variables, the study proceeds with CFA to evaluate the quality of the scales before testing the proposed hypotheses. CFA is used to test the unidimensionality, convergence validity, and discriminant validity of the variables using AMOS 20 software. The results indicates a good model fit, and all values meet the required criteria. The results is accepted from good to very good.

Table 4. Results of Parameters Testing the Appropriateness of the Research Model

Measure	Estimate	Interpretation
CMIN	756,095	
df	284	
CMIN/df	2.662	
GFI	0.925	Good
CFI	0.963	Very good
TLI	0.958	Good
RMSEA	0.048	Good
PCLOSE	0.771	Good

Source: Compiled from AMOS

4.1.5. Structural Equation Modeling (SEM) analysis

After conducting the confirmatory factor analysis (CFA) to assess the quality of the measurement scale, the study proceeds to SEM analysis to test the hypotheses. $CMIN/df = 2.676 < 3$, $GFI = 0.924 > 0.9$, $CFI = 0.964 > 0.9$, $TLI = 0.958 > 0.9$, $RMSEA = 0.048 < 0.08$, $PCLOSE = 0.748 > 0.05$. These results indicate that the model fits the evaluation data of Hu & Bentler (1999). The study used second-order factors of the SEM model to fit the proposed

hypotheses. According to J. Wang & Wang (2019), using second-order factors contributes to the variation between first-order factors.

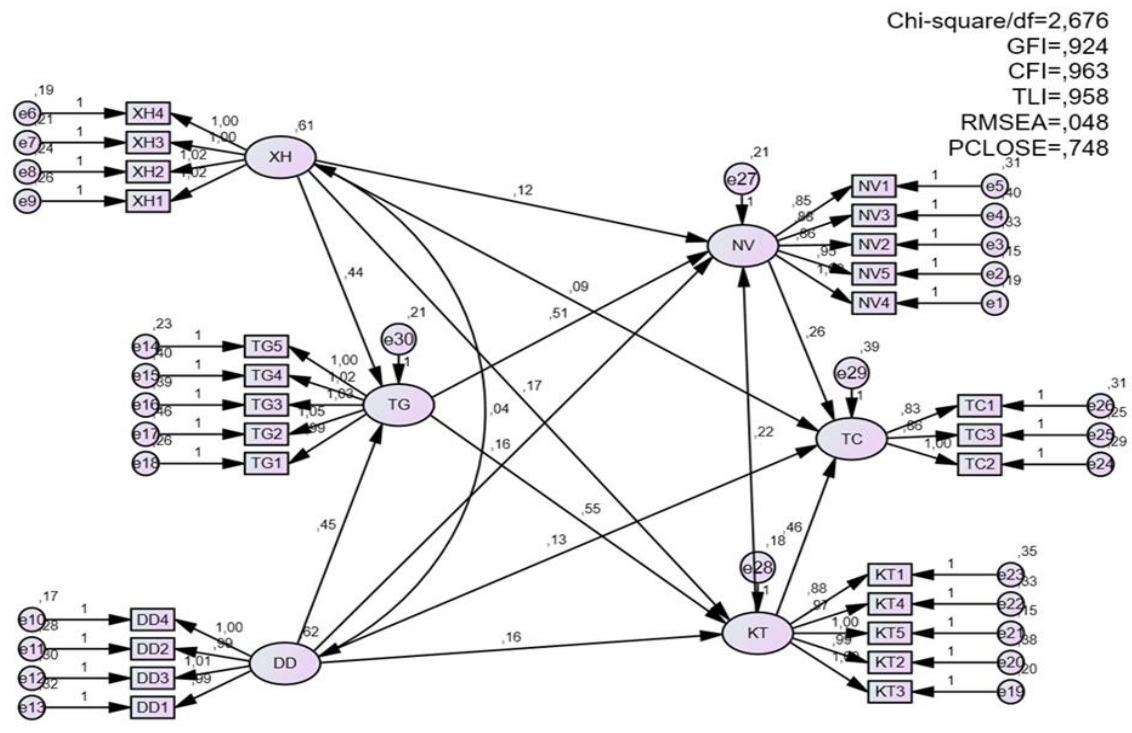


Figure 2. SEM model structure

Source: Compiled from AMOS

Table 5. Results of structural model analysis

Impact			Maximum likelihood estimates		SE	Critical ratio	p-value
			Unstandardized coefficients	Standardized coefficients			
TG	<---	DD	,454	,519	,030	14,917	***
TG	<---	XH	,445	,501	,031	14,458	***
KT	<---	DD	,156	,181	,034	4,536	***
KT	<---	TG	,552	,560	,052	10,689	***
KT	<---	XH	,174	,199	,034	5,099	***
NV	<---	DD	,157	,164	,037	4,235	***
NV	<---	XH	,120	,123	,037	3,255	,001
NV	<---	KT	,225	,202	,057	3,937	***
NV	<---	TG	,507	,461	,065	7,830	***
TC	<---	DD	,127	,118	,049	2,607	,009
TC	<---	XH	,093	,085	,048	1,914	,056
TC	<---	NV	,264	,236	,063	4,204	***
TC	<---	KT	,460	,368	,072	6,396	***

Source: Compiled from AMOS

From the results above, it can be seen that out of the 13 initial hypotheses proposed, 12 hypotheses are accepted and all have a positive impact. Only one hypothesis was rejected at a 95% significance level, which is the perception of social influence on positive word-of-mouth.

4.2. Discussion of research results

The study reveals the relationship between Socialness Perception, involvement, media richness, Involvement, and Arousal towards positive word-of-mouth through the use of Messenger. The hypothesis of Socialness Perception do not have a direct impact on positive word-of-mouth but rather indirectly through involvement, pleasure, and arousal. The findings show that in today's context, consumers are stimulated when retailers apply communication tools to consumers through instant messaging on mobile phones. This stimulation has led consumers to feel more stimulated than introducing products through direct retail. This result was contrary to Delia Vazquez and colleagues (2017). The differences in research results may be influenced by the differences in culture between Chinese and Vietnamese consumers. The impact of media richness was also broader than the studies of Delia Vazquez and colleagues (2017) and Brunelle (2009), where media richness had an impact on all aspects except social cognition. It can be seen that businesses today have effectively applied multimedia communication channels to consumers with diverse communication channels in exchanging information or expressing emotions.

5. Conclusion and recommendations

5.1. Conclusion

Thanks to its superior characteristics, instant messaging via mobile phones opens up a golden opportunity for retailers today. This communication platform helps businesses reach their target customers conveniently. When customers feel comfortable contacting the business, loyalty and satisfaction will increase.

Further research can expand the observation sample by approaching male consumers and surveying more industries. It is interesting that the research also shows that gender, age, and education level also affect positive word-of-mouth. However, the study still has some limitations, such as not specifying how consumers spread word-of-mouth. The sample size of the study is not large enough to have a high representative value, and cultural differences between countries have not been studied.

5.2. Recommendations

First, retailers should have a multi-channel, multimedia marketing strategy and maximize the advantages of the richness of Vietnam's current media. This approach has a positive impact on positive WOM, thereby helping retailers build brands and stimulate consumers to have positive behaviors and emotions towards products and retail brands. In addition to traditional methods, retailers should approach new social networks like Tiktok, Instagram; advertise their products on e-commerce platforms; approach other smart electronic devices that can link users with smartphones like smart watches (Iwatch), intelligent robots, etc. and keep up with the pace of development of the era by using AI - Chat GPT is an example.

Second, customer experience needs to be improved and focused on more. Retailers should build an appropriate approach to reach consumers, stimulate their participation in the communication process with the retailer. Research has shown that engagement has a positive impact on happiness and stimulation. This is also the process that helps retailers understand the "insights" as well as the needs of consumers. This also requires the attitude of salespeople at retail stores.

Third, enhance the social awareness of consumers, retailers, and the government. This policy suggestion requires support from all three parties: consumers need to be mindful and cautious when researching and purchasing products, avoiding unverified information and scams; retailers need to be honest and transparent in marketing their products, building an ecosystem and guiding consumers; the government and regulatory agencies need to enact specific consumer protection policies such as reviewing laws in the Consumer Protection Act, closely monitoring the business activities of retailers, and supplementing communication channels with consumers to promptly address and support consumer reports.

Fourth, retailers need to increase conversion rates by promoting their sales platforms. When content is invested in and shared on social media pages, it not only helps improve trust and credibility with existing customers but also attracts new customers interested in the product. At this point, social media helps businesses naturally increase conversion rates, directly impacting the revenue of retailers. This suggestion emphasizes marketing strategies, marketing executives, and the quality marketing rate, from the bidding process to buying and delivering products to consumers without many obstacles or returns,... This raises questions about the method and dedication of retailers when inviting consumers.

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THE IMPACT OF AI MARKETING ON BRAND LOVE AMONG HANOI UNIVERSITY STUDENTS: THE CASE OF E-WALLETS

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Abstract

The digital era has created favorable conditions and opportunities for businesses to leverage emerging technologies to enhance the quality of their products and services. AI technology, in particular, plays a critical role in marketing activities for payment intermediaries, such as e-wallet service providers. This paper aims to investigate the influence of AI marketing on Hanoi university students' love for e-wallet brands. Base on the sample of 641 surveys collected by structured questionnaires, findings from the study reveals that: (i) The current chatbot systems used by e-wallets do not provide the same level of smoothness as person-to-person consultations; (ii) Interactive personalization has the greatest impact on user experience; and (iii) Passive digital footprints have not yet had a significant enough impact on brand love. The authors have expanded on previous studies by introducing four new factors in AI Marketing: information personalization, interactive personalization, active digital footprint and passive digital footprint. The study provides several recommendations to assist e-wallet businesses in their digital transformation processes, specifically regarding the application of AI marketing to enhance brand love among Hanoi University students.

Keywords: *AI Marketing, brand love, e-wallet, user experience*

1. Introduction

In January 2021, the Vietnamese government introduced a national strategy aimed at promoting research, development, and application of AI technology until 2030. The goal is to make Vietnam a leading country in AI research, development, and application within ASEAN and globally. By 2025, Vietnam aims to be among the top 5 countries in ASEAN

and the top 60 countries in the world for AI. The government's initiative has led to increased interest in the application of AI in various fields, including marketing. There are currently around 40 e-wallets operating in the Vietnamese market, with five popular e-wallet brands among social media users. Along with the development of the economy, non-cash payments, including e-wallets, are becoming an inevitable trend among young people, who represent a potentially profitable user group. E-wallet brands in Vietnam are using AI marketing to reach users at touchpoints, improve their experience, and foster brand love. However, the number of studies on the impact of AI on user experience and brand love, specifically for e-wallet brands in Vietnam, is limited. Therefore, this article will focus on addressing this research gap.

College students share common features including favoriting, understanding, and easily accepting new technologies. According to the statistics from the Ministry of Education and Training (2020), Vietnam has 1,672,881 students attending public and non-public universities in total. It can be seen that students play an important role and are the audience with great potential for exploitation in the total number of e-wallet users in the Vietnam market.

For the above reasons, the study of "*The Impact of AI Marketing on Brand Love among Hanoi University Students: The Case of E-wallets*" is conducted by the authors to clarify the factors of AI Marketing which are currently being applied by e-wallet brands and their level of influence on user experience and brand love.

This article is structured into five parts: (i) Introduction; (ii) Literature Reviews and Theoretical Basis, (iii) Research methodology; (iv) Results, and; (v) Discussion and Conclusion.

2. Literature Review and Theoretical Basis

2.1. Literature Review

AI is defined as an "intelligent computing agent" (Poole & Mackworth, 2010). In other words, the definition reflects the idea that AI systems are not merely passive tools but rather active agents that can act autonomously and intelligently to achieve specific objectives. This definition differs from previous notions that restricted AI to machines programmed by algorithm, lacking independence. Regarding AI Marketing, the definition refers to the developing artificial intelligent system that uses information about customers, competitors, and industry leaders to suggest and implement marketing strategies that generate the best results. (Overgoor et al., 2019).

E-wallets are widely regarded as a secure and user-friendly payment option, particularly in light of ongoing technological advancements, suitable for all types of users (Dang et al., 2021). According to the Circular guiding the intermediary payment services of the State Bank: "*E-wallet service*" is a service that provides users with an electronic identity account created by service providers on the carrier. information (such as electronic chips, mobile phone sims, computers, etc.), allowing a monetary value to be stored and used as a means of non-cash payment."

According to Robert (2005), brand love represents the most robust emotional connection between a brand and its users. Users often express their love for a brand through

expressions, such as “I like this car” or “I love shopping here”. Despite facing a plethora of options, users only develop a strong affinity towards a select few brands, particularly those that foster a loving relationship with a brand love-centric (Ahuvia, 2005).

2.2. Research hypothesis

2.2.1. AI Marketing efforts in e-wallet experience

Kotler (2021) has identified five essential pillars of Digital Marketing 5.0, including Predictive Marketing, Contextual Marketing, and Augmented Marketing. In this study, the authors investigated the current applications of AI Marketing in e-wallets, comparing them with the components of Digital Marketing 5.0, and deduced the various applications of AI Marketing in the e-wallet user experience. The selected applications share a common characteristic which is that they are visible and can be perceived by e-wallets’ users, which are: (1) Intelligent Interaction, which corresponds to the augmented marketing platform; (2) Personalization, which corresponds to the contextual marketing platform in the digital era; and (3) Digital Footprint, which corresponds to the predictive marketing platform.

In the e-payment industry, the development of human-imitation technologies is still limited, with chatbots powered by AI being the primary form. Therefore, the authors focused on investigating chatbots to represent the intelligent interaction variables, considering the three crucial factors from DeLone and McLeans’s IS Success Model: information quality, system quality, and service quality. *From there, the authors hypothesized [H1]: Intelligent interaction has an impact on user experience.*

According to Darshana Desai (2021), AI-integrated personalization is a strategy businesses use to address potential customer needs and increase profits by providing the right information at the right time through the right channels. Personalization is a key high-tech element of context marketing, as described by Kotler (2021) in Marketing 5.0. It operates based on the user's intention and prior behavior, which led the authors to employ scales from the UTAUT model to measure the impact of personalization on the e-wallet user experience. *From there, the authors proposed the following hypothesis [H2]: Personalization has an impact on user experience.*

Digital footprint plays an important role in marketing. Specifically in re-marketing, Arya et al. (2019) have demonstrated, this digital trace is especially important in helping marketers understand the needs, habits, and behaviors of users. Since digital footprint is an aspect of AI Marketing in digital platforms using context which has many similarities in the attitudes and satisfaction levels of e-wallet users, therefore, the authors used the U&G Model (Uses and Gratification Theory) to measure digital footprint variables. *From there, the authors proposed the following hypothesis [H3]: Digital footprint has an impact on user experience.*

2.2.2. User experience

User experience has been recognized as a critical component of contemporary marketing. Previous research has highlighted that user experience involves the interaction between users and brands which has a lasting impact on the user's perception. User experience

has been proven to be influenced by three AI Marketing factors: Intelligent Interaction, Personalization, and Digital Footprint. Therefore, the authors concentrated on investigating the user experience based on the influence of each of these factors. *From there, the authors proposed the following hypothesis [H4]: User experience has an impact on brand love.*

2.2.3. Brand love

The authors has incorporated the variable "brand love" into their model to propose a viable solution based on the impact of AI marketing applications on user experience, specifically the unique relationship between brands and users when they interact with AI marketing features such as intelligent interaction, personalization, and digital footprint within their e-wallet experience.

2.3. Framework

With the above analysis, the authors selected and developed the research model as shown in the figure below. Which, the attached hypotheses have been stated related to each factor:

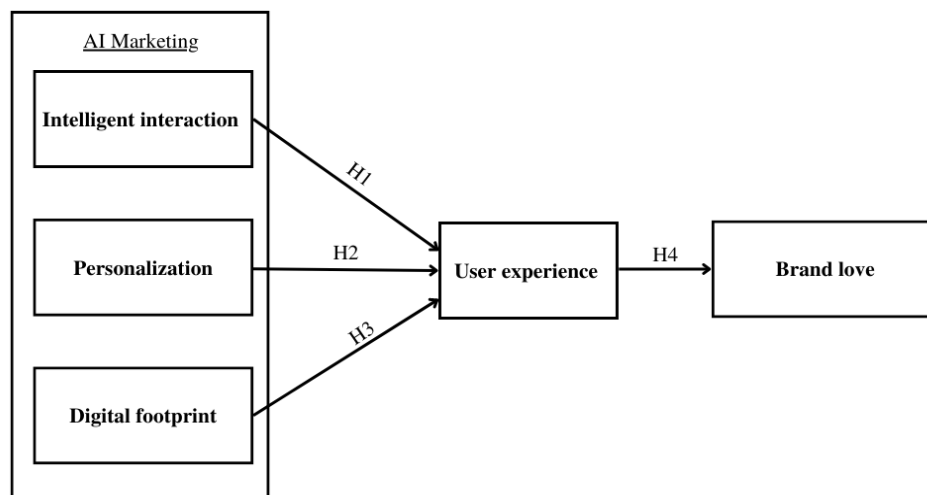


Figure 1. Proposed research model

3. Method

3.1. Research sample

To collect data for the study, the authors conducted a survey of university students who are currently studying and living in Hanoi City. The survey utilized a combination of factor analysis and linear regression, with a model that comprised 37 measurement variables. In total, 686 students were surveyed, and valid responses were obtained from 641 participants, which indicates a reliable sample size.

With 641 valid responses that the authors received, there were more women than men among the study participations. The proportion of women accounted for 63.5% while the number of men accounted for only 36.5%. This may signify that women are more open to discuss their experience using e-wallets. The majority of the respondents were second-year students, comprising 59.3% of the sample. More than 70% of the participants reported having an average monthly income of less than 3 million VND, with the remainder earning

3 million VND or more per month. These demographic characteristics provide insights into the sample of students surveyed and may influence the results of the study.

3.2. Scale

The observed variables were measured using a 5-point Likert scale, ranging from 1 (Strongly disagree) to 5 (Strongly agree), and were based on established models from previous research by foreign authors, including the Information System Success Model (Delone & McLean, 2003), the Theory of Acceptance and Use of Technology (Venkatesh et al., 2003), and the Use and Satisfaction Model (U&G Model) developed by Xueming Luo (2002).

4. Results

4.1. Testing reliability using Cronbach's Alpha

The analysis results showed that Cronbach's Alpha coefficients of all scales were greater than 0.6. The observed variables all had total intercorrelations greater than 0.3 and all were smaller than the common Cronbach's Alpha value. The final results obtained showed that the scales' values for each factor group were all reliable and the data correlations were consistent with the constructed scales.

Table 1. Results of the reliability test of the measurement scale

Factor	Cronbach's Alpha	Total Variance Explained	Number of Items
Intelligent Interaction (CB)	0,932	0,731 - 0,776	0/9
Personalization (PN)	0,912	0,561 - 0,723	0/12
Digital Footprint (FOOT)	0,842	0,391 - 0,657	0/9
User experience (CX)	0,843	0,677 - 0,731	0/3
Brand love (BL)	0,861	0,692 - 0,742	0/4

Source: Author's team processing survey data (2023)

4.2. Exploratory Factor Analysis - EFA

The results of the EFA analysis for all factor groups showed significant correlations ($\text{sig} = 0.000 < 0.05$) among variables in the overall sample, with a KMO coefficient of 0.941 ($10.5 < \text{KMO} < 1$) and an eigenvalue extraction coefficient of 1.145, indicating the suitability of the EFA analysis. However, the factor loadings of the observed variables PNa2, PNb3, and FOOTb2 did not meet the requirements, so the group excluded these observed variables and proceeded to perform a second EFA analysis.

Table 2. KMO and Bartlett's Test results of independent variables for the second time

Kaiser-Meyer-Olkin	0,941
Bartlett's test	11474,668
Df	351
Sig.	0,000

Source: Author's team processing survey data (2023)

The KMO test result for the second analysis was 0.941, which is greater than 0.5. Therefore, the research group initially concluded that these factors were entirely appropriate for the study dataset. The result of Bartlett's test was 11474.668 with sig = 0.000, confirming that the observed variables were correlated with each other and the factor analysis process with the data was reasonable. The total variance extracted from the independent variables was 68.489% (>50%), indicating that the research model was suitable for the EFA test.

Table 3. Results of Second Rotation Matrix

	Factor				
	1	2	3	4	5
CBa1	0.711				
CBa2	0.741				
CBa3	0.713				
CBb1	0.731				
CBb2	0.742				
CBb3	0.735				
CBc1	0.711				
CBc2	0.759				
CBc3	0.749				
PNa1				0.733	
PNa3				0.573	
PNb1				0.761	
PNb2				0.803	
PNc1			0.686		
PNc2			0.802		
PNc2			0.763		
PNd1			0.595		
PNd2			0.622		
PNd3			0.582		
FOOTa1		0.833			
FOOTa2		0.864			
FOOTa3		0.876			
FOOTb1		0.639			
FOOTb3		0.606			
FOOTc1					0.843
FOOTc2					0.872
FOOTc3					0.854

Source: Author's team processing survey data (2023)

The factor loadings were all greater than 0.5, and no variables loaded on both factors with similar loadings. Therefore, the factors were reliable and distinct in the exploratory factor analysis. However, according to the rotated factor matrix, two-factor groups, PN and FOOT, were each split into two new factor groups. Based on the theoretical foundation and content of the observed variables in the PN factor, the authors agreed to name the first new group Interactive Personalization (PNIT) and the second new group Informative Personalization (PNIF). For the FOOT factor, the first new group was named Active Digital Footprint (AFOOT) and the second new group was named Passive Digital Footprint (PFOOT).

The separation of the "Personalization" factor into two sub-factors can be explained by its dependence on the relationship with the user, based on the 3 levels of personalization in marketing (Kotler, 2021). At level 1, personalization of information is a low level of personalization, where marketing activities rely on information collected from users by businesses. This includes providing suitable proposals such as advertising messages, product selection, promotions, etc. Level 2 is interactive personalization, where marketing activities reach users through interactive experiences with e-wallets. At this level, marketers create a two-way communication interface and interact intelligently with users

The separation of the "Digital Footprint" factor can be explained by differences in users' perceptions of how businesses approach them. If users actively leave a trace, they tend to feel satisfied when receiving relevant recommendations. Conversely, it may cause discomfort if users are not willing to share information. This supports the findings of Arakemath's (2015) research, where the Digital Footprint was classified into two groups: Active Digital Footprint and Passive Digital Footprint.

After conducting EFA factor analysis, the original 30 observed variables were reduced to 27 variables and were subsequently divided into 5 factors, which were named as follows:

Table 4. Newly formed factors

Factor	Item Loadings
Intelligent interaction (CB)	CBa1, CBa2, CBa3, CBb1, CBb2, CBb3, CBc1, CBc2, CBc3
Interactive Personalization (PNIT)	PNa1, PNa3, PNb1, PNb2
Information Personalization (PNIF)	PNc1, PNc2, PNc3, PNd1, PNd2, PNd3
Active Digital Footprint (AFOOT)	FOOTa1, FOOTa2, FOOTa3, FOOTb1, FOOTb3
Passive Digital Footprint (PFOOT)	FOOTc1, FOOTc2, FOOTc3

Source: Author's team processing survey data (2023)

The splitting of PN and FOOT into 2 new variables led to the division of hypothesis H2 and hypothesis H3 into 4 new hypotheses: H2.1, H2.2, H3.1, and H3.2, as follows:

H2.1: Interactive personalization has an impact on user experience.

H2.2: Informative personalization has an impact on user experience.

H3.1: Active digital footprint has an impact on user experience.

H3.2: Passive digital footprint has an impact on user experience

4.3. Linear Regression Analysis

4.3.1. The Influence of AI Marketing on User Experience

The R2 (R-Square) coefficient is 0.594 > 0.5 - meaning that the control and independent variables explain 59.4% of the variation in the dependent variable. The Durbin-Watson (DW) statistic serves to test for first-order autocorrelation. According to Yahua Qiao (2011), if the DW value falls between 1.5 and 2.5, no autocorrelation is present. From the table, we obtain a Durbin-Watson value of 1.850, which meets the required value.

ANOVA table with sig. = 0.000 < 0.05 implies that the linear regression model constructed is appropriate for the population. The Sig. values of the t-test for the variables "Intelligent Interaction", "Interactive personalization", "Informative personalization", and "Active Digital Footprint" are all less than 0.05. Therefore, these variables all have significant explanatory power for the dependent variable "User experience". On the other hand, the variable "Passive Digital Footprint" has a sig. value > 0.05, indicating that it is not statistically significant and cannot explain the dependent variable "user experience" in this research model.

Table 5. Results of Regression Coefficient Analysis

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0,382	0,122		3,142	0,002		
	CB	0,128	0,041	0,123	3,165	0,002	0,421	2,376
	PNIT	0,454	0,037	0,447	12,263	0,000	0,480	2,084
	PNIF	0,170	0,035	0,179	4,777	0,000	0,453	2,206
	AFOOT	0,147	0,026	0,179	5,624	0,000	0,634	1,578
	PFOOT	0,017	0,021	0,022	0,838	0,402	0,910	1,099

Source: Author's team processing survey data (2023)

Furthermore, the variable "Interactive Personalization" has the highest β coefficient. It can be observed that this factor has a significant impact on the dependent variable 'user experience' compared to the other factors. Next, the Variance Inflation Factor (VIF) is examined to check for multicollinearity. According to the Coe table, the VIF scores for all 5 factors are < 10, indicating that there is no multicollinearity among the independent variables. The regression model is presented below as a sample:

$$CX = 0,123*CB + 0,447*PNIT + 0,179*PNIF + 0,179*AFOOT$$

4.3.2. The impact of user experience on brand love

The Model Summary table shows that the R-Square coefficient is 0.491, indicating that the control and independent variables explain 49.1% of the variance in the dependent variable, while the remaining 50.9% is due to external factors and random error. The Durbin-Watson (DW) statistic is used to test for first-order autocorrelation. According to Yahua Qiao (2011), if the DW value falls between 1.5 and 2.5, there is no first-order autocorrelation. The table shows that the Durbin-Watson value is 1.974, which meets the required value.

Upon examining the ANOVA table, it was observed that the F-value for the hypothesis test of the model's overall fit to the population was [insert value] with a significance level of 0.000, which is less than the conventional threshold of 0.05. This implies that the linear regression model developed is appropriate for the population.

Table 6. Results of Regression Coefficient Analysis

Coefficients								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0,516	0,127		4,079	0,000		
	CB	0,800	0,032	0,701	24,817	0,000	1,000	1,000

Source: Author's team processing survey data (2023)

The significance value (Sig.) of the t-test for the "User experience" variable is less than 0.05. Therefore, all variables have significant explanatory power for the dependent variable "Brand love."

The VIF values were then examined to detect the presence of multicollinearity among the independent variables. As shown in the Coe table, the VIF value for the "User experience" variable is $1 < 10$, indicating that multicollinearity is not an issue. The regression model used in the study is presented below: $BL = 0,701 * CX$

4.4. Descriptive statistics of the impact of AI Marketing on brand love

Table 7. Descriptive statistics of factors

Factor	Observed variable	Standard deviation	Mean value (\bar{x})	
Intelligent interaction	The question-and-answer system of the e-wallet is easy to use	0,909	3,88	3,76
	The question-and-answer system of the e-wallet operates smoothly	0,919	3,74	
	The question-and-answer system of the e-wallet is reliable	0,895	3,78	

Factor	Observed variable	Standard deviation	Mean value (\bar{x})
	The question-and-answer system of the e-wallet provides timely information	0,894	3,75
	The question-and-answer system of the e-wallet provides accurate information	0,872	3,86
	The question-and-answer system of the e-wallet provides comprehensive information.	0,887	3,80
	The question-answering system of the e-wallet understands my inquiries accurately	0,915	3,63
	The question-answering system of the e-wallet meets my requirements quickly	0,912	3,69
	The question-answering system of the e-wallet provides useful solutions	0,904	3,68
Interactive personalization	I save time when using e-wallet for payment services	0,892	4,12
	I rarely make mistakes in transferring money when using e-wallet to make familiar payments	0,927	3,98
	I find it easy to operate when using an e-wallet	0,864	4,14
	I can easily make payments for familiar services using an e-wallet	0,865	4,16
Informative personalization	I use an e-wallet because many people around me use it	1,060	3,64
	I use an e-wallet because people around me have had good experiences and recommended it to me	1,081	3,53
	People around me believe that I should take advantage of personalized offers from my e-wallet	1,068	3,49
	The new and creative interface provides me with entertainment while using an e-wallet	0,932	3,79
	The suggestions and recommendations from my e-wallet provide me with interesting experiences	0,931	3,66

Factor	Observed variable	Standard deviation	Mean value (\bar{x})	
	I enjoy the reward point experiences when using an e-wallet	0,958	3,74	
Active digital footprint	I am comfortable when encountering e-wallet advertisements on the internet	1,109	3,11	3,06
	I am excited when e-wallet advertisements unexpectedly appear on my electronic devices	1,121	2,81	
	I find it exciting when e-wallet advertisements pop up unexpectedly on various platforms, such as Facebook, Google, Zalo, etc..	1,155	2,79	
	I believe the information from the e-wallet advertisements that I am using is useful	1,029	3,42	
	I rarely miss out on lucrative promotions from my e-wallet	1,125	3,21	
User experience	I am satisfied with my experience using an e-wallet	0,841	3,95	3,85
	The e-wallet provides all the features I need	0,867	3,88	
	The e-wallet meets my needs before I realize them	0,886	3,73	
Brand love	I enjoy using an e-wallet	0,922	3,84	3,60
	An e-wallet is my first choice when I use payment and money transfer services	1,069	3,56	
	I am willing to participate in events and promotions from my e-wallet	1,088	3,42	
	I am willing to leave positive feedback about my e-wallet on any platform	1,017	3,58	

Source: Author's team processing survey data (2023)

Through the descriptive statistical analysis, the authors observed that the majority of e-wallet users were satisfied with the intelligent communication system (\bar{x} =3.76), interactive personalization features (\bar{x} =4.10), and informative personalization (\bar{x} =3.64) of their preferred e-wallet brand. However, they maintained a neutral attitude towards actively collected information (\bar{x} =3.06). Nevertheless, this did not significantly affect their satisfaction with the user experience (\bar{x} =3.85), and users agreed that there was a brand love between them and their preferred e-wallet (\bar{x} =3.60).

The data shows that the factor group "Interactive personalization" has the highest average value, indicating that users of their favorite e-wallet are quite satisfied with marketing activities accessed through interactive experiences. The three highest average value statements are: "I can easily pay for familiar services with e-wallet" ($\bar{x}=4.16$), "I can easily operate e-wallet" ($\bar{x}=4.14$), and "I save time when using e-wallet for payment services" ($\bar{x}=4.12$). This indicates that the majority of the respondents have a positive attitude towards the "ease" and "time-saving" aspects of using their favorite e-wallet. Moreover, for the surveyed group of students who favor convenience, using e-wallets is a suitable trend for them.

Although the overall attitude of the respondents toward the "Active digital footprint" factor was neutral, a standard deviation larger than 1 indicates a significant difference in their evaluation scores. This can be explained by the users' attitudes towards tracking, specifically advertisements, promotions, and other incentives. Users may feel uncomfortable as they are concerned about information risks and security. The data shows that the majority of e-wallet users are worried when e-wallet ads unexpectedly appear on their devices or spread across social media platforms ($\bar{x}=2.79$). On the other hand, there are some individuals who are more open-minded and comfortable with providing information to enhance the personalization in their experience.

4.5. Hypothesis testing results

Based on the above analyses, the authors has summarized the results of testing the following hypotheses:

Table 8. Results of Hypothesis Testing

Hypothesis	Statement	Conclusion
H ₁	Intelligent interaction has an impact on user experience	Supported
H _{2.1}	Interactive personalization has an impact on user experience	Supported
H _{2.2}	Informative personalization has an impact on user experience	Supported
H _{3.1}	Active digital footprint has an impact on user experience	Supported
H _{3.2}	Passive digital footprint has an impact on user experience	Not supported
H ₄	User experience has an impact on brand love	Supported

Source: Summary of the authors' results, 2023

5. Discussion and Conclusion

According to the research findings, the use of e-wallets among students is influenced by various AI marketing factors, including intelligent interaction, interactive personalization, informative personalization, and active digital footprint. Regression testing was conducted, and the authors was able to synthesize the following hypotheses: (i) The passive digital footprint factor is deemed statistically insignificant and therefore cannot be accepted in the model, (ii) Interactive personalization is identified as the most influential factor on students' brand love towards e-wallets, (iii) Active digital footprint in the electronic

wallet experience affects users' willingness to leave their data and consequently their brand loyalty, (iv) Students exhibit no discernible differences in their perception of AI Marketing expressions when using e-wallets, and (v) E-wallets serve as an effective tool in connecting businesses with consumers through AI Marketing-enhanced promotions.

Therefore, to optimize the use of AI marketing in enhancing user experience and building brand loyalty among students who use e-wallets, businesses need to focus on: (i) Promoting marketing that allows users to interact two-way with the application and the community; (ii) Adjust promotions to suit the target audience because this aspect greatly affects the user experience; (iii) Developing personalized advertising that needs to be classified to reach users willing to share access data on digital platforms; (iv) Developing advantages in intelligent contact systems such as chatbots in user support. In other words, users expect the chatbot system to provide a sense of authenticity and confidence in their personal problem-solving abilities; (v) Cooperate with many partner units to provide suitable young people to meet a variety of products and services.

The study still presents certain limitations. Firstly, the sample structure of the group is not diverse, the scope of research is only in Vietnam and specifically in Hanoi city due to time, budget, and resource constraints. In addition, the study has not clarified the impact of demographic factors on the influence of AI Marketing in user experience on brand love. Depending on the culture and economy in different geographical areas, the research results may change, so further studies can be conducted in other geographical spaces to compare and contrast the results.

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ONLINE COMPULSIVE BUYING AMONG YOUNG PEOPLE UNDER THE DEVELOPMENT OF E-COMMERCE

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Abstract

Online Compulsive Buying is a problem arising from the explosion of e-commerce. By applying appropriate theoretical models, the authors have hypothesized and built models about the factors affecting Online Compulsive Buying behavior. The results show that stress, usefulness, and gender are factors that positively influence this consumption behavior. As a moderator, Usefulness increases the effect of stress on Online Shopping Addiction and decreases the effect of Self-esteem on Online Shopping Addiction. Moreover, the research team also makes recommendations for the Government of Vietnam, businesses doing business in the field of e-commerce, and consumers to limit this negative consumption behavior contributing to building a favorable healthy digital economy, and sustainability.

Keywords: *Online Compulsive Buying, Online Shopping Addiction, Online Shopping, E-Commerce, Consumer Behavior.*

1. Introduction

In recent years, e-commerce has grown rapidly all over the world. According to a research report on Cross-border e-commerce conducted by Ninja Van Group and DPD group in 6 countries in Southeast Asia (ASEAN) in 2022, the average Vietnamese consumer purchases 104 orders per year, higher than compared to the people of the following countries, which are Thailand (75 orders), Singapore and the Philippines (58 orders). Meanwhile, the average number of orders purchased in the region is 66 orders per year.

In today's consumer society, shopping is an integral part of life and the economy (Mukhopadhyay & Johar, 2009). E-commerce has many advantages but also leads to other problems and consequences, among which is the introduction of Online

Compulsive Buying (known as Online Shopping Addiction). With Internet shopping at their fingertips, it is easy for consumers to become compulsive shoppers (Lim, 2017). A meta-analysis examining shopping addiction found that the propensity for shopping addiction was more pronounced among young people (Maraz et al., 2016; Elliot, 1994; Roberts, 1998; Yurchisin & Johnson, 2004). Online Compulsive Buying has been identified in 2% of the world's population (Bighiu, 2015), while the figure among young people is higher. In Vietnam, according to a survey conducted by the authors, 33% of young people surveyed believe that they have signs of an online shopping addiction. In China, the prevalence of online shopping addiction among university students is 16.7% (Hou & Yang, 2020).

Compulsive Buying in general and Online Compulsive Buying have serious psychological, social, and financial consequences for an individual (Black et al., 2012). According to the study, people with Compulsive Buying Behavior can lead debt piled up at 58.3%, unable to cope with payments at 41.7%, criticism from acquaintances at 33.3%, and after judicial and financial performance at 8.3% (Christenson et al., 1994). Online Compulsive Buying affects all individuals in a society (Roberts & Jones, 2001). In addition, it is said that the recent global economic crisis is partly due to Compulsive Buying (Sharma et al., 2014; Gardarsdottir & Dittmar, 2012; Schneider & Kirchgassner, 2009).

Compulsory online buying is easier to come by than Offline Compulsive Buying (often referred to as Compulsive Buying) (Adamczyk, 2021). From a sociological point of view, the object of addiction is not a material good (such as a drug or a consumable) but an interaction between the addict and their subject that occurs under specific circumstances (Shaffer, 1996). Therefore, easy access to the subject of addiction is an important condition for the development of addiction. In other words, the act of buying is the addictive subject of Compulsive Shopping, so the fact that consumers can often meet online shopping easily creates more favorable conditions for consumers' development of this behavior. Therefore, the rate of Online Compulsive Buying is higher than that of offline forced purchases.

Despite appearing more and more in society, there are currently very few studies identifying predictors of Online Shopping Addiction (Sun & Wu, 2011), especially research placed in context in Vietnam. Due to Online Compulsive Buying (Online Shopping Addiction) not only creates market inefficiencies, but also increases social costs due to reduced productivity, personal bankruptcy, broken families, and ruined lives. Pursuing credit problems and psychiatric counseling costs both tax dollars and human lives. Therefore, research on factors affecting Online Compulsive Buying has been conducted by the authors to have a more comprehensive view of this behavior. From the research results, the authors proposed suitable solutions for behavior restriction contributing to the development of e-commerce and the digital economy in Vietnam.

2. Literature review

2.1. Online Compulsive Buying (OCB)

Online Compulsive Buying is derived from Compulsive Buying. In the beginning, purchasing was done offline, so only the term Compulsive Buying was used. Later, when technology developed, buying behavior took place on the Internet; so, the term Online Compulsive Buying was born and had a difference in the feature of online purchases to the concept of compulsive purchase. A variety of terms have been developed in this area including: "compulsive buying" (O'Guinn & Faber, 1989; Workman & Paper, 2010), and "compulsory consumption" (Faber et al., 1987; Hirschman, 1992); Compulsive Shopping Disorder or Shopping Addiction (Sussman, Lisha & Griffiths, 2010).

In the early 20th century, German psychiatrist Emil Kraepelin invented the term "oniomania" to describe the unstoppable impulse to buy. However, it was not until 1988 that this definition of behavior was proposed by another group of researchers. O'Guinn and Faber (1989) define compulsive buying behavior as repeated purchases that occur as a response to negative events or emotions. Meanwhile, Mueller et al (2015) consider compulsive shopping behavior as an excessive focus on shopping that turns into a desire to buy something difficult to control. Over time, compulsive buyers increasingly restrict their activities in the buying process. Definition from the perspective of Psychology, Dr. Donald Black (2007) - a professor of psychiatry from the University of Iowa School of Medicine has the view that "Shopping addiction is defined as an abnormal condition that in which, people are often obsessed with perception and buying behavior to the point of leading to conflict or crisis".

In general, although there are many ways of defining the concepts, they all have certain things in common. Adding the online factor, the characteristics of Online Compulsive Buying include: (1) Online purchase behavior is made continuously, and difficult to control; (2) Online shopping behavior is done regardless of possible consequences.

In short, it can be broadly defined as follows: *Online Compulsive Buying is purchased that are difficult to control, repeated over and over, despite possible adverse consequences.*

2.2. Hypotheses development & Research models

All theories and models such as the Theory of Reasoned Action - TRA, The Theory of Planned Behavior - TPB, the Technology Acceptance Model - TAM, and the two-factor model of compulsive purchase of Valence, d'Astous, & Fortier' can be used to explain online compulsive buying (online shopping addiction). However, when researching to find a theoretical model suitable for the research's goals, the authors found that:

First, when studying compulsive online shopping behavior Intent to perform the behavior is no longer an important factor to consider the impact of factors on the actual behavior.

The results of several studies have shown a limitation of TRA that Behavioral Intent does not always lead to Actual Behavior (Rhodes et al., 2005; Maruping et al., 2017). Similarly, according to Thompson's (1991) analysis of the TAM model, the intention to act is only the subjective probability that the user will perform the behavior.

Second, compulsive buying behavior comes from the need to buy goods to achieve a certain purpose - this is an important factor because if this need does not exist, online compulsive buying behavior can't arise.

Meanwhile, for the TPB, some scholars argue that this model ignores a person's needs before engaging in a certain action, needs that will influence the behavior regardless of the attitude the degree is expressed (Reed & Lloyd, 2021). Similarly, TRA does not have a person's needs element.

Third, it is necessary to have elements specific to the online shopping context to make a distinction between conventional Compulsive Buying and Online Compulsive Buying.

What makes forced Online Compulsive Buying different from Compulsive Buying is because of the context of consumer buying and selling on the Internet. Online Shopping Addicts are not necessarily addicted to Shopping and vice versa. Therefore, considering the features that only online shopping has, especially the usefulness that online shopping brings, will make the perspective of influencing factors be studied more comprehensively.

Combining the above analysis, the authors found that the combined use of the model of the two main factors affecting the compulsive shopping behavior of Valence, d'Astous, & Fortier, and TRA is appropriate for research purposes. Accordingly, Attitude will be expressed through Helpfulness, Influence from others are social norms, these are the two original factors in the TRA theoretical model. The authors expand the model with factors of psychological and personality characteristics that make consumers need to shop to achieve a certain purpose. Personal and psychological characteristics are the factors that reflect the need to buy, they want to buy to relieve emotions and to achieve certain expectations, and this supplement compensates for the shortcomings of the analyzed models.

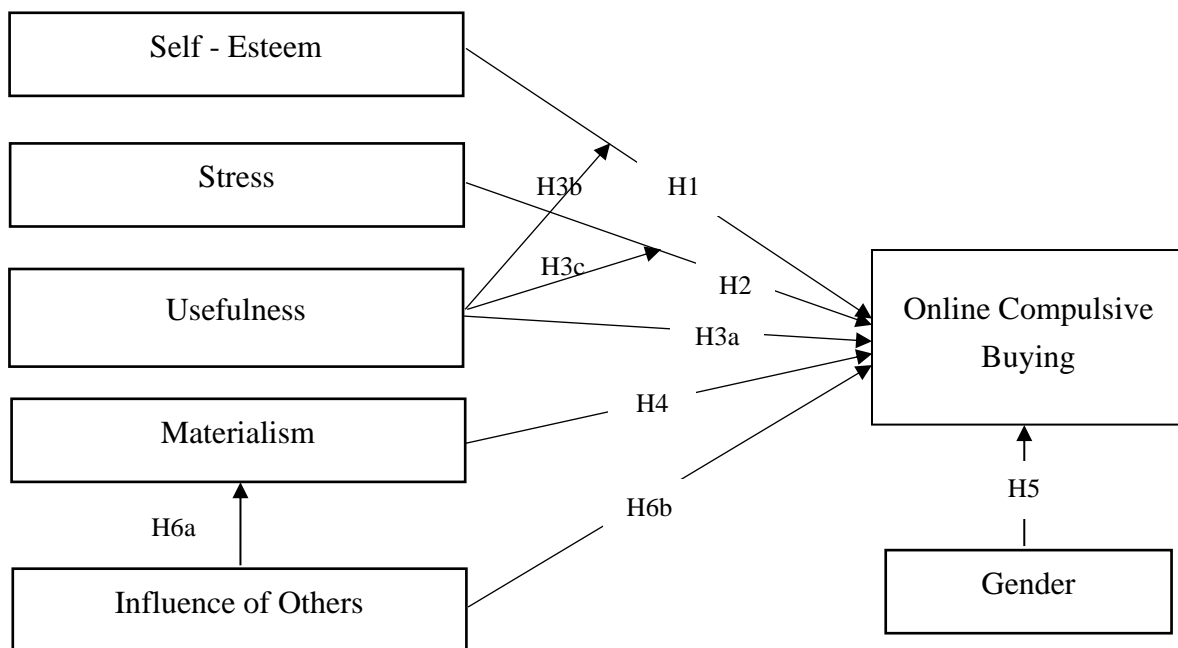


Figure 1. Research models

Source: The Authors

2.2.1. Self-esteem (SE)

Self-esteem is defined as the set of personal thoughts and feelings about self-worth and importance (Rosenberg, 1965; Orth et al., 2014). It refers to how a person perceives himself and his worth. According to the theory of self-improvement (Wicklund & Gollwitzer, 1981), when the self-perception is lower than the desired self, it will create low self-esteem, which in turn leads consumers to buy products with high self-esteem can enhance their status and true self. Therefore, the authors hypothesize:

H1: Self-esteem hurts Online Compulsive Buying in young people.

2.2.2. Stress (ST)

Stress is defined as any unpleasant emotional experience accompanied by predictable manifestations of biochemical, physiological, and behavioral changes (Baum, 1990). Emotions have been identified as a factor in continued technology use (Guinea & Markus, 2009). On the other hand, based on the theory of stress coping strategies (Folkman & Lazaeus, 1985), there are two ways that individuals manage stress. One of these is emotion-focused coping, which aims to reduce or manage emotional distress. In an emotionally focused coping strategy, some individuals will seek relief through escapism. Excessive use of shopping sites may be the result of a desire to escape reality as well as a quick distraction from discomfort and immediate relief of negative emotions (Müller et al., 2022). Therefore, the authors hypothesize that:

H2: Stress positively affects Online Compulsive Buying in young people.

2.2.3. Usefulness (US)

Perceived usefulness is defined as the degree to which a person believes that using a system will improve his or her job performance (Davis, 1989). Helpfulness stimulates more online purchases and thereby creates an opportunity for compulsive online buying behavior. Although there is no research on usefulness affecting compulsive online purchase behavior, there are many studies on the effect of the use on online purchase intention (Tunsakul, 2020; Lin & et al., 2010). Qualitative research by Astrid Muller et al (2021) states that it is important to consider certain advantages of the electronic market that contribute to the specific phenomenological characteristics of compulsive online purchases. regime.

When realizing the usefulness of online shopping, people with compulsive online shopping will trust online shopping first because of the benefits that online shopping brings. From there, for those who require psychological relief, and need to shop, the usefulness that that person perceives may increase the implementation of compulsive online purchase behavior. Therefore, the research team put forward the following hypotheses:

H3a: Usefulness has a positive effect on Online Compulsive Buying in young people

H3b: Usefulness increases the influence of Self-esteem on Online Compulsive Buying in young people

H3c: Helpfulness increases the effect of stress on Online Compulsive Buying in young people

2.2.4. Materialism (MAT)

Materialism has been conceptualized as a personality trait (Belk, 1985) and a source of life satisfaction (Richis, 1987). Materialism is a psychological construct that reflects the importance of the attainment of wealth, possessions, status, and image to an individual relative to other goals in life (Kasser, 2018). It is also described as the acquisition and use of material wealth to pursue one's goals in life or certain states (Richins, 2004). Materialists tend to improve their self-image through repeated and prolific purchases regardless of their actual need for use. Materialists turn to shop on an ongoing basis to close the gap or mismatch between the “real selves and the desired selves” (Dittmar & Drury, 2000; Yurchisin, et al., 2006). Therefore, the authors hypothesize:

H4: Materialism has a positive effect on Online Compulsive Buying in young people

2.2.5. Gender

Pratarelli & Browme (2002) provide evidence that some addictions may differ by gender. There is consistent evidence that women are more likely to exhibit compulsive and addictive buying behavior (Black 2007; Christenson et al., 1994; Davenport et al., 2012).

H5: Gender has an impact on Online Compulsive buying in young people.

2.2.6. Influence of others

The influence of others is a type of social influence in which groups of members encourage conformity and discourage nonconformity (Leary, Vann, & Groza, 2016). Several researchers have shown that influence from others influences compulsive buying (Roberts, 1998; Tan, Chen, & Theng, 2015). However, they also observed that this effect varies from the product-to-product type and from person to person (Jalees et al., 2015).

Besides, interpersonal influence including parents, teachers, and peers is one of the main causes of materialism (Chaplin & John, 2010). Individuals learn rationality from their parents and material attitudes through their peers (Churchill Jr & Moschis, 1979). It promotes social orientation and validation, leading to materialism (Chaplin & John, 2010).

H6a: Influence of others has a positive effect on Materialism

H6b: Influence of others has a positive effect on Online Compulsive Buying in young peopl

3. Method

3.1. Research instruments

The research process is divided into two phases: preliminary qualitative research and formal quantitative research.

The preliminary qualitative research method is carried out by in-depth interview techniques with experts in the field of marketing to complete the elements of the research work, thus screening the independent variables in the theoretical model.

Formal quantitative research was carried out through the survey method distributed questionnaires on the Internet. The content of the survey is divided into three parts: Part 1 is about demographic questions such as age, occupation, gender, and channels used to purchase online; In part 2, the authors use a scale to evaluate Compulsive online shopping behavior (Zhao et al., 2017) Compulsive online buying behavior is measured by a scale including 06 main factors: Importance, Tolerance, Emotional Change, Consequences of discontinuing in-person shopping, Recurrence, and Conflict; For part 3, the authors survey the factors affecting compulsive online purchasing behavior. The study used several variables that are thought to have an impact on young people's compulsive online shopping behavior such as stress (Lovibond & Lovibond, 1995), self-esteem (Rosenberg et al., 1995), usefulness (Tunsakul, 2020; Lin et al., 2010); Materialism (Richins, 2004); Influence from others (Bearden et al., 1990).

A four-point Likert scale from 1 (which didn't work for me at all) to 4 (which worked for me at all) was used to record key data for the Stress and Self-esteem scales. Meanwhile, the remaining factors are measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

3.2. Data collection

After conducting an online survey on the Internet, with survey respondents aged from 18 to 30 years old, who have been using the online purchase method, the total number of votes collected was 639 votes. Of these, there were 171 invalid votes because they were not subject to the research and the answers were not suitable, the remaining 468 votes were valid with full information and expressed the views of the survey participants. The number of valid questionnaires included in the official data processing was 468.

Table 1. Demographic Descriptive Statistics

Gender	<ul style="list-style-type: none"> • 33.5% male • 66.5% of female
Age	<ul style="list-style-type: none"> • 30.8% aged 18-20 • 43.4% aged 21-23 • 23.3% aged 24-26 • 2.6% aged 27-30
Occupation	<ul style="list-style-type: none"> • 66.5% of students • 9.1% office workers (private enterprises) • 10% civil servants. officials • 14.4% self-employed

Source: The Authors

3.3. Data analysis

After collecting information about the subjects, the research team used SPSS and AMOS software to perform data analysis. In terms of mechanism, the characteristics of the research subjects accurately determine the group of subjects addicted to online shopping; Testing the reliability of Cronbach's alpha scale to measure observed variables; The PCA method (Principal Component Analysis) aims to reduce the scale into the main parts representing the original scales. For this study, there are a total of 68 scales, measuring 14 factors in the model; Confirmatory factor analysis (CFA) is also a method of statistical analysis used to check whether previously defined variables are consistent with the data. CFA belongs to the group of methods of factor analysis. And finally, the Linear Structural Analysis Method (SEM). The SEM method combines multiple regression analysis and factor analysis to explain complex relationships between variables.

4. Results

4.1. The results of assessing the reliability of the scale

The measured Cronbach's Alpha coefficients of the scales with Cronbach's Alpha coefficients ranged from the lowest of 0.768 of the MO components scale group to the highest of the SE component scales of 0.927. Scale correlation index - the adjusted sum of all scales is higher than 0.3, showing that all variables used have high reliability.

4.2. PCA

Experimental results show that there are 14 new representative scales extracted from the original data file of 68 original scales. The lowest measured load factor is 0.572, and the KMO coefficient is 0.880 in threshold from 0.5 to 1. In addition, using the filter extraction according to the Eigenvalue criterion is greater than 1, the number shows that the representative scale of 14 is 1,119, showing that the extracted value is 14 scales if based on the Eigenvalue criterion. The cumulative total variance in group 14 is 64,760%, indicating that these 14 representative scales can explain 64.76% of the original 68 original scales.

4.3. CFA

Evaluate the fit of the model

With the criteria for evaluating the reliability of the data file,

The value $CMIN/DF = 1.562$, is generally considered pretty good. A value below 2 or 3 is generally considered acceptable.

A CFI value = 0.920, which ranges from 0.90 to 0.95, is a moderate fit.

A TLI value = 0.914, which ranges from 0.90 to 0.95, is of average concordance.

This is the approximate error estimate of the model. A value of $RMSEA = 0.035$, less than 0.05, is considered a good fit.

In addition, the loads are shown in the table above (CFA Factor Loading) show the lowest measured load factor of 0.563 which is above the allowable threshold of 0.5.

These results show that the input data is quite compatible with the compatibility assessment model. Therefore, the model is perfectly suitable for performing other measurement experiments.

Table 2. Results of model fit

CMIN/DF	CFI	TLI	RMSEA
1.562	0.920	0.914	0.035

Source: Compiled from analysis results in Amos

Evaluate the discriminant validity and convergence of the model

The AVE (average variance extracted) values ranged from 0.509 for the WI group to the highest 0.560 for the SE group. Indicates that the explanatory percentage values of latent variables are as low as 50.9% and highest as 56%. This completely confirms that the scales achieve convergence when generalizing the concepts given, moreover the CR coefficient (the lowest composite reliability is 0.753 for the WI group and the highest is 0.927 for the SE group), more evidence is given that the measurement component scales for each concept are in perfect agreement with this experiment.

To evaluate the discriminant value of research based on the comparison method of AVE with MSV. The results show that the shared variance indices on different factor groups are always smaller than only AVE convergence. Thus, there can be confirmed that the scales are convergent.

4.4. Analysis results of Structural Equation Modeling (SEM)

The results show the impact between latent variables as follows:

Table 3. SEM model estimation results

Mối quan hệ			Unstandardized Coefficients (β)	Standardized Coefficients (β std)	S.E.	P-value
IN	----- >	MAT	1.815	1.42	0.416	0.000
ST	----- >	OCB	0.119	0.161	0.041	0.004
SE	----- >	OCB	-0.122	-0.192	0.035	0.000
IN	----- >	OCB	0.127	0.082	0.13	0.328
MAT	----- >	OCB	0.415	0.34	0.126	0.000
US	----- >	OCB	0.153	0.251	0.035	0.000
US_SE	----- >	OCB	-0.047	-0.163	0.015	0.002
US_ST	----- >	OCB	0.034	0.124	0.014	0.015
GIOITINH	----- >	OCB	-0.107	-0.136	0.04	0.008

Source: Compiled from analysis results in Amos

Based on the results of analyzing the relationship between variables, we have the following evaluations:

H1: Self-esteem has a negative effect on compulsive online shopping behavior in young people

This relationship is statistically significant, with $\beta = -0.122$ and $\beta_{std} = -0.192$. This shows that, as SE increases, OCB decreases. This result is in line with the expectation of hypothesis H1 and also supports the research of Bhatia (2019). Currently, when society develops, people's essential needs such as food, clothing, and learning are fully met, then people will begin to arise higher needs for self-affirmation. People with low self-esteem want to assert themselves through items, goods, and expenses that are no longer strange things in life.

H2. Stress has a positive effect on Online Compulsive Buying in young people

This relationship is statistically significant with $\beta = 0.119$ and $\beta_{std} = 0.161$. This result shows that when ST increase, OCB also increases. The results are consistent with the study of Muller et al. (2022) and the theoretical study of coping strategies for stress (Folkman & Lazaeus 1985). Online shopping behavior is a behavior that is sought to reduce stress. When shopping online, they feel liberated from reality and immersed in an online world where they can be free to choose and think according to what they like.

H3a: Usefulness has a positive effect on Online Compulsive Buying in young people

This relationship is statistically significant, with $\beta = 0.153$ and $\beta_{std} = 0.251$. This result shows when the US increases, the OCB also increases. The authors have succeeded in demonstrating that the advantageous factors of online purchasing influence compulsive online purchases. Previously, usefulness was only proven to affect the intention to perform the behavior and the intention to influence the compulsive online purchase behavior (Luong Thu Ha et al., 2021).

H3b: Usefulness increases the influence of Self-esteem on Online Compulsive Buying in young people

This relationship is statistically significant, with $\beta = -0.047$ and $\beta_{std} = -0.163$. This shows that as US_SE goes up, OCB goes down. The test results obtained are not the same as the hypothesis that the research team set out. The usefulness of online shopping makes the effect of Self-esteem on compulsive online buying behavior becomes less.

H3c: Usefulness increases the effect of stress on Online Compulsive Buying in young people

This relationship is statistically significant, with $\beta = 0.034$ and $\beta_{std} = 0.124$. This result shows that when US_ST increases, OCB also increases. The authors have succeeded in proving the moderator role hypothesis of utility. The impact of stress on online shopping addiction is also driven by usefulness. When convenience appears, consumers can easily access and approach the online store from anywhere, anytime, in any space, or at any event.

H4: Materialism has a positive effect on Online Compulsive Buying in young people

This relationship is statistically significant, with $\beta = 0.415$ and $\beta_{std} = 0.34$. This result shows that when MAT increases, OCB also increases. This result is similar to the results of previous studies that have been performed (He et al., 2018; Bhatia, 2019). In the modern consumer society, online shopping has become an important part of life and can be considered a means for people to interact with the physical world.

H5: Gender has an impact on Online Compulsive Buying in young people

This relationship is statistically significant, with $\beta = -0.107$ and $\beta_{std} = -0.136$. This result shows that when the Gender is male, OCB decreases.

H6a: Influence of others has a positive effect on materialism

This relationship is statistically significant with the unnormalized coefficient (β) of 1.815 and the standardized coefficient (β_{std}) of 1.42. This shows that, as IN increases, MAT also increases. This result is consistent with previous studies.

H6b: Influence of others has a positive effect on Online Compulsive Buying in young people

This relationship was not statistically significant ($P\text{-value} > 0.05$). This shows that there is no statistical evidence to confirm the relationship between IN and OCB.

5. Discussion and Conclusion

Based on the Theory of Reasoned Action (TRA) and Valence, d'Astous & Fortier's Compulsive Buying model, the authors have constructed a model of factors influencing Online Compulsive Buying (online shopping addictions) among young people. Through research, there are a total of 5 factors identified to have an impact on Online compulsive buying (online shopping addiction) among young people, namely: Materialism, Stress, Self-esteem, materialism, and finally, Gender. For the factor of Influence of Others, there is no statistical evidence to confirm the relationship between this factor and compulsive online shopping behavior (online shopping addiction).

With these results, the research team has made theoretical contributions to the research topic on behaviors related to Online Shopping in general and Online Compulsive Buying in particular. At the same time, the authors also make some recommendations as follows:

For consumers who need to overcome compulsive online shopping habits, it may be helpful to consider replacing shopping with other healthy and beneficial lifestyles to alleviate psychological issues. Therefore, the first step in preventing compulsive shopping behavior is identifying the psychological needs that drive it.

In cases where everything seems to be getting out of control, individuals may need to seek immediate treatment if they cannot find alternative ways to relieve stress other than online shopping. There is always a reason behind negative emotions, and counseling professionals can help eliminate these negative feelings.

Individuals need to have a more accurate understanding of the definition of success and its value to themselves. Value can be built by developing oneself through courses and social activities, instead of emphasizing external material value. Developing emotional intelligence skills can contribute to more sustainable consumer behavior, and reduce susceptibility to materialism, and therefore, the consequences of addictive behavior.

Engaging in non-shopping related activities such as sports, book clubs, or cooking can help compulsive shoppers partially forget their addictive behavior and become acquainted with new habits.

For the government, appropriate regulations should be established based on consideration of the negative impacts of this behavior to protect the rights of consumers, promote the healthy development of e-commerce towards positive consumer behavior, and sustainable and environmentally friendly shopping. Therefore, there should be regulations for e-commerce platforms regarding the establishment of limits and restrictions on customers' shopping accounts. Limits and restrictions can be set on consumers' online shopping accounts to help them maintain control and limit their spending. For example, reminders can be set for online shopping time, where the longer they shop online, the more discounts decrease over time. The government can develop programs to enhance business awareness of sustainable economic development. In addition, the government should create favorable conditions for companies participating in sustainable economic activities in e-commerce. Regarding regulatory management for other relevant entities such as credit cards and consumer lending channels, the state needs stricter measures to minimize payment tools and reduce addictive online shopping behaviors. In practice, anyone can open a credit card from VND 15-30 million without having to prove their financial status, which has become leverage for the forced development of online shopping behavior

From a business perspective, it is evident that online businesses participating in this activity can leverage the factors that coerce consumers to make more purchases. Therefore, businesses play an equally important role in generating and developing consumer behavior. Businesses should consider implementing reasonable advertising and consumption policies that both limit the negative impacts of such behavior and contribute to creating a healthy and stable business environment. Striking a balance does not mean that businesses' measures must eliminate coerced online shopping behavior and reduce business revenue.

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IMPACT OF DIGITAL FINANCES ON THE STABILITY OF THE COMMERCIAL BANKING SYSTEM IN VIETNAM

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Abstract

In the current era of 4th industrial revolution, accelerating digital finance is becoming more and more popular in the commercial banking system. Digital finance assists in bank stability; however, it may also pose the chances of financial instability due to systematic risks. Consequently, the purpose of this paper is to conduct the impact of digital finance on banking system stability, thereby providing policy implications related to digital finance in order to promote Vietnamese's inclusive finance. This paper uses Random Effect Model (REM) to investigate empirical evidence on the impact of digital finance on 24 commercial banks in Vietnam between 2013-2022. The result suggests that digital finance leads to economic growth and enhances banking performance in the future. However, for some emerging markets like Vietnam, there is a negative relationship between digital finance and bank stability in short term. This can be explained by the fact that the practice of digital finance in Vietnam is at the very early stage that takes some time to impact positively on the banking stability and consequently the economy as a whole. Therefore, the government, policymakers can consider digital finance as an effective tool in order to bring a revolutionary development in overall financial sector.

Keywords: *commercial banking, digital finance, stability*

1. Introduction

In recent years, the trend of using digital services in banking activities has become prominent with the increasing number of customers participating and the increasingly diverse types of services. Especially since 2020, when the Covid-19 epidemic broke out, digital finance has become one of the typical features of the current financial landscape.

According to research by Kasri et al (2022), digital payments are being used more by nearly 50% of consumers globally. Of those, most plan to continue using it in the future. According to a report published in December 2021 by the Bank for International Settlements (BIS) on nearly 30 economies in the period 2020 - 2021 compiled by the Committee on Payments and Market Infrastructure (CPMI). In general, the total value of non-cash payments has a high growth rate (State Bank of Vietnam, 2022). Along with that, the stability of the banking system is one of the top concerns of bank managers, deposit insurers and the general public due to the potential for system-wide contagion (Bai and Elyasiani, 2013). Therefore, the impact of digital finance on the stability of the banking system is a topic of current concern. The development of digital finance can bring about decentralization and diversification, efficiency and transparency (Vučinić, 2020), and create incentives for banks to lend to more individuals and businesses. and leads to diversified benefits (Danisman & Tarazi, 2020) (Stephane et al, 2019). Therefore, studies in developed countries and a number of research papers in developing countries suggest that digital finance can generate profits and bring many positive effects to ensure sustainable economic growth in times of crisis such as the Covid-19 pandemic (Banna and Alam, 2021), (Du Thi Lan Quynh, 2021), (Safiullah and Paramati, 2022), (Hasan et al, (2022), (Banna et al , 2021), (Syed et al, 2022), (Lin et al, 2022) However, with some studies in developing countries, there are different opinions about the influence of digital finance on banking stability. According to Syed et al (2021) that digital finance can cause systemic risk and financial instability through empirical research in three South Asian countries (India, Pakistan, Bangladesh). In addition, differences in short-term and long-term results also occur in some studies in developing countries such as Syed et al (2022), Kasri et al. associates (2022)

In Vietnam, by the end of April 2022, non-cash payment activities had a high growth rate compared to the same period last year (State Bank of Vietnam, 2022). In which, compared to the same period in 2021, in terms of quantity, statistics show that contactless payment transactions increased by 69.7%, Internet transactions increased by 48.39%, QR Code transactions increased by 56.52% and via mobile phones increased by 97.65%. In addition, the number of activated e-wallets also increased by a total of 10.37% compared to the end of last year and the number of Mobile Banking transactions is also estimated to reach a growth rate of 200%. In addition, every day Vietnam has about 30 million people using the Internet banking payment system with the value of private money transactions at the mobile phone channel reaching 300 trillion VND/day. According to data announced at the press conference of the series of events in response to "Cashless Day 2022" held on May 20, 2022, the first 4 months of 2022 have achieved a growth of 32.37% in transaction value through the interbank electronic payment system.

Therefore, studying the impact of digital finance on the stability of the commercial banking system in Vietnam is of practical significance to provide a deeper insight into the relationship between digital finance and the stability of the banking system. Then, our goal is to help commercial banks make the right decisions about applying digital finance in their operations to ensure financial stability in the future.

The article has applied the predecessor theoretical basis to propose a research model, collected panel data from 24 Vietnamese commercial banks and the economic growth rate and inflation rate of Vietnam in the period from 2013 to 2022, using panel data estimation techniques by random effects regression (REM) to investigate empirical evidence on the impact of digital finance on the standard deviation of ROAA and Zscore from which the article proposed some policy implications related to the research results

2. Method

The research was written based on the work of *Banna (2021)*, in which the research group adjusted the appropriate factors to measure the impact of digital finances on the stability of the commercial banking system in Vietnam. The research was conducted in a situation where many countries are moving towards a cashless economy by implementing new technological services. In particular, in Vietnam - a region with financial diversity, more emphasis is being placed on the expansion of technology into the financial market. Furthermore, several financial institutions including the banking sector, rely on technology to provide digital financial services.

The research was carried out using quantitative research methods with secondary data sets from 24 commercial banks over the 10-year period from 2013 to 2022 and it includes reports on macroeconomic variables, digital finances and stability banks. The model proposed by the research team includes 2 dependent variables: i) Ln(Z-score) using return on average assets (LZS), ii) Volatility of ROAA (SDROAA) and 10 independent variables, of which there are 6 bank-specific variables: i) Loan ratio (LR), ii) Loan loss provision ratio (LLPR), iii) Management quality (MQ), iv) Capitalisation (equity ratio) (CAP), v) Revenue diversification (IND), vi) Bank size (SIZE). 2 macroeconomic variables: i) GDPG: Gross domestic product rate, ii) INFL: Inflation. 2 digital financial variables: i) INT: The percentage of the population using the Internet, ii) MMT: Mobile money transaction percent of GDP.

In regard to the quantitative method, the research group used the Stata 14 software program to measure the impact between the independent and dependent variables, conduct hypothesis testing through a multivariate regression model and evaluate the results based on certain standards. Accordingly, the economic data are grouped into the software in the form of a panel data model consisting of two components: cross-section data and time series data.

Based on the original research of Hasanul Banna and Md Rabiul Alam (2021), the research model applied in the study follows as:

$$Y_{ijt} = \beta_0 + \beta_1 DF_{jt} + \beta_2 B_{ijt} + \beta_3 M_{jt} + \epsilon$$

In there:

Y_{ijt} : ln (Z-score) and ln (SDROAA) are dependent variables representing the stability of bank i in country j in year t

DF_{jt} : Digital financial index of country j in year t

B_{ijt} : Banking factors of bank i in country j in year t

Mjt: Macroeconomic factors of country j in year t

β_0 : Intercept factor

$\beta_1, \beta_2, \beta_3$: Coefficients of the independent variable

ϵ : Model error

3. Results

3.1. Correlation analysis

The correlation coefficient (r) is a statistical indicator that reflects the degree of linear relationship between variables. The r value ranges from -1 to +1 regardless of the measurement size of the variables. Through the correlation coefficient r , it is possible to know the individual correlation direction between the variables and detect the phenomenon of multicollinearity (if $r > 0.8$). In addition, when the pairwise correlation between variables is high (greater than 0.5), multicollinearity can occur (Gujarati, 2008). This can lead to the model having high multicollinearity defects; at the same time, the estimated coefficients easily lose their statistical significance and their sign is opposite to the expected sign; The estimated results are unreliable.

According to the results presented in the table, there is no pair of correlation coefficients greater than 0.8, so the correlation between variables is at an acceptable level. Therefore, this is an important basis to help the authors test and select the appropriate model.

Table 1. Correlation coefficient matrix

	Ln (sdROAA)	Ln (Zscore)	SIZE	LR	LLPR	MQ	CAP	IND	GDPG	INFL	Ln (MMT)	Ln (INT)
ln(sdROAA)	1.0000											
ln(Zscore)	-0.7241	1.0000										
SIZE	-0.2925	0.3357	1.0000									
LR	-0.0959	0.2081	0.3119	1.0000								
LLPR	0.0934	-0.0581	0.1967	-0.1416	1.0000							
MQ	0.1046	0.1482	0.0961	0.5066	-0.0116	1.0000						
CAP	0.4286	-0.1605	-0.4886	-0.0302	0.0934	0.0747	1.0000					
IND	-0.0932	0.0595	0.1898	-0.1055	0.0211	-0.1153	-0.0826	1.0000				
GDPG	-0.0466	0.0300	-0.0232	-0.0001	-0.0027	0.0342	-0.0137	0.0056	1.0000			
INFL	0.0596	-0.0738	-0.1056	-0.0904	0.1808	-0.0854	0.0992	0.0258	0.0481	1.0000		
ln(MMT)	-0.0029	0.1426	0.3405	0.2558	0.0164	0.1242	-0.0467	0.0866	-0.1046	-0.2390	1.0000	
ln(INT)	-0.1321	0.2200	0.3554	0.3480	-0.1111	0.1903	-0.1517	0.1365	-0.0647	-0.2617	0.7779	1.0000

Source: Quantitative research results

3.2. The model tests for multicollinearity

The research team continues to perform the test to check the phenomenon of multicollinearity based on the Variance Inflation Factor (VIF). In which, if $VIF > 10$, there is multicollinearity phenomenon, which can seriously affect the estimated results of the model. Based on Table 2, the VIF coefficients of all 10 factors are less than 3 and the average VIF is 1.38, inferring no multicollinearity with the selected variables. Therefore, the research team kept the above variables unchanged to perform other regressions.

Table 2. Result of multicollinearity test among independent variables

Variables	VIF	1/VIF
LnMMT	2.96	0.338397
LnINT	2.75	0.363534
SIZE	1.96	0.509172
LR	1.71	0.584374
LLPR	1.50	0.666028
MQ	1.39	0.719698
CAP	1.26	0.793962
IND	1.13	0.888116
GDPG	1.11	0.902241
INFL	1.02	0.984826
Mean VIF	1.68	

Source: Quantitative research results

3.3. Random effects model (REM)

The research team runs Hausman test to find out the most accurate and sure fit for the collected data set, which is the FEM or REM model. The Hausman test poses two hypotheses:

H0: REM random effects model is suitable and effective

H1: The FEM fixed-effects model is suitable and effective

The results show that in model 1 $\text{Prob} > \chi^2 = 0.5090 > 0.05$ and in model 2 $\text{Prob} > \chi^2 = 0.7292 > 0.05$. With 95% confidence, we do not have enough basis to reject H0. Understandably, the random effects model REM is the most suitable model for data analysis.

Table 3. Model estimation results by REM method for the period of 2013 - 2022

Variables	LnZscore	LnSdROAA
	REM	REM
	Coef	Coef
SIZE	0.3651514***	-0.2597996***
LR	1.255948**	-0.4529586
LLPR	-21.1475***	8.31373*
MQ	1.288419**	0.1862538
CAP	2.087553*	5.476276***
IND	0.0737529	-0.0184351
GDPG	1.320804	-1.46804
INFL	0.1178156	0.8075505
LnMMT	-0.1579939**	0.3816633***
LnINT	1.04541*	-1.76315***
R-squared	0.3186	0.4078

*** Significance level 1% ($p < 0.01$)

** Significance level 5% ($p < 0.05$)

* Significance level 10% ($p < 0.1$)

Source: Quantitative research results

3.4. Verification and correction of defects

To identify the defects of the model, the research team conducted a test of the variable variance phenomenon (Breusch Pagan Lagrangian Multiplier test) and the autocorrelation phenomenon (Woodridge test). After obtaining the test results, the authors conclude that both models suffer from the above defects. Therefore, the team used the FGLS model with a selection of panels (heteroskedasticity) and corr (ar1) to overcome the defect.

Table 4. Results of model estimation by FGLS method for the period 2013 - 2022

Variables	LnZscore	LnSdROAA
	FGLS	FGLS
	Coef	Coef
SIZE	0.2972123***	-0.1750332***

LR	0.0372958	-0.9513033*
LLPR	-12.72405**	8.21622
MQ	0.8288309	1.600804***
CAP	1.870269	4.054964***
IND	-0.1870473	0.1549993
GDPG	2.663191***	-2.154347**
INFL	-1.902409	1.583648
LnMMT	-0.2038888**	0.2711243***
LnINT	1.968564***	-1.616947**

*** Significance level 1% ($p < 0.01$)

** Significance level 5% ($p < 0.05$)

* Significance level 10% ($p < 0.1$)

Source: Quantitative research results

4. Discussion and Conclusion

4.1. Discussion

Digital finance is the bridge to improve the well-being of individuals and businesses who have official bank accounts and have funds in their bank accounts to complete many financial transactions. Policymakers of state agencies and business managers have always strived to promote digital finance. This study focuses on analyzing the impact of digital finance on the stability of the commercial banking system in Vietnam in the ten years from 2013 to 2022, thereby providing some recommendations. The research group chooses to measure digital finance through the percentage of mobile payments on GDP proposed by Siddik and Kabiraj (2020). At the same time, we choose the Z-score and the volatility of return on average assets (SdROAA) as variables representing the banking system's stability.

Based on synthesizing secondary data from 24 commercial banks in Vietnam over the ten years from 2013 to 2022, using panel data analyzed by the Random-Effects Model, The research team has concluded that the model consists of 8 factors that affect two dependent variables, ln (Z-score) and ln (SDROAA) with a significant explanation rate of 31.86% and 40, respectively.

The results of the research team indicated that bank size (SIZE) had a positive effect on the average return on assets (ln Z-score) and a negative impact on variation in average return on assets (SDROAA) over the entire study period from 2013 to 2022. This result could explain that when banks are large, credit ratings become more severe, and banks tend to accept less credit in return for higher quality (Boot and Thakor, 2000). Besides, according

to Hughes et al. (2001), large banks can gain potential diversification advantages, thereby increasing the bank's operational efficiency and profitability and promoting the bank's stability. This result is also consistent with previous studies by Haan and Poghosyan (2012), Adusei (2015), and Banna and Alam (2021).

The loan ratio (LR) had a positive effect on the stability of the banking system. The experimental test of Fang et al. (2014) and Fukuyama et al. (2022) also gave similar results. Lending is one of the main activities that bring the majority of profits to banks, so when banks lend more, profits and stability also increase. Compared to banks that prefer to invest in non-traditional activities or derivatives, banks with higher loan ratios tend to be less risky.

The loan loss provision ratio (LLPR) negatively affected the banking system's stability. The higher the provision ratio, the lower the banking system's stability, and vice versa. The increase in the risk provision ratio is a sign that the bank is pursuing risky lending activities and may cause instability in the system (Ahamed and Mallick, 2019). When a bank's bad debt ratio is high, the risk provision becomes larger, increasing the bank's operating costs.

Management quality (MQ) measured by total profitable assets over total assets of a bank had a positive relationship with the banking system's steadiness. When the ratio of earning assets is higher, the bank's management quality becomes better, thereby reducing excessive risk-taking and making the banking system more stable (Ahamed and Mallick, 2019).

The capitalization (CAP) positively affects the banking system's firmness through its relationship with $\ln(\text{Z-score})$ but also increases ROAA volatility, which means increased volatility. The equity ratio is the internal strength of commercial banks, indicating the financial autonomy of those banks. Well-capitalized banks are perceived to be less risky, thereby maintaining bank stability (Berger et al., 2009). According to Gambacorta and Mistrulli (2004), a higher equity ratio will increase the bank's stability, especially in times of crisis.

The revenue diversification (IND) is not statistically significant when regression of the full-sample model 2013-2022. In the REM model, IND has a positive effect on the banking system's stability. When studying income diversification in 11 developing economies, Sanya and Wolfe (2011) found that diversifying activities that generate interest and non-interest income can significantly reduce the risk of insolvency, thereby increasing the bank's stability.

The result showed that the percentage of mobile payments to gross domestic product (MMT) had a negative influence on the banking system's stability. This result contradicts the study of Stephane et al. (2019); Banna (2020, 2021); Risman et al. (2021) when these authors concluded that digital finance had a positive impact on financial stability by increasing the ability of banks to provide financing.

The percentage of the population using the Internet (INT) - the variable used to measure digital finance - increases, and the banking system's stability increases. In the long term, as the number of Internet users increases and knowledge about digital finance is more

widely available, the official digital financial products of banks will also become easier to access. Banks are more convenient in customer management and increase the stability of the system (Siddik and Kabiraj, 2020).

Considering the variables of macroeconomic factors, the research team's model results show that the inflation rate had no impact on stability. When regressing using the FGLS model, the GDP growth rate showed a positive relationship with stability. As the economy develops, the banking system's firmness is also promoted (Honohan, 2008; Ozili, 2018).

4.2. Conclusion

The research team has collected data from macro statistics and financial statements of 24 Vietnamese commercial banks from 2013 to 2022, fully satisfying the selection conditions of the authors. After that, the data is entered into STATA software to conduct regression analysis according to the panel data regression method (Panel Data Regression) with the approach of all three models involving Pooled OLS model (pooled OLS model), fixed effects model (FEM), and random effects model (REM). The research shows that eight factors affect the stability of the banking system, where the primary variable is digital finance as measured by the percentage of mobile payments to GDP which has a negative effect on the stability of the banking system. The sample in the author's research paper is Vietnam - a country that has only developed digital finance in the last few years. Therefore, it will probably need more time to prove the relationship between these two variables. Moreover, there needs to be a technology background with strong information coverage so that digital finance can flourish and promote the banking system's stability.

Overall, this study shows a solid significance on determinants that influence the banking system's stability in Vietnam. The findings should be recommended for adopting a better digital financial system, thereby developing the banking system's stability, not stifling it. Some of the recommendations are illustrated below:

- The central bank needs policies to promote commercial banks to complete and build a firm information technology apparatus so that digital finance can enhance stability. State agencies need to accelerate the process of completing legal regulations on electronic transactions and developing regulations on the protection of personal data and the privacy of service users.
- The central bank should complete the overall financial capacity improvement project, then set specific capital increase milestones for each bank.
- State agencies should continue to find solutions to stimulate economic growth, control inflation, and develop a sustainable economy.
- Commercial banks should study and build a complete roadmap to change the model to digital banking.
- Commercial banks should focus on developing smart banking products and services, such as e-wallets with relative ecosystems.

- Banks should focus on comprehensive consolidation, such as improving the bank's inefficient asset ratio, raising the capital-to-total asset ratio, and adjusting state ownership for individual banks. It will increase the stability of that bank and simultaneously contribute to promoting financial inclusion, thereby devoting itself to the steadiness of the whole financial system.

4.3. Limitations and further research directions

The scope of coverage of digital finance is broad. In this study, the authors only focus on mobile money transactions. This variable cannot represent the entire digital finance. Similarly, the stability of a bank can be measured by many variables; however, in this paper, only the Z-score and volatility of return on average assets (SdROAA) are used as a proxy. Moreover, the study only focuses on sampling data in Vietnam, there has not been an expansion of the research scope to other countries in the region and the world.

Based on the above limitations, future studies can expand the scope of research to countries and regions in the world. In addition, future studies may add other variables to the model as well as select other measures for digital finance and the banking system's stability.

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FINANCIAL LITERACY OF VIETNAMESE STUDENTS IN THE CONTEXT OF DIGITAL TRANSFORMATION: EVIDENCE FROM STUDENTS IN HANOI CITY

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Abstract

This study was conducted to measure and evaluate the financial literacy of Vietnamese students and to determine the factors affecting the financial literacy of this group in the context of digital transformation. Using data collected from 1,114 students at different universities in Hanoi, the authors applied Cronbach's Alpha, EFA, One_Way ANOVA techniques, and obtained the most significant results: Vietnamese students have financial knowledge, financial attitudes, financial behavior, and financial literacy, in general, are at a good level. There is a statistically significant difference in the financial literacy scores between this group by Gender, Education, Having bank accounts, using Smart Banking, and Investing online. Accordingly, male students show higher scores in financial literacy than female students. Students majoring in engineering, economics and business administration have higher levels of financial literacy than those in languages and other majors. In connection with the digital transformation in Vietnam, the fact that students have bank accounts, use Smart Banking, and make online investments has helped to increase literacy levels. These new and valuable findings represent another positive influence of digital transformation - besides the impact on the business development of enterprises and customer satisfaction (which has been mentioned in many newspapers, reports, and other studies).

Keywords: *financial literacy, students, digital transformation*

1. Introduction

According to the OECD (2013), Financial Literacy (FL) is the combination of awareness, knowledge, skills, attitudes and behaviors required to make meaningful reliable financial decisions to achieve personal financial satisfaction. Improving an individual's FL not only ensures the reduction of financial risks when participating in and using financial

services, but also has an important meaning and positive impact on the financial inclusion of each country (Grohmann et.al, 2018). However, on the 2018 financial inclusion index, Vietnam ranked only 112/176 in the world and 23/37 in Asia. According to a research sample by Dougn (2019), only 24% of the Vietnamese surveyed had an above-average FL. In general, the FL of Vietnamese people is still limited (Do Hong Nhung and Nguyen Ngoc Hai Chau, 2021). This fact motivates researchers to consider and evaluate the level of FL of Vietnamese residents (particularly young people, accounting for 21% of the population in 2019), and to identify factors affecting FL, which provides the scientific basis for appropriate solutions to improve FL. In order to meet this requirement, several studies have been conducted, focusing on evaluating the FL of students in Vietnam such as Le Hoang Anh et.al. (2018), Tran Thanh Thu et.al. (2021). However, no author has considered the FL of the youth in the context of digital transformation in Vietnam.

Digital transformation is the integration of digital technology into all areas of an enterprise, creating a fundamental change in the way of operation and business model in order to increase enterprise value and customer satisfaction. The digital transformation process in Vietnam up to 2022 has recorded important results, typically the digital economy accounts for 10.41% of GDP (an increase of 9.6% compared to the end of 2021)¹. Digital transformation brings businesses many advantages such as saving operating costs, improving access to customers, increasing accuracy and speeding up the decision-making process, and improving productivity, thereby increasing the operational efficiency and competitiveness of enterprises. On the other hand, digital transformation is an inevitable “path” for businesses to cater to the Gen Z customer group, which currently accounts for 32% of the world population. This is a group of people who are tech-savvy and willing to experience innovation and invention. According to experts, the path of digital transformation depends on the current status and financial capacity of each enterprise, but they must aim at customer experience and satisfaction. This results in the Vietnamese students being able to search and order anything via websites, e-commerce platforms, social networks and shopping apps. In particular, they easily compare prices and use sales promotion programs to get satisfied products at the lowest cost. In addition to the popularity of e-wallet applications, Smart Banking is an important premise for transactions to be carried out entirely online. In addition, digital transformation also helps students save and invest in online platforms and smartphones. Consequently, the process of consuming and managing personal finances is quick, convenient and flexible.

Based on the above analysis, the research group believes that the activeness of enterprise in digital transformation enables Vietnamese young people to access financial issues earlier and more conveniently, improving the FL of this group compared to previous generations. In order to scientifically and reliably verify this judgment, the authors conduct research to measure FL and determine factors affecting the FL of students at some universities in Hanoi. Among the expected factors, purchasing goods on e-commerce platforms, using shopping apps and online payment, using Smart Banking and investing online are representative factors of digital transformation.

¹ <https://vnexpress.net/hanh-trinh-chuyen-doi-so-o-viet-nam-4521504.html>

2. Literature Review

Financial literacy (FL) is a multidimensional concept - a term that is common and used all over the world. So far, many researchers have offered different concepts and explanations (Holzmann, 2010; Hung et al., 2009; Morgan and Trinh, 2017...). However, the most commonly used concept of FL is still the concept of OECD (2013) mentioned above. Since then, OECD (2013) has developed a set of questions to measure individuals' financial literacy in general. However, in 2022, the OECD adjusted the questionnaire and focused on measuring FL using 3 main aspects: Financial Knowledge, Financial Behavior and Financial Attitude. The content of each aspect is understood according to the interpretation of the World Bank (2013), specifically: *Financial knowledge* is an individual's understanding of basic financial concepts (inflation, compound interest,...) and how to recognize financial products/services as well as basic financial skills (payments, bank account...). Therefore, financial knowledge is a prerequisite for shaping financial attitudes and behaviors of each individual. *Financial Attitude* is an individual's view of the surrounding financial situation, including attitudes about saving, investing, borrowing, attitudes toward the future, and self-confidence toward retirement plans, saving trends, lending... Determining an individual's attitude towards economics and finance is a consequence of that individual's financial knowledge and creates a premise for financial behavior (financial decision making). Finally, *financial behavior* is understood as an individual influence on the volatility of financial issues around such as daily money management, long-term planning, making financial decisions (the ability to choose the right financial products) or seeking financial advice. Through individual's responses to financial issues, we can evaluate an individual's sensitivity to financial in the face of change.

Regarding the main factors affecting individual's FL, these are age, gender, and education level, based on strongly corroborated studies. Specifically, for students aged 15 to 22, Edwy et. al (2022) proved that FL increases with age. According to the author, as age increases, people become more knowledgeable, leading to a change in their attitudes and behavior. This result is confirmed by Le Hoang Anh et. al (2018). According to the research of Utami and Sitanggang (2021), university students have higher levels of financial literacy than high school students.

There are also gender differences in financial literacy. Research by Chen and Volpe (2002), Eitel and Martin (2009), Nguyen Thi Hai Yen (2015), Philippas and Avdoulas (2019) confirmed that men are financially savvy better than women. Meanwhile, Nguyen Thi Yen (2014), Nguyen Dang Tue (2017), and Le Hoang Anh et. al (2018) found the opposite result.

Regarding education, Philippas and Avdoulas (2019) point out that university students with Economics majors have better FL than students with other majors because they have access to financial knowledge at school. In addition, financial perception is also influenced by the number of years attending university: 3rd and 4th year students have better FL than 1st and 2nd year students. This result is supported by Le Hoang Anh et al (2018), Morgan and Trinh (2017), Pham Thi Hoang Anh et. al (2021), Tran Thanh Thu et. al (2021).

In addition, it had been found that income, occupation, and culture and living environment factors have a positive impact on an individual's FL (Pham Thi Hoang Anh et

al., 2021; Philippas and Avdoulas, 2019; Thapa et al., 2015). However, the factors associated with the digital transformation process have not been considered clearly and comprehensively, especially in Vietnam. However, a number of researchers around the world have proposed the relationship between the benefits of establishment through digital transformation and the FL of young people. According to Suratno et al (2021), students having the habit of online shopping have higher levels of FL than those who do not shop online because they are more agile when comparing prices on e-commerce platforms and understand product information better. Furthermore, Seldal and Nyhus (2022) state that today's young people are the group of people who use online payments most often, and that students who use online payment services have better FL than those who do not use this service. With regard to saving and investment behavior, Michaela et. al (2022) concluded that students who participate in investment activities have higher levels of FL because they have knowledge of choosing the right investment tools as well as an understanding of the benefits and risks of investment.

3. Method

3.1. Financial literacy scale and influencing factors

To measure financial literacy (FL), the authors use the concept and the questionnaire from OECD (2022), which, however, is selectively adapted to the age of 18 to 22 in Vietnam. FL is measured on three dimensions including financial knowledge, financial attitudes, and financial behavior. Specifically, the Financial knowledge variable is measured using 7 scales which are questions that test respondents' understanding of the time value of money, inflation, interest rates, savings, loans, investment, risk. Each question has specific answers and is then converted to a 5-point Likert scale from (1) respondents have no knowledge to (5) Respondents have reasonable knowledge of the question asked.

Table 1. Scale of Financial Knowledge variable

Symbol	Contents of the scale
K1	If you were given 100 million VND, would you like to receive it now or in 5 years, knowing the price of everything you want to buy stays the same in those 5 years?
K2	When the inflation rate increases, how will the money that you have to spend on daily living?
K3	Assume that you need to buy a laptop for 15 million. Store A offers a discount of 2 million, store B 10% off. Which store do you choose to buy from?
K4	You have 100 million VND in savings at the bank with an interest rate of 8%/year. After 2 years, what amount will you get?
K5	Today, you save money at the bank with an interest rate of 8%/year. If the inflation rate is 10%/year, after a year, what will this money be worth compared to now?
K6	You borrow 100 million from the bank, after 1 year you have to pay 106 million. What is the loan interest rate?
K7	Is it always better to split your investment into several different asset classes than to invest in a single one?

The Financial Attitude variable measures the thoughts or beliefs of each person about financial matters, measured by a 6 Likert scale with 5 points from (1) Totally disagree to (5) Totally agree.

Table 2. Scale of Financial Attitude variable

Symbol	Contents of the scale
A1	I find setting up a spending plan is necessary
A2	I find comparing and finding out the price before buying is necessary
A3	I find saving part of my income instead of spending it all is necessary
A4	I only borrow money when absolutely necessary (for compulsory expenses for living and studying)
A5	I think it is better to deposit my savings in a bank to receive a stable and safe interest rate than to invest in the stock market, cryptocurrency or business.
A6	I find diversifying investment activities is necessary

Financial Behavior variable represents an individual's specific response to changes in economic and financial fields, measured by a 6 Likert scale with 5 points ranging from (1) Totally disagree to (5) Totally agree.

Table 3. Scale of Financial Behavior variable

Symbol	Contents of the scale
B1	I strictly adhere to the spending plan
B2	I always compare prices before buying
B3	I regularly leave part of my monthly earnings for urgent future needs
B4	I rarely have to borrow money to spend
B5	I deposited savings instead of investing in stocks, cryptocurrencies, business,...
B6	I usually diversify my investments

Based on research literature, the factors affecting financial literacy include gender, age, education, and digital transformation factors (table 4).

Table 4. Scale of influencing factors

Variable name	Symbol	Contents of the scale
Gender	Gender	Gender
Age	Age	Age
Major	Edu	Major
Digital transformation	DT 1	Buy on e-commerce platform
	DT 2	Use shopping and payment apps on smartphones
	DT 3	Have your own bank account and use Smart Banking service
	DT 4	Interested in and making online investments

3.2. Research sample

Based on the allocation of 1,300 surveys directly to students in different universities in Hanoi in the period from December 2022 to February 2023, the research group received 1,114 responses qualified for analysis. The results are shown in Table 5.

Table 5. Structure of the research sample

Factor	Classification Criteria	Quantity	Percentage
Gender	Male	447	40.13%
	Female	661	59.34%
	Other	6	0.54%
Age	18	317	28.46%
	19	231	20.74%
	20	329	29.53%
	21	143	12.84%
	22	94	8.44%
Major	Engineering	264	23.70%
	Language	153	13.73%
	Economics and Business Administration	588	52.78%
	Other	109	9.78%
Buying on e-commerce platform	No	249	22.35%
	Yes	865	77.65%
Using shopping apps and online payment	No	176	15.80%
	Yes	938	84.20%
Having bank accounts	No bank account	25	2.24%
	Having a bank account, do not use Smart Banking	109	9.78%
	Having a bank account and use Smart Banking	980	87.97%
Investing online	Not interested in online investment	377	33.84%
	Interested, but not invested online yet	633	56.82%
	Interested and have online investment	104	9.34%

The above sample structure shows that the percentage of surveyed females is higher than that of males, mostly between the ages of 18 and 20. The number of surveyed students studying Economics and Business Administration is dominant among those studying engineering and language majors, which corresponds to the educational scope of the universities in Hanoi. Regarding digital transformation background, businesses that are actively changing the way they provide services have been making online purchases and payments, using Smart Banking and online investment become popular, especially after the outbreak of Covid 19 pandemic in early 2020. In the survey sample, 77.65% of students shop

on e-commerce platforms, 84.2% of them use online shopping and payment apps, and 87.97% of them have Bank accounts and use Smart Banking. This number is much higher than the average of 68% of the Vietnamese population who have a bank account². Also, regarding online investment activities, due to new capital requirements, and a certain level of understanding, the percentage of students investing online reaches 9.34%, while the proportion of students being interested in online investment (although not yet implemented) is 56.82%, accounting for more than a half of the research sample, demonstrating the sharp sensitivity and quick grasping to new trends of young people.

3.3. Data processing techniques

The following are the primary data processing techniques used for the research:

First, descriptive statistics. Frequency statistics to determine the sample structure. Mean statistics are used to describe the survey subjects' overall assessment of how many points are used on the scale (Likert 5), with an emphasis on the Mean, Max, Min, Standard Deviation.

Second, evaluate the reliability of Cronbach's Alpha. Cronbach's Alpha is used to evaluate termite relationships between variables in the same group. According to Hoang Trong and Chu Nguyen Mong Ngoc (2008), the value of Cronbach's Alpha coefficient from 0.6 or higher is the qualifying scale. Corrected Item - Total Correlation represents the relationship between an observed variable and all other observable variables on the same scale. According to Loiacono (2000), this coefficient should be set to ≥ 0.4 in order to select the best observational variables for a measurement scale.

Third, Exploratory Factor Analysis (EFA). EFA is used to reduce a set of many variables to measure interdependence into a smaller set of variables (called factors), ensuring that they are more significant but still contain most of the information content of the original set of variables. According to Hair et al. (2009), Factor loading with a value of 0.5 or higher, the new observed variable is evaluated as "statistically significant." In addition, the value of KMO must reach a value of 0.5 or higher as a sufficient condition for the factor analysis to be appropriate. Bartlett's assessment is statistically significant (Sig. < 0.05), showing that the observed variables are as a whole correlated. In addition, the total variance explained $\geq 50\%$ indicates that the EFA model is appropriate.

Fourth, One-way ANOVA. This analysis shows differences in FL between different groups in the same factor as shown in Table 5. In the Homogeneity test table, if Sig. value of Levene Statistic ≥ 0.05 shows that the variance between the choices of the qualitative variable is not different, see the results in the ANOVA table. If F's Sig. value in ANOVA rating table is < 0.05 , it can be concluded: There are statistically significant differences in the FL levels of different students in each group. In case Sig. value of Levene Statistic $< 0,05$, the equation hypothesis between groups of qualitative variables is violated. Then, look at the Robust Tests test table, if Welch's Sig. value is $<0,05$, it shows that there is a statistically significant

² <https://vnexpress.net/68-nguoi-truong-thanh-co-tai-khoan-ngan-hang-4477351.html>

difference in the levels of FL between the groups being considered. Specific differences between groups are expressed in the size of the Mean values in the Descriptives table (if there are only two classified groups) or Mean Difference and Sig. values on the Multiple Comparisons table of the Post Hoc query (if two or more classified teams are included).

4. Results

4.1. Assess the reliability of the scales for each aspect of Financial Literacy

By conducting the Cronbach's Alpha reliability test for each group of Financial Literacy, Financial Attitude, and Financial Behavior scales, the following results were obtained, as shown in Table 6.

Table 6. Summary of Reliability Statistics

Variable	Scale	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Financial Knowledge	K1	0.187	0.641	0.633
	K2	0.264	0.620	
	K3	0.340	0.602	
	K4	0.366	0.591	
	K5	0.452	0.557	
	K6	0.500	0.547	
	K7	0.333	0.601	
Financial Attitude	A1	0.526	0.607	0.684
	A2	0.572	0.599	
	A3	0.582	0.594	
	A4	0.440	0.636	
	A5	0.125	0.742	
	A6	0.359	0.661	
Financial Behavior	B1	0.441	0.585	0.650
	B2	0.368	0.612	
	B3	0.512	0.557	
	B4	0.346	0.620	
	B5	0.269	0.650	
	B6	0.361	0.614	

The results from Table 6 illustrate that Cronbach's Alpha coefficient of all groups is > 0.6, which shows that the groups of the variables Financial Knowledge, Financial Attitude, and Financial Behavior are suitable to represent the overall variable financial literacy. However, in each group of variables, only a few scales score best (Correct Item-Total Correlation > 0.4). The remaining non-standard scales are omitted. In particular, the best scales for the Financial Literacy

variable are K5 and K6. The best scales for the Financial Attitude variable are A1, A2, A3, and A4. The best scales for the Financial Behavior variable are B1 and B3.

4.2. Group of scales using EFA

The scales selected as the best in Step 1 continue to be analyzed by EFA to verify convergence. The results show that the KMO coefficient reaches 0.726 (> 0.5), so the factor analysis is reasonable. Bartlett's test has statistical significance (Sig. = 0.000 < 0.05), showing that the observed variables in the population are correlated with each other. The total variance explained is 66.04% $> 50\%$, proving that eight separate scales in three groups can converge and reflect 66.04% of the change in all observations. The grouping of the scales is shown in the Rotated Component Matrix table. Because the scales chosen to perform the factor analysis are already the best (according to Cronbach's alpha reliability test), the grouping results ensure that the scales are in the correct representative group and all convergent. Factor loading coefficients are all very high, ranging from 0.643 to 0.871, showing the ability to measure the overall variables.

Table 7. Rotated Component Matrix

	Component		
	1	2	3
A3	0.812		
A2	0.795		
A1	0.761		
A4	0.643		
B1		0.871	
B3		0.797	
K5			0.849
K6			0.838

4.3. Measure and evaluate Financial Literacy

From the selected scales, we extract data to measure each aspect of financial literacy, attitudes, and behavior with the Mean of the scale in the group. From there, calculate the level of financial literacy as the average of the three aspects above. The means of the component variables and the total variable are presented in Table 8.

Table 8. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Financial Knowledge	1114	1.00	5.00	4.1481	1.0716
Financial Attitude	1114	1.00	5.00	4.3754	0.6211
Financial Behavior	1114	1.00	5.00	3.6346	0.8191
FL	1114	1.00	5.00	4.0528	0.5381

The average score in Table 8 shows that while Financial Behavior is still lower than Financial Attitude and Financial Literacy, all three aspects are generally at Good levels (an

average of about 3.4 to 4.2 on the Likert-5 scale, leading to good financial literacy among Vietnamese students - a good sign that the results have improved significantly compared to previous studies by Le Hoang Anh et al. (2018), Pham Thi Hoang Anh et al. (2021), Tran Thanh Thu et al. (2021). Furthermore, good financial literacy is also possible because the respondents of this study are mainly students from the major universities in Hanoi such as National Economics University, University of Science and Technology, Foreign Trade University. With high admission scores, students at these universities are expected to have higher qualifications and skills than the current youth average.

4.4. Identify factors affecting financial literacy

Comparing the difference in financial literacy by One_Way ANOVA with all demographic variables and digital transformation contextual variables shows that there is only a statistically significant difference in financial literacy among gender, majors, and use of SmartBanking and online investing.

Table 9. ANOVA

Criteria	Sig. of Levene Statistic in Homogeneity	Sig. of F in ANOVA	Sig. of Welch in Robust tests
Gender	0.061 (> 0.05)	0.021 (< 0.05)	
Age	0.162 (> 0.05)	0.553 (> 0.05)	
Education	0.000 (< 0.05)		0.000 (< 0.05)
Buying on e-commerce platform	0.456 (> 0.05)	0.645 (> 0.05)	
Using shopping apps and online payment	0.073 (> 0.05)	0.943 (> 0.05)	
Having bank account and Smart Banking	0.000 (< 0.05)		0.031 (< 0.05)
Investing online	0.003 (< 0.05)		0.000 (< 0.05)

Look at the difference in financial literacy between groups of students using the mean in the Descriptive Table or Multiple Comparison Table (Post Hoc test) provided in Table 10.

Table 10. Difference of FL in Gender

Gender		Mean Difference	Std. Error	Sig.
Male	Female	0.0909	0.0329	0.006
	Other	0.1074	0.2206	0.627
Female	Male	-0.0909	0.0329	0.006
	Other	0.0164	0.2201	0.941
Other	Male	-0.1074	0.2206	0.627
	Female	-0.0164	0.2201	0.941

Table 10 shows a statistically significant difference (95% confidence level) between the financial literacy of male and female students, showing that male students have higher levels of financial literacy than female students. This result reconfirms the existing opinion of

Chen and Volpe (2002), Eitel and Martin (2009), Nguyen Thi Hai Yen (2015), and Philippas & Avdoulas (2019).

Table 11. Difference of FL in Education

Education		Mean Difference	Std. Error	Sig.
Engineering	Language	0.1258	0.0539	0.020
	Economics	-0.0525	0.0393	0.182
	Other	0.2403	0.0604	0.000
Language	Engineering	-0.1258	0.0539	0.020
	Economics	-0.1783	0.0481	0.000
	Other	0.1145	0.0665	0.085
Economics	Engineering	0.0525	0.0393	0.182
	Language	0.1783	0.0481	0.000
	Other	0.2928	0.0553	0.000
Other	Engineering	-0.2403	0.0604	0.000
	Language	-0.1145	0.0665	0.085
	Economics	-0.2928	0.0553	0.000

The results in Table 11 show that students with engineering or economics majors have higher financial literacy than languages and other majors (99% and 95% confidence, respectively). For the two majors Engineering and Economics & Business Administration, the difference in financial literacy is not statistically significant. Thus, the education sector is still a factor that leads to the disparity in financial literacy. Given the importance of financial literacy, schools from secondary school upward need to be careful to integrate financial literacy teaching into the curriculum at levels ranging from simple to complex. At the university level, there is a need to include compulsory or elective subjects related to financial services, investments, and insurance in the educational program.

Table 12. Difference of FL in Having and using Smart Banking

		Mean Difference	Std. Error	Sig.
No bank account	Having a bank account, do not use Smart Banking	-0.2911	0.1186	0.014
	Having a bank account and use Smart Banking	-0.3887	0.1083	0.000
Having a bank account, do not use Smart Banking	No bank account	0.2911	0.1186	0.014
	Having a bank account and use Smart Banking	-0.0976	0.0540	0.071
Having a bank account and use Smart Banking	No bank account	0.3887	0.1083	0.000
	Having a bank account, do not use Smart Banking	0.0976	0.0540	0.071

All Sig values. shown in Table 12 have Sig. < 0.05 or < 0.1 indicates a statistically significant difference (95% or 90% confidence level) in financial literacy between groups of students that who have bank accounts and use Smart Banking have higher financial literacy than students who have bank accounts but do not use Smart Banking.

At the same time, students who have an account but do not use Smart Banking still have better financial literacy than unbanked students. Therefore, having a separate bank account (with or without independent income) and using the Smart Banking application together have a positive impact on financial literacy as the research team suggested. This can be explained by the convenience of having a bank account in everyday spending and the usefulness of Smart Banking in making payments, managing balance fluctuations, and saving online. Students who use Smart Banking regularly have the opportunity to control their own money (supported by their parents or self-employed) more conveniently and easily than students who do not have bank accounts or do not use Smart Banking.

Table 13. Difference of FL in Investing online

		Mean Difference	Std. Error	Sig.
Not interested in online investment	Interested, but not invested online yet	-0.1408	0.0346	0.000
	Interested and have online investment	-0.2782	0.0589	0.000
Interested, but not invested online yet	Not interested in online investment	0.1408	0.0346	0.000
	Interested and have online investment	-0.1374	0.0563	0.015
Interested and have online investment	Not interested in online investment	0.2782	0.0589	0.000
	Interested, but not invested online yet	0.1374	0.0563	0.015

With 99% and 95% confidence levels, Table 13 clearly shows the statistically significant difference that the financial literacy of interested students with online investing is better than interested students who have not yet made online investments. And students who are interested but have not done online investing before still have higher financial literacy than students who are not interested in online investing. Such a positive effect corresponds exactly to the expectations of the research group. It shows the impact of the wide availability of investment products on online platforms on the financial literacy of young people. These days, students can easily and quickly learn and register to open an investment account, make transactions, summarize balances, and transfer principal/interest on a smartphone or computer connected to the internet. Investing online, even with a limited amount of money, is a helpful experience for students to practice risk assessment, determine expected returns, and manage portfolios. These are all essential and at a higher level of personal financial literacy. In

addition, the online investment experience from the student days also creates the prerequisite for effective management of one's asset portfolio in the future. Over time, these assets accumulate more and more. So, if they are well managed and continue to be profitable within the allowable risk threshold, it will increase the value of a person's wealth.

5. Conclusion

Based on the concept and measurement of Financial literacy of the OECD (2013) and OECD (2022), the research group created and developed a questionnaire (adapted) to survey 1,114 students at universities in Hanoi. The data collected are processed through Cronbach's Alpha, EFA and One_Way ANOVA & Post Hoc Test. The obtained results show that Vietnamese students have good financial knowledge, financial attitude, financial behavior in particular and FL in general (according to the interval assessment of the Likert 5 scale). This is a significantly improved result compared to previous studies and is above the general FL level of the population living in Vietnam. Regarding the factors affecting students' FL in Vietnam, using this sample, the authors discovered four factors leading to the difference in FL between groups of students including: Gender, Education, Having a bank account and Using Smart Banking, Having an online investment. Accordingly, male students have higher than female students. Students in Engineering, Economics & Business Administrative majors have higher FL than those in Language and Other majors. Related to the digital transformation situation in Vietnam, the authors found that having bank accounts, using Smart Banking, having interest and making online investments have contributed to the increase in students' FL. These are new, valuable insights that represent another positive influence of the digital transformation in addition to the effect on business performance of enterprises and customer satisfaction (mentioned in many reports, and other studies).

The above results also provide a scientific basis for Vietnamese government's solutions to improve the financial literacy of young people and the resident population, promoting financial inclusion strategy. Accordingly, there is a need to create opportunities for equal access to FL education for both genders, and to supplement FL educational content in educational programs from high school to university, continue to promote cashless payments and create opportunities for individuals to conveniently access and use modern transaction methods and financial instruments at low cost.

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STUDENT'S INTENTION TO USE E-LEARNING: CASE STUDY AT NATIONAL ECONOMICS UNIVERSITY

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Abstract

The study has completed the TAM technology acceptance model when researching the intention to use e-learning with selected external factors and examining the impact of these factors on the student's intention to use e-learning. pellets. The study uses a quantitative research method, in which the research model is tested with a survey data set of 789 students. The results of the analysis revealed that the information quality, experience of using computers, enjoyment, and belief in one's own abilities positively influence perceived usefulness and ease of use, and both. This perception has a positive influence on the attitude towards using e-learning. Besides, usage attitude is an important factor that positively affects the intention to use e-learning.

Keywords: *E-learning, TAM model, ICT, intention to use, NEU.*

1. Introduction

The continuous development of information and communication technology (ICT) has brought great strides to e-learning. The advantage of e-learning is to reduce the time and cost of learning (Muruthy & Yamin, 2017)¹. In addition, e-learning also allows access to necessary knowledge anytime, anywhere, not limited by geographical boundaries (Raspopovic et al., 2017). Besides, for students, the advantages of e-learning are more recognized in career development, academic achievement as well as social value (Divaris et al., 2008). Finally, e-learning meets the increasing needs of users to personalize learning,

¹ Muruthy, A. E., and Yamin, F. M., 2017. The perception and effectiveness of Learning Management System (LMS) usage among the Higher Education students. *Journal of Technology and Operations Management*, 12(1), 86-98

allowing users to access the knowledge they are interested in, adjust the speed of the learning, and so on (Huang and Chiu, 2015).

The e-learning system is more dependent on digital media and telecommunications, so there are limitations that can negatively affect user satisfaction. Support from universities and organizations is needed to help solve the difficulties of using e-learning by ensuring proper design before students/users reach it.

In developed countries, the advantages of e-learning can be further promoted due to the development of physical infrastructure. On the other hand, e-learning systems in developing countries have been partially or fully applied in the learning process, but the effect has not been commensurate (Tarhini et al., 2017). Most e-learning implementation projects fail partially or completely due to resistance from users (Minh & Anh, 2020). This shows that the problem lies in not understanding the factors affecting the adoption of e-learning (Salloum, 2019).

Besides, most of the previous studies have focused on examining the impact of specific factors on the adoption of e-learning. But those factors often vary from study to study depending on the individual and the context. In particular, during the period of the COVID-19 epidemic occurring, education and training work was almost entirely suspended. Facing this situation, many Vietnam's universities have implemented the application of e-learning systems to ensure uninterrupted learning. At the same time, the university introduced and applied the e-learning system, including learning management systems (LMS) and communication systems (Microsoft Teams), thereby ensuring the learning process continues. However, the implementation and application of the e-learning system at that time and later still faced many difficulties and inefficiencies. It is clear that developed countries have used and studied the factors affecting the intention to use e-learning early on, have found the causes, provided solutions, and implemented them to improve the intention to use e-learning. Therefore, studying students' intention to use e-learning in Vietnam is necessary. Furthermore, conducting this research is very important, especially in Vietnam, where the application of e-learning is still limited (Pham & Ho, 2020).

2. Literature Review and Theoretical Framework

To explore the above limitations, the main purpose of the study is (1) *to complete the technology acceptance model (TAM) when studying the intention to use e-learning with selected TAM's external factors* and (2) *to examine the impact of the above factors on student's intention to use e-learning*, a case study at the National Economics University. In addition, considering these factors will strengthen researchers' ability on this topic and improve e-learning adoption rates by strengthening based on cultural, social, and technical factors and related techniques to facilitate use. Furthermore, an understanding of these factors is expected to help educators and business managers identify the strengths and weaknesses of e-learning infrastructure and enhance user support intention to use e-learning.

Definition of e-learning

E-learning is defined as a teaching and learning method that fully or partially represents an educational model based on the use of electronic media and devices as a tool to increase the effectiveness of training and communication, and interaction while helping to accept new ways of perceiving and establishing learning (Krishnan & Hussin, 2017; Rhema, 2013).

TAM technology acceptance model

The Technology Acceptance Model (TAM) proposed by Davis (1985) has been used in various studies, and since then, it has become one of the important tools in academia, especially in the study of technology acceptance. Besides, in a recent analysis, this model was also proven to be more effective than other models when applied to studying technology acceptance in education.

According to this model, both perceived usefulness and perceived ease of use are influenced by external factors. Those two perceptions are used to predict users' attitudes towards technology use. The figure below illustrates the TAM model.

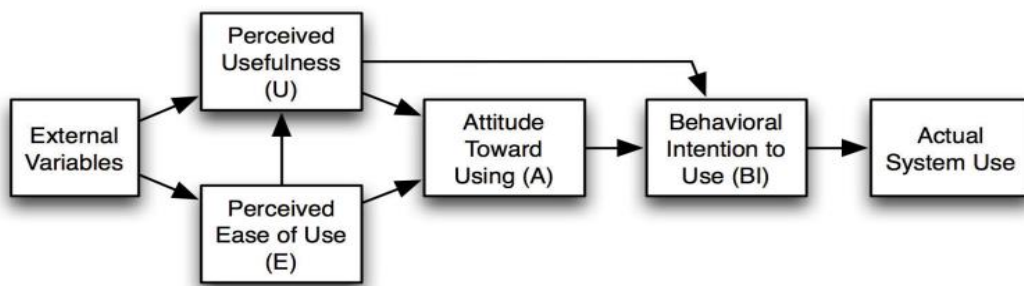


Figure 1. Technology acceptance model

Source: Davis (1985)

Technology acceptance model in predicting behavioral Intention using E-learning

The research review shows that the TAM model has been widely used and extended by many studies to evaluate and restructure the context of using e-learning. Two constructs of the TAM model (perceived usefulness and ease of use) have been applied to assess university students' acceptance of web-based courses (Selim, 2003). The results show that the usefulness and ease of use of the web-based course are proven to be the main determinants of the acceptance and use of the web-delivered course as an effective learning technology.

Abdullah and Ward (2016) identified 152 extrinsic factors by reviewing 107 articles published during the previous years. Their research results show that five factors such as *self-efficacy, subjective norms, enjoyment, computer anxiety, and prior experience* are considered to be the most used extrinsic factors. It has been found that the impact of the most widely used extrinsic factors is limited to the core beliefs of TAM, i.e. extrinsic factors affect only perceived usefulness and ease of use. Although the work of Abdullah and Ward (2016) has contributed significantly to the relevant rationale, their study did not include all relevant

research in the context of e-learning adoption and barriers. barriers to time and especially the development of technology in recent years. Therefore, this study aims to assess the influence of factors on students' intention to continue using e-learning based on the technology adoption model (TAM), applied to students at the University of National Economics.

Abdullah and Ward (2016) analyzed the previous studies using the TAM technology acceptance model in the use of e-learning. Research results show that there are only eight external factors (self-efficacy, subjective norm, enjoyment, system quality, content quality, knowledge quality, accessibility, and pleasure in using a computer) that have a relationship with TAM. Among the three influencing factors of the e-learning system, there are two factors that are system quality and content quality that will not affect students' intention to use e-learning because in the same research context at the university National Economics University, these two factors are the same for all students. The same goes for the "Elearning system Accessibility" factor (the extent to which users can easily access and use and extract information from the system). This is also a factor that will not change with students in the same university. The results identified five external factors that were chosen for the model.

Information quality (IQ)

Information quality refers to the issue that e-learning has new and updated knowledge useful for users' learning. In previous studies, there is a relationship between information quality and perceived usefulness, and perceived ease of use in the process of using e-learning (Jaber, 2016; Wongvilaisakul and Lekcharoen, 2015; Motaghian et al., 2013). Therefore, the following hypotheses are proposed:

H1a: Information quality (IQ) has a positive effect on the perceived usefulness (PU) of the e-learning system.

H1b: Information quality (IQ) has a positive effect on the perceived ease of use (PEU) of e-learning systems.

Prior experience (PE)

According to Abdullah and Ward (2016), prior experience is the most common factor when using the TAM model to predict e-learning acceptance. Previous literature also found evidence that prior experience influences perceived usefulness and perceived ease of use during e-learning use. Therefore, the following hypotheses are proposed:

H2a: Prior experience (PE) has a positive influence on the perceived usefulness (PU) of an e-learning system.

H2b: Prior experience (PE) has a positive effect on the perceived ease of use (PEU) of an e-learning system.

Subjective norm (SN)

Subjective norm is shown to have a strong relationship with the TAM model (Abdullah & Ward, 2016). Subjective norm is understood as an individual's perception that important people to that individual will influence whether that individual performs or does not perform a particular behavior (Fishbein & Ajzen, 1977).

In certain situations, there is a possibility that an individual may use a system (e.g. e-learning) to comply with the request of another (e.g. teacher, friend, parent, ...), instead of focusing on their personal feelings and beliefs (Davis, 1989). Previous studies have also shown that subjective norm has an influence on perceived usefulness in the process of using e-learning (Davis, 1989; Ajzen, 1991; Revyathi & Tselios, 2017). The following hypotheses are suggested:

H3a: Subjective norm (SN) has a positive influence on the perceived usefulness (PU) of the e-learning system.

H3b: Subjective norm (SN) has a positive influence on the perceived ease of use (PEU) of e-learning systems.

Enjoyment (ENJOY)

Enjoyment is defined as the extent to which a user enjoys using the information gathered from e-learning, regardless of factors such as computer performance.

To delve deeper into the adoption of e-learning, the study of user enjoyment plays an important role. Abdullah and Ward (2016) conducted a study showing that enjoyment significantly affects perceived usefulness and ease of use in the process of using e-learning. As enjoyment increases, so does the intention to use e-learning. From that, the following hypotheses are proposed:

H4a: Enjoyment (ENJOY) has a positive effect on the perceived usefulness (PU) of the e-learning system.

H4b: Enjoyment (ENJOY) has a positive effect on the perceived ease of use (PEU) of e-learning systems.

Self-efficacy (SE)

Self-efficacy is understood as an individual's belief in his or her ability to perform a particular task. Many studies show that self-efficacy is correlated with the perceived usefulness of e-learning (Chu et al., 2008). The following hypotheses are suggested:

H5a: Self-efficacy (SE) has a positive effect on the perceived usefulness (PU) of the e-learning system.

H5b: Self-efficacy (SE) has a positive effect on the perceived ease of use (PEU) of e-learning systems.

Perceived usefulness (PU)

Perceived usefulness refers to the extent to which individuals believe that using new technology can improve their job performance. Various empirical studies indicate that PU is the main determinant of the use of a particular technology.

An e-learning system can only be accepted by students when they perceive that its use will improve learning efficiency. Previous e-learning studies have shown that there is a significant positive correlation between perceived usefulness and behavioral intention to use e-learning. The following hypothesis is suggested:

H6: Perceived usefulness (PU) has a positive influence on attitude to use (ATT) e-learning system.

Perceived ease of use (PEU)

Perceived ease of use refers to how simple an individual feel when using a technological tool. Many studies show that perceived ease of use is positively correlated with behavioral intention to use, directly or indirectly. For e-learning, perceived ease of use refers to whether students find e-learning simple and easy to understand. From this, the following hypothesis is proposed:

H7: Perceived ease of use (PEU) has a positive influence on attitude towards using the e-learning system (ATT).

Attitude Towards Use (ATT)

Attitude refers to whether a person has positive or negative feelings about using e-learning. Many studies have shown that attitude has a direct influence on human behavioral intentions. So the following hypothesis is proposed:

H8: Attitude (ATT) has a positive influence on behavioral intention to use (INT) the e-learning system.

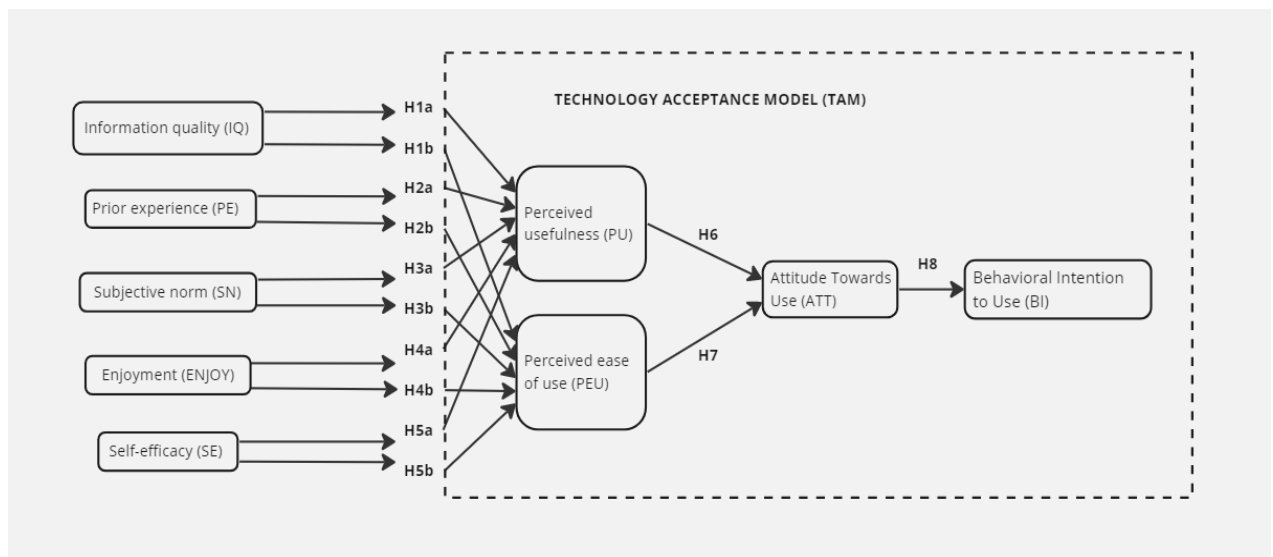


Figure 2. Research model and hypothesis

3. Method

The research team applied a quantitative method, based on primary data, collected through a survey of nearly 800 students of the National Economics University. After determining the factors for model building, research, and survey design with 32 questions, the survey was conducted in a narrow range to test the reliability and significance of the scale, then survey expansion. 789 valid questionnaires were collected and included in the analysis.

The scale prepared by the group is measured according to the Likert scale. The research team has built a scale with the specific observed variables as follows: The

information quality (IQ) scale is adjusted from the scale of Salloum & cs. (2019); The prior experience (PE) scale is adapted from the scale of Abdullah & Ward (2016); The subjective norm scale (SN) is adapted from the scale of Venkatesh & Davis (2000); The Enjoyment Scale (ENJOY) was adapted from the scale of Salloum et al. (2019); Scale of self-efficacy (SE) is adjusted from the scale of Bandura (1982); The perceived usefulness scale (PU) is adapted from the scale of Venkatesh & Davis (2000); Perceived ease of use (PEU) scale was adapted from the scale of Lee et al. (2009), Mohammadi (2015); The Attitude to Use Scale (ATT) was adapted from the scale of Masrom (2007), Sun et al. (2008); The Intent to Use Scale (INT) was adapted from the scale of Lee et al. (2009), Mohammadi (2015).

After the data is encrypted, SPSS 26 software will be used to test Cronbach's Alpha reliability coefficient, exploratory factor analysis (EFA), and correlation analysis. In which, the reliability coefficient helps to evaluate the reliability of the scale; exploratory factor analysis helps to evaluate convergent and discriminant values; Correlation analysis between the variables in the model to check the linear correlation between the dependent variable and the independent variable. The research team then uses regression analysis to test the hypotheses and draw conclusions. Finally, the research team used T-test and One-way ANOVA to test the differences in characteristics of the study sample.

4. Results

Descriptive statistics

The results obtained from the survey showed a large gender difference. Among 789 students participating in the survey, the female gender accounted for 73.9%, corresponding to 583 people while the male gender accounted for 26.1% with 206 people.

Scale reliability test results

The research team used Cronbach's Alpha coefficient to evaluate the reliability of each scale and performed exploratory factor analysis (EFA) to evaluate the convergent and discriminant value of these scales.

Cronbach's Alpha test shows that all observed variables have a total correlation coefficient greater than 0.3 and Cronbach's Alpha coefficient greater than 0.6. The results of evaluating the reliability of the scale by Cronbach's Alpha coefficient show that all the scales and observed variables are satisfactory. (Table 1)

The results of exploratory factor analysis EFA

For EFA exploratory factor analysis, KMO, and Bartlett tests are used to test the correlative relationship between variables and the fit of the factor analysis model, $0.5 < \text{KMO} < 1$, the factor analysis is fit. If this test is statistically significant ($\text{Sig} \leq 0.05$), then the observed variables are correlated with each other in the population (Hair, Anderson, Tatham, and William, 2006). Bartlett's test results have a KMO coefficient of 0.800, with the significance level $\text{sig} = 0.000 < 0.5$, showing that the observed variables are correlated with each other in the population, so the data used for analysis is completely appropriate.

Table 1. Results of testing the reliability of the scale

Factor	Number of observed variables	Cronbach's Alpha coefficient
Information Quality (IQ)	5	0,728
Prior Experience (PE)	2	0,830
Subjective Norm (SN)	2	0,920
Enjoyment (ENJOY)	5	0,755
Self-efficacy (SE)	3	0,706
Perceived Usefulness (PU)	4	0,832
Perceived Ease of Use (PEU)	4	0,767
Attitude (ATT)	3	0,841
Intention to Use (INT)	4	0,785

Correlation analysis results

Sig Pearson correlation between variables is less than 0.05. Thus, there is a linear relationship between the independent variables and the dependent variables. The correlation coefficient r between the variables also has a value of $r > 0$ showing that the variables have a positive relationship with each other. (Table 2)

Table 2. Results of Pearson correlation analysis among all variables

	IQ	PE	SN	ENJOY	SE	PU	PEU	ATT	INT
IQ									
PE	.339**								
SN	.406**	.335**							
ENJOY	.640**	.570**	.620**						
SE	.334**	.780**	.419**	.576**					
PU	.632**	.413**	.542**	.898**	.491**				
PEU	.900**	.254**	.356**	.497**	.304**	.475**			
ATT	.367**	.327**	.308**	.400**	.370**	.346**	.332**		
INT	.486**	.377**	.846**	.643**	.517**	.627**	.449**	.377**	

Note: (**) significant correlation at 0.01 level (1%); (*) the correlation is significant at the 0.05 level (5%)

Results of regression analysis and hypothesis testing

Since the model has many intermediate variables, the number of regressions to run will correspond to the number of variables that have a dependent role in the model. Thus, it is necessary to run four regressions. The sample regression model is written with the normalized regression coefficients as follows: (Figure 3)

$$PU = 0.106 + 0.922*ENJOY + 0.375*IQ + 0.233*PE + 0.123*SE$$

$$PEU = 0.202 + 0.988*ENJOY + 0.330*IQ + 0.172*PE + 0.136*SE$$

$$ATT = 2.421 + 0.243*PU + 0.216*PEU$$

$$INT = 2.242 + 0.377*ATT$$

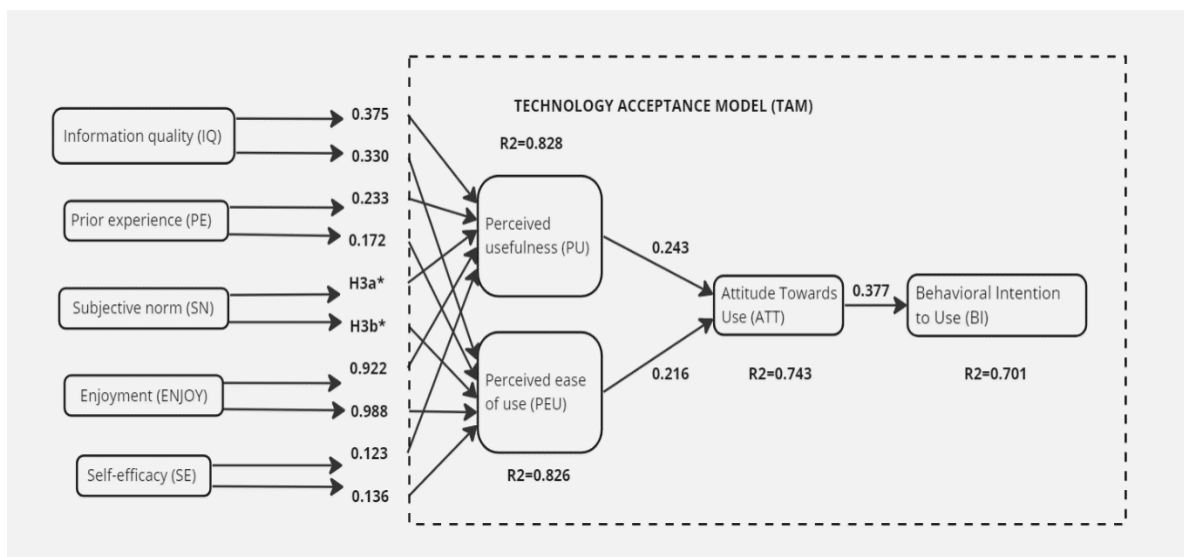


Figure 3. Results of regression analysis and hypothesis testing (*sig > 0.05)

Result of the difference test

Gender: Levene's sig value is 0.416 > 0.05, we can conclude that the variances of the groups of values are identical. Using the sig results in the ANOVA table, the sig value is 0.636 > 0.05, thus concluding that there is no difference in behavioral intention to use different e-learning between male and female genders.

Years of study: Levene's sig value is 0.115 > 0.05, we can conclude that the variances of the groups of values are identical. Using the sig results in the ANOVA table, the sig value is 0.079 > 0.05, thus concluding that there is no difference in behavioral intention to use different e-learning among students by year study differently.

Thus, through the analysis results, we can confirm that the results of the initial hypotheses are as follows:

Hypothesis	Results
H1a: Information quality (IQ) has a positive effect on the perceived usefulness (PU) of the e-learning system.	Supported
H1b: Information quality (IQ) has a positive effect on the perceived ease of use (PEU) of e-learning systems.	Supported
H2a: Prior experience (PE) has a positive influence on the perceived usefulness (PU) of an e-learning system.	Supported
H2b: Prior experience (PE) has a positive effect on the perceived ease of use (PEU) of an e-learning system.	Supported
H3a: Subjective norm (SN) has a positive influence on the perceived usefulness (PU) of the e-learning system.	Not supported
H3b: Subjective norm (SN) has a positive influence on the perceived ease of use (PEU) of e-learning systems.	Not supported

Hypothesis	Results
H4a: Enjoyment (ENJOY) has a positive effect on the perceived usefulness (PU) of the e-learning system.	Supported
H4b: Enjoyment (ENJOY) has a positive effect on the perceived ease of use (PEU) of e-learning systems.	Supported
H5a: Self-efficacy (SE) has a positive effect on the perceived usefulness (PU) of the e-learning system.	Supported
H5b: Self-efficacy (SE) has a positive effect on the perceived ease of use (PEU) of e-learning systems.	Supported
H6: Perceived usefulness (PU) has a positive influence on the attitude (ATT) e-learning system.	Supported
H7: Perceived ease of use (PEU) has a positive influence on attitude towards using the e-learning system (ATT).	Supported
H8: Attitude (ATT) has a positive influence on behavioral intention to use (INT) the e-learning system.	Supported

5. Discussion and Conclusion

The obtained results show that information quality has a positive effect on the perceived usefulness and the perceived ease of use of the e-learning system, similar to the results of Thai Kim Phung et al. (2016). This indicates that when the information quality of the e-learning system is guaranteed to be up-to-date and clear, students believe that using e-learning is useful for their learning and do not feel difficult to use. The above results also show that prior experience and enjoyment positively affect students' perceived usefulness and ease of use when using e-learning. Therefore, as students have more experience with the internet and electronic devices and show an open tendency to interact naturally with the e-learning system, the perceived usefulness of the system inevitably increases and usage is less supposed to be more complicated. Self-efficacy was also found to have a positive effect on perceived usefulness and ease of use. This means that e-learning is said to be more useful and easy to use when students believe that they can perform the tasks on the system to achieve the desired results.

Subjective norm was the only factor shown to have no impact on perceived usefulness and perceived ease of use. Research shows that nowadays e-learning has become an integral part of students' formal learning process, so students' perceptions and attitudes are not much affected by the judgments of people around them about this system. This result disagrees with the results observed in the previous study by Kimathi and Yi Zhang (2019) at the University of Dar es Salaam, Tanzania. This difference can be explained by the difference in context when our research was conducted after the Covid 19 epidemic, which made e-learning an indispensable and accepted part widely in the educational environment.

Regarding the components of TAM, the results show that perceived usefulness and perceived ease of use have a positive influence on the attitude toward the use of the e-learning system. This result agrees with the original theoretical foundation of TAM and is quite similar to the research results of Le Hieu Hoc and Dao Trung Kien (2016) when studying the factors affecting the intention to use e- student learning, a case study at Hanoi University of Science and Technology. So, when students believe that the e-learning system is useful and find the system user-friendly, their attitudes inevitably become better. Moreover, the study clearly shows that students' attitude has a significant positive influence on behavioral intention to use e-learning. When students express a positive attitude towards using e-learning, their behavioral intention increases. Using these factors, stakeholders can design and adjust the e-learning system to increase the motivation to use e-learning for learning purposes of students. Recognizing these factors can also help improve the capacity of researchers and improve the rate of intention to use e-learning in the Vietnamese context by looking at the factors studied in this study. this study.

The study reinforces the application of the TAM model along with additional factors to the model in the Vietnamese context. Research results also help to enhance and deepen the understanding of external factors and provide useful suggestions for policymakers, experts, developers, and designers in the application of effective e-learning systems.

Although the results of the study have played a certain role in perfecting the TAM model and describing the intention to use e-learning of students at the National Economics University, it has also set some limits. First, the subjects of the study were university students and did not consider the opinions of the instructors, and if the faculty responses were considered, comparisons between analyzes could be made. of instructors and students. Further research should consider this argument. Second, use patterns and determine user opinions and intentions for a single point in time. Therefore, it is advisable to do more research using follow-up surveys over a longer period of time as it is possible that individuals' perceptions and preferences will change as they gain more experience over time.

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THE IMPACT OF DIGITAL TRANSFORMATION ON USING ELECTRICAL PAYMENTS IN DAILY LIFE OF PEOPLE IN VIETNAM

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Abstract

This paper's objective is to analyze and assess the impact of digital transformation on electronic payment usage in Vietnam. The study uses the method of analyzing and testing the linear structural model (SEM) on SmartPLS 4.0 from 652 observations collected through surveys of businesses and consumers in urban and rural areas of Vietnam. After six months of collecting and processing data, the analysis indicates that factors of digital transformation, which are the Quality of Digital Infrastructure and Government Support, influence electrical payment usage. Although these two factors do not directly affect the behavior, they only affect mediately through the variables Usage Intention, Expected Efficiency, Expected Effort, Payment Intermediaries, Security, and Social Influence. The strongest median variable is Security, which has a direct effect on Usage behavior, and following Security is Payment Intermediaries. Therefore, the study wants to indicate aspects of Digital Transformation that the Government and administrators should pay attention to promote non-cash payment.

Keywords: *digital transformation, usage behavior, electrical payments, government support, infrastructure quality.*

1. Introduction

In recent years, the development of Digital Transformation in Vietnam has made great strides. The rapid growth of digital transformation has innovated all fields. Especially, according to statistics from the Payment Department of the Vietnam State Bank, in the first 11 months of 2022, non-cash payment transactions increased by 85.6% in quantity and

31.39% in value compared to the first 11 months of 2021; In addition, the total number of activated e-wallets across the country increased by 10.37% in the first four months of 2022.

Contributing to that successful transition is impossible not to mention government support and the digital infrastructure. New technologies such as AI and big data have been applied in many fields, especially banking, and finance. Besides, it is indispensable for the Government's attention to development orientation and legal framework building. It matters that technology goes first and management follows. Governance is not only based on the legal system to ensure security; but also policies to maintain and encourage the growth of e-payments, such as business, user support and contribute to solving difficulties in production and business, ensuring social security.

This is the era of digital transformation but authors found that there have been few studies on e-payments under the impact of digital transformation, especially in Vietnam. Therefore, in this research, the authors will look at two main aspects: Government support and Infrastructure quality. In addition, there are many social aspects that previous studies have not touched on. Thus, the research team focuses on illuminating the impact of Digital Transformation on Vietnamese people's behavior in using electronic payments based on direct and indirect relationships. The study uses qualitative and quantitative methods following the PLS-SEM model. The structure of the research paper consists of 5 parts: 1 - Introduction, 2 - Literature review and theoretical framework, 3 - Research method, 4 - Results and discussion, and 5 - Conclusion and policy implication.

2. Literature review and Theoretical framework

2.1. Studies on the intention and behavior of using electronic payments

Electronic payment is defined by Kalakota & Whinston (1996) as any form of money transfer made through electronic devices. With this payment method, users can transfer, deposit, and withdraw money from their accounts easier and faster than using cash. According to Yu et al. (2002), there are currently four major categories of electronic payment systems: (1) online credit card payment, (2) electronic cash, (3) electronic checks, and (4) small payments.

The behavior of using technology can be understood as the totality of actions and the process of realizing the need until deciding to consume and use any technology. When studying usage behavior, intention to use is currently the primary factor studied to predict the usability and behavior of using a product, especially new technology products.

Research papers on electronic payment are numerous and have appeared early since the 2000s, in which the TAM model is commonly used. However, recent studies prefer the UTAUT model, which has been applied more and proven its superiority; in particular, Judani & Sfenrianto (2015) based on the UTAUT model to build a Model of Factors Influencing Consumers' Intention To Use E-payment System in Indonesia, and Wei et al. (2021) surveyed 295 users to evaluate the Young Generation's Mobile Payment Adoption Behavior in Taiwan. Both of these studies believe it is necessary to expand the scope and research subjects to have a broader view regarding the factors affecting the behavior of using electronic payments.

Most studies on the usage of new technology in Vietnam use the TAM model. Dao My Hang et al. (2018), when finding factors affecting the decision to use fintech services in payment activities of individual customers in Vietnam, suggest that banks should improve their technology infrastructure. However, the study only includes motivational factors, so further studies should also focus on objective factors such as social norms. While Pham Mai Khanh et al. (2021) found a new factor, Payment Intermediary, which was added after in-depth interviews with several customers using electronic payments. In the results, Payment Intermediary and Subjective Norm are tested to have the most impact on Attitude to use.

Studies using the UTAUT model in Vietnam, for instance Nguyen Duy Thanh and Cao Hao Thi & Nguyen Duy Thanh (2011) and Dao Thu Huong (2019). Nguyen Duy Thanh and Cao Hao Thi have added Legal Factors, which is a new and less noticed variable when researching consumer behavior. 24.76% of those surveyed were not aware of legal factors because they thought it was a factor in the macro scope. This shows that legal factors related to e-banking and electronic transactions have not been paying much attention in Vietnam. Similar to Dao My Hang et al. (2018) Nguyen Duy Thanh and Cao Hao Thi proposed that banks should pay more attention to technology infrastructure, especially security.

2.2. Studies on the impact of digital transformation

According to the Ministry of Information and Communications, digital transformation is the procedure of total and comprehensive change of individuals and organizations in the way of living, working, and production methods based on digital technologies. There have been many research articles on the impact of digital transformation, in which topics related to the influence of digital transformation on changing consumer behavior are of the most focus. Digital transformation mainly affects consumer behavior by changing methods for communicating, finding, and exchanging information about products and services, as well as buying and consuming (Hennig-Thurau et al., 2010). Gensler et al. (2017) believe that the current trend is online shopping since with this type of shopping consumers can easily search and compare products over the internet. Similarly, the study of 3 authors Demmers, Weltevreden, and van Dolen (2020) has described this change in user behavior in detail, shopping is increasingly influenced by digital advertising and ease of shopping in digital markets, especially e-commerce sites. Besides affecting consumers, digital transformation also affects business operations and marketing. Firms have adopted technology in how and where they sell products and services; they also apply technology in communicating with users. As a result, a new business model - the digital business model - has emerged.

There are also research papers in Vietnam on the impact of digital transformation; Pham Thuy Hong (2020) has shown that because of the effect of the digital economy, consumers' shopping behavior has visibly changed. Digital technology has facilitated maximizing user benefits, increasing experience, and participating in solving businesses' and customers' problems. Similarly, there are many research articles depicting the impact of digital transformation on internal enterprises, such as Nguyen Hong Minh (2020), Pham Huy Giao (2020), Vu Trong Nghia (2021), Vo Huu Hoa (2021). Most of these studies illustrate the current state of digital transformation in businesses, thereby pointing out challenges and suggesting more effective digital transformation solutions for these businesses.

2.3. Foundational theories

The Unified Theory of Acceptance and Use of Technology (UTAUT) was developed by V. Venkatesh, M.G. Morris, and F.D. Davis (2003). They argued that researchers faced numerous similar models proposed by multiple theories and noted that they “picked and chose” models from models or chose a “preferred model,” with the result that other models were largely ignored. Thus, they synthesized the proposals made by different acceptance models, including TRA, TAM, TPB, C-TAM-TPB, MM, MPCU, SCT, and IDT) and proposed the Unified Theory of Acceptance and Use of Technology (UTAUT).

UTAUT includes four main factors: Performance Expectancy; Effort Expectancy; Social Influence; Facilitating Conditions. Another significant difference between UTAUT and its predecessors is that UTAUT proposed four moderating factors (i.e., gender, age, experience, and voluntariness of use) to boost the model’s predictive ability.

The superiority of the UTAUT model has been demonstrated in many studies, such as Foon & Fah’s study (2011), where they observed the intention to use internet banking services among 200 customers with accounts at Malaysian banks. The results showed that Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, all played crucial roles in influencing the intention to use internet banking. And their results also showed that their research model could explain an average of 56% of changes in intention to use the services. Due to the superiority of the UTAUT model over other models, the research team decided to rely primarily on UTAUT to construct their research model.

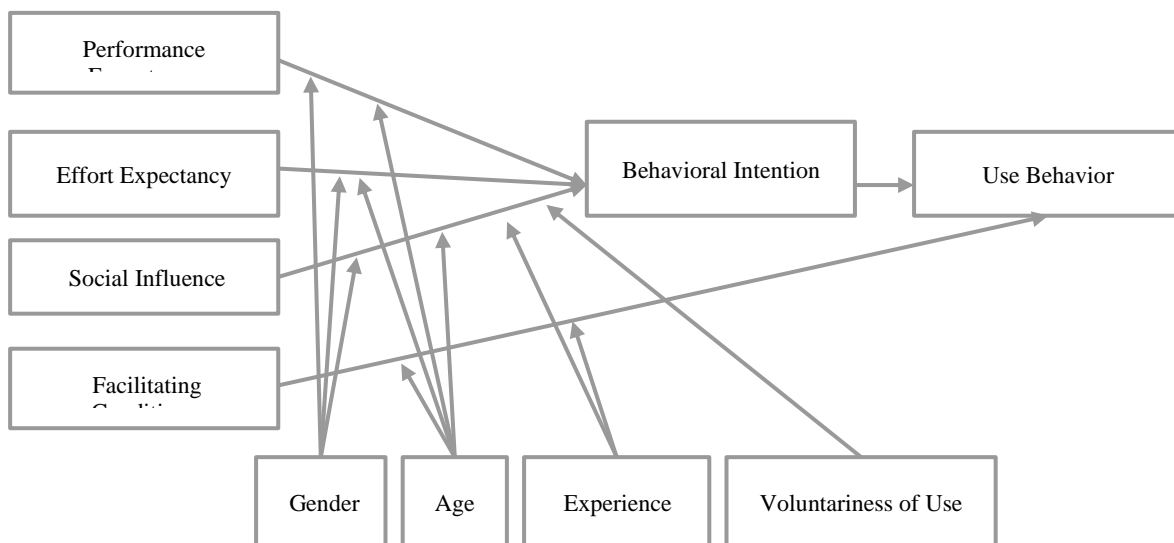


Figure 1. Unified Theory of Acceptance and Use of Technology Model

Source: Venkatesh et al. (2003).

2.4. Hypotheses and research model

Based on Venkatesh et al. (2003) and Foon & Fah (2011), the research team mostly used the hypotheses of the UTAUT model. However, to avoid unneeded and suit the research objectives, we removed the Facilitating Conditions hypothesis and variables. To explain this, we must look at the definition of Facilitating Conditions according to Venkatesh et al. (2003): Facilitating Conditions are the degree to which an individual has the necessary organizational and infrastructure support to use a technology system and the organizations or technological infrastructure operate to enhance and eliminate barriers to use. Meanwhile, the research objective focused on the intention and behavior of using electronic payments in a specific facilitating condition - digital transformation.

2.4.1. The Intention to Use electronic payments, Performance Expectancy, Effort Expectancy, Social Influence.

Venkatesh et al. (2003) concluded that behavioral intention strongly influences technology use. With electronic payments, Raza et al. (2018) research result confirmed that the intention to use electronic payments has an immense impact on the actual use. Pham et al. (2022), when studying the factors affecting the intention to use online banking, also agreed that intention positively affects the decision. Thereby, the research team proposed the hypothesis:

H1: The Intention to Use has a positive impact on Usage Behavior

2.4.2. Performance Expectancy

If customers have high expectations and see the usefulness of e-payment, they intend to use and continue to use e-payment; thus, the research team believes that Performance Expectancy positively impacts the intention to use payment service. There have been many foreign studies demonstrating that Performance Expectancy can explain the intention to use technology (Alalwan, 2015); and Performance Expectancy has also been shown to have a positive effect on the intention to use online payment services in Vietnam (Ha Nam Khanh Giao and Vo Van Linh, 2011; Tran Thi Khanh Tam, 2018). From that, the authors hypothesized:

H2: Performance Expectancy has a positive impact on the Intention to Use

2.4.3. Effort Expectancy

Effort Expectancy is proportional to the perceived ease of use of technology products and services (Ha Nam Khanh Giao and Vo Van Linh, 2011; Tran Thi Khanh Tam, 2018). Many research results show that Effort Expectancy not only has a positive impact on user intention but also has an indirect effect on increasing customer satisfaction, thereby affecting intention (Priya and Vikas Gandhi et al., 2018).

H3a: Effort Expectancy has a positive impact on the Intention to Use

There are several studies on the impact of Effort Expectancy on Performance Expectancy, such as Venkatesh and Davis' study (2000). They argued that when users find technology easy to use, they will evaluate it as helpful and intend to use it more. The final results of this study proved this point: Effort Expectancy had a direct and significant impact on Performance Expectancy. Therefore, the research team proposed the following hypothesis:

H3b: Effort Expectancy has a positive impact on Performance Expectancy

2.4.4. Social Influence.

Social Influence is defined as how a customer perceives and will use an electronic transaction service because of the influence of others around them. According to Philip Kotler, consumer buying behavior is strongly influenced by social characteristics. Research by Do Thi Huong et al. (2021) suggests that Social Influence positively correlated to the intention to use electronic payment at supermarkets in Hanoi. Moreover, it is also one of the two factors having the most significant impact on the intention to use electronic payments at supermarkets in Hanoi. As a result, the research team came up with hypothesis H4 regarding Social Influence:

H4: Social Influence has a positive impact on the Intention to Use

2.4.5. Security

Al-Dala'in et al. (2009) focused on finding the influence of reliability and security factors on user behavior in online services. The results of Luo et al. (2010) showed that both reliability and security factors significantly impact user behavior, which is similar to the findings of.

H5: Security has a positive impact on Usage Behavior.

2.4.6. Payment intermediaries:

Payment intermediaries play a role as intermediaries connecting businesses and customers and are the only party in e-commerce transactions that can verify the identity and location of sellers. And according to Nguyen Hong Quan (2021), e-commerce support policies include policy mechanisms, rules, and regulations of sellers or e-commerce service providers aimed at committing and ensuring consumers their obligations and responsibilities towards consumers who have used or are using e-commerce services to purchase goods through websites. Therefore, payment intermediaries have also been considered a vital factor influencing customer intentions and acceptance behaviors toward new technologies and features.

H6: Payment intermediaries has a positive impact on the Intention to Use

2.4.6. Digital transformation

➤ Government Support

In this study, Government support can be defined as the development of decisions and policies to promote the growth of Digital Transformation while protecting the rights and safety of society.

In Vietnam, decision 1813/QĐ-TTg 2021 approved the scheme on "The project of developing non-cash payment in Vietnam from 2021 to 2025". The project aims to promote electronic payments in the government sector and public administrative services. It strengthens the connection between payment service providers and payment intermediaries

with the Vietnam National Public Service Portal, the Electronic one-stop system of ministries, branches, localities, and hence facilitating electronic payment for fees, charges, payments of electricity bills, water, tuition, hospital fees, and so on. The convenience of using electronic payment services, therefore, increases significantly. Also, this could make people feel more comfortable using these services and enhance their usability.

H7a: Government support has a positive influence on Performance Expectancy

Furthermore, Dasgupta et al. (1999) argue that supportive government policies could improve the ease of use of e-services, facilitate people's access to e-services, and gain benefits through these services.

H7b: Government support has a positive influence on Effort Expectancy

In addition, citizens' trust in the government reflects the effectiveness of policies. Ergo, it can be seen whether the government has a positive or negative impact on the influence of society. According to Miller and Listhaug (1990), "Society's trust in government reflects judgments about whether government agencies and political organizations are functioning according to societal expectations. People's expectations of how the government works include: fairness, equality, honesty, effectiveness, efficiency, and meeting the needs of society."

H7c: Government support has a positive influence on Social Influence

Besides, the Vietnam Law on Cyber Information Security 2015 (No. 86/2015/QH13) has been enacted based on the experiences of other developed countries: the US, Europe, Japan, China, and many foreign organizations and enterprises. According to the report by Mr. Nguyen Phong Nha, Vietnam Deputy Director General in charge of the Department of Telecommunications, in 2021, the Department processed nearly 1.1 million SIMs with signs of improper subscriber information; blocked more than 78 million calls with signs of fraud; handle 227 thousand subscribers who spread spam calls.

H7d: Government support has a positive influence on Security

Moreover, Circular 23 shows the issue of great concern about payment intermediaries. Nguyen Hong Quan (2021) also pointed out that policy factors in the online payment environment are key to influencing user behavior. This factor relates to the regulations, commitments, and guarantees of payment intermediaries under the protection and control of the Government. Therefore, the authors proposed hypotheses:

H7e: Government support has a positive influence on Payment Intermediaries

➤ **Quality of Digital Infrastructure**

According to the Minister of the Ministry of Information and Communications, the Authority of Information Technology Application, considers digital infrastructure as a crucial and essential component for connecting, establishing, and maintaining the flow of data for the digital economy and society. This includes both physical infrastructure

(broadband telecommunications, data centers) and soft infrastructure (cloud computing, IoT connectivity) at high speeds and bandwidths to meet all the demands of the digital economy and society.

A United Nations Industrial Development Organization (UNIDO) report states that the Quality of Digital Infrastructure can help consumers make informed choices and help encourage businesses and industries to innovate in technology and organizational methods.

H8a: Quality of Digital Infrastructure has a positive influence on Performance Expectancy

In Bui Nhat Vuong's study (2021), it was also suggested that the development of technology, process improvements, and increased features help to support users in easy operation and utilization of technology services. It can be seen that the quality of digital infrastructure is the foundation upon which financial companies can deploy electronic payment services and provide diverse, user-friendly, and convenient electronic payment products. Based on this, the group puts forward the hypothesis:

H8b: Quality of Digital Infrastructure has a positive influence on Effort Expectancy

Moreover, the better the quality of infrastructure meets the needs, the more satisfied people will be and the more they will share with those around them. This is illustrated by the level of access to infrastructure such as the internet (the proportion of internet users in Vietnam accounts for over 70% of the population) and the percentage of internet users shopping online (88% in 2020, compared to 77% in 2019).

H8c: Quality of Digital Infrastructure has a positive influence on Social Influence

Additionally, according to Laukkanen and Lauronen (2005), individuals often have concerns about the security of personal information transmitted via mobile devices and applications, as well as connectivity risks (Black et al., 2001) and private issues (Kuisma et al., 2007). Therefore, it can be determined that a well-developed digital infrastructure plays a significant role in providing connectivity in payment transactions to avoid problems such as internet connection failures, system and maintenance failures, and errors due to human factors... to minimize manipulation, save time as well as prevent confusion and reduce the risk of leakage.

H8d: Quality of Digital Infrastructure has a positive influence on Security

Research by Yao et al. (2018) indicates that the rapid development of information technology and the Internet has changed consumer payment patterns. Consumers increasingly prefer online shopping and electronic payments. But credit risk is a major obstacle in the development of the e-commerce market (Yan and Chang, 2007), so payment intermediaries were born as a way to solve the problems of trust and security of financial transactions between people buy and sell (Cheng et al., 2017, similar to Wu (2020)). From the above arguments, the authors came up with the following hypotheses:

H8e: Quality of Digital Infrastructure has a positive influence on Payment Intermediaries

2.5. Research model

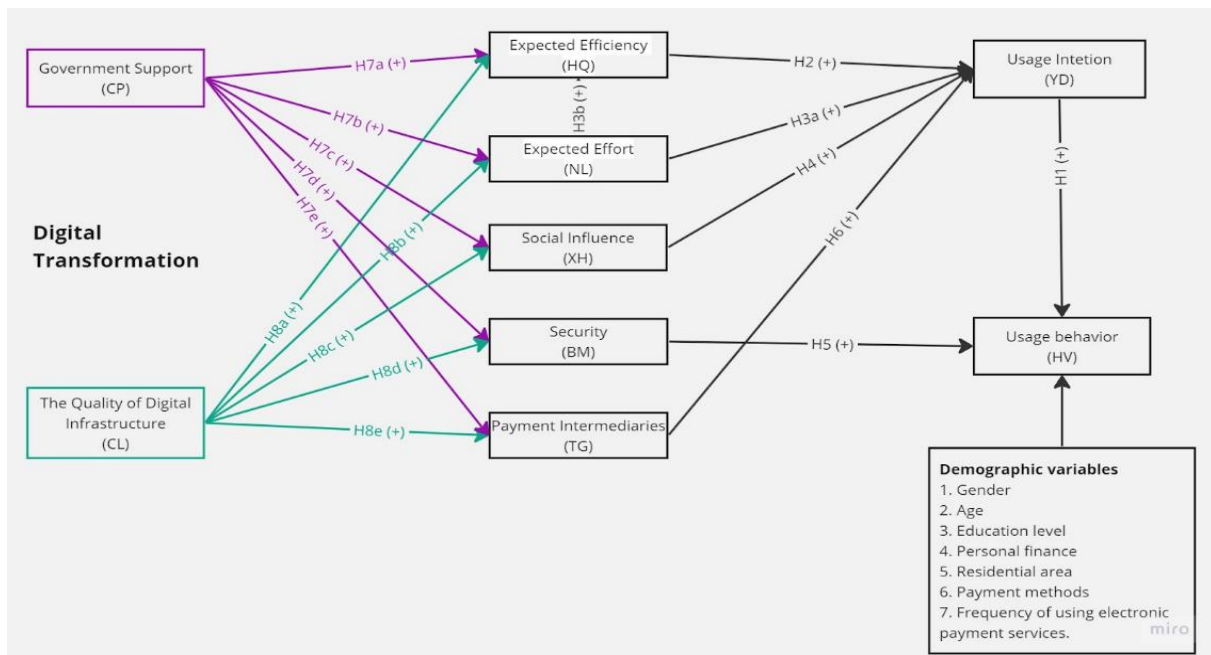


Figure 2. Proposed research model

Source: Authors' compilations based on Venkatesh et al, 2003

3. Method

The authors use research data including both primary and secondary data.

3.1. Qualitative research methodology

According to the result's in-depth interviews with 20 presidents and representatives of shops and businesses, the team also concluded on factors of the article: Government Support, Efficiency, Effort, and Payment Intermediaries variables have a positive impact on people's use of e-commerce; Infrastructure Quality, Security, and Social Influence have an unclear impact on intention to use e-commerce; survey subjects at different ages and regions also have dissimilar thoughts regard using e-commerce.

3.2. Quantitative Methodology

Our goal is to identify and measure the impact of factors affecting the behavior of Vietnamese people in using e-payment. The authors found that measuring observed variables by using Likert scale is the most optimal. This study was conducted in Vietnam based on 7 big variables and 37 observed variables; with the targeted object being people living across the country for more than six months (from August 5, 2022, to February 15, 2023); the scope allowed for online and direct surveys via questionnaires in the northern region.

In this study, the collected data has been checked, cleaned, stored, and analyzed using Excel, SPSS 20.0, and SmartPLS 4.0 software. Then, the Partial Least Squares Structural Equation Modeling (PLS-SEM) (Ha Nam Khanh Giao & Bui Nhat Vuong, 2019) will be

used to evaluate and conclude the relationships and intermediate roles of variables in the intention and behavior of using electronic payments by people in the context of the study.

4. Results

4.1. Descriptive statistical analysis

After distributing the survey questionnaire, the research team filtered the error results and obtained 652 valid votes, meeting the minimum number of requirements. The result, men accounted for 29.8%; women accounted for 70.2%; the proportion of people under 18 years old is 3.5%; the age group 18-25 accounts for 62.1%, the age group 25-30 accounts for 18.25%, the age group 30-40 accounts for 8.7% and the age group over 40 accounting for 7.4%; the proportion of people living in urban areas (Hanoi City, Hai Phong City) accounts for 56.5%, and people living in non-urban provinces (Hung Yen, Lao Cai, Thai Nguyen, Bac Ninh, etc.) accounted for 44.5%.

The survey shows Internet banking is the most used service by 82.8% of participants, and the least used service is for Online investment transactions with 11.3%. The results of the survey show survey participants are using e-payment quite frequently with 48.3% of participants using e-payment daily.

4.2. Testing measurement model

To assess the measurement model, the authors focused on the indicators: quality of observed variables, reliability, convergence, and the discriminability of the scales. Evaluating the quality of the observed variables: According to the results of Figure 3, all loading coefficients of all observed variables are greater than 0.708, satisfying the quality according to Hair et al. (2014) since $(0,708)^2 = 0,5$, which means latent variables have explained 50% of the variation of the observed variable. Therefore, the scale has good internal consistency reliability.

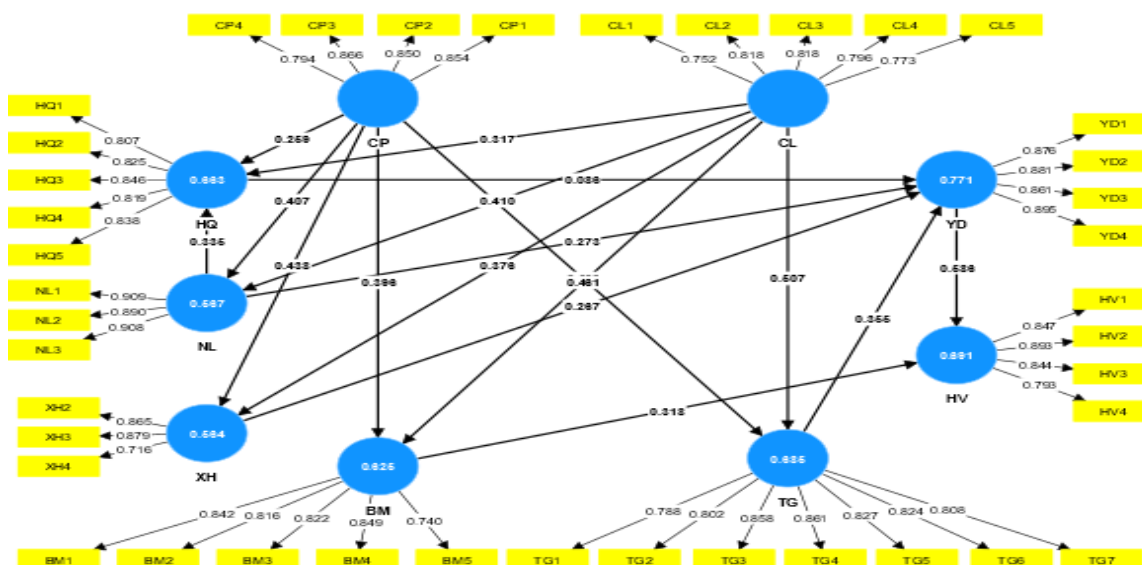


Figure 3. Results of the analysis of the quality of the observed variables.

Source: Results from SmartPLS analysis, 2023 data collected by the research team.

4.2.1. Evaluate the reliability and convergence of the scale:

From table 1, it is shown that all factors have Cronbach Alpha coefficients, Composite Reliability CR, and AVE coefficients that satisfy the combined reliability conditions that DeVellis (2012), Bagozzi & Yi (1988), and Hock & Ringle (2010) released.

Table 1. Reliability results and convergence value of the scale

Scale	Number of observed variables	Outer Loading	Cronbach's Alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average Variance Extracted (AVE)
Security	5	(0,740-0,849)	0,873	0,874	0,908	0,664
Quality of Digital infrastructure	5	(0,752-0,818)	0,851	0,852	0,893	0,627
Government Support	4	(0,794-0,866)	0,863	0,864	0,906	0,708
Performance Expectancy	5	(0,807-0,846)	0,884	0,885	0,915	0,684
Effort Expectancy	3	(0,890-0,909)	0,873	0,874	0,929	0,814
Payment Intermediary	7	(0,788-0,861)	0,887	0,888	0,937	0,679
Social Influence	3	(0,716-0,879)	0,921	0,922	0,863	0,678
Intention to Use	4	(0,861-0,895)	0,792	0,793	0,909	0,772
Usage Behavior	4	(0,793-0,893)	0,901	0,902	0,931	0,714

Source: Results from SmartPLS analysis, 2023 data collected by the research team

4.2.2. Testing the discriminant value of the scale

From Table 2, it is shown that all factors have the discrimination validity that satisfies the combined reliability conditions that Henseler et al. (2015) released (with the value is below 0.9, the discrimination will be valid). Therefore, it is satisfied to perform the next test.

Table 2. HTMT

	BM	CL	CP	HQ	HV	NL	TG	XH
BM								
CL	0,855							
CP	0,826	0,815						
HQ	0,750	0,842	0,817					
HV	0,806	0,765	0,738	0,767				
NL	0,723	0,799	0,794	0,829	0,785			
TG	0,846	0,879	0,834	0,835	0,827	0,830		
XH	0,820	0,841	0,863	0,813	0,845	0,806	0,829	
YD	0,741	0,770	0,777	0,825	0,897	0,877	0,892	0,899

Source: Results from SmartPLS analysis, 2023 data collected by the research team

4.3. Testing structural model

4.3.1. Structural model analysis results

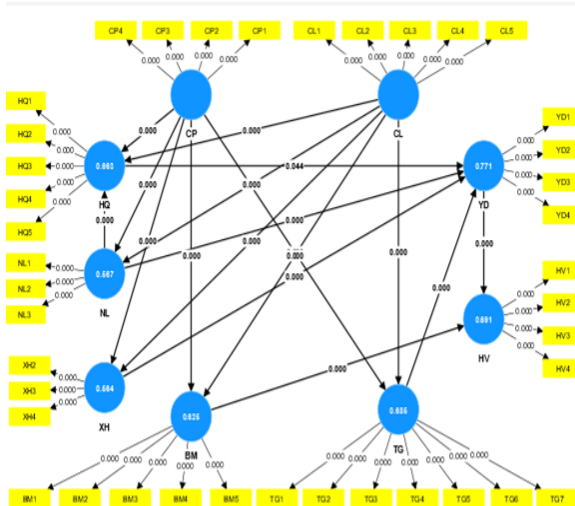


Figure 4a. Results of P value

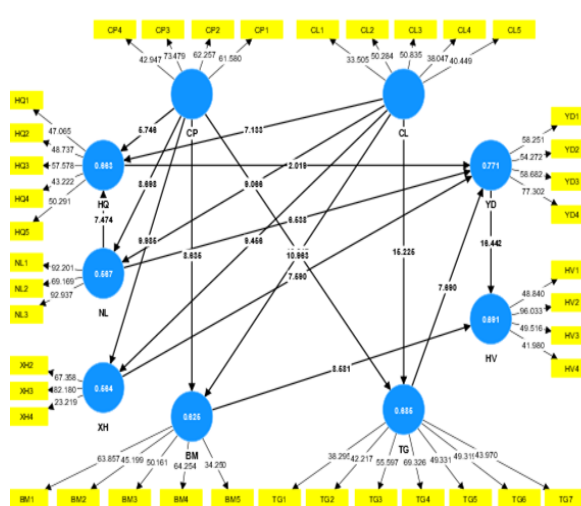


Figure 4b. Results of T test

Source: Results from SmartPLS analysis, 2023 data collected by the research team.

After testing the model's outer loading results, the research team continues to test T value in the figure below. The T values depicted in Figure 4b of the variables are all greater than 1.96, and all the P values (Figure 4a) are smaller than 0.05. This means the authors' hypotheses are correct

4.3.2. Testing multicollinearity problem:

To test for multicollinearity in the model, the team analyzed the variance inflation factor (VIF). According to Hair et al. (2019) $VIF < 3$ to reduce multicollinearity. Team's analysis showed that all the VIFs of the observed variables are between 1,337 and 2,886 that are smaller than 3, which means there may be no multicollinearity.

4.3.3. Testing relationships:

Before testing the level of impact between the relationships of the variables, the authors checked the P value in section 4.3.1, showing that these values are statistically significant.

➤ **The explanatory level of the independent variable for the dependency (R squared):**

Table 3. R-square, R-square adjusted

	BM	CL	CP	HQ	NL	TG	XH
R-square	0,564	0,625	0,663	0,691	0,567	0,771	0,685
R-square adjusted	0,562	0,664	0,662	0,690	0,566	0,769	0,684

Source: Results from SmartPLS analysis, 2023 data collected by the research team

Research results (Table 3) all show that the independent variable explains more than 50% of the predictive variability of the dependent variable. Specifically, the largest R-square adjusted is the variable YD with a value of 0.769; The smallest is the variable XH with R Square Adjusted reaching 0.562. Therefore, the authors found that the variables in the model have a good level of reflection.

➤ **Effect size f2 value (f squared)**

According to the results of Fig 5 f squared, the authors' analysis results are as follows:

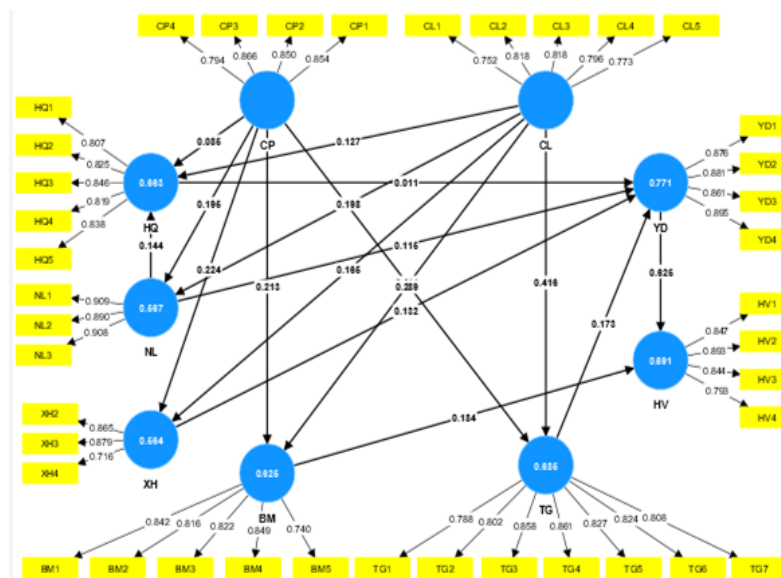


Fig 5. F square analysis results

Source: Results from SmartPLS analysis, 2023 data collected by the research team.

Firstly, Government Support and Quality of Digital Infrastructure both have a positive impact on Security, Performance Expectancy, Effort Expectancy, Payment Intermediaries, and Social Influence. Specifically, both CP and CL variables affect TG the strongest (0.244; 0.416); additionally, CL is considered to have a huge impact on TG because the f Square coefficient is in the range ≥ 0.35 (Cohen (1988)). Besides, CP and CL have the

lowest impact on HQ (0.085; 0.127), considering a small impact with the range of $0.02 \leq f^2 < 0.15$ (Cohen (1988)).

Secondly, Payment Intermediaries, Effort Expectancy, Social Influence, and Performance Expectancy have positive effects in descending order on Intent to Pay, respectively. Although the Performance Expectancy and Effort Expectancy factors have been widely accepted in many research papers such as Dao Thu Huong (2019); Dao My Hang et al. (2018); Wei et al. (2021), etc.; the authors' analysis shows that Payment Intermediaries (the highest f^2 (0.173)) and Social Influence (0.132) are the factors that have the highest impact on Intention to Use. Performance Expectancy according to the results is having little or no effect on Intention to Use (0.011). This might be true when Performance Expectancy no longer attracts the consumer's attention and influences their behavior.

Thirdly, the results also showed that Safety Security and Intention to Use have a medium and high impact on Usage Behavior, respectively. Moreover, Security is the only factor besides Intention to Use that directly affects Usage Behavior. It can be seen that in the current context, security is gradually getting more notice and may directly affect people's payment activities. Research by Luo et al. (2010) also shows that trustworthiness and safety have a significant influence on users' usage behavior.

Finally, Effort Expectancy is analyzed to have a small impact on Performance Expectancy, similar to the results of Venkatesh and Davis (2000).

➤ **Testing the intermediary relationship:**

Firstly, the results show that there is a difference in the level of influence between the separate indirect relationships of CP to HV. It is easy to see that $CP \rightarrow BM \rightarrow HV$ has the highest standardized regression coefficient with $\beta(CP) = 0.126$. Besides, the mediating effect level is respectively TG, XH, and NL, ($0.081 > 0.068 > 0.065$). The Government Support factor has included the legal element to present the Government's impact on Security and the intermediate impact on Usage Behavior. The results drawn from the group's analysis illustrate that CP affects HV through the mediated variable BM. This indicates a change in people's awareness compared to the conclusion of Nguyen Duy Khanh and Cao Hao Thi (2011): Legal factors have not been paid attention to and focused on in Vietnam. In fact, according to Kaspersky, in the first half of 2022, Vietnam detected and prevented 56,392 fake attacks targeting banks. Therefore, the legal factor affecting safety and security is currently a concern to people.

Secondly, the relationship of $CL \rightarrow BM \rightarrow HV$ (P value < 0.05 ; $T > 1.96$; $\beta(CL) = 0.147$) with the highest regression coefficient of all the mean effect relationships separate time between CL and HV; additionally, the results show the mediating effect of TG, NL, and XH decrease respectively.

The three Hypotheses $CP \rightarrow HQ \rightarrow YD \rightarrow HV$, $CP \rightarrow NL \rightarrow HQ \rightarrow YD \rightarrow HV$, and $CL \rightarrow NL \rightarrow HQ \rightarrow YD \rightarrow HV$ have all been rejected due to a P -value > 0.05 . This result can be explained by Fig 5, where the f -square value for Performance Expectancy is

considered to have the lowest impact and almost no effect on the Intention to Use E-payment (0.011). Additionally, this relationship involves multiple intermediate variables, which reduces the level of impact. Furthermore, Government Support has a weak effect on Performance Expectancy.

Comparing the influence between CL to HV and CP to HV depicts that the ranking of the relationship CP → BM → HV is in second place in terms of impact level, after CL → BM → HV, showing that to do well in security, the quality factor should be more concerned. Also, consider the relationship CL → TG → YD → HV, which is also higher than CP → TG → YD → HV. In addition, Performance Expectancy and Effort Expectancy no longer grab people's interest in electronic payments. This implies that amid the 4.0 revolution, the Government's primary effort to promote the digital economy is on businesses. The market economy (open economy) introduces many high technologies into Vietnam; as a result, people have high applicability and awareness; and focus on the quality of the electronic infrastructure and pay more attention to it. Due to market competition, technology growth changes strongly between domestic and foreign enterprises. Therefore, the products are gradually perfected and meet the maximum demand for use. However, CL → XH → YD → HV is lower than CP → XH → YD → HV. Hence, to promote the trend of not using cash, the Government should actively propagate and encourage the social community.

Table 4. Separate indirect impact results on Usage Behavior.

	Level of impact	T testing	P Value	Hypothesis testing
CP → BM → HV	0,126	5,691	0,000	Accepted
CP → TG → YD → HV	0,081	6,014	0,000	Accepted
CP → XH → YD → HV	0,068	5,354	0,000	Accepted
CP → NL → YD → HV	0,065	4,281	0,000	Accepted
CP → HQ → YD → HV	0,013	1,830	0,068	Rejected
CP → NL → HQ → YD → HV	0,007	1,859	0,063	Rejected
CL → BM → HV	0,147	7,083	0,000	Accepted
CL → TG → YD → HV	0,106	6,296	0,000	Accepted
CL → NL → YD → HV	0,066	5,413	0,000	Accepted
CL → XH → YD → HV	0,059	5,880	0,000	Accepted
CL → HQ → YD → HV	0,016	1,981	0,048	Accepted
CL → NL → HQ → YD → HV	0,007	1,896	0,058	Rejected

Source: Results from SmartPLS analysis, 2023 data collected by the research team

To test the relationship of aggregate indirect effects, the team continued to analyze and present in the table below:

Table 5. Summary table of indirect effects on Usage Behavior.

	Level of impact	T testing	P Value	Hypothesis testing
CL → HV	0,400	16,632	0,000	Accepted
CP → HV	0,360	14,599	0,000	Accepted

Source: Results from SmartPLS analysis, 2023 data collected by the research team

The analysis results show that the level of indirect effects from CL and CP to HV has $T > 1.96$; $P \text{ value} = 0.000 < 0.05$. Thus, there exists an indirect relationship between CL and CP to HV. The Total of the intermediate relationship will be equal to all the Specifics put together, so the Total of $CL > CP$ matches the result $(CL \rightarrow BM \rightarrow HV) > (CP \rightarrow BM \rightarrow HV)$.

Still, overall, Quality of Digital Infrastructure has the highest impact on Usage Behavior. From here, it can be seen that technology precedes management and follows; and technology development needs to be accompanied by governance to maintain stability and sustainable development.

5. Discussion and Conclusion

5.1. Policy implication

➤ For state management agencies

Firstly, it is necessary to advocate promoting the development of digital infrastructure to create a foundation for the growth of digital transformation in general and e-payment in particular. Sustainable development policies are needed to create a specific economic value with appropriate innovations for the future.

Secondly, the Government needs to orient, lead, and complete the legal framework related to payment risk management to ensure security, safety, and confidentiality in e-payment, as well as improve management and supervision activities for types, means, and electronic payment systems in Vietnam.

Thirdly, the Government needs to direct competent agencies to study and promulgate regulations on coordination mechanisms between credit institutions and payment intermediaries to create interconnection in payment, helping to save costs and increase convenience.

Finally, developing the electronic payment systems synchronously and continue directing local management agencies to promote communication activities to disseminate knowledge, raise awareness, and change behavior and consumer payment methods of both organizations and people; by that, improving access to and encouraging using electronic payment products and services in civil and commercial transactions.

➤ For businesses

Electronic payment services have been able to meet the existing desires of consumers; however, the development of electronic payment technology is slowing down. Therefore, to address this issue, businesses should actively innovate and develop their product ecosystem, expand new experiences, and strive for the best convenience.

Moreover, businesses need to focus more on digital infrastructure and technology to improve the electronic payment systems' efficiency, safety, and stability through regular updates and upgrades to ensure a smooth and trouble-free operation system.

In addition, businesses have to strengthen security by building and developing risk management programs for electronic payment systems or researching and applying new technologies for electronic payment systems, such as big data, blockchain, etc

5.2. Conclusion

This research is dedicated to revealing how digital transformation impacts the use of digital payment by Vietnamese people. Among the impacts of Digital Infrastructure Quality and Government Support to Usage Behavior through intermediate variables, the impact of Digital Infrastructure Quality on Usage Behavior is higher than that of Government Support.

Besides, the research also shows that Security and Payment Intermediaries are the two strongest intermediate variables that affect Usage Behavior. Expected Effectiveness has almost no direct impact on Usage Intention, and its role as an intermediate variable is also weak. Furthermore, there are differences in the Usage Behavior of Electronic Payment among age groups and residential areas of people.

Finally, the issues related to digital infrastructure and government support are multifaceted, and the current study did not delve deeply enough into their various factors, including the behavior of individual businesses. The most critical aspect, however, is the role of the government in ensuring the quality of digital infrastructure. This is an urgent matter since sustainable development of digital technology. Moreover, the study did not adequately address the social impact of digital infrastructure quality on usage behavior through intermediaries, despite clear evidence of its effects. Therefore, in future studies, the research team should narrow down the scope of businesses and conduct a more in-depth analysis of the social impact, government activities, and the catalyst effect of digital infrastructure in the digital transformation.

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IMPACT OF FINANCIAL LITERACY ON THE MIDDLE-AGED ACCESSIBILITY TO DIGITAL FINANCIAL SERVICES

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Abstract

The study aims to evaluate the impact of financial literacy (FL) on the ability of middle-aged people in Vietnam to access digital financial services (DFS), considering all three factors: financial knowledge, financial attitudes and financial behavior on accessibility to digital financial services (DFS) of middle-aged people in Vietnam. The research team utilised data collected through direct questionnaire surveys, and processed it through both quantitative and qualitative analysis, as well as in-depth interviews. The research results indicate that the factors of "financial knowledge," "financial attitude," and "financial behavior" are all positively correlated with the accessibility to DFS of middle-aged people in Vietnam. Based on these findings, the authors suggested some policy implications through programs and recommended policies with relevant agencies to enhance financial literacy and accessibility of middle-aged people to DFS in Vietnam.

Keywords: *financial literacy, digital financial services, digital economy, middle-aged, Vietnam.*

1. Introduction

In the digitalisation trend of industry 4.0, the financial services industry undergoes major changes, with technological driven innovations occurring in payments (instant payment, digital wallets) to credit (crowdfunding and online market lending), insurance (insuretech) and investment (robo-advice) to core banking (online digital banks), biometric identification or back-end support services (cloud-computing and big data) (OECD, 2020). These DFS benefit customers, financial institutions and the entire national economy, therefore, improving financial consumers' accessibility to DFS is essential in the current context.

However, DFS also poses significant challenges in choosing the suitable products and services and making accurate financial decisions for financial consumers. So as to do that, they need to be well aware of digital financial products and services in the market by

improving their FL. In Vietnam, the average FL level is very low, especially compared to other countries in the same region (Morgan and Trinh, 2019). According to Tran Thanh Thu et al. (2020), the level of interest in FL of Vietnamese people is lower than that of most Asian countries: the number of people with a high level of FL is only 24%, yet up to 93% of Vietnamese people do not intend to improve their FL.

As of 01/04/2019, the number of Vietnamese people in the middle-aged population group (45-65 years old) was 21.020.239, accounting for about 21,85% of the country's population and 32,13% of the labour force (15-65 years old). Middle-aged people contribute greatly to the economy because they tend to have higher incomes, spend more, generate tax revenue, contribute to social activities and create demand for products and services that stimulate employment growth. Lursadi and Mitchell (2011) have shown that middle-aged people have higher FL than younger or older people. However, middle-aged adults will often have difficulty learning and familiarizing themselves with technology, which, in turn, reduces their accessibility to DFS. As a result, improving FL and accessibility to DFS will help them realize the benefits of DFS, as well as protecting themselves against risks in the digital financial environment.

According to Morgan and Trinh (2020), FL has a positive correlation with Vietnamese people's accessibility to DFS. As a consequence, measuring the effects of FL on the accessibility to DFS of middle-aged people in Vietnam will contribute to taking appropriate measures to improve their level of FL and accessibility to DFS, improving the stability and development of the national economy.

In order to achieve the objectives of this study, in the next part, the authors will introduce literature review and overview of research. In Part 3, we will outline our research methodology, which is a combination of qualitative and quantitative research to analyze the effects of FL on accessibility to DFS. The research results (analysis of descriptive statistics and assessment of the impact of FL on middle-aged people's accessibility to DFS in Vietnam) will be presented in Part 4. Finally, Part 5 is the policy implications made based on the results of the research.

2. Literature review

2.1. Financial literacy

Previous studies have not yet provided a unified definition of FL (Gerrans and Heaney, 2016; Mabula and Ping, 2018). With a focus on financial knowledge, the OECD (2020) presents the most comprehensive definition of FL as “A combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial well-being”. With a focus on confidence in making responsible financial decisions, Warmath and Zimmerman (2019) have defined FL as the ability of a person to make effective financial decisions, where “competency” specifically refers to knowledge, skills, and self-efficacy. Kamiya (2017) associates the original definition of FL with “financial knowledge”, but the latest definitions now include or refer to the financial behavior of how consumers use and interact with the social and economic

environment. We found that the concept of FL includes several aspects: Financial knowledge (Kalekye and Memba, 2013; OECD, 2013; Lusardi and Mitchell, 2017; Kuntze et al., 2019; Ward and Lynch, 2019); Ability to communicate financial concepts (Remund, 2010); Ability to make sound financial decisions (OECD, 2020); Attitudes towards the use of financial products and services (OJK, 2021); Finance behavior (Vieira et al., 2018).

Therefore, we believe that FL is most related to concepts and ideas of financial knowledge, understanding concepts and applying them in the real world when making decisions about different options in financing activities such as saving and investing. We evaluate FL depending on three basic components: financial knowledge, financial behaviour, and financial attitudes.

(1) Financial knowledge

Financial knowledge is the most common element in many conceptual definitions of FL. Many previous studies have demonstrated the importance of financial knowledge directly affecting the level of access and effective use of main financial services. Specifically, people with higher financial knowledge are less likely to be taken advantage of or scammed (Andreou and Philip, 2018), less likely to take out loans beyond their ability to pay back (Lusardi and Tufano, 2015), well plan for retirement (Maarten van Rooij et al., 2012), participate more frequently in financial markets (Balloch et al., 2015) and have higher returns on savings accounts (Deuflhard et al., 2018).

(2) Financial attitude

The concept of financial attitude is defined as the mental state, viewpoint and financial judgement. Financial attitude affects how a person oversees financial management (Asih and Khafid, 2020); financial attitude shapes the way people save and spend money (Siswanti and Halida, 2020). Financial attitude plays a role in the individuals determining their attitudes and behaviours, both in terms of financial management, financial budgeting and decision making.

(3) Financial behaviour

There are many methods to define financial behaviour. Lusardi et al. (2010) assumes that financial behaviour is related to an individual's ability to project and manage personal finance in the direction of positive outcomes. Tezel (2015) describes financial behaviour as "the ability to capture the impact of financial decisions and correct decisions about cash management, precautions and opportunities for planning budget."

Many studies have proven that people with higher levels of FL are able to effectively participate in financial activities, such as deposits, mutual funds, and stocks (Yang et al., 2022). In addition, people with high FL established more mindful retirement planning (Clark et al., 2017) and sustainable investments (Aydin et al., 2019). On the other hand, low FL is related to limitations and restrictions in financial behaviour, such as less participation in financial markets (Bucher-Koenen et al., 2021), and making poor financial investment decisions (Lusardi and Mitchell, 2014).

2.2. Accessibility to digital financial services

According to the study of G20/OECD INFE in 2017, DFS can be defined as financial operations using digital technology, including electronic money, mobile financial services, online financial services, i-teller and branchless banking, whether through bank or non-bank institutions. DFS can encompass various monetary transactions, other financial products and services including payment, credit, saving, pensions and insurance and non-transactional services, such as viewing personal financial information through digital devices. From this perspective, in this study, the authors will focus on the accessibility of middle-aged Vietnamese to DFS in the following main areas: (1) Payment and money transfer, (2) Credit, (3) Savings, (4) Investment, (5) Insurance and (6) Budgeting and financial management.

Access to services means that people move forward, grasp and use the services that are necessary for their lives in the most effective and satisfying way. Hence, accessibility to DFS is the ability of people to be aware of and use DFS to satisfy their needs and benefit from it. In this study, we will approach DFS accessibility based on two dimensions: (1) being aware of the existence of DFS in the arrays mentioned above and (2) using those DFS. We chose to evaluate accessibility to DFS based on such two aspects because awareness of DFS is a prerequisite, a necessary condition for the use of that DFS. However, not everyone who is aware of the existence of DFS is willing to use that DFS, as financial conditions, individual demands, understanding of technology and digital finance, risk tolerance when starting to use a new service are different for each person.

2.3. Research hypotheses and model

a. Financial knowledge

Several studies have analyzed financial literacy for DFS adoption and use (Königsheim et al., 2017; Morgan and Trinh, 2019; Shen et al., 2018). Findings from both Kass-Hanna et al (2021) and Lyons and Kass-Hanna (2021) consistently indicate that financial literacy and digital literacy are key factors for building behavioral financial performance and long-term financial security. On the other hand, the lack of digital financial literacy is a potential threat to the financial economy, including individuals in the new age of digital banking.

⇒ H1: Financial literacy has an impact on middle-aged people's accessibility to digital financial services.

b. Financial attitude

The results of the study by Himawan and Wiyanto (2021) indicate that financial attitudes show a positive and significant impact on financial satisfaction and solutions in the use of non-cash payments. The results of another study, by Putri and Andarini (2022), show that a person's financial attitude can influence the use of Shopee pay in financial management. The results show that financial attitudes have a positive impact on Shopee pay service users. Foster and Johansyah (2022) suggest that financial attitudes have a significant positive effect on the use of cryptocurrencies. Thus, people with financial literacy and financial attitudes can encourage to use digital financial services such as digital wallets for payment.

⇒ H2: Financial attitudes have an impact on the accessibility to digital financial services of middle-aged people.

c. Financial behaviour

Several studies have attempted to discuss the relationship between DFS and financial behaviour. Garrett et al (2014) found that consumers using mobile payment devices are more likely to have high-cost debt, trouble with financial management, bad credit, card usage, and a lack of financial literacy. Yeo and Fisher (2017) investigated how online financial service users are affected by perceived behavioral control, subjective norm, and perceived usefulness.

⇒ H3: Financial behaviour affects middle-aged people's accessibility to digital financial services.

Synthesized from the above research hypotheses, we propose the following model:

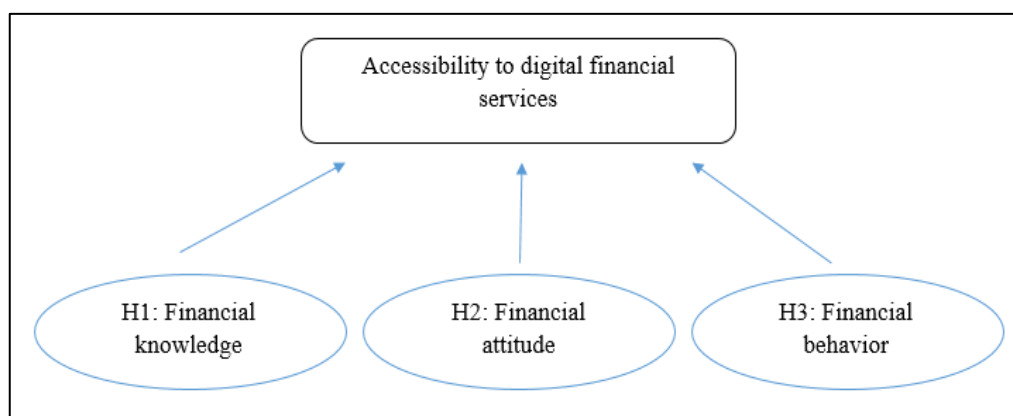


Figure 1. Research model

3. Method

3.1. Research methodology

In the scope of the research, the authors combined qualitative and quantitative research. Specifically:

Based on the synthesis and development of theories from previous studies, theories of financial literacy, accessibility to DFS, the authors have qualitatively analysed the factors affecting financial literacy and accessibility to digital financial services (DFS) among middle-aged people, as well as the impact of financial literacy on their access to DFS in Vietnam. At the same time, the study used quantitative methods and data modelling collected from individuals to obtain information on financial literacy, accessibility to DFS as well as other demographic information. The research developed a quantitative measurement scale for financial literacy and DFS access, where the set of indicators to measure financial literacy was constructed based on the OECD questionnaire (2015, 2016), research by Rooji et al. (2011), Ani Caroline Grigion Potrich et al.'s study (2016), Gian Paolo Stella et al.'s study (2019), and then adjusted to suit the middle-aged population in Vietnam. Specifically, the complete questionnaire to measure financial literacy included questions to measure Financial

knowledge (such as understanding of interest rates, inflation, time value of money, real value of money, stock market, definitions, and risk assessment, etc.); Financial attitudes (opinion on controlling spending/money management, willingness to invest/save or follow a spending plan, attitudes towards debt repayment, etc.); and Financial behaviors (cash management, budgeting/debt repayment/saving plans, etc.). The "Financial knowledge" scale consisted of 10 observation variables, the "Financial attitude" scale consisted of 8 observation variables, and the "Financial behavior" scale includes 8 observed variables. The survey tool was built based on observation variables measuring concepts in the model.

3.2. Research sample

The process of distributing survey questionnaires was collected from 20/12/2022 to 15/02/2023, mainly done online to save time and costs and increase access to middle-aged people and is also very consistent with the geographical distance between the researcher and the research object. After finishing, the author collected 1.117 answer sheets, went through the process of selection, cleaned the data by removing invalid answer sheets (only one column vote), and the total number of votes passed. The standard to include in the next analysis steps is 1.022 votes (accounting for 91,5%). The results of the descriptive statistics of the study sample obtained are as follows:

Regarding the gender of the study sample, there was not a big difference, and the proportion of women participating in the survey was higher than that of men, with 56% and 44%, respectively. This also shows that women have a certain level of interest in financial matters.

Regarding the living area, the authors found that in the survey, the number of respondents living in urban areas accounted for 77%, three times higher than in rural areas. This result can be explained by the fact that because the survey is mainly conducted using e-vouchers, the number of people in urban areas who have access to them will be higher than in rural areas. In addition, people living in urban areas will often have access to and be closer to financial issues than those in rural areas.

Regarding marital status, because the subjects of the research sample are middle-aged people, two common marital statuses are married and have children (69%) and married and have no children (14%). followed by middle-aged people who are unmarried at 12% and divorced at 5%.

In terms of education level, the majority of survey respondents have a university or college degree. From there, it is possible to ensure that the majority of people surveyed are mature and qualified enough to assess their accessibility to DFS objectively without being affected by transient subjective factors.

Regarding income, the group with income from 20 to 30 million VND/month has the highest proportion, at 35% of the total surveyed subjects. This is a stable income level compared to the conditions and living standards of many households and is common because their accumulated capacity and expertise in work increase over time, so this income level is reasonable.

4. Results and discussion

4.1. Descriptive statistic of accessibility to digital financial service

Regarding statistics on the awareness of digital financial products and services among middle-aged Vietnamese individuals: The proportion of middle-aged Vietnamese people acquainted with online payment services is overwhelmingly high (95%), primarily due to the impact of the Covid-19 pandemic and the government's promotion of online payments and other digital financial services in Vietnam. However, services such as credit, investment, insurance, and especially budget planning and management are considerably less prevalent, as these are not ubiquitous in everyday life.

Concerning the statistics on the utilisation of digital financial services among middle-aged Vietnamese individuals who are aware of them: The proportion of individuals utilizing online payment services is remarkably high (92%), indicating that this service is widely adopted in daily life. To satisfy their needs, users must inevitably execute payments for shopping or service usage. Conversely, services such as online savings, credit, insurance, investment, budget planning, and management are not obligatory necessities in life, so the proportion of middle-aged individuals who choose to use these services cannot be as dominant as online payments.

4.2. Impact of financial literacy on accessibility to digital financial services

After making EFA and CFA analysis to test the scale reliability and eliminate observable variables with unqualified loading factor, the authors obtained 6 factors observable variables with as:

Table 1. Summary of factors

No.	Factor	Observable variables	Type
1	Basic financial knowledge	FK1, FK2, FK3, FK4, FK5 (5 items)	Dependent
2	Advance financial knowledge	FK6, FK7, FK8, FK9 (4 items)	Dependent
3	Financial attitude	FA1, FA2, FA3, FA4, FA5, FA6, FA7, FA8 (8 items)	Dependent
4	Financial behavior	FB1, FB2, FB3, FB4, FB5, FB6, FB7, FB8 (8 items)	Dependent
5	Accessibility to DFS1	DFS1, DFS2, DFS3 (3 items)	Independent
6	Accessibility to DFS 2	DFS4, DFS5, DFS6 (3 items)	Independent
Number of dependent observable variables: 25			
Number of independent observable variables: 6			

Table 2. Model validity measures

Factor	Variable name	Composite Reliability (CR)	Average Variance Extracted (AVE)	Maximum Shared Variance (MSV)
Basic financial knowledge	FK_CB	0,929	0,622	0,319
Advance financial knowledge	FK_NC	0,908	0,554	0,319
Financial attitude	FA	0,839	0,515	0,105
Financial behavior	FB	0,805	0,512	0,100
Accessibility to DFS1	TC_1	0,767	0,529	0,418
Accessibility to DFS 2	TC_2	0,761	0,533	0,418

All factors have qualified composite reliability ($CR > 0,5$). The observed variables are unidirectional measuring a latent factor and uniquely represent a latent factor.

AVE are all higher than 0,5, showing that 6 factors meet the requirements for convergent validity. Moreover, MSV values are all smaller than the corresponding AVE values, which means 6 factors have no discriminant validity concern.

The authors continue to build structural equation modeling (SEM) as follows:

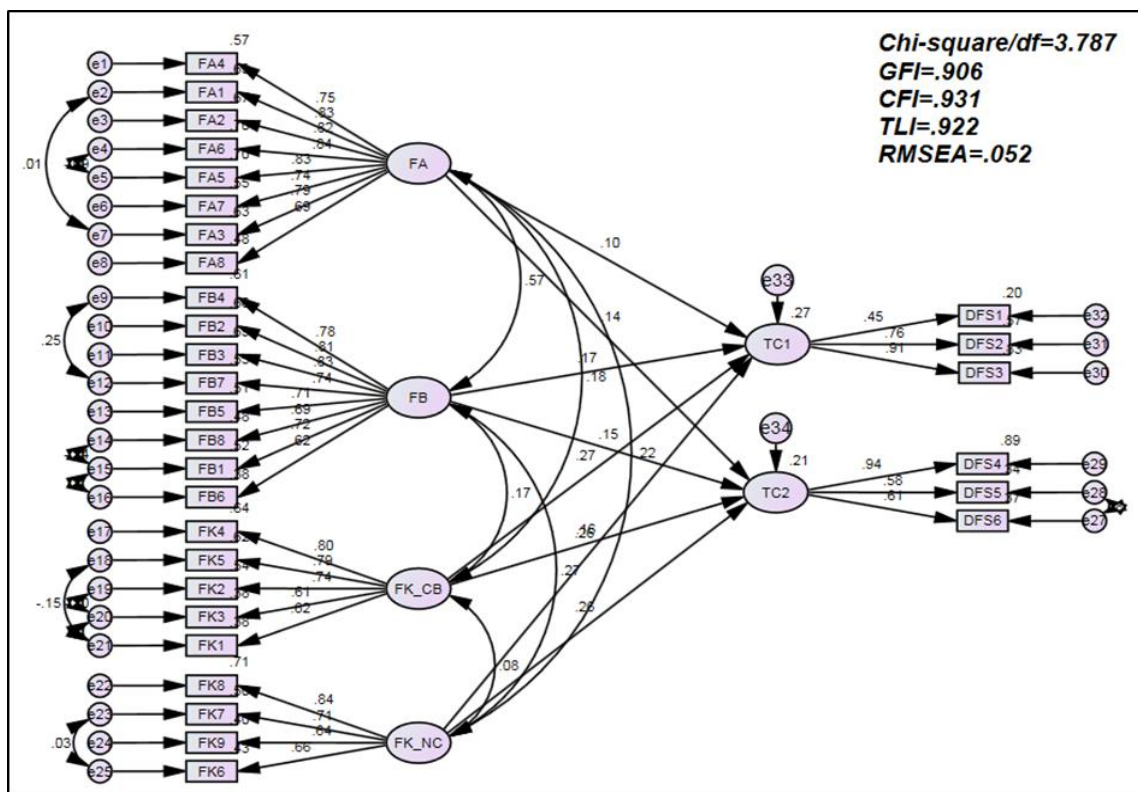


Figure 2. Structural Equation Modeling (SEM)

Table 3. SEM Standardised Regression Weights

Relationship between Variables			Standardised Regression Coefficient (SRC)	P-value
TC_1	←	FA	0,099	0,012
TC_1	←	FB	0,175	0,000
TC_1	←	FK_CB	0,266	0,000
TC_1	←	FK_NC	0,259	0,000
TC_2	←	FA	0,140	0,000
TC_2	←	FB	0,145	0,000
TC_2	←	FK_CB	0,157	0,000
TC_2	←	FK_NC	0,259	0,000

According to Table 3, all factors of the FL have P-value < 0.05, showing that with 95% confidence interval, these factors all have an impact on the likelihood of accessibility to both DFS groups (where TC_1 includes accessibility to services payment, savings and credit services; TC_2 group includes accessibility to insurance, investment, budgeting and financial management services).

Regarding the financial knowledge factor:

The SRC of FK_CB set in correlation with TC_1 is 0,266. This suggests that any increase in FL will lead to an increase in accessibility to payment, savings and credit services. Similarly, the SRC between FK_CB for TC_2 is 0,157. Consequently, we conclude that FK_CB has a positive relationship with the accessibility to insurance services, investment and financial management. FK_NC set in correlation with TC_1 and TC_2 both have a SRC of 0,259, showing that as financial knowledge is enhanced, it is positively correlated with DFS accessibility.

Positive relationship between FL and accessibility to DFS of middle-aged people can be explained by the following reason. As middle-aged people improve their financial knowledge, they will form the initiative to learn about financial services, thereby improving accessibility to DFS. Carrying the responsibilities of making decisions in household financial management, they need to be equipped with knowledge of financial products and services to ensure financial security in the digitalization trend and the rapidly developing context of DFS. Having good financial knowledge will increase the middle-aged group's level of readiness and confidence to adopt and use DFS.

Regarding the financial attitude factor:

The influence FA on TC_1 is 0,012, meaning that any increase in financial attitude will lead to an increase in access to payment, savings, and credit services. FA also has a positive relationship with TC_2 with a SRC of 0,140. It can be seen that if the financial attitude of middle-aged individuals becomes better, they will develop self-awareness about financial services, thereby enhancing their ability to access DFS.

When someone has a good financial attitude, it leads to appropriate and correct financial behaviour, thereby expanding financial opportunities and closer access to DFS. Financial attitude affects how someone adjusts their financial behaviour, thereby creating an impact on DFS access. This is especially true for middle-aged individuals, most of whom have equipped themselves with certain financial knowledge and formed an attitude towards finance, gradually they actively participate in financial services and enhance their ability to access DFS.

Regarding the financial behaviour factor:

FB has a SRC of 0,175 in the correlation with TC_1, indicating a positive correlation, specifically when FB increases by 1 unit, it will increase TC_1 by 0,175 units. Therefore, financial behaviour is a factor that promotes the ability to access payment, savings, and credit services. In the relationship with TC_2, the SRC of FB is 0,145, showing that financial behaviour has a positive impact on the ability to access insurance, investment, budgeting, and financial management services: when FB increases by 1 unit, TC_2 increases by 0,145 units.

Along with the growth of the financial system, the development of technology, financial behaviour is increasingly perfected, and the sensitivity of middle-aged individuals to changes in the economy also increases, thereby reacting faster to the changes in digital financial services. Therefore, as the financial behaviour of middle-aged individuals improves, they have more opportunities to access a diverse range of digital financial services.

5. Discussion and Conclusion

At present, digital financial literacy remains relatively novel for the Vietnamese population, especially among middle-aged individuals. The challenges of acquiring new knowledge are compounded by their limited learning capacity compared to younger generations. Consequently, establishing guidance to enhance digital financial literacy faces significant obstacles. With a developing economy and burgeoning technology, numerous digital financial services have emerged in the market. Insufficient digital financial literacy adversely affects the accessibility of these services for middle-aged Vietnamese individuals in the current context. Based on this reality, the authors propose solutions to improve digital financial literacy in tandem with the direct dissemination of digital financial services to consumers, providing them with hands-on experience. Practical implementation proves considerably more beneficial than solely relying on theoretical instruction or hearing promotional messages.

Programs aimed at enhancing digital financial literacy, along with practical experiences, should be flexible and monitored for timely adjustments to suit the learning capacity of different target groups. Information from these programs should be derived from reputable sources, easily recognizable to facilitate comprehension and accessibility. Simplifying communication and standardising theoretical frameworks will enable middle-aged individuals to absorb this knowledge more effectively.

The government and local authorities should facilitate the widespread implementation of digital financial services within their jurisdictions. Additionally, policies

should encourage middle-aged individuals with limited education to proactively consolidate and improve their digital financial literacy. Moreover, support policies should enable middle-aged individuals to readily possess electronic devices and stimulate consumption of digital financial products and services, indirectly elevating living standards and fostering local economic development.

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THE IMPACT OF DIGITAL TRANSFORMATION ON CUSTOMER SATISFACTION TO DIGITAL BANKING SERVICE OF COMMERCIAL BANKS IN VIETNAM

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Abstract

The present study focuses on examining the interplay and correlation between the digital transformation process as assessed by the digital banking service quality components (Ease of use, Effectiveness, Interoperability, Privacy/ Security, Empathy, Responsiveness, Reliability, Service portfolios, Service charge) and customer satisfaction for digital banking services at commercial banks in Vietnam. The predictors (independent variables) for this study are the aforementioned service quality aspects and moderator is Service charge. The outcome variable (dependent variable) is customer satisfaction. The authors combined qualitative and quantitative research techniques to develop observed variables and assess the model's fit. This study can help banking leaders evaluate and improve the quality of digital banking services in the context of financial liberalization and globalization.

Keywords: *Banking service quality, Customer satisfaction, Digital Banking, Digital Transformation*

1. Introduction

In Vietnam, the government's program "National transition to 2025, orientation to 2030" has clearly stated that finance and banking is one of the fields with great social impact; and digitization should be prioritized. The requirement for banks is to improve the quality of digital banking services to meet the needs and improve customer satisfaction. The benefits of e-banking are great for customers, banks and the economy, thanks to its convenience, convenience, speed, accuracy and security (Do Van Huu, 2005). Service quality assessment

is an important leadership task needed to achieve organizational success (Glaveli et al., 2006). Cronin and Taylor (1992) described five dimensions (tangibility, reliability, responsiveness, assurance, and empathy) that constitute customer expectations of service. When information technology is applied to banks, the concept of electronic banking (e-banking) was born to create a new service platform to serve the requirements of a set of customers who have already participated and transferred change in the digital environment (Nguyen Thuy Trang, 2018). Therefore, a big requirement for Vietnamese banks today is to actively develop and improve the quality of e-banking services in order to best meet customer needs.

When deploying e-banking services at banks in Vietnam, the nature of the service environment has changed significantly, that is, the transition from the traditional environment to the online environment with a technology platform. Therefore, the traditional banking service quality assessment model will no longer be suitable with traditional scales, combining with the deployed e-banking service, it will require new scales to match with the new service deployed on the bank's e-banking platforms. Service Quality improvement is a key issue determining the very survival of the bank itself. The gap-model of the SERVQUAL instrument (Parasuraman et al., 1991) and BSQ models, that compares the perception of performance (P) to expectation (E), has been widely used in past studies in a variety of industries. This study will attempt to utilize the SERVQUAL measurement of Parasuraman, Zeithaml, and Berry (1991) in determining the existence of 'service-gaps' in commercial banks of Vietnam.

2. Literature review and Theoretical framework

2.1. Literature review

Regarding foreign studies, there are some typical studies that focus on customer experience and satisfaction when researching into the field of digital transformation. Research by Nuri and Andi (2018) examines the influence of service quality from four aspects: operational aspect, physical aspect, new technology and human aspect on customer experience. The study concludes that new operational and technological aspects have a significant contribution to customer experience, thereby creating customer satisfaction and customer loyalty in the context of Islamic banking. Firas et al (2021) researched and found out how digital transformation positively affects customer experience in the Palestinian banking sector because it makes the banking experience easier, faster and more flexible, helping to improve customer satisfaction and satisfaction. In Vietnam, the authors Trang Doan Do et al (2022) have concluded that quantitative transformation has a positive impact on the performance of Vietnamese commercial banks.

After reviewing relevant studies, the research team has discovered gaps and factors that are not suitable with the actual situation at banks as well as the consumer tastes of customers in Vietnam. Vietnam. Firstly, digital transformation has become a popular trend in economic sectors all over the world and has been deeply explored by many researchers. However, in the banking sector in Vietnam, there have not been many studies related to this

topic. Secondly, in terms of time, after the Covid-19 pandemic, customers' behavior and habits have changed a lot, especially in the banking sector. However, there are too few studies related to the influence of digital transformation on customer satisfaction with digital banking services in Vietnam, especially in the context of the ongoing Covid-19 pandemic. Third, in the field of Digital Banking, service quality is an important factor to help the Bank enhance its reliability and create trust for customers. However, the number of studies are too modest related to the quality of digital banking services, especially in Vietnam. In addition, the research team found that there are no previous documents or studies that have investigated or described the impact of digital banking services in commercial banks in Vietnam on customer satisfaction. We therefore believe that the results of this study will be unique and will complement this issue.

2.2. Theoretical framework

Digital banking and digital banking services

Digital banking includes the transition from traditional banking to technology-based banking, in which banking services are managed for customers through a series of open and customized channels such as machines and computers. automatic withdrawal (ATM) and mobile platform, online/Internet. These channels present a popular opportunity for banks to offer services to their customers such as mobile and online banking, text messaging, electronic reporting and bill payment. With digital banking, customers have the opportunity to fulfill their banking needs without going to a physical branch (Kimenyi et al., 2009).

Digital banking services as defined by Chikoko and Munongo (2015) is the use of the internet, mobile phones and any other electronic means as a distribution channel for banking services, including all services. traditional banking services such as balance inquiry, statement printing, transfers, transfer of funds to other accounts, bill payment, and new banking services such as presenting and paying electronic bills without necessarily visiting bank.

Quality of digital banking services (e-SERVQUAL)

For the digital banking, assessing customer service quality perceptions is becoming increasingly important and strategic for banks (Huei et al., 2018). Since Parasuraman et al. (1988) introduced a 22-item scale, called SERVQUAL, to measure service quality, this model has been widely applied across industries. The focus of SERVQUAL lies in the five dimensions of service quality made possible by an indirect (or objective) comparison between pre-purchase expectations and post-purchase perceptions of a company's performance. Previously, Yang & Jun (2002) also confirmed that there are 6 factors, namely: reliability, accessibility, ease of use, personalization, security and reputation that affect service quality. However, approaching from the perspective of customer satisfaction on the internet, Zeithaml et al (2000, 2002) have proposed an e-SERVQUAL model that includes 7 influencing factors: efficiency, synchronization, and reliability, personal data protection, response, reimbursement and contact. On that basis, Gerrard & Cunningham (2015) have studied more specifically with satisfaction with the quality of banking services on the internet including: presence, ease of use, reliability, responsiveness, safety, service situation,

staff quality. This result reinforces the study of Chu et al (2012) on the relationship between internet service quality, relationship quality and customer loyalty, which has shown relatively specific factors affecting affect internet banking.

2.3. Research model and hypotheses

Based on a review of the literature on service quality assessment guided by the adopted ES-QUAL and CLDVNHS models, the authors come to the conclusion that the combination of these two models will complement each other to provide a comprehensive understanding of the various aspects affecting customer satisfaction. Therefore, the research team proposes the following research model:

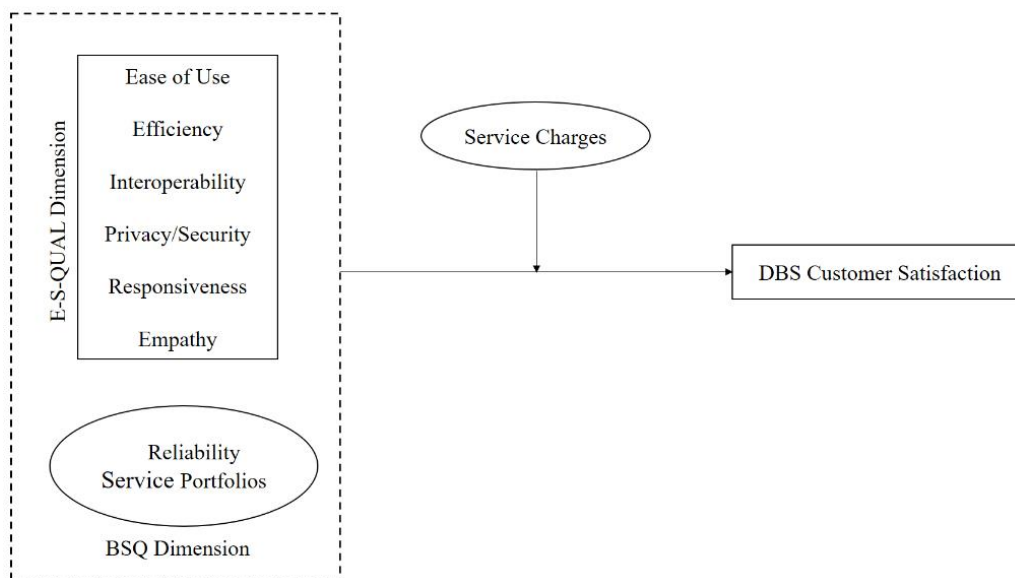


Figure 1. The impact of Digital Transformation on Customer Satisfaction to Digital Banking Service of Commercial Banks

Research hypothesis

➤ *Ease of use*

The user-friendliness of digital programs is described by their ease of use (Parasuraman et al., 2005). The simplicity of use has a major impact on utilization and customer satisfaction, according to Ketema and Selassie (2020), who evaluated banking apps during the COVID-19 pandemic. Similar to this, earlier research (Simon and Senaji, 2016; Zavareh et al., 2012) came to the conclusion that the usability of e-services has an impact on customer satisfaction. Therefore, this study hypothesized that:

H1: Ease of use of DB services is positively related with customer satisfaction

➤ *Efficiency*

Efficiency affects how quickly a platform can offer customers flexible financial assistance and how easily a digital platform can handle customer support queries (Ariff et al., 2013). According to Ankrah (2012), enhanced operational efficiency in the banking sector of Ghana has the potential to yield strategic advantages including increased customer satisfaction.

According to this, John and Rotimi (2014) contend that efficiency is still crucial for promoting electronic consumer satisfaction in Nigeria's banking sector. Also, recent research demonstrates that efficiency has a substantial impact on the pleasure of online customers (Amin, 2016; Raza et al., 2020). Given these perspectives, this study hypothesized that:

H2. The efficiency of the DB is positively related with customer satisfaction

➤ *Interoperability*

The capacity of an DB technology to connect to and communicate with other electronic banking systems is known as interoperability (Gupta et al., 2017). The national mobile money interoperability infrastructure in Ghana, for instance, has been integrated by banks to let users move money between two bank accounts or between many entities (GSMA, 2020). Bank customers are required to use the available platforms to carry out a range of financial activities because of the limitations placed on people during the COVID-19 epidemic (Kelecic, 2020). Moreover, Bourreau and Valetti (2015) contend that interoperability drastically lowers consumer conversions and related expenses because e-customers no longer need to switch between several digital platforms in order to carry out a similar task. According to this research (Bourreau and Valetti, 2015; Kelecic, 2020), there is a strong and positive correlation between Interoperability and consumer happiness. Therefore, we hypothesize that:

H3. DB applications interoperability is positively related with customer satisfaction

➤ *Privacy and security*

The security and privacy dimension evaluate how well a bank's digital platform safeguards the private and financial data of its customers (Parasuraman et al., 2005). Security is a significant issue in how customers perceive the quality of the services provided at COVID-19 in Ethiopia, according to Ketema and Selassie (2020). This claim is accurate because there are several security concerns caused by the limits placed on people that force them to rely solely on their DB applications for their financial transactions. According to research by Ketema and Selassie (2020), the level of security offered by mobile banking platforms has a big impact on how satisfied and trusted customers are. Customer happiness and the privacy/security of DB services are positively and significantly correlated, according to research by Ketema and Selassie (2020). Finally, we hypothesize that:

H4. The privacy/security of the DB service application is positively related with customer satisfaction

➤ *Empathy*

Empathy involves providing care and attention to individual clients (Parasuraman et al., 1988). Parasuraman et al. (1994) pointed out that quantitative research has acknowledged archetypal aspects of service quality including philanthropic safety, reliability, as well as empathy-level exposure. Potluri et al. (2016) describes empathy as the ability to take care of customers and show devotion to them independently, especially while providing services. Similarly, studies by Siddiqi (2011) in Bangladesh confirmed that empathy highly predicts customer satisfaction. Therefore, the next hypothesis stated is:

H5. The empathy of the DB service application is positively related with customer satisfaction

➤ *Responsiveness*

The willingness to assist clients and render prompt service is referred to as responsiveness (Akinyemi et al., 2010; Parasuraman et al., 2005). The capacity to promptly and professionally recover after a bank's digital service failure or outage can frequently produce a very positive sense of quality (Zavareh et al., 2012). Narteh (2018) draws the conclusion that a bank's capacity to provide high-quality service has an impact on customers' happiness in Ghana. Past research has demonstrated that customer happiness is impacted by the DB's response (Narteh, 2018; Al-Ghraibah, 2020). Therefore, in this study, we hypothesize that:

H6: DB service responsiveness is positively related with customer satisfaction

➤ *Reliability*

The DB platform's reliability is described as its capacity to carry out its functions in accordance with clearly defined mission characteristics without making mistakes (Bahia and Nantel, 2000; Parasuraman et al., 2005). According to Parasuraman et al. (1988), one of the most crucial aspects of service quality is reliability since customers want to know that the registered services can fully provide the service they have been promised adequate and precise (Parasuraman et al., 2005). Given that results in the provision of high-caliber services Customers' pleasure and loyalty are positively impacted by DB reliability, according to research by Raza et al. (2020) and Narteh (2018). Therefore, in this study, we hypothesize that:

H7. DB reliability is positively related with customer satisfaction

➤ *Service portfolios*

According to Bahia and Nantel (2000), the service portfolio refers to a collection of cutting-edge goods and services that adhere to its mission statement. Banks have shifted the majority of their traditional services to their digital platforms as a result of constraints put in place due to the COVID-19 epidemic. Customers, on the other side, are eager to anticipate bundled services on a consolidated platform from which they can (Mersha and Worku, 2020). Ghana's banking sector is competitive mostly as a result of the constant introduction of novel goods and services (Addai et al., 2019). It is clear that the service category significantly predicts customer satisfaction (Petridou et al., 2007; Narteh, 2018). Therefore, this study hypothesized that:

H8. The service portfolio of the DB applications is positively related with customer satisfaction

➤ *Moderator: Services charge*

Service fees are expenses related to using or gaining access to the DB (Bahia and Nantel, 2000). Senyo and Osabutey (2020) found that Ghanaian users of mobile banking were concerned about the cost of each transaction and came to the conclusion that lowering service prices would greatly increase customer satisfaction. There is evidence that the price-

quality relationship has not been thoroughly investigated (Kim et al., 2006, Toncar et al., 2010). In a recent study, Toncar et al. (2010) discovered that customers' evaluations of the quality of the service are influenced by the extent to which their fees expectations are realized. This leads us to conclude that clients' expectations for the amount they will pay will affect how good of a service they will receive. The charge a consumer anticipates paying for a specific service is known as the expected charge (Toncar et al., 2010). Fees fairness affects the customer's faith in and happiness with the service provider, according to Kim et al. (2006). As a result, in this study, we choose "service charge" as a moderate variable and propose the following hypothesis:

H9. DB service charge moderates the relationship between service quality of the bank and customer satisfaction

3. Method

Data collection: This study used survey questionnaires, both direct and indirect questionnaires with statistics analysis. The research team has collected 505 users of digital banking services in Vietnam who were surveyed using online forms and questionnaires created on a Google Docs Forms page.

Participants: The survey results showed that there was no significant gender difference between the survey participants: 220 of the survey participants were male (43.56%) and the remaining 285 survey (56.44%) participants were female. Statistical results on age show that the majority of survey respondents are between the ages of 18 and 39, accounting for 71.28%. Statistical results of survey respondents by education level show that the majority of respondents to the survey have an education level from high school or higher, of which the number of people with a university degree accounts for the highest percentage (64.95%). Meanwhile, the number of people with education level from upper secondary or lower and intermediate and advanced is very low, including only 24 people (4.75%). Finally, in terms of average income, 200 survey respondents had an income from 10 to 20 million dong (39.60%). The number of people with incomes from under 10 million dong and from 20 to 30 million dong were quite similar, were 130 (25.74%) and 119 (23.56%) respectively.

Data analysis: After collecting data, the authors synthesized, screened, coded and processed the data through SPSS software version 22.0 and AMOS. First, evaluating Cronbach's Alpha coefficient to assess the reliability of the scales, and at the same time evaluating the correlation coefficient of total variables to eliminate unsatisfactory observed variables. Exploratory factor analysis EFA and confirmatory factor analysis CFA were used to conclude the quality of the scale and the suitability of the proposed research model, preparing for the testing of the research hypothesis. Lastly, using linear structural model SEM with covariance-based approach (CB-SEM) to test the research model and research hypotheses.

4. Results

Reliability assessment

The results indicated that the Cronbach's alpha coefficient of the measurement scales were all above 0,7 criteria, specifically, $\alpha_{EOUS} = 0,820$, $\alpha_{EFF} = 0,743$, $\alpha_{INTE} = 0,804$, $\alpha_{SECU} = 0,712$, $\alpha_{EMP} = 0,912$, $\alpha_{RES} = 0,879$, $\alpha_{REL} = 0,755$, $\alpha_{SEPO} = 0,808$, $\alpha_{SEC} = 0,762$, $\alpha_{SAT} = 0,771$. Moreover, all observed variables in each measurement scale had inter-item correlation of the total score above 0,3, except for the observed variable of SAT1, which only reached a correlation coefficient of 0,228. Additionally, the inter-item correlation of the total score for SAT was only 0,322, which decreased the Cronbach's alpha value of the measurement scale. Therefore, the research team decided to remove the SEC1 and SAT1 variables from the model to improve the reliability of the measurement scales. As a result, it can be concluded that all of the measurement scales achieved consistent reliability, and 36 out of 38 observed variables were retained for further analysis in subsequent steps.

After using Cronbach's alpha coefficient to eliminate invalid observed variables, the research team conducted exploratory factor analysis (EFA) with Promax oblique rotation and Principal Axis Factoring extraction on all 36 observations of the factors. The Kaiser-Meyer-Olkin measure was 0.874, indicating that the data was suitable for factor analysis (Hair et al., 2009). The significance level of the Bartlett's test was Sig = 0.000, which confirms that the variables are intercorrelated in the population. All 36 variables were extracted into 10 factors with Eigenvalues greater than 1, with a total variance explained of 58,010%, indicating that the 10 factors account for 58,632% of the data variability. Thus, it can be concluded that the model is appropriate and the 10 factors can explain the data.

Confirmatory factor analysis (CFA)

The resulting fit indices for the model are were follows: $CMIN/df = 1,480 \leq 2$, $GFI = 0,916 \geq 0,8$, $CFI = 0,967$, $TLI = 0,962 \geq 0,9$, and $RMSEA = 0,031 \leq 0,08$. Based on these analyses, it can be concluded that all fit indices meet the required standards, affirming the appropriateness of the research model (Hair et al., 2010)

The results of Table 2 show that the CR of all constructs exceeds the recommended value of 0,6. Additionally, while most constructs have AVE values above the threshold of 0,5, the AVE of SEC, SECU, and EFF only reached 0,456, 0,466, and 0,491, respectively (close to but below 0,5). However, Fornell and Larcker (1981) suggested that when AVE values are below 0,5, but CR values are above 0,6 (the CR values of SEC, SECU, and EFF are 0,805, 0,715, and 0,439, respectively), the convergence value is still acceptable. Therefore, all measurement scales ensure reliability and discriminant validity (Hair et al., 2020).

Structural Equation Modeling (SEM) Analysis

The results of the goodness-of-fit test for the linear Structural Equation Modeling (SEM) show that the indices are as follows: $CMIN/df = 1,526 \leq 2$, $GFI = 0,925 \geq 0,9$, $CFI = 0,970 \geq 0,9$, $TLI = 0,965 \geq 0,9$, and $RMSEA = 0,032 \leq 0,08$. Therefore, it can be concluded that the research model fits relatively well with the market data (Hair et al., 2010)

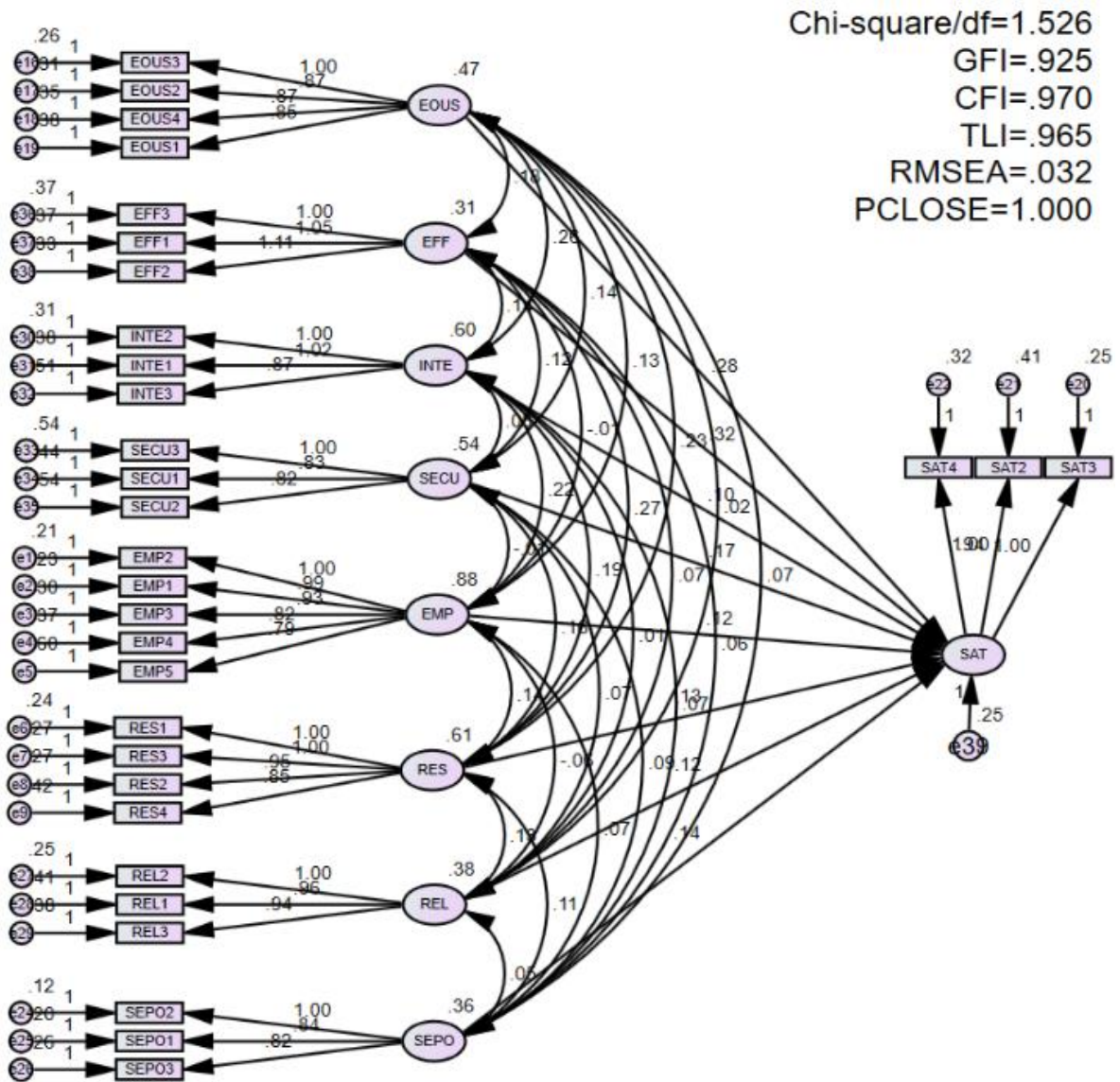


Figure 2. Normalized structural model

Table 1. Hypothesis test

	Path	β	S.E.	C.R.	P-value	Decision
H1	EOUS \rightarrow SAT	0,277	0,063	4,387	***	Supported
H2	EFF \rightarrow SAT	0,318	0,095	3,353	***	Supported
H3	INTE \rightarrow SAT	0,101	0,051	1,966	0,049	Supported
H4	SECU \rightarrow SAT	0,166	0,051	3,257	0,001	Supported
H5	EMP \rightarrow SAT	0,122	0,036	3,417	***	Supported
H6	RES \rightarrow SAT	0,130	0,060	2,181	0,029	Supported
H7	REL \rightarrow SAT	0,124	0,057	2,199	0,028	Supported
H8	SEPO \rightarrow SAT	0,135	0,055	2,480	0,013	Supported

The findings indicate that all hypotheses H1, H2, H3, H4, H5, H6, H7, H8 are supported at a statistically significant level of 5%. Specifically, Ease of use and Effectiveness have positive and the most significant influence on customer satisfaction (H1: $\beta = 0,277$, p-value = $0,000 < 0,05$), (H2: $\beta = 0,317$, p-value = $0,000 < 0,05$). Interoperability, Security, Empathy, Responsiveness, Reliability and Service Portfolio all have strong and positive impact on customer satisfaction (H3: $\beta = 0,101$, p-value = $0,0049 < 0,05$), (H4: $\beta = 0,166$, p-value = $0,001 < 0,05$), (H5: $\beta = 0,122$, p-value = $0,000 < 0,05$), (H6: $\beta = 0,122$, p-value = $0,029 < 0,05$), (H7: $\beta = 0,124$, p-value = $0,028 < 0,05$), (H8: $\beta = 0,124$, p-value = $0,028 < 0,05$)

Table 2. Moderating hypothesis test

	Path	β	S.E.	t	P-value	Decision
H9a	EOUS * SEC \rightarrow SAT	0,2553	0,0711	3,5901	0,0004	Supported
H9b	EFF * SEC \rightarrow SAT	0,4680	0,0608	7,7028	0,0000	Supported
H9c	INTE * SEC \rightarrow SAT	0,2353	0,0470	5,0079	0,0000	Supported
H9d	SECU * SEC \rightarrow SAT	0,2253	0,0613	3,6762	0,0003	Supported
H9e	RES * SEC \rightarrow SAT	0,3475	0,0555	6,2585	0,0000	Supported
H9f	EMP * SEC \rightarrow SAT	0,1352	0,0528	2,5593	0,0108	Supported
H9g	REL * SEC \rightarrow SAT	0,2269	0,0717	3,1673	0,0016	Supported
H9h	SEPO * SEC \rightarrow SAT	0,3241	0,0940	3,4488	0,0006	Supported

Regarding the moderating hypothesis, the analysis results show that all the moderating hypothesis H9 are accepted at a statistically significant level of 5%.

5. Discussion and Conclusion

5.1. Discussion

The independent factors "easy of use, efficiency, interoperability, security/privacy, insight comprehension, response, dependability and service category" all have a positive or negative impact on the dependent variable "satisfaction," according to the hypotheses H1, H2, H3, H4, H5, H6, H7, and H8. This finding is consistent with earlier studies by Egala (2019), Al-Ghraibah (2020), Ankrah (2012), and Ketema and Selassie (2020). In online banking, each single feature of effectiveness, system availability, fulfillment, privacy, contact, feedback, and individual. Although Ul Haq and Awan (2020) found that consumer happiness is connected with the privacy and security of digital applications, this association depends on the privacy and security of the platform. The study's findings are particularly significant because Ketema and Selassie (2020) discovered a link between customer happiness and how simple SQDB applications are to use. Similar findings are made for the variable "understanding" in Van Dinh and Lee Pickler's (2012) investigation of the connection between service quality and customer satisfaction in the retail banking industry. When employing multiple regression equations, knowledge and dependability have a considerably larger rate of positive influence than the other variables, with significant contributions of 0.26 and 0.28. This outcome is in line with the findings of Murali et al.

(2016) and Al-Ghraibah (2020), who discovered a connection between high-quality digital services and customer satisfaction and intention to stick around. In contrast to Agala's study from 2021, his other hypotheses, such as interoperability, responsiveness, and service category, had no effect on customer satisfaction. Yet, this outcome is consistent with the findings of the research team when the independent variable "Services charge" is allowed to operate as a moderator in the association between consumer happiness and the quality of digital banking services. The results demonstrate that the connection between independent factors and dependent variables is positively impacted by service fees. Service charge is an important factor for meeting customer demand for digital banking services of commercial banks in Vietnam, specifically, reasonable service charges can enhance customer satisfaction with service quality and strengthen the link between customers and the bank.

5.2. Summary and recommendations

In this study, we investigate how different facets of digital banking services offered by Vietnamese commercial banks impacted Vietnam as a whole and the banking sector in particular throughout the period of digital transformation. The Covid-19 pandemic, when digital transformation is viewed as a strategic and unavoidable step of the economy, and the rising popularity of "mobile banks" among Vietnamese banking service users served as the impetus for this study. The model put forth by the research team is entirely appropriate and has surprisingly precise predictions, according to the findings of the confirmatory factor analysis CFA in the preceding chapter. Theoretically, the research has contributed to building a model to evaluate the effect of digital transformation on customer satisfaction through measuring the quality of digital banking services in Vietnam. Indeed, the 9 aspects that the research team found have a positive effect on customer satisfaction in descending order as follows: Efficiency, Ease of use, Security and privacy, Service Category, Responsiveness, Reliability, Understanding, Interoperability. This is the basis for researchers to develop topics related to digital transformation in the future.

The research results of the project help commercial banks to save costs in researching and understanding the market. In the context of large competitive credit institutions in many fields, customer retention is therefore essential. Finding out about their experiences is a crucial step in being able to guarantee the accuracy of the information provided to customers. Managers can now concentrate their resources on creating a digital bank in the most efficient manner thanks to the research's identification of crucial aspects of the process of digital transformation that have an impact on customer satisfaction. Commercial banks can make strategic adjustments for business operations based on the topic and the precise information provided by the author group, which will help them better understand the needs of customers.

5.3. Conclusion

The aim of this research was to examine how quality DBS (digital banking services) affects customer satisfaction and retention intentions, using the E-S-QUAL and BSQ models. We collected 505 responses and at the end of the result analysis, it emerged that DBS satisfaction directly impacts on customers' retention intentions. Specifically, the study

is based on eight quality dimensions namely ease of use, efficiency, interoperability, privacy/security, responsibility, reliability, empathy and portfolio. Moreover, service charge has a role as a regulator variable. It emerged that ease of use, efficiency, interoperability, privacy/security, responsibility, reliability, empathy and portfolio of DBS impacts on customers' retention decision when satisfied. Although some portions of the study findings were inconsistent with prior studies, it offers an opportunity for further assessment in contribution to a broader knowledge of quality banking services.

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THE EFFECT OF ONLINE ADVERTISING PLACEMENT AND THE NUMBER OF IDENTICAL ONLINE ADVERTISEMENTS ON BRAND AWARENESS: AN EXPERIMENTAL RESEARCH ON UNIVERSITY STUDENTS IN HANOI

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Abstract

This study uses an empirical method to determine the influence of different display placements of online advertising and different numbers of identical online ads on the brand perception of viewers. Based on the theory of brand recognition within the theory of brand awareness, the article points out the influence of two factors, which are: different placements of online advertising and different numbers of online identical ads on the brand recognition ability of viewers who are students in Hanoi. Experimental results show that both of these two factors will have different levels of influence on the viewer's ability to recognize the brand, namely the ability to recognize the brand name and the ability to recognize the brand's advertising image.

Keywords: *Advertising, Online advertising, Brand Awareness, Banner, Brand Recognition, Advertising Frequency, Pop-up, Ad Placement, Skyscraper, Website.*

1. Introduction

Online advertising involves delivering advertisements to Internet users via Web sites, e-mail, ad-supported software, and Internet-enabled smart phones. The purpose of the internet ads is to inform users of the wide range of products and services on offer. Examples of online advertising include contextual ads on search engine results pages, banner ads, rich media ads, social network advertising, interstitial ads, online classified advertising, advertising networks, and email marketing, including email spam. Online advertisements

may be classified into floating ads, expanding ads, pop-ups, wallpaper ads, trick banners, and pop-unders, among others (Backshi and Gupta, 2013). However, for the purposes of this research, banner ads, skyscraper ads, and pop-up ads are examined.

Mass communication that is based on traditional advertising is known as online advertising. Online advertising is the dissemination of advertisements to Internet users via websites, email, ad-supported programs, and Internet-connected cell phones. Contextual advertising on search engine results pages, banner ads, rich media ads, social media ads, interstitials, commercials, online classified ads, advertising networks, and email marketing, including email spam, are a few examples of online advertising.

One of the forms of online advertising is advertising on websites as well as on other platforms like social networks and blogs (Yang et al., 2016). Consumers' knowledge of brands increases thanks to the use of online advertising, especially advertising on websites (Alamsya et al., 2021).

Previous research has discovered and investigated elements like the degree of the promoted product's engagement (Yoon 2001), the brand's familiarity (Dahlen 2001), and the viewer's Internet experience. (Bruner 2000), all of which have a significant impact on how sympathetic consumers are to the promoted product or brand and how likely they are to make a purchase (Gallagher 2001). Other research has concentrated on looking at elements relating to the design of the advertisement itself, such as the placement of the advertisement (Benway & Lane 1998) and the frequency of the display of advertisement pictures. 2015 (Schmidt & Eisend).

However, studies examining the effectiveness of advertising, such as the level of recall and recognition of advertising images, are few, leading to a lack of research on the possibility of advertising. remember in each different online advertising placement or remember the viewer's level of memory with different advertising frequencies. This is largely due to the lack of models and metrics to measure the effectiveness of advertising on the website.

While studies have concentrated on what is advertised and where it is advertised, none of the studies have focused on how advertising is presented and how that affects its efficacy. Studies on the efficiency of online advertising currently use accessible content rather than creating website content and advertising messages themselves, which results in a lack of objectivity and accuracy because the respondents may have previously heard of the advertisement and the brand. Therefore, in order to get more accurate results, it is really important to use a method that has better control over the responses from surveyors and to use a new model and metric for the research paper.

2. Literature review and Theoretical basis

Numerous studies on online advertising in general and the efficiency of online advertising on websites in particular have been conducted throughout the globe. However,

there is still no official research study available in Vietnam that examines the effects of geographic location, the volume of comparable advertisements, and the nature of online advertising on websites.

Effective research on internet advertising on websites all over the world has so far only looked at how the viewer's brand awareness is affected by the ad's location and status. The degree to which the content of the advertising and that of the website are identical has not been the subject of any official investigation. In studies on the quantity of advertisements, researchers mostly concentrate on the frequency of advertisements appearing in various formats, excluding websites.

Additionally, studies assessing brand awareness among viewers of internet advertisements have only utilized qualitative and quantitative techniques; no studies measuring brand awareness have employed experimental techniques, which has an impact on the objectivity and accuracy of the study findings. There have been several studies published since the 2000s, but with the development of the Internet today, viewers' perspectives have changed significantly, which has had an impact on their capacity to consume advertising information.

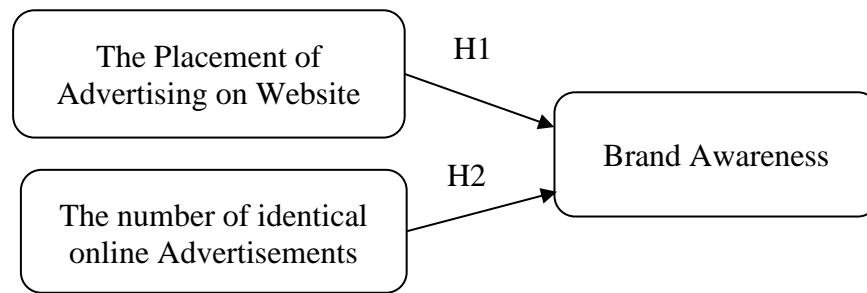
Brand awareness

Consumers' decision to buy a certain product or service is often based on their understanding of the brand. Brand awareness helps consumers decide which brand they will buy and where to buy it. Brand awareness reflects the ability of customers to recognize, distinguish, and name a brand under different conditions (Keller, 1993). Brand awareness includes brand recall and brand recognition.

Brand recognition

Brand recognition is understood as the ability of consumers to distinguish brands they have seen or heard of before (Keller, 1993). In other words, consumers have been exposed to the brand before, and when it comes to brand suggestions, they will recognize the brand. According to power theory, or threshold theory (Kintsch, 1970), recognition requires lower memory robustness than recall. Various studies have shown that people often choose things that are familiar to them (Coates et al., 2006; Hoyer & Brown, 1990; McDonald & Sharp, 2000), and at the same time, they are just looking at them without realizing it (Bornstein, 1989; Zajonc, 1968). Goldstein & Gigerenzer (2002) have shown that when the correct answer is unknown, people tend to choose answers they find familiar (Barreda, Bilgihan, Nusair, & Okumus, 2015) because they believe that the familiar answers are more reliable. Brand recognition is an equally important component of branding, explained by Lin (2009) as the consumer's perception of a brand through prior product experience plus known information. According to Aaker (1996), brand recognition is arguably more important for new brands or niche markets.

Research model



Hypotheses

H1: The placement of ads on the website has an impact on the viewer's brand awareness:

- H1a: Pop-up placement has a stronger impact on brand awareness than Banner placement.
- H1b: Pop-up placement has a stronger impact on brand awareness than Skyscraper placement.
- H1c: Banner placement has a stronger impact on brand recognition than Skyscraper placement.
- H1d: Banner placement has a stronger impact on brand awareness than Pop-up placement.
- H1e: Skyscraper placement has a stronger impact on brand awareness than Banner placement.
- H1f: Skyscraper placement has a stronger impact on brand awareness than Pop-up placement.

H2: The same number of ads has an effect on brand awareness.

- H2a: Three ad placements with the same content have a stronger effect on brand recognition than a single placement.
- H2b: One placement has a stronger effect on brand recognition than three placements with the same content.

3. Method

The study uses a combination of primary data collection methods, including survey, experiment and interview.

Survey

First, the authors viewed 100 websites in Vietnam to determine the ad placements and structures of the most popular ads. The authors then conducted a quantitative survey, asking 120 students in Hanoi to list five issues they are currently interested in to determine the topics that students are most concerned about today. This was done to choose the most representative website contents and advertising messages for the experimental research.

Experiment

The most commonly discussed topic (education, health, etc.) was then picked as the focus of the websites based on the poll results. The authors then created nine advertisements and eight websites to investigate the impact of brand awareness on viewers and the number of identical online advertisements. It compared the effects of different online advertising placements, including Banner, Skyscraper, and Pop-up ads, on viewers' brand recognition. It also highlighted the differences in impact between websites with three identical online advertisements. Each of the four stages of the investigation, which lasted two days and

included six shifts with ten interviews each, involved 264 individuals. 240 of the 264 participants' results were approved.

Table 1. Website conventions surveyed

Website	Placement of Advertising	Message of Advertising	Content of Website	Sample size
1	Banner	Entertainment	Entertainment	30
	Skyscraper	Food		
	Pop-up	Education		
2	Banner	Education	Entertainment	30
	Skyscraper	Entertainment		
	Pop-up	Food		
3	Banner	Food	Entertainment	30
	Skyscraper	Education		
	Pop-up	Entertainment		
4	Banner	Food	Education	30
	Skyscraper	Education		
	Pop-up	Entertainment		
5	Banner	Education	Education	30
	Skyscraper	Entertainment		
	Pop-up	Food		
6	Banner	Entertainment	Education	30
	Skyscraper	Food		
	Pop-up	Education		
7	Banner	Education	Health	30
	Skyscraper	Entertainment		
	Pop-up	Food		
8	Banner	Entertainment	Education	30
	Skyscraper	Entertainment		
	Pop-up	Entertainment		

The results of the experimental research were coded and analyzed using SPSS. The obtained results are a Chi-squared test with hypotheses H1 and H2 to test the impact of independent variables' placements and the number of identical online advertisements on brand awareness.

Interview: After the experiment, an in-depth interview was conducted to discover the causes and motives behind respondents' responses to experimental research, allowing for reliable findings of brand recognition through online advertising. Thirty-two respondents were chosen from eight groups and asked a series of questions based on their replies to learn more about the reasons behind the results, specifically why they recognized the brand image in the advertisement after surfing the website. The results show that the reasons why it is not brand awareness are frequently caused by respondents paying more attention to the Pop-up advertisements, causing respondents to miss information about the advertised brand, or by respondents overconcentrating on the website's content, etc. On the other hand, respondents have brand awareness because they can easily remember the ads when all the advertisements on the website are totally the same.

4. Results

4.1. Quantitative research results

After conducting a quantitative survey to determine the placement of advertising on websites and the areas of most interest today, the results show that Online advertising placements: The author's group collected 120 samples, and the results showed that there are three most popular placements for Online Advertising: Banner with 86/120 answers accounting for 71.7%; Skyscraper with 80/120 answers accounting for 66.7%; Pop-up with 87/120 answers accounting for 72.5%. Website content and advertising message: the topics "Education"; "Health" and "Entertainment" are the three most interesting topics, with 75/120 answers being "Education" accounting for 62.5%, 42/120 answers "Health" accounting for 35% and 84/120 answers "Entertainment" accounting for 70%. Therefore, the group selected the advertisement's message in 3 fields: Education; Health and Entertainment; and three fields for websites's content included: Entertainment and Education and Health; simultaneously, the advertising placements will be Banner; Skyscraper and Pop-up.

4.2. Chi-squared test analysis

In the analysis of the impact of ad placement on brand recognition, when comparing the impact of banner placement with skyscraper placement on entertainment-related advertising content, there are two variables: Recognizing the brand's promotional image and realizing the advertised brand name has Asymp coefficients. Sig. (two-sided) < 0.05, the rate of recognizing these two variables in the Banner placement is better than in the Skyscraper placement. For content related to the education sector, there is only one satisfying variable: Recognize advertised brand names with Asymp coefficients. Sig. (two-sided) < 0.05, the probability of recognizing this variable in the Banner placement is better than in the Skyscraper placement. This result shows the difference in effectiveness of Banner and Skyscraper placements, Banner ads are more effective than

Skyscraper ads in affecting image recognition, promotional image of the brand, and recognizing the advertised brand name.

When comparing the effects of Banner placement with Pop-up placement on educational-related advertising, there was one gratification: Realizing that the advertised brand name has Asymp coefficients. Sig. (two-sided) < 0.05. This result does not show a difference between the impact of Banner and Pop-up ad placement.

When comparing the impact of Skyscraper placements with Pop-up placements on entertainment-related advertising, there is a scale related to placement: Image recognition Branded promotional images have Asymp coefficients. Sig. (two-sided) < 0.05, the rate of recognizing this scale in the Pop-up placement is better than the Skyscraper Asymp coefficients placement. Sig. (two-sided) < 0.05 is the recognition of the brand's advertising image. This result shows the difference in the impact of Pop-up and Skyscraper ad placements. It can be seen that Pop-up ad placement has a stronger impact on the ability of Website viewers to recognize it than the Skyscraper advertising placement.

In the analysis of the impact of the number of ads with the same content on brand recognition, for banner ads, there are two satisfying scales: Brand recognition and Brand name recognition. advertised with Asymp coefficients. Sig. (two-sided) < 0.05, this recognition rate on websites with 3 identical ads is better than on websites with only 1 ad. For advertising in Skyscraper placements, there is a satisfying scale: Realize that the advertised brand name has Asymp coefficients. Sig. (two-sided) < 0.05, this recognition rate on websites with 3 identical ads is better than on websites with only 1 ad. For Pop-up ad placements, there are two satisfaction scales: Brand Ad Image Recognition and Advertised Brand Name Recognition with Asymp coefficients. Sig. (two-sided) < 0.05, this recognition rate on websites with 3 identical ads is better than on websites with only 1 ad. From this result, it can be seen that a Website with 3 identical ads is likely to have a stronger impact on the viewer's ability to recognize the Skyscraper ad placement.

Table 2. Results of Chi-squared test on brand awareness among Websites

		Names of variables	Asymp. Sig. (two sided)
Analyze the impact of the advertising placement factor on brand recognition	Comparison of the effectiveness of Banner and Skyscraper placements in the field of entertainment	Realize the advertising image of the brand	0.003
		Recognize the advertised brand name	0.032
	Comparing the effectiveness of Banner and Skyscraper placements in the field of education	Realize the advertising image of the brand	0.121
		Recognize the advertised brand name	0.015

		Names of variables	Asymp. Sig. (two sided)	
	Comparison of the effectiveness of Banner and Pop-up placements in the field of entertainment	Realize the advertising image of the brand	0.347	
		Recognize the advertised brand name	0.796	
	Comparing the effectiveness of Banner and Pop-up placements in the field of education	Realize the advertising image of the brand	0.598	
		Recognize the advertised brand name	0.032	
	Comparison of the effectiveness of Skyscraper and Pop-up placements in the field of entertainment	Realize the advertising image of the brand	0.035	
		Recognize the advertised brand name	0.058	
	Comparing the effectiveness of Skyscraper and Pop-up placements in the field of education	Realize the advertising image of the brand	0.039	
		Recognize the advertised brand name	0.754	
	Analyze the impact of the number of identical ads on brand recognition	Compare the impact of a website with 3 identical and a website with 1 ad in the Banner placement	Realize the advertising image of the brand	0.011
			Recognize the advertised brand name	0.001
Compare the impact of a website with 3 identical ads and a website with 1 ad in the Skyscraper placement		Realize the advertising image of the brand	0.519	
		Recognize the advertised brand name	0.01	
Compare the impact of a website with 3 identical ads and a website with 1 ad in the Pop-up placement		Realize the advertising image of the brand	0.037	
		Recognize the advertised brand name	0.035	

5. Discussion and Conclusion

5.1. Summary of research results

Regarding the placement of ads on the website that has an impact on the brand awareness of the viewers, research has shown that Pop-up ad placement has a stronger impact on brand recognition than the advertising placement. Skyscraper and Banner placement have a stronger impact on brand recognition than Skyscraper placement. *Therefore, hypotheses H1b and H1c are supported.*

Regarding the number of similar ads that affect brand awareness, the authors draw the conclusion that three ad placements with the same content have a stronger influence on brand recognition than a single ad placement. *Therefore, hypothesis H2a is supported.*

5.2. Discussing the results

First, both Banner and Pop-up placements have a stronger impact on brand recognition than Skyscraper placements. Specifically, for the ability to recognize the advertising image of the brand and recognize the advertised brand name, the Banner placement has a stronger impact than the Skyscraper placement for image recognition. When brand image is advertised, Banner placement has a stronger impact than Skyscraper placement. Through the qualitative interview conducted after the experiment, the reason given by the respondents for the Pop-up advertisement to have a stronger impact on the ability to recognize the advertising image is because the Pop-up advertisement is displayed. display in the center of the screen as the viewer reads the web page. Therefore, viewers are required to pay attention to the advertised brand image if they want to turn off this ad.

The reason why Banner ads have a stronger impact on brand names is because Banner ads are located right at the top of the website, right next to the website title, so the advertised image and brand name can be easily seen. closer. The fact that Skyscraper ads have a lower impact than the other 2 placements is also explained by the fact that this ad placement is located along the margins of the website, out of the viewer's eyes, so viewers will pay more attention to the website content. is to pay attention to advertising.

Second, for a website with three advertisements showing the same content, the ability to recognize the advertised brand image and the brand name is both high, compared to a website with only one ad placement. Specifically, for Banner and Pop-up advertising placements, the percentage of respondents who recognize the brand image and recognize the brand name advertised on the website with three advertisements with the same content is higher than that on the website alone. There is one advertisement showing that content. In addition, the website with three advertisement placements has a stronger impact on the viewer's ability to recognize the advertised brand name than the website with only one advertising placement at the Skyscraper placement. The reason for this problem is that the website has three ads with the same content, forcing viewers to constantly remember the advertising content. Meanwhile, for a website with only one ad placement, the number of times the viewer's recognition is lower; besides, there is other advertising content that interferes with the viewer's process of remembering the advertising content.

5.3. Recommendations and conclusions

From the above research results, the authors found that if the advertising purpose of the business is for viewers to recall the brand name or brand recognition, they can choose to advertise in the Banner or Pop-up placement instead of the Skyscraper location. However, to avoid the audience feeling uncomfortable because of the inconvenience and not wanting to receive the advertising message conveyed, the business should use the Banner placement. The reason is because of the psychology of avoiding advertising when viewers think that Pop-up ads are the most annoying and need to be turned off quickly (Le Wang, 2014) to view website content, so it often makes people uncomfortable.

The number of ads with the same content has a stronger impact on the brand recognition of the viewers than just one ad placement, this result is in agreement with Schmidt & Eisend (2015). Therefore, if businesses want to increase brand awareness, they can simultaneously use multiple ads with the same content appearing on the website at the same time instead of just one ad to increase the viewer's memory.

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FACTORS AFFECTING INNOVATIVE WORK BEHAVIOR OF EMPLOYEES: A STUDY OF STARTUPS AT VIETNAM NATIONAL INNOVATION CENTER

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Abstract

The Industry 4.0 has strongly changed how business work all over the world, innovation is now becoming a must and everything related to innovation needs to be studied in detail. This study explores the factors that influence innovative work behavior among employees of startups in various industries, which are supported by the National Innovation Center. In this study, the factors analyzed included personal factors such as openness to experience, and intrinsic motivation, as well as organizational factors such as leader-member exchange, transformational leadership, and perceived organizational support. To achieve the research objectives, a survey of 213 employees and in-depth interviews with five employees were conducted. The findings of the study indicate that all factors mentioned above have an impact on innovative work behavior. The implications of these findings and practical recommendations proposed in this study can be used to design interventions that encourage and support innovative work behavior among employees, leading to improved organizational performance and competitiveness.

Keywords: *innovative work behavior, openness to experience, intrinsic motivation, leader-member exchange, transformational leadership, perceived organizational support.*

1. Introduction

Industry 4.0, with technologies like AI, Big data, virtual reality, and blockchain, is changing competitive advantages among economies. Thus, startups are considered key drivers to enhance entrepreneurial ecosystems in emerging economies (Getz and Robinson, 2003; Aftab et al., 2022). In that context, Vietnam has established the Vietnam National Center (NIC) to build an innovation ecosystem and pilot a regulatory environment for innovative activities.

Employee innovative behavior is crucial for an organization to achieve a competitive advantage in today's dynamic business environment (Yuan and Woodman, 2010). Innovative work behavior (IWB) has been shown to be a key driver of organizational innovation, which can result in improved performance and increased market share (Janssen, 2000).

Understanding the determinants of innovative work behavior is crucial for organizations to foster a workplace environment that cultivates and rewards creativity. According to Srirahayu and collaborators (2023), there are three innovative work behavior antecedents: personal factors, organizational factors, and external factors. However, choosing the right factors to analyze innovative work behavior is crucial. The factors of openness to experience, intrinsic motivation belonging to the group of personal factors and transformational leadership, leader-member exchange, and perceived organizational support to the organizational factors group are particularly relevant to this study based on its size and duration.

Openness to experience is a personality trait linked to an individual's behavior. Intrinsic motivation is the internal drive to engage in a behavior because it is interesting, enjoyable, or fulfilling in itself, and has been shown to be important for engaging in innovative work behavior. Leadership is also an important factor in innovative work behavior. Transformational leadership involves inspiring and motivating followers to achieve their full potential and has been positively associated with innovative work behavior. Leader-member exchange is also important for promoting innovative work behavior, as it refers to the quality of the relationship between a leader and their followers. Finally, perceived organizational support is important for creating a work environment that fosters innovative work behavior. When employees feel that the organization supports their ideas and values their contributions, they are more likely to engage in innovative work behavior.

This study will clarify how the above factors affect the innovative work behavior of employees working at startups supported by NIC. By understanding these factors, organizations can develop strategies to promote innovative work behavior and stay competitive in today's rapidly changing business environment.

The specific research objectives are as follows:

- Understanding the antecedents of innovative work behavior.
- Determining the factors affecting the IWB of employees and evaluating the IWB level of employees through the factors mentioned above.
- Identifying the barriers to IWB.
- Determining strategies that employees, leaders, organizations, and NIC can use to enhance IWB.

2. Theoretical Basic and Hypotheses

The OECD defines innovation as implementing new or improved products, processes, marketing, or organizational methods in business practices, workplace organization, or external relations (OECD, 2005). Innovative work behavior (IWB) refers to proactive employee behavior to generate, develop, and implement useful and valuable new ideas, processes, or products (Scott & Bruce, 1994). IWB includes both idea generation and implementation and is influenced by individual, organizational, and environmental factors (De Jong & Den Hartog, 2010). IWB is closely related to innovation, which refers to the process of creating and implementing new ideas, processes, or products that are novel,

useful, and valuable (West & Farr, 1990). IWB is considered a key antecedent of innovation, as it is the starting point for the innovation process and it is crucial for innovation, organizational learning, and adaptability (Janssen, 2000; De Jong & Den Hartog, 2010).

2.1. Openness to experience

Openness to experience (OTE) is a Big Five personality trait related to an individual's receptiveness to new ideas, experiences, and sensations (John et al., 2008). Research suggests that employees with high OTE are more creative and generate more innovative solutions (Scott & Bruce, 1994; Shalley & Gilson, 2004), possibly due to their imaginative, curious, and risk-taking nature (Amabile, 1983; Feist, 1998). Hiring and promoting individuals with high OTE may lead to improved organizational performance and competitive advantage through increased innovative work behavior (IWB) (Mumford et al., 1991), making it a valuable trait for organizations to consider when seeking to foster a culture of innovation. Then the following hypothesis is generated:

H1: There is a positive relationship between openness to experience and innovative work behavior.

2.2. Intrinsic motivation

Intrinsic motivation (IM) is a critical factor in driving innovative behavior in the workplace. It refers to the inherent desire to engage in an activity for its own sake, driven by personal satisfaction, enjoyment, or interest (Ryan & Deci, 2000). Amabile (1988) found that individuals who are more intrinsically motivated are more likely to engage in creative thinking and problem-solving, essential components of innovative behavior. Similarly, George and Zhou (2007) found that employees who are more intrinsically motivated are more likely to engage in proactive behavior, including innovative behavior such as generating new ideas and seeking out new opportunities. By promoting intrinsic motivation among employees, organizations may be able to encourage more innovative behavior and drive growth and success (Amabile, 1988; George & Zhou, 2007). Then the following hypothesis is generated:

H2: There is a positive relationship between intrinsic motivation and innovative work behavior.

2.3. Leader-Member Exchange

LMX theory highlights the importance of the leader-subordinate relationship in predicting work-related outcomes (Graen & Uhl-Bien, 1995). High-quality LMX is associated with positive employee outcomes such as job satisfaction, organizational commitment, and job performance (Liden et al., 1997). Studies have also shown a positive relationship between high-quality LMX and innovative work behavior and creativity (Jung et al., 2008; Wang et al., 2005). These findings suggest that organizations can promote innovative work behavior by fostering strong and supportive relationships between leaders and subordinates. Then the following hypothesis is generated:

H3: There is a positive relationship between LMX and innovative work behavior.

2.4. Transformational leadership

Transformational leadership (TL) is a leadership style that inspires and motivates followers to achieve their full potential and work towards a common goal that benefits the organization as a whole (Bass & Riggio, 2006). This leadership style has been linked to higher levels of job satisfaction, motivation, and commitment among employees.

In addition, research has shown that organizations that promote innovative work behavior are more likely to succeed in their industries (Shalley, Zhou, & Oldham, 2004). Transformational leaders can create a supportive work environment that empowers employees to take risks and try new things. This can lead to greater creativity and innovation among employees, as well as higher levels of engagement and commitment to the organization (Bass & Riggio, 2006).

Given the importance of innovative work behavior for organizational success, it is important to understand how leadership styles can impact employees' willingness and ability to engage in such behavior.

H4: There is a positive relationship between transformational leadership and innovative work behavior.

2.5. Perceived organizational support

Perceived organizational support (POS) refers to how much employees believe their organization values their contributions and cares about their well-being (Eisenberger et al., 1986). Research has found that POS is associated with job satisfaction, performance, and turnover intentions (Rhoades & Eisenberger, 2002). Employees who perceive high levels of organizational support may feel more comfortable taking risks and experimenting with new ideas, as they believe that their organization will reward their efforts (Scott-Ladd et al., 2006). Theories such as social exchange theory and self-determination theory explain the relationship between POS and innovative work behavior. In conclusion, promoting perceived organizational support is crucial for organizations that want to foster innovative work behavior (Eisenberger et al., 2010). Then the following hypothesis is generated:

H5: There is a positive relationship between perceived organizational support and innovative work behavior.

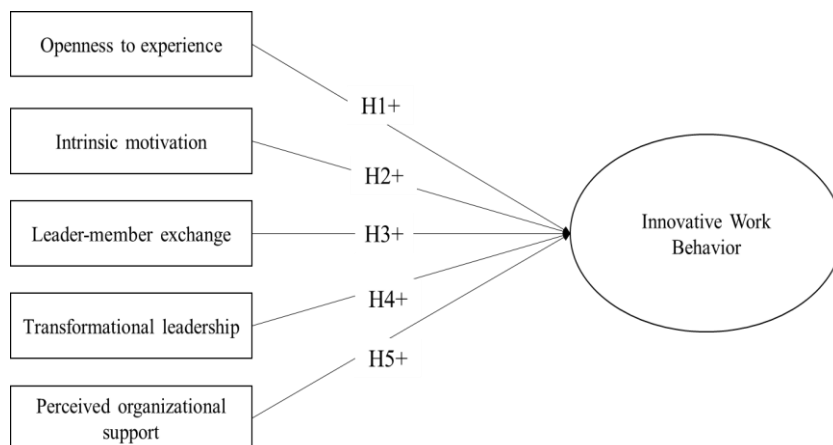


Figure 1. Theoretical research model

2. Method

This research used mix methods that included survey and indepth interviews. The questionnaire was distributed directly to 260 employees of startups at NIC, and there were 213 valid responses. After very result of survey, indepth interview with five persons were carried out to understand the insight of findings.

Measurement: variable Openness to experience (OTE) was measured by 8 items by Feist, G. J. (1998). Intrinsic motivation (IM) was measured by 5 items by Amabile TM. (1985). Leader-member exchange (LMX) was measured using 6 items developed by Graen, G. B., Novak, M. A., & Sommerkamp, P. (1982). Transformational leadership (TL) was measured using 7 items developed by Carless, S. A., Wearing, A. J., & Mann, L. (2000). Perceived organizational support (POS) was measured using 10 items adapted from Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). The dependent variable is Innovative work behavior (IWB) was measured using 6 items developed by Scott, S. G., & Bruce, R. A. (1994).

All items were measured using a five-point Likert scale (with scores ranging from 1 = strongly not agree to 5 = strongly agree).

Table 1. Characteristics of the sample

Criteria		Number of observations	Percentage (%)
Sum		213	100
Gender	Female	92	43.2
	Male	107	50.2
	Not mentioned	14	6.6
Age	18 - 22	64	30.0
	23 - 30	95	44.6
	30 - 40	54	25.4
	More than 40	0	0.0
Education level	College	6	2.8
	University	182	85.4
	Master	19	8.9
	Doctor	2	0.9
	Others	4	1.9
Business age (years)	Less than 3 years	121	56.8
	3 - 5 years	59	27.7
	5 - 10 years	25	11.7
	More than 10 years	8	3.8
	Less than 10 people	15	7.0

Criteria		Number of observations	Percentage (%)
Number of employees in organization	10 - 20 people	115	54.0
	20 - 30 people	22	10.3
	More than 30 people	61	28.6
Industry sector	Technology	160	75.1
	Education	5	2.3
	Business	9	4.2
	Manufacturing	6	2.8
	Healthcare	3	1.4
	Others	30	14.1

Source: The author's research

The surveyor obtained 213 valid responses. The demographics of the respondents were as follows: 50.2% were male, 44.6% were 23 - 30 years old, and 85.4% of the employees surveyed had a university degree. 56.8% of employees participating in this survey belong to enterprises operating for less than 3 years, with a scale of 10 to 20 people (54%) and owners and technology-related areas (75.1%).

4. Results

4.1. Exploratory factor analysis (EFA)

Table 2. Exploratory analysis and the reliability of the scale

Factors	Items	Factors loading				Mean	Std. Dev.
Openness to experience (Cronbach's alpha = 0.948)							
OTE1	I enjoy trying new things and experiences.	0.935				4.11	0.779
OTE7	I enjoy creative and imaginative activities.	0.895				4.02	0.798
OTE4	I enjoy discussing abstract ideas and concepts.	0.885				4.06	0.799
OTE2	I often seek out new and challenging experiences.	0.878				4.02	0.818
OTE3	I am open to new ideas and ways of thinking.	0.821				4.10	0.780
OTE8	I am willing to take risks in order to achieve my goals.	0.804				4.10	0.800
OTE5	I am willing to consider alternative perspectives and viewpoints.	0.774				4.07	0.774

Factors	Items	Factors loading					Mean	Std. Dev.
OTE6	I am comfortable with uncertainty and ambiguity.	0.766					4.05	0.862
Perceived organizational support (Cronbach's alpha = 0.909)								
POS8	My organization fosters a positive work environment and culture.		0.79 2				4.17	0.854
POS7	My organization shows a sincere interest in my concerns and opinions.		0.78 5				3.94	.0920
POS5	My organization treats employees fairly and respectfully.		0.70 9				4.08	0.785
POS10	My organization provides opportunities for employees to participate in decision-making.		0.70 2				4.01	0.871
POS1	My organization values my contributions to the workplace.		0.70 1				3.97	0.776
POS2	My organization cares about my well-being and job satisfaction.		0.69 7				3.98	0.771
POS9	My organization communicates clearly and openly with employees.		0.68 4				4.03	0.921
POS4	My organization recognizes my efforts and achievements at work.		0.66 6				3.99	0.833
POS6	My organization supports my career development and growth.		0.66 0				4.11	0.760
POS3	My organization provides the resources necessary to perform my job effectively.		0.60 4				4.06	0.901
Transformational leadership (Cronbach's alpha = 0.890)								
TL3	My leader gives encouragement and recognition to staff.			0.83 7			4.10	0.884
TL4	My leader fosters trust, involvement, and cooperation among team members.			0.82 9			4.08	0.875
TL7	My leader instills pride and respect in others and inspires me by being highly competent.			0.82 5			4.06	0.912

Factors	Items	Factors loading					Mean	Std. Dev.
TL1	My leader communicates a clear and positive vision of the future.			0.803			4.10	0.857
TL6	My leader is clear about his/her values and practices what he/she preaches.			0.630			3.99	0.916
TL2	My leader treats staff as individuals, supports and encourages their development.			0.537			3.91	0.858
TL5	My leader encourages thinking about problems in new ways and questions assumptions.			0.533			3.99	0.961
Intrinsic motivation (Cronbach's alpha = 0.898)								
IM4	I enjoy creating new procedures for work tasks.				0.962		3.81	0.933
IM2	I enjoy coming up with new ideas for products.				0.950		3.84	0.943
IM3	I enjoy engaging in analytical thinking.				0.950		3.83	0.933
IM1	I enjoy finding solutions to complex problems.				0.622		4.09	0.781
IM5	I enjoy improving existing processes or products.				0.595		4.16	0.845
Leader-member exchange (Cronbach's alpha = 0.790)								
LMX6	I have a highly effective working relationship with my supervisor.					0.753	3.92	0.766
LMX5	I have enough confidence in my supervisor that I would defend and justify his/her decision if he/she were not present to do so.					0.723	3.96	0.928
LMX4	My supervisor uses his/her power to help me solve problems in my work.					0.685	3.97	0.895
LMX3	My supervisor recognizes my potential.					0.676	3.98	0.743
LMX2	My supervisor understands my job problems and needs.					0.665	3.96	0.837

Factors	Items	Factors loading					Mean	Std. Dev.
LMX1	I know how satisfied my supervisor is with what I do.					0.617	3.89	0.834
Innovative work behavior (Cronbach's alpha = 0.742)								
IWB1	I search out new technologies, processes, techniques, and/or product ideas.	0.727					4.06	0.796
IWB2	I come up with innovative and creative ideas.	0.723					4.24	0.821
IWB4	I investigate and secure funds needed to implement new ideas.	0.712					4.08	0.875
IWB5	I develop adequate plans and schedules for the implementation of new ideas.	0.701					4.09	0.787
IWB3	I promote and champion ideas to others.	0.666					3.97	0.921
IWB6	I consider myself a creative member of my team.	0.589					4.11	0.760

Source: The author's research

Exploratory factor analysis was conducted by the Principal component extraction method and Varimax rotation separately for independent and dependent variables. The analysis explained 63.42% of the variability of the independent variables and 69.45% of the variability of the dependent variables, meeting the test conditions. Observable variables with a factor loading value greater than 0.5 show the correlation value between the observed variables of that factor. The loading coefficients are all greater than 0.5, indicating good statistical significance for the observed variables. The obtained KMO coefficient is 0.859, showing the overall correlation between the observed variables in the study. Cronbach's Alpha indexes were all above 0.7, indicating good reliability of the scale.

4.2. Correlation analysis

The correlation analysis reveals that the independent variables are significantly related to the dependent variable, with the perceived organizational support factor showing the strongest correlation (correlation coefficient 0.740) followed by transformational leadership (correlation coefficient 0.7). All hypotheses are supported, particularly hypotheses H5 and H4. The average ratings for leader-member exchange and intrinsic motivation were low, with mean values of 3.94 and 3.95, respectively, while innovative work behavior had the highest mean value of 4.09. The remaining factors were rated at an average level of around 4.04.

Table 3. The Mean and Correlation analysis

Independent variables	Mean	Std. Dev.	1	2	3	4	5
1. Openness to experience	4.07	0.687					
2. Intrinsic motivation	3.95	0.749	0.230**				
3. Leader-member exchange	3.94	0.584	0.037	0.040			
4. Transformational leadership	4.05	0.686	0.205**	0.195**	0.192**		
5. Perceived organizational support	4.01	0.624	0.271**	0.209**	0.277**	0.597**	
6. Innovative work behavior	4.09	0.496	0.477**	0.410**	0.401**	0.700**	0.740**

**Correlation is significant at the 0.01 level (2-tailed).

Source: The author's research

4.3. Linear regression

Table 4. Estimation results of the model

Model Summary ^b								
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	Sig. F Change	Durbin-Watson
1	0.896 ^a	0.803	0.798	0.22300	0.803	68.256	0.000	1.548

Predictors: (Constant), POS, IM, LMX, OTE, TL_a
 Dependent Variable: IWB_b

Source: The author's research

R Square = 0.803, so the independent variables in the model explained 80.3% for the variation of the innovation behavior variable in the work of employees. This is a good result for this research model. The VIF index (variance inflation factor) to measure the influence of multicollinearity, the VIF index of the data ranges from 1,089 to 1,698, within the acceptable range (Hair et al., 2019), shows that multicollinearity does not affect the results.

Table 5. The results of analysis of variance ANOVA

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.835	5	8.367	68.256	0.000 ^b
	Residual	10.294	208	0.050		
	Total	52.129	213			

a. Dependent Variable: IWB
 b. Predictors: (Constant), POS, IM, LMX, OTE, TL

Source: The author's research

Regression results show that the Sig coefficients of all independent variables in the model are less than 0.01, so it can be concluded that they all have an impact on employees' innovation behavior at work. Thus, the results of the study accept all hypotheses. To test the fit of the population scale model, the researcher considered the F value from the ANOVA analysis table, the F value = 68.256, the Sig value. = 0.000b, so the linear regression model is suitable for the data set and can be used.

Table 6. Regression coefficient model of factors affecting innovative work behavior of employees

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.074	0.157		-.476	0.635		
	OTE	0.183	0.024	0.253	7.736	0.000	0.892	1.121
	IM	0.132	0.021	0.200	6.210	0.000	0.918	1.089
	LMX	0.184	0.027	0.217	6.730	0.000	0.920	1.087
	TL	0.256	0.028	0.355	9.180	0.000	0.637	1.569
	POS	0.284	0.032	0.357	8.876	0.000	0.589	1.698

a. Dependent Variable: IWB

Source: The author's research

The relationship between the dependent variable and the independent variables is shown in the following linear regression equation:

$$IWB = 0.284 * POS + 0.256 * TL + 0.184 * LMX + 0.183 * OTE + 0.132 * IM - 0.074$$

5. Discussion and Conclusion

5.1. Discussion

Perceived organizational support (POS) has a positive effect on IWB, consistent with Zhang et al. (2018). When asked about the reasons for their scores in this section, four out of five participants in the in-depth interview answered that their organization is very small, each person has a large workload, and the leader is under significant pressure. Therefore, the leaders' concern for some of the employees' personal problems (personal development, job satisfaction, and well-being) is reduced. Additionally, the lack of financial resources or inadequate financial allocation in startups is insufficient to support the individual needs of everyone. One participant stated that the company cares about the needs of employees, but the level of attention is not sufficient. The employees need to be asked more about job satisfaction, and the company should survey employee feedback more often.

Transformational leadership (TL) has a positive effect on IWB, consistent with Wang et al. (2019) and Kim et al. (2016). In-depth interviews revealed that some leaders

prioritize meeting deadlines over employee development. However, the TL2 factor - “My leader treats staff as individuals, supports and encourages their development” had an average score below 4. An interviewee mentioned that his leader was more focused on achieving tasks and meeting deadlines, and they may not prioritize staff development as much as they should.

Leader-member exchange (LMX) has a positive effect on IWB, consistent with Jiang et al. (2019). However, the average assessment of LMX factors was less than 4, indicating ineffective or insufficient communication between leaders and employees. One reason for this may be that leaders have not invested enough time or effort in building positive relationships with their followers, given the significant workload placed on leaders of startup companies. Another reason mentioned in the in-depth interviews for the low scores on LMX is a lack of fit between leaders and their followers. As leaders are often talented people invited from abroad with different educational and cultural backgrounds compared to employees, this can result in a communication gap.

Openness to experience (OTE) has a positive effect on IWB, consistent with De Jong and Den Hartog (2007). The factor had a high mean score, indicating that employees possess creativity, dynamism, and a willingness to take risks that contribute greatly to startup businesses.

Intrinsic motivation (IM) has a positive effect on IWB, consistent with Deci and Ryan (1985), Gong et al. (2013), and Karwowski et al. (2019). However, some variables related to motivation for generating new ideas and implementing innovative behavior had average scores below 4. In-depth interviews revealed that employees feel insufficiently supported by enterprises for example, they have no acknowledgment of the direction of the leader and the business, which leads to employees’ lacking autonomy, control over their work, and confidence in their abilities.

5.2. Recommendations for startups at NIC

In-depth interviews with employees have revealed that they want attention not only on work-related issues but also on personal development, satisfaction, well-being, and transparency of their businesses. To improve these issues, organizations can consider the following suggestions: Organizations should build effective communication traffic between employees and leaders as communication that is timely, informative, and relevant can foster a sense of trust and openness between employees and leaders, leading to greater job satisfaction and motivation, and it does not have to come at a high cost. Organizations should set specific development goals that align with company objectives to provide a sense of purpose and commitment. Research by Zhao et al. (2017) has shown that employees who are given specific, challenging goals are more motivated and perform better. Businesses should develop criteria to evaluate employee dedication and recognize and reward that dedication. When employees feel valued and appreciated for their work, they are more likely to be motivated and dedicated to their future activities (Gifford, Zammuto, and Goodman, 2019).

5.3. Recommendation for NIC

NIC, as a state agency supporting the innovation ecosystem in Vietnam, should take action to create an environment that encourages innovative work behavior. This includes

investing in R&D to fund basic and applied research and development projects to overcome the high costs and risks of innovation for enterprises (Liu, 2020) thereby, helping start-up businesses have funds for employee support activities. NIC should also supplement and adjust incentives specified in Decree 94/2020/ND-CP to adapt to societal and global trends, establish policies and regulations that encourage socially responsible practices, and organize activities to promote collaboration between businesses, universities, and research institutions to foster innovation and at the same time, recruit human resources for innovation (Burchell et al., 2020; Koivisto & Lipponen, 2019).

5.4. Conclusion

The study found that organizational support and leadership are crucial for fostering innovative work behavior. By focusing on factors such as effective communication, specific development goals, and criteria for evaluating employee dedication, organizations can foster an innovative workforce. Although the study has limitations, such as small sample size and limited scope, it can still guide organizations seeking to create an environment that enhances innovation and empowers their employees to be creative, proactive, and adaptable. Future research could explore a broader range of factors in addition to the factors mentioned in this study or focus on the perceived organizational support and transformational leadership factors, as well as examine the innovative work behavior in other industry sectors.

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THE EMPLOYEE'S READINESS TO CHANGE IN DIGITAL TRANSFORMATION: THE CASE OF SMES IN HANOI

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Abstract

This paper seeks to investigate and analyze digital transformation readiness-related factors among employees of small and medium-sized enterprises. To accomplish the research objective, exploratory factor analysis and descriptive statistical analysis were employed. The survey of 208 employees residing and working in Hanoi, one of the cities with the most active digital transformation activities in Vietnam, yielded the collected data. In-depth interviews were also used to gain a more comprehensive understanding of employees' readiness for digital transformation. Research results show that: (i) there are significant differences in readiness for digital transformation between employees of different ages, sectors of operation, and professional qualifications; (ii) readiness-related factors, including self-efficacy, attitude, characteristics of employee, leadership, perceived benefits and perceived risks were derived from the exploratory factor analysis; (iii) while the majority of employees comprehend the benefits of digital transformation and have a positive attitude toward it, some lack confidence in their own abilities, and have not yet fully felt the risks and support of their leaders in this process. From the research findings, some implications have been proposed.

Key words: *digital transformation, SMEs, readiness*

1. Introduction

Alongside the emergence of the Fourth Industrial Revolution in recent years, the digital transformation trend is gaining momentum in the majority of countries around the globe, significantly enhancing the efficiency of organizations. Digital transformation enables businesses, particularly small and medium-sized businesses, to achieve greater efficiency and flexibility, optimize production processes, and create value propositions

and timely responses to market requirements. (Alcacer & Cruz-Machado, 2019; Queiroz et al., 2020; Chen et al., 2018; Dedehayir et al., 2017). In addition, digital transformation is required to maintain market competitiveness and technological leadership. (Rachinger et al., 2019).

To achieve digital transformation success, it is necessary to emphasize the importance of employees. People play a central role in lean philosophy activities that create value, reduce waste, and continuously improve. Such processes significantly rely on employee engagement and participation in problem solving and learning (Liker, 2004; Slack et al., 2010; Womack et al., 1990). However, digital transformation can create new problems and cause anxiety and tension among employees. Research by Vakola et al. (2004) confirms that employees may experience apprehension and resistance if they are unaware of upcoming changes and their potential effects. In contrast, organizational trust, the leader's achievement vision, and charisma will result in a degree of change acquiescence. Digital transformation drastically alters production methods, necessitating a production force with synchronized qualifications and awareness in order to deploy, coordinate, and implement the economy effectively. In industries where technology can replace humans, jobs will be lost, but new opportunities will be created in industries that require both advanced technology and a skilled workforce. This will impact the structure of jobs and the labor market, resulting in significant changes and posing numerous challenges for employees and the labor market as a whole. Also, there are significant concerns that it may be difficult for organizations and workers to adapt to digital transformation and reap its benefits.

By the end of 2021, Vietnam had approximately 850,000 active businesses, of which 96% were small and medium-sized and only 4% were medium and large (Bich Ngan, 2021). Most enterprises have initially applied software and solutions for sales management, online sales, omni-channel marketing, customer relationship management, and distribution channel management. However, many businesses find it difficult to engage employees in the planning, implementation, and application of digital at work, which determines the success of the business in the process of digital transformation. determine how to prepare employees for transformation. Consequently, capturing employees' readiness for timely and appropriate solutions will aid in achieving the transition objective. The digital transformation of businesses is more convenient and simpler to implement, particularly for small and medium-sized businesses (SMEs) with limited resources.

2. Literature review and Theoretical Basic

2.1. Literature review

Kempers (2023) conducted a study on the driving and limiting factors for employees in digital transformation in small and medium-sized enterprises (SMEs). This study was carried out using the development service network of businesses in the Netherlands. The authors used a semi-structured interview method with open-ended questions to gain an overall understanding and discuss the process with employees. During the interviews, the interviewer not only asked prepared questions but also asked spontaneous questions. By

doing so, the authors gained new insights (Huberman & Miles, 1994). Interviewees were introduced and explained in advance to have a better understanding of digital transformation and how they responded. The collected data was analyzed and compared with existing literature to form an action strategy on how SMEs in the service sector can improve the current situation by applying digital transformation. Finally, the study results identified several important factors influencing employee readiness, such as skills, leadership, and their participation in digital transformation.

Wen and Atan (2021) in their study, "SMEs Readiness Towards Digital Transformation in Malaysia," addressed five aspects that influence the process of a company's digital transformation. One of these aspects was the readiness of employees. The researchers used descriptive analysis and non-randomized sampling methods. The authors also used quantitative methods to clarify issues by creating numerical data or data to make the data more meaningful. Then, a questionnaire was distributed through an online platform, Google Form, as a research tool to collect data from SMEs in Perak's manufacturing sector. Finally, the authors concluded that employee readiness is an extremely important factor in driving a company's readiness for digital transformation.

Nguyen (2021) study on "Barriers to Digital Transformation for SMEs in Vietnam" emphasized the key role of human resources, especially the extent to which employees participate in digital transformation. Besides using the network modeling method SEM, the author also studied and analyzed documents, including books, newspapers, magazines, reports, and local and foreign studies related to barriers to digital transformation. The author surveyed SMEs through questionnaires and obtained 228 valid responses for the study. Finally, the author made observations about the role of human resources in digital transformation and proposed solutions to promote successful digital transformation in companies.

Giang et al. (2022), in their study "Readiness of SMEs to Apply Big Data: An Experiment in Vietnam," pointed out that there must be employee readiness in terms of perception and knowledge in using big data in digital transformation. The researchers surveyed businesses through questionnaires, and 274 valid questionnaires were used for analysis. The data was analyzed using STATISTICA to present descriptive statistics, correlation analysis, and reliability testing of measured factors. The study concluded that mainly small and medium-sized businesses have not successfully applied digital transformation because they are not ready in terms of human resources, and therefore, more investment is needed in human resources.

Ates and Acur (2022) conducted a study on the impacts of digital readiness and changing outdated methods in small and medium-sized high-tech enterprises headquartered in the UK. The authors applied a qualitative, longitudinal approach with a total of 22 structured direct interviews. All data was uploaded to the database using NVIVO 11 Pro software for the purpose of coding. Finally, the study concluded that in order to successfully digitize SMEs, in addition to technological factors, changes in the external work environment and work habits of both leaders and employees are also necessary. This has

significant implications for ensuring that the digitization process is implemented effectively and successfully within the business.

Rafiah et al. (2022) argued that "In addition to technology, automation, processes, and strategy, human resources are one of the most important considerations for companies, especially small and medium-sized enterprises, when implementing digitization in their businesses." The study used a definition of digital readiness along with a descriptive survey research method as a measure that can be used to assess the readiness of entrepreneurs for digital transformation, particularly in West Java (Indonesia). Data was collected through a survey using a questionnaire distributed to various small and medium-sized enterprises in West Java.

Volker Sticha et al. (2020), in their study "Measures for a successful Digital Transformation of SMEs", concluded that the adaptability and capability of the workforce is one of the important factors that contribute to the success of the digital transformation process. The authors used the case study research method of EISENHARDT along with a theoretical sampling method to select cases for the study, which included 30 supported small and medium-sized enterprises.

2.2. Theoretical Basic

Based on the theory of technology acceptance model (TAM) and the theory of extended planned behavior (TPB), the surveyed and analyzed factors are included. In order to incorporate them in the analysis, the original factors in these models were modified to correspond with the context of digital transformation and contrasted with recent factors from the literature review and preliminary interview results. As a consequence, the analysis included the seven factors listed below:

Table 1. Factors and measure scales.

No.	Factor	Number of initial items	Adapt from
1	Attitude (AT)	4	Davis (1989)
2	Characteristics of employee (CE)	5	Caldwell and Liu (2011)
3	Self- efficiency (SE)	5	Holt et al (2007)
4	Leadership (LD)	4	Marijana Rodić, Slobodan Marić (2020)
5	Perceived benefits (PB)	4	Davis (1989)
6	Perceived risk (PR)	5	Michael & Chen (2022)
7	Readiness to digital transformation (RT)	4	Holt et al (2007)

Source: Research team's synthesis

Attitude: Attitude is the expression through words, gestures, and actions about objects, phenomena, and people through valuable evaluations, including cognition,

influence, and behavior. Attitude can be positive or negative in external expressions of the person who expresses it. The Theory of Planned Behavior (TPB) emphasizes that attitude leads to behavior. This means the direct participant's evaluation of the results they obtained when doing activities in digital transformation, more generally than just the degree of positive or negative evaluation of this behavior. If the employees have a positive attitude towards digital transformation, it will increase their readiness for digital transformation.

Characteristics of Employee: This factor can be examined from various perspectives. In this study, employee characteristics refer to the employee's innovativeness and whether the employee exhibits more features of innovators or adopters. People who are innovative are typically risk-takers, youthful, content with their socioeconomic standing, sociable, and interested in digital transformation changes. Their risk tolerance induces them to adopt technologies even when they may ultimately fail (Rogers, 2003; Jin, 2013).

Self-Efficacy: The confidence in one's ability to perform digital transformation tasks is another crucial factor. The belief that one can easily perform new tasks reflects employees' readiness for change. Employees who believe that they have the necessary skills, or are willing to learn them, are more likely to be ready for change. Confidence in one's ability to perform new tasks is often considered a critical factor in successful change management. Berneth (2004) argues that assessing one's own abilities is essential for successful transformation.

Leadership: This element reflects an individual's perception of leadership support for organizational change. Members of the organization will be more open to change if they perceive the backing of the organization's most senior leaders. This support is manifested itself through communication, encouragement, assisting employees adjust to change, or commitments to change from senior managers. According to Ngereja et al. (2020), the commitment of top leadership plays a vital role and can be considered a foundation for other factors to exist. Therefore, leadership support is required for employees to comprehend that digital transformation is necessary and beneficial to the organization.

Leadership: This element reflects an individual's perception of leadership support for organizational change. Members of the organization will be more open to change if they perceive the backing of the organization's most senior leaders. This support is manifested itself through communication, encouragement, assisting employees adjust to change, or commitments to change from senior managers. According to Ngereja et al. (2020), the commitment of top leadership plays a vital role and can be considered a foundation for other factors to exist. Therefore, leadership support is required for employees to comprehend that digital transformation is necessary and beneficial to the organization.

Perceived benefits: This factor reflects the values that individuals receive if changes occur in the organization. Employees can receive values in terms of time (work efficiency), finance (salary), customer satisfaction, etc. Clearly understanding the benefits received can improve the readiness level of employees for digital transformation because "If individuals do not believe that change is beneficial to them, they are unlikely to have an overall positive readiness assessment" (Armenaski and Haris (1999)).

Perceived risk: Employees may worry about their job prospects or feel uncertain about the skills and knowledge required for the digital transformation. These concerns can significantly impact their readiness for change. The perception of risks and difficulties associated with digital transformation, such as changes in salary, job responsibilities, skills, and adaptability, are important considerations for employees. This factor includes five questions that measure employees' awareness of the risks and difficulties they may encounter.

Readiness: According to the studies by Armenakis (1993) and Holt et al. (2007), readiness for change is one of the most important factors related to employee support for change initiatives. When employees are receptive for change or willing to participate in digital transformation, the process of digital transformation within a business will be smoother. . This perception is manifested through an individual's perception of their adaptability and the benefits that digital transformation brings to them personally and the company in general. When this perception is correct, it also reflects their readiness for digital transformation.

3. Method

3.1. Research Method

The research team utilized both qualitative and quantitative research methods. Personal interviews are used for qualitative research to achieve two goals: (1) to explore readiness-related factors and compare their applicability to the theoretical foundation before conducting quantitative survey; and (2) to gain a more comprehensive understanding of employees' readiness for digital transformation. The quantitative research method was conducted through a survey of 208 employees in Hanoi. Stratified random sampling and snowball sampling were employed as sampling techniques. Based on the structure of Hanoi's small and medium-sized businesses, the research team selected employees from corresponding businesses and asked respondents to recommend survey subjects from other businesses.

3.2. Data collection and analysis

Data was collected from December 2022 to January 2023. The study's questionnaire was founded on previous research. Some questions were modified to fit the context and characteristics of Hanoi's small and medium-sized enterprises. Through in-depth interviews with a number of specialists, leaders, and employees, the author modified the measurement scales. On the basis of the findings from the in-depth interviews, the opinions were modified to reflect the ideas and language of the research subjects. Several new viewpoints were formulated and incorporated into the measurement scales. This study employed a 5-point Likert scale, with 1 representing "strongly disagree" and 5 representing "strongly agree." The formal study was conducted after the questionnaire was modified through pilot interviews to ensure textual coherence.

The research team distributed an online questionnaire to personnel who had participated in digital transformation. 235 responses were received by the research team. Only 208 samples were used for analysis after invalid questionnaires were removed. SPSS software was used to input and process the questionnaires. The measurement scale for individual readiness for organizational change was filtered using the Cronbach's Alpha reliability coefficient and exploratory factor analysis (EFA).

4. Results

4.1. Demographic characteristics

The demographic characteristics of the participants in this study include their gender, age, job sector, level of education and digital technology expertise. The survey showed that the gender distribution of the participants was relatively even, with 48% female and 52% male. The majority of respondents were between the ages of 18 and 24 (44%), followed by those between the ages of 25 and 34 (34%) and those between the ages of 35 and 44 (17%). The group of employees aged 45 to 60 comprised the smallest proportion, accounting for only 5% of those surveyed. Regarding the educational level of the respondents, there was a diverse distribution. The majority of respondents reported having a university degree (78%), followed by master's degree (11%), vocational college level (9%) and finally high school diploma (2%).

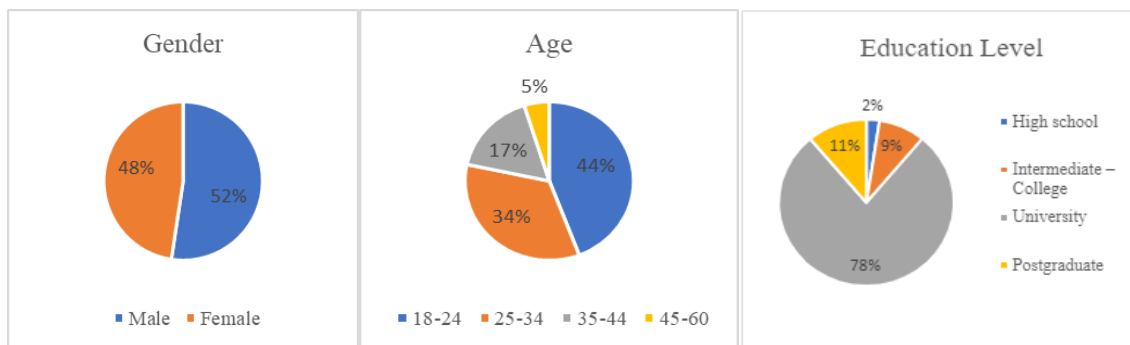


Figure 1. Age, gender and education level

Source: Research team

Among the survey participants, 40% worked in the commercial sector, followed by the construction industry with 18%, the transportation and logistics industry with 16%, and the education sector with approximately the same percentage, 15%. Only 10% of those surveyed were employed in the information technology industry, while only 2% were employed in the agriculture-forestry-fishery industry. In terms of digital transformation expertise, the majority mainly used utilities from the internet and social networking access (49%). 31% of individuals whose occupations are related to digital technology did not graduate from relevant majors, while 20% of individuals graduated from relevant digital technology majors.

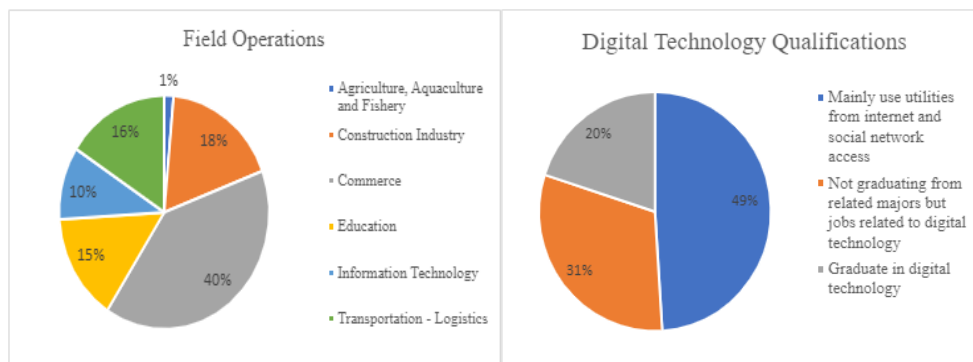


Figure 2. Ownership and technology level

Source: Research team

4.2. Employee digital transformation readiness by different demographic groups

Different demographic groups have variable levels of employee readiness for the digital transformation, according to the survey conducted by the research team.

Readiness by age

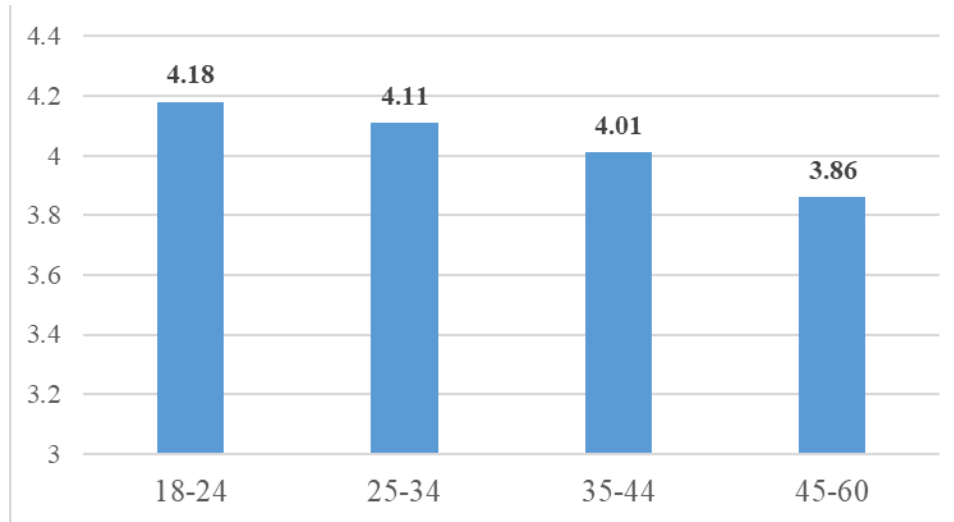


Figure 3. Readiness of SMEs employees by age

Source: Research team

Based on the survey results of the research team, there are differences between age groups and a tendency for readiness to decrease with age. The percentage of young employees participating in the survey is quite high and they tend to adapt to new technology and enjoy challenging themselves. Employees in the three age groups between 18 and 44 generally have comparable levels of readiness, scoring 4.18, 4.11 and 4.08 out of a possible 5 points, respectively. For those aged 45 to 60, adapting to digital transformation remains challenging, so their readiness level is still low

Readiness by gender

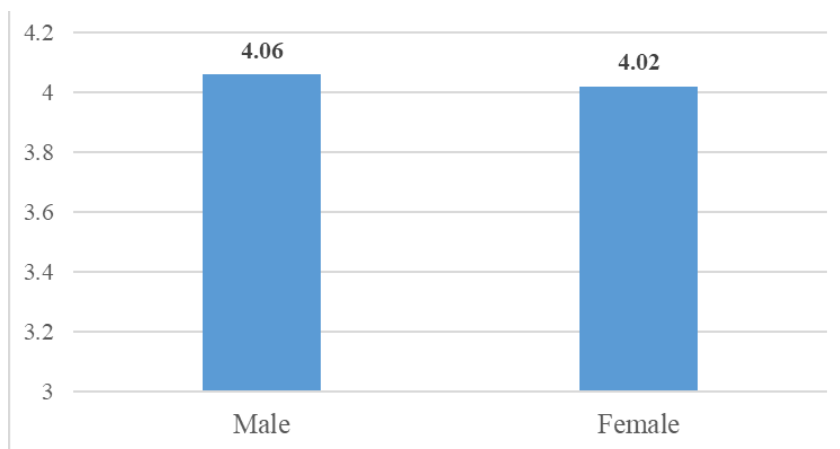


Figure 4. Readiness of SMEs employees by gender

Source: Research team

In terms of gender, male employees have a readiness level of 4.06 out of five while female employees have a readiness level of 4.02 out of five. Overall, there is an indifference between the readiness levels of men and women overall. Some studies suggest that men have a more positive attitude towards digital technology and are more willing to access and use new technologies than women. However, personal perception and skills also play a role in this difference. If women have good knowledge about digital transformation, they will be willing to embrace it like men. Therefore, all employees, regardless of gender, need to be supported in their training, as digital transformation and readiness for digital transformation are necessary for all employees.

Readiness by sector of operation

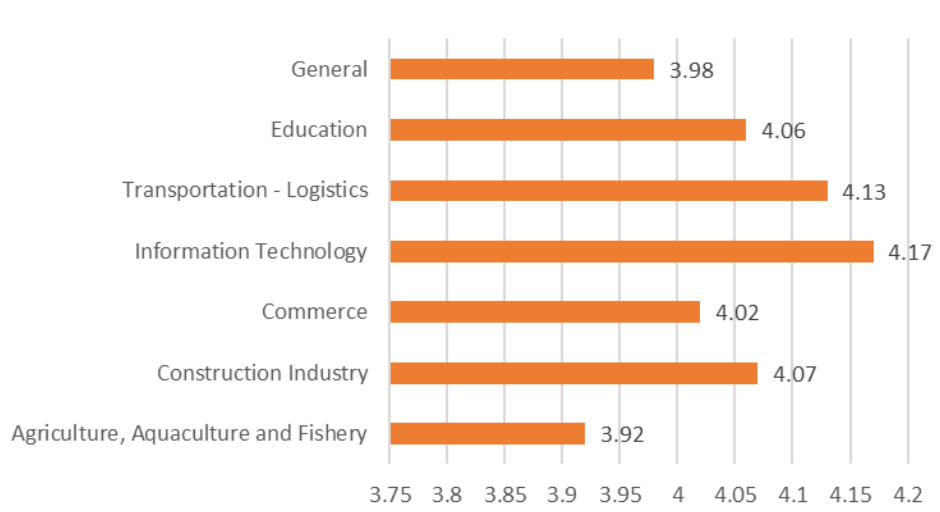


Figure 5. Readiness of SMEs employees by sector of operation

Source: Research team

Employees in all industries have a readiness level of four or higher, which is greater than the industry average. Agriculture, forestry, and aquaculture industries achieved the lowest score (3.92), which is lower than the overall result for the entire industry. Although the demand for technology applications in production in this industry is increasing, the readiness level of employees is still low. This may be due to the fact that this field has not yet developed many advanced technologies, and the majority of its work is still performed manually. It can be said that employees in this industry are accustomed to working without new technologies, making digital transformation difficult for them to adapt to. The IT industry ranks first with a readiness level of 4.17 out of 5 points. This is completely consistent with reality, as employees in this industry regularly access technology applications and intelligent devices, so they feel very ready to participate in digital transformation. Next are industries such as transportation-logistics (4.13), industry-construction (4.07), education (4.06) and commerce (4.02).

Readiness by form of bussiness ownership

According to the survey results, employees in different types of enterprises have a readiness level of around 4 points. Overall, there is little disparity in readiness levels between

different types of enterprises. Corporations and partnerships rank first and second with a small difference (4.02 and 3.98, respectively). Private enterprises have the lowest score of 3.91, which is lower than the overall score for all industries (3.97/5).

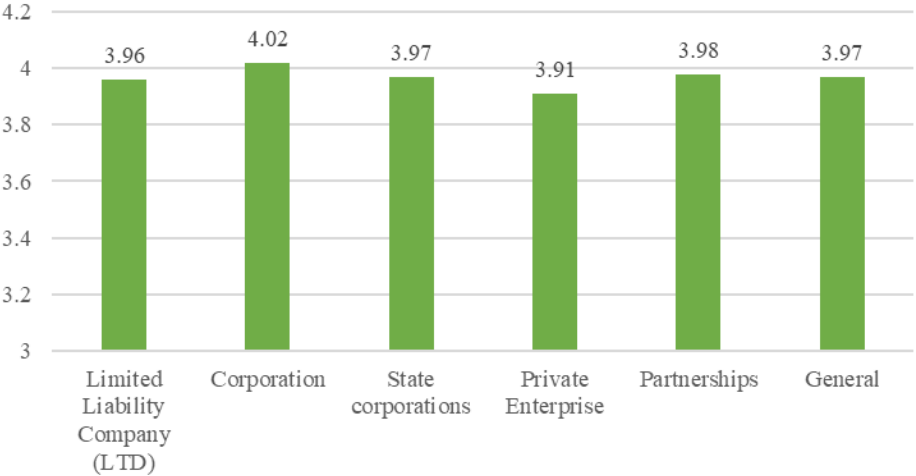


Figure 6. Readiness of SME employees by form of business ownership

Source: Research team

Readiness by professional qualifications

Employees who graduated from technology-related fields show a higher level of readiness for digital transformation, scoring 4.05/5, which is consistent with the reality. A group of employees in the information technology industry stated, "We frequently apply technology to work and other activities, so we do not feel this is a big challenge." Next are employees who did not graduate from technology-related fields but whose jobs involve digital technology, scoring 4.01/5, which is comparable to the previous group. Finally, employees who mainly use utilities like internet access and social networks score around 3.84/5.

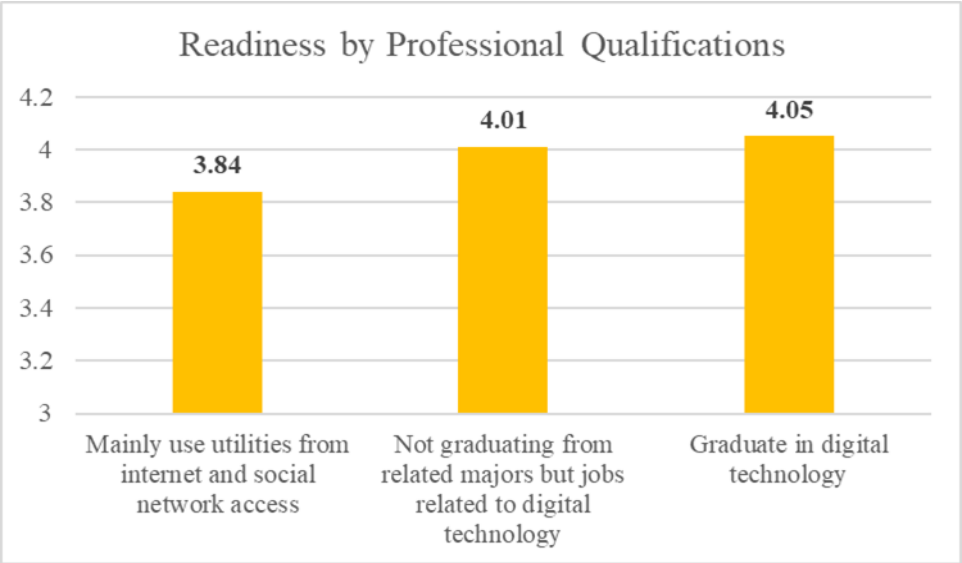


Figure 7. Readiness of SME employees by professional qualifications

Source: Research team

4.3. Employees' assessment on readiness-related factors

EFA Analysis - Evaluation of the Scale

The Kaiser-Meyer-Olkin (KMO) and Bartlett tests were utilized to determine whether factor analysis was suitable for the set of propositions. The Cronbach alpha coefficient and exploratory factor analysis (EFA) are utilized to determine the dependability of each structure. All of the investigated structures satisfy the requirements for internal consistency and unidirectional proportionality, as demonstrated by the findings. The item-total correlation of each construct's items is greater than 0.3. All KMO coefficients are greater than 0.5, the p value (Bartlett test) is 0.05, the total explanatory variance is greater than 50%, and the loading coefficients of the items in each structure are all greater than 0.5 (Table 2). The fundamental established factors are identical to those in the original research model; only undesirable variables will be eliminated.

Table 2. Reliability of each factor (n = 208)

Factor	Number of Items	Cronbach's Alpha	Corrected-item total correlation minimum	KMO	p-value	Factor loading minimum	TVE (%)
Attitude	4	0.882	0.694	0.806	0.000	0.648	73.749
Characteristics of employee	4	0.876	0.717	0.822	0.000	0.600	73.063
Self-efficacy	5	0.932	0.776	0.899	0.000	0.679	78.620
Leadership	3	0.807	0.607	0.704	0.000	0.669	72.147
Perceived benefits	4	0.893	0.682	0.788	0.000	0.556	75.729
Perceived risks	5	0.900	0.684	0.871	0.000	0.634	71.871
Readiness	4	0.880	0.727	0.817	0.000	0.605	73.478

Source: Research team

Key findings from the survey and in-depth interviews

After factor analysis and reliability testing of the scale, the employees' perceptions of the factors are examined. Using a combination of survey and in-depth interview data, a more comprehensive picture of employees' readiness for digital transformation is drawn up.

Table 3. SMEs employees' assessment on readiness and related factors

	SDA	DA	N	A	SA	SCORE
Self efficiency						3.81
SE1	1.32	1.33	26.52	54.94	15.89	3.83
SE2	0.94	2.34	30.71	54.34	11.67	3.73
SE3	0.56	1.87	22.78	57.58	17.21	3.89
SE4	0.74	4.55	28.93	48.32	17.46	3.77
SE5	0.69	2.65	28.15	52.30	16.21	3.81
Attitude						4.1
AT1	0.66	0.00	8.72	53.93	36.69	4.26
AT2	0.57	0.00	16.43	54.77	28.23	4.10
AT3	0.63	0.99	17.53	51.76	29.09	4.08
AT4	0.95	0.99	16.43	63.82	17.81	3.97
Leadership						3.92
LD1	1.69	2.00	18.76	59.49	17.85	3.90
LD2	1.87	2.76	17.42	60.12	17.83	3.89
LD3	1.75	1.53	16.47	57.52	22.73	3.98
Characteristics of employee (Innovativeness)						4.06
CE1	0.68	0.00	16.02	54.76	28.54	4.10
CE2	0.71	1.37	13.73	58.51	25.68	4.07
CE3	0.73	1.00	17.45	51.45	29.24	4.07
CE4	0.68	1.69	19.11	51.98	26.54	4.02
Perceived benefits						4.03
PB3	0.56	0.60	11.21	56.28	31.35	4.17
PB4	0.83	4.58	22.18	50.46	21.95	3.88
PB5	0.89	2.54	19.54	52.66	24.37	3.97
PB6	0.70	0.87	14.57	55.93	27.93	4.10
Perceived risks						3.31
PR1	3.87	9.33	25.83	50.00	10.54	3.54
PR2	5.57	13.25	26.10	45.70	9.38	3.40
PR3	7.39	18.32	37.16	29.14	7.99	3.12
PR4	6.84	14.90	35.01	33.77	9.48	3.24
PR5	7.56	14.90	30.46	36.76	10.32	3.27
Readiness for digital transformation						3.99
RT1	0.67	0.66	13.13	61.87	23.67	4.07
RT2	0.66	1.99	21.08	56.84	19.43	3.92
RT3	0.65	2.23	16.23	62.95	17.94	3.95
RT4	0.68	1.12	17.88	57.37	22.95	4.01

Source: Research team

Attitude: Employees have a very positive outlook on digital transformation. With a rating of 4.1, it shows that the majority of them perceive digital transformation as useful and necessary. Although there are risks associated with digital transformation, overall, the benefits outweigh them. This is a good sign that encourages the readiness of employees to embrace digital transformation.

An office female employee stated: *"When we weigh the pros and cons, the benefits are still greater, and it's important to adapt and embrace it."*

Similarly, an engineer expressed: *"Adapting to digital transformation is necessary to leverage its benefits and, at the same time, avoid potential risks in the future."*

Characteristics of employees: Most employees have an objective view of digital transformation due to their openness and enthusiasm for new experiences. This aspect has a relatively high impact on employees' readiness, with a score of 4.065 out of 5. The survey sample of the study focuses primarily on workers aged 18-35 who have an open mindset and are willing to adapt to digital transformation.

During an interview, an engineer shared his opinion to reveal the personality traits of a young person with awareness of digital transformation, as follows: *"Currently, the world is rapidly moving from the industrial age to the digital age. This is creating a significant difference in the operation and production methods of economic sectors worldwide. Adapting to digital transformation is essential to take advantage of its benefits and avoid potential risks in the future."*

Self-efficacy: Overall, the "self-confidence in personal capabilities" aspect of employees has a significant impact on their readiness to adapt to digital transformation, with an average score of 3.806 out of a total of 5 points. Most employees feel that the ongoing digital transformation is reasonable for the development of the times because technology is continuously advancing and requiring employees to have the necessary technical skills to work. A Viettel employee expressed their opinion in an interview, saying, *"Artificial intelligence is thriving, and digital transformation is a means to demonstrate that." Digital transformation influences employees, making it easy for them to complete their work, so employees expect digital transformation to continue to exist in the present and future.* However, employees who lack technical skills and good knowledge of digital technology may feel less ready to apply and perform various tasks with digital transformation, as the results show that these two factors only account for about 3.73 points out of a total of 5 points.

After being interviewed, a 26-year-old automation mechanical engineer said, *"I see that work productivity has increased, and document storage and transmission are easily done."*

Leadership: In this aspect, the average score is 3.923/5 points. Therefore, organizational leaders also have a significant impact on the readiness of employees to adapt to digital transformation.

Leadership within a company has a significant impact on the readiness of workers in digital transformation. Leaders play an important role in setting strategic direction and

driving change within the company. According to interview results, most workers and experts affirm that leadership has an impact on their readiness for digital transformation.

"The senior leaders in my bank also proposed and directed our bank to be a pioneer, to try hard in digital transformation. Almost all employees responded well," A female bank employee stated her viewpoint.

They realize that leadership motivates employees by encouraging and supporting innovation activities. Employees are encouraged to learn and develop new skills and be ready to adapt to digital transformation. Another important aspect is that leaders set clear goals and determine the necessity of digital transformation, publicize and help employees understand the importance and purpose of digital transformation.

The perspective of a 25-year-old female Viettel employee on this issue is as follows :*"At my company, from senior leadership to grassroots leaders, everyone advocates the importance of digital transformation, promoting readiness for learning and adaptation to digital transformation. And employees are gradually getting used to this."*

Perceived benefits: significantly affects the readiness of employees in a business to adapt to digital transformation. This is clearly demonstrated by the high average value of 4.03. Employees have a clear understanding of the benefits that digital transformation brings, and this aspect has a major impact on their readiness to adapt to digital transformation when they realize that digital transformation helps them increase work productivity and reduce the time spent on tasks at a high level, with an average value of 4.17 out of 5. An electrical engineer who was interviewed stated, *"Digital transformation has brought and is bringing many benefits to both me and the company. And here are some of the main benefits: saving time and effort, increasing flexibility and convenience, enhancing connectivity and interaction, and strengthening the ability to work and learn remotely."*

Similarly, a 23-year-old female employee working in the banking sector stated the benefits of digital transformation in this field: *"Digital transformation helps people work smartly and quickly, helping me save time. For example, now I have many international payment sets. Instead of manually checking the files, there will be software that can check the information, results of all customer systems, and companies that have a need for money transfer. From there, they can check if the company has bad debts or which side the company has made payments to. That is one of the ways digital transformation helps in the banking industry."*

Regarding the benefits that help increase their income, the average value is low at 3.88. This is because, in addition to the benefits of increased salaries for those with knowledge and skills to adapt to digital transformation, there are also concerns about the possibility of reduced salaries for some employees who are not yet prepared to adapt. This will be more evident when analyzing the results from the perspective of risk perception.

Perceived risk: In addition to perceiving the benefits, employees also have an objective view of the risks associated with digital transformation, which significantly impacts their readiness to adapt to it, with an average score of 3.314/5. Employees are concerned about their ability to meet the high demands of digital transformation, which poses a relatively high risk of job loss, affecting their readiness to adapt and limiting risks.

Regarding this issue, an interview with a male manager expressed the viewpoint: *"Indeed, if the digital transformation process occurs synchronously and extensively, there will be challenges for those at lower levels. For example, new employees or those who are not really necessary. Digital transformation makes work more convenient and efficient, everything is automated, so the number of employees can be reduced. The risk of digitization replacing humans is significant."*

However, there is also another perspective that employees are not afraid of being replaced. In an interview, a male automation mechanical engineer said, *"The risk of job loss and being replaced is one of the reasons to worry about, but I don't think that's the main reason. I am not afraid of being replaced by digital skill applications like Chat GPT, AI. On the one hand, artificial intelligence is indeed powerful, but in my work, machines and AI cannot replace humans. I still have to be the one who makes decisions and controls the quality of the work."* The concern about reduced income has an average score of 3.24/5, indicating that employees tend to fear the risk of reduced wages, as well as finding it difficult to find other jobs if they lose their current job. These risk perceptions of employees give them a more objective and realistic view of the need to adapt to digital transformation.

Readiness: Most survey participants have a clear understanding of the level of readiness for digital transformation. According to the Likert scale, the level of readiness in this group reaches 3.99/5 points, which is a relatively high score. This shows that employees have an objective view of digital transformation, specifically its benefits, risks, and value. Based on these objective views, they may be more willing than ever to participate in the digital transformation process.

As a 22-year-old office worker said: *"... there is no field or profession that is not digitized. Even when shopping, we can see fruit and vegetable sellers integrating QR codes and electronic wallets for easy payment. They have adapted to digital transformation. So why don't I do the same...?"*

A similar view was expressed by a 26-year-old office worker regarding the readiness of all employees in the company: *"Depending on the age of the employee, I see that digital transformation is easier to adapt to and suitable for younger generations. But most people are trying to adapt, ready to apply the digital transformation to work to increase work efficiency."*

Through the interview results combined with the Likert scale, it is evident that the level of readiness of workers in digital transformation is relatively high, indicating that this is happening every day and is consistent with the development trend of the times.

5. Conclusion

The study has identified groups of readiness-related factors, such as self-efficacy, attitude, characteristics of the employee, leadership, and perceived benefits and perceived risks. According to the findings of the analysis, the leadership's support for the digital transformation process has not been felt by the employees, who lack confidence in their ability to embrace digital transformation. This implies that managers of small and medium-sized businesses must be more determined, communicate more effectively about digital

transformation, and motivate employees to participate through more specific and effective measures. This will also increase employees' confidence in the digital transformation process, making them more proactive in capturing and reaping benefits and mitigating risks associated with this transformation. When employees are prepared for digital transformation, they benefit and advance toward their personal objectives, thereby contributing to the achievement of the organization's objectives.

Future research: Further studies may consider the following directions: Quantifying the impact of the aforementioned factors on SMEs' employees' readiness for digital transformation; Consider the effect of demographic variables as moderators; Concentrate on sectors and employee groups with distinct demographic characteristics; incorporate more variables into the analysis. Focus on particular aspects, such as leadership or enhancing the competencies of employees, to motivate them to better adapt to digital transformation.

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APPLICATIONS INFORMATION AND COMMUNICATIONS TECHNOGY IN WAREHOUSE OPERATION: A CASE STUDY IN VIETNAMESE LOGISTICS COMPANIES

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Abstract

Warehousing has been played important role in adding value in the supply chain. Currently, with rapid development of information and communications technologies (ICTs) with usage of Cyber-Physical systems, big data, warehouse management systems, sensor networks will improve productivity as well as boost up levels of customer service in warehouse operation. These smart technologies named barcode, RFID, auto guided vehicle (AGV), WMS... are useful tools that can be flexible with the whole warehouse system and increase efficiency and profitability in fulfillment operations for many orders...The research suggests that ICTs should apply depend on companies transactions for its benefits. This paper suggests that the board management in logistics companies make a good decision in investing in advanced technology.

Keywords: *ICTS, warehouse operation, RFID, WMS, Barcode, AVG*

1. Introduction

Warehouse is one of added- value parts in logistics process. The fact that it is a place where thousands of customers orders are carefully handled under the complex tasks and high responsibilities in order to meet the customer need of lead-time, on time delivery. In logistics 4.0, ITCs have enabled company to be more productive, fully operational in improving of customers service levels at the seasonable cost in term of the warehouse management. There is a comprehensive software package for warehouse management. Thanks to its communication capacities with the various systems involved in the logistics process, it enhances the features and operation of the devices, thereby ensuring the highest level of efficiency of the operation. The managers have planned their resources (human resources, material equipment handing, packaging ...) in the peak reason or for the medium term, long term for its smooth processing (René B. M. et al., 2017). There have been thousands of orders received daily, across a wide range of thousands of stock keeping units (SKU), serving all consolidated orders or separated orders and shipping in hundreds of vehicles. In the

conventional warehouse, it is highly appreciated the significance of warehouse management system (WMS) in order to save delivery- time, order entry accurately, avoid mistakes in routine practices. In this paper would like to present the usage barcode, RFID, auto guided vehicle (AGV), WMS....in warehouse operation to achieve its customers' requirements.

Hence, this paper is aimed at answering the following research questions:

1. Overview literature of ICTs especially usage barcode, RFID, auto guided vehicle (AGV), WMS....in warehouse operation.
2. What are values of ICTs once they have been applied in warehouse?
3. Which proposal should be made about ICTs widely used in warehouse to keep up with high technology development trend of smart warehouse?

2. Literature review

Most of products handled at those of types of warehouse (manufacturers, distributions centers, B2C- orders) where orders received and shipped must be on time delivered, right quantity, right place, right condition. In order to effectively manage physical distribution process from manufacturers, shopping malls to end users, the managers of warehouse tasks have to monitor properly the tracking of orders. Therefore, Warehouse Management Systems (WMS) is an effective solution to increase customers service. It has played an important key to save human resources by tracking customers' orders (advance shipment, time shipment, order quantity, feedback, shortage orders managements...). WMS is considered as an effective tool for supporting warehouse 's customer service level in terms of inventory control (Andiyappillai. N. (2020). WMS can help warehouse managers to keep an intensive check of flow of inbound of goods and outbound goods. In order to keep in touch with each SKU (stock keeping unit) that has different size, style, color, location (Silver et al., 1998). WSM applied on warehouse operations as a tool to describe all existing interaction between the parts composing the warehouse processes in order to standardize and optimize material flows (customer services, storage location control, picking lists). WMS is designed all distinct features for eliminating of entering wrong data. Its functions to gather information available for those who have right to get access to get information for solution. Warehouse leaders can report all activities (how the goods are shipped; what are goods picked). It connects Sales offices, Customer service, Transporter to process orders shipment. Barcode encodes product information into bars and distinct characters, making it much convenient in handling, tracking goods stored in warehouse. Barcodes or RFIDs are often used in WMS for products tracking, RFID can improve the efficiency of the warehouse management and make a rapid self-recording of receiving and delivery Žunić at al., 2018). In logistics 4.0, robots or self -driving vehicles named AVGs are increasingly popular in warehouse. They have played an important role in replacing humans working in process. According to Hana Neradilova (2017) AVGs have developed into a reliable and efficient technological equipment during more than fifty year. AGVs is also a practical idea to reduce the inefficient routine practices to avoid inaccuracies as least as possible as well as to solve the labor shortage issue (Navodika et al., 2019). For

the past ten years, AGVs have been widely used in automated material handling in industrial environments (De Ryck et al., 2020). AGVs have been used nowadays in factories to make factory environments more intelligent where the products themselves will be used to determine their next required process (Mehamit et al., 2018). In warehouse tasks, AGVs are automatically controlled vehicles that are used in-house for floor bound conveying (Markis et al., 2019).

The role of ICTs in warehouse operation

It is undoubted that more and more ICTs are used in the warehouse operation. This usage will dramatically impact on how the warehouse will be organized in relation to new technologies and configuration. ICTs will coordinate intralogistics flows and different hardware systems, integrates manual and automatic operations. The benefits of using ICTs in term of delivering palletized goods in warehouse are:

- Saving the labor cost and operation expenses:

Warehouse manager's responsibilities are to care their employees, health and safety, working hours. (Alan 2010). The ICTs such as AVGs are considered like robots working in warehouse without any requirement benefits as well as remuneration or social welfare. We do not worry about the headcount's resources rising annually or thinking of yearly upgrade salary or other benefit of forklift drivers, day-off for holidays, or national days or motivation base on KPI performances.

- Putting safety priority:

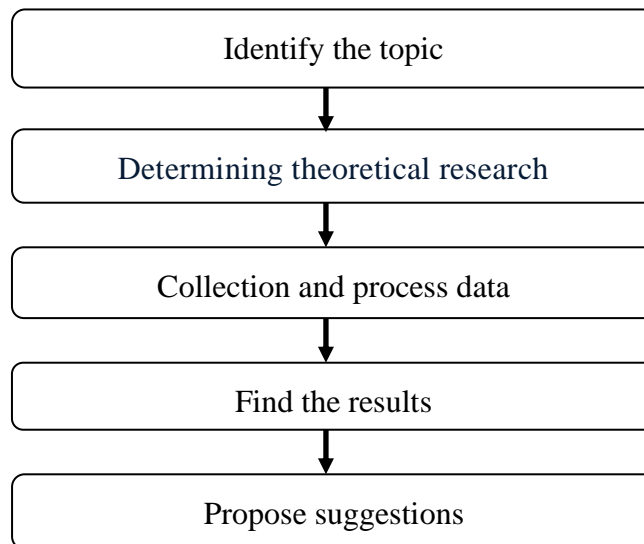
Well-designed ICTs determine the most effective allocation of both labor and space in order to reduce waste. These AVGs let you place pallets, shelves and other equipment's that need to accommodate for in warehouse, optimize the flow to movement. By contrast, equipment run by human operators, such as forklifts, do not have as many built-in safety mechanisms and ultimately rely on human input, whereas a human operator always has the potential to become distracted or fatigued and therefore cause an accident. (Tezer & Aynas (2018)

- Improving warehouse productivity and increasing accuracy:

In warehouse operation, there are thousands of tasks happening daily with thousand order waiting for handling. In peak reason, mistakes may be arisen by people without controlling or anticipating any trouble. By replacing the human resources with AVG, a lot of potential inaccurate workflows or workload will reduce partially and increase output, this helps operation become more smoothly and productive. (Barreto et al., (2017). With SKU, barcode technology, they enable of inventory tracking, management, location of goods, improving inventory turnover ratio and low deadstock quantities.

2. Method

The research was held from February to May 2023 which qualitative approach is used with the techniques of synthesis, comparison, and data descriptive statistics collected by short interviews with managers in logistics companies. There are some steps as below:



The information is collected from primary and secondary sources. The first sources are interviewed with managers in warehouses of logistics companies located in Ho Chi Minh, Dong Nai, Vung Tau, Long An and Binh Duong Province. The author has conducted a survey of 140 companies with different logistics service supply. Data is processed through Excel dashboard software.

Secondary sources are collected from researches published in confirmed journals, e-books.

3. Results

ICTs are applied directly to business in logistics service providers more and more deeply and widely, considered as a great tool for competitions between companies. According to Vietnam Report (2022), 100% of logistics enterprises have invested in digital transformation, of which 86% think that applying ICTs will have many benefits such as more work volume in a while, improved efficiency, etc. increase sales ; 36% think that ICTs in logistics activities will help customers approach to international markets, gain experiences when trading in international environment. In fact, logistics enterprises apply common technology platforms in their entire operations, emerging technology platforms are deeply paid much attention to. Of which, about 68% of logistics enterprises have applied revolutionary 4.0 advances to their operations such as IoT (19.4%), cloud computing (18.4%), artificial intelligence (18.4%), big data and blockchain (14.3%).

In the paper, the author conducted a survey of 140 logistics companies. Among them, 20% surveyed companies in the field of providing international 3PL/4PL services, followed by the field of domestic forwarding and transportation, warehousing services. Generally, of the software that logistics enterprises are applying, the number of barcode, RFID, auto guided vehicle (AGV), WMS are applied by enterprises the most (over enterprises participated in the survey). And the results are statistically calculated by the author through Figures 1, 2.

Most of warehouses located in Ho Chi Minh city where is the largest economic center and most populous city. It also processed most of on-line orders, B2C -processing orders.

Barcode technologies and WMS software are used in most of warehouse operations, with a percentage of 36 % and 29 % respectively.

AVG technology applied at least with the rate of 14% of 140 warehouses collected.

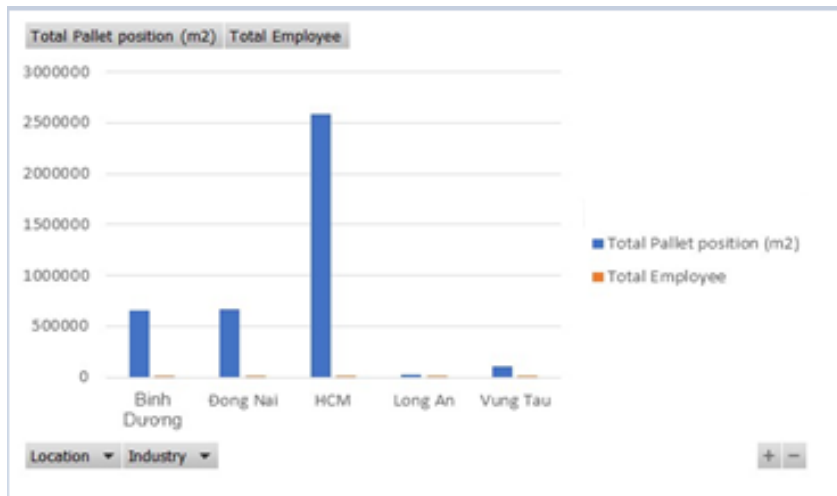


Figure 1. Location of warehouse of logistics companies

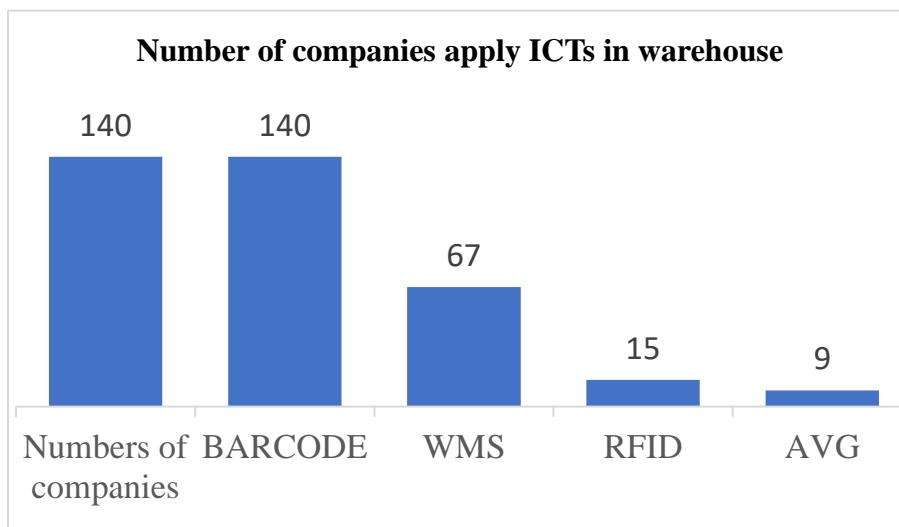
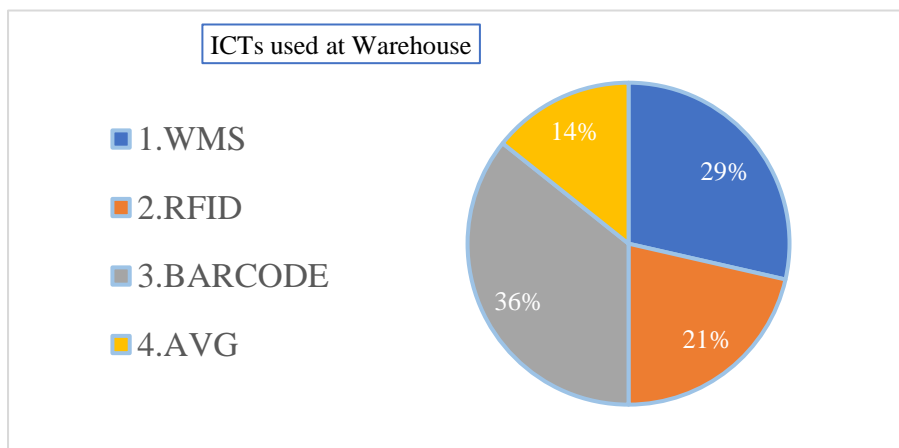


Figure 2. ICTs are used in warehouses

4. Discussion and Conclusion

Most of advantages can be listed that 28 percentage of answers showed that productivity improve. (connect to customer service to control accuracy inventory management)

Some disqualified workers are reduced with 20 percentage of surveyed companies. When ICTs applied for warehouse operation, some part of shop floor job such as checker, forklift drivers, pickers, packers will be reduced. Otherwise, qualified jobs such as technical trainers, maintenance workers will replace the labor force.

As most of companies' answers said that there is high initial investment and Wi-Fi infrastructure linkage for the whole systems with 34 % and 27 % of replies respectively. In normal situations, in order to make sure throughout operation smoothly, the managers have to plan the number of headcounts really in need in operations such as forklift drivers, forklift trucks, pickers, customers service as well as budget for that labor forces. On the other hand, the expense invested in infrastructure of the warehouse environment are enormous. For example, with the same volume of through-put, factory requires planned more than AGVs to handle all the quantity of pallets. There is imbalance in financial status when inventing AGVs replacing shop floor workers. The money company needs to pay per month to cover all operations shall increases more than 50 % of cost. According to some researchers found that the vehicle guidance is realized by some hardware like wires or lines that are placed in the working environment of the robot (Markis et al., (2019). The conventionally used AGVs require also a well-defined, structured and obstacle-free working environments according to Mohammed et al., (2019) and De Ryck et al., (2020). Moreover, an infrastructure wireless network is the wireless network that contains a wireless router/access point and enables other computers to connect to it wireless. The disadvantage of infrastructure mode wireless networks is the additional cost of access point hardware. The company needs to invest in complete synchronization of the warehouse IT system.

Training cost for skills and expertise

Patrico & Mendes (2020) believed that new skills and expertise are required to implement and maintain the systems and hence existing or potential employees must be retrained to new processes, sometimes to a higher technical aptitude. Moreover, the labor market has not yet met the labor requirements of high professional and technical skills of enterprises and organizations, including FDI enterprises. Industrial parks, export processing zones, high-tech zones, FDI sector and labor export still face difficulties in recruiting highly qualified and technical workers to meet the transfer of new science and technology from foreign. Vietnamese workers are still weak in foreign languages and lack understanding of the law and culture of the country they come to work for.

From the above analysis, this study proposes some suggestions for applying ICTs to warehouse operation.

Firstly, it is essential for board management to raise awareness of efficiency of ICTs. They may build business cases in long terms. They need to see the benefit of ICTs and operation costs so that they allow smart technology to be integral part in every warehouse operation.

Secondly, it is agreed that implication of new technology in warehouse operation also brings challenges to workforces, to the management boards. Therefore, they consider to built human strategies for flexible change and adaptability with high customers services.

To sum up the application the new technology will bring lot of advantages as well as disadvantages. At the moment, it is possible to confirm that using ICTs is one of the best solutions in warehouse operation in terms of productivity and its low qualified jobs.

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CASHLESS PAYMENTS IN VIETNAM: BEFORE AND DURING THE COVID-19 PANDEMIC

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Abstract

The article studies the impact of the COVID pandemic on the situation of non-cash payment activities in Vietnam. By collecting data on domestic payment through payment methods, quantity, and balance of demand deposit accounts in Vietnam for the two periods which are before and during COVID, the author analyzed vividly and detailly the growth of non-cash payments in general and through payment methods in particular in case of without and with COVID. As a result, cashless payments started to show growth before COVID appeared, but COVID is undeniably a strong push to make this payment business grow stronger and more impressive, especially for payment methods via payment orders, internet banking, and mobile banking.

Keywords: *Cashless Payments, the impact of the COVID pandemic, Vietnam*

1. Introduction

Cashless payment is the trend of global economic and civilized development. However, depending on the level of economic growth, technology, people's knowledge and consumer culture, each country will have a different roadmap to non-cash payment. In recent times, especially under the impact of the Covid 19 pandemic, Vietnam has been catching up very quickly with this trend. Non-cash payment activities tend to increase over the years, both in terms of transaction value and volume. According to statistics of the State Bank of Vietnam, non-cash payments in 2022 have doubled compared to the previous year. The use of cashless payment instruments is driven by ease of use in micropayments and retail, scheduling financial transactions that can be managed anywhere, reduce transaction costs and be more efficient than using cash payment instruments (Irvi Givelyn et al., 2020). These benefits seem to have been recognized by the Vietnamese public from students, officers to small retailers in traditional markets in big cities and towns. When people get used to this form of payment, it will create momentum for even stronger growth in the future.

2. Literature review

Cashless transaction refers to an economic context in which goods and services are traded without the use of cash, either through electronic transfers or by check payments (Hock-Han Tee and Hway-Boon Bee, 2016). In addition to electronic transfers and checks, payments through electronic wallets and smart banking applications have become familiar and dominant today. Therefore, it is possible to expand the concept of non-cash payment as a form of payment using electronic payment means applying digital technology such as: E-

wallet, MobileBanking, InternetBanking... or indirect payment. through credit institutions instead of buyers and sellers directly exchanging with each other as is the practice today (Nguyen Dai Lai, 2020).

Non-cash payment methods:

- Checks: Checks are one of the oldest cashless payment methods. In this method, the person issues a check for a specific amount to another person. Checks are deposited in the respective bank. The bank processes a payment through a clearinghouse. All transactions are done through recorded checks and proof of payment.

- Bill of exchange accepted by the bank: a certificate confirming the deferred payment in international trade.

- Automated Teller Machines (ATMs): are machines that withdraw money, deposit money, transfer funds between two or more accounts, and pay bills. Automated teller machines will be used more often to make many online payments such as utility bills, airline tickets, purchases, etc.

- National Electronic Funds Transfer (NEFT): This is an online platform where banks exchange value, thereby enabling instant transfers between banks to one or more beneficiaries for each individual. core.

- Real Time Gross Settlement (RTGS): This is an online payment system used by banks and financial institutions to transfer money directly and instantly from the bank account of one party to the bank account of another party, with the transferred amount being the full amount (gross) without any deductions or charges. The RTGS system operates 24/7 and is operated by the central bank or financial institution to ensure safety and reliability in the payment process. Using RTGS reduces payment risks and speeds up the payment process, while providing detailed information about financial transactions that users can use to verify their transaction history.

- Mobile Banking: this is a service provided by a bank, allowing users to use the bank's online services, perform online transactions through an application on the device. mobile.

- Electronic transfers (E-transfers): Electronic transfers are made over the internet on PCs, laptops and other devices. Bank customers who have signed up for online banking can perform basic banking transactions via the web.

- POS terminals: POS is deployed to point of sale locations where users swipe their electronic cards through them to pay for purchases or services instead of using raw cash. Since the POS terminals are online in real time, the customer's bank account is instantly debited for the value of the purchase made or the service enjoyed.

- E-wallet: An electronic wallet that stores card numbers and cash. This is a virtual wallet that can store credit cards, debit cards and other information. Both the customer and the merchant of the e-wallet require a smartphone with an active internet connection.

- Credit card: This is a plastic card used to pay for goods or items delivered on a consumption-first, pay-later basis. Each time the customer makes a payment, the customer is granted a credit by the card issuer and will be charged interest after a certain period of time according to the bank's regulations.

- Debit Card: This is a new form of value transfer in which the cardholder, after entering a PIN, uses a terminal and network to enable the transfer of value from their account to the merchant's account.

- Cash card: is an instant payment card without a pin code at public card acceptance points, often integrated with public transport cards, student cards, employee cards, etc.

- QR code payment is the most modern method of payment & receipt of payment today, allowing customers to use the built-in QR-Pay feature in Mobile Banking applications of domestic banks and e-wallets. on mobile phones to pay for orders.

Cashless payments bring many benefits to consumers, businesses, and society.

Firstly, cashless payments save consumers and businesses time, as they don't have to spend time counting money, changing money, or queuing for cash delivery.

Secondly, with cashless payments, users don't have to worry about losing money, or having their credit cards and personal information stolen. Current electronic payment facilities are secure and well encrypted.

Thirdly, cashless payments make it easy for consumers to track their spending and manage their personal finances. Businesses can also easily manage their finances and reduce the risk of loss due to cash.

Fourthly, cashless payments reduce costs for printing, transporting and storing cash, as well as for collection, counting and financial control.

Fifthly, cashless payments offer flexibility to consumers and businesses in using different means of payment such as credit cards, wire transfers, e-wallets, internet payments, and many other forms of payment. Thereby bringing convenience and boosting spending.

Sixthly, cashless payments reduce financial crimes such as counterfeiting, counterfeiting, and stolen cash. More importantly, the government will limit tax evasion and corruption.

Finally, cashless payments reduce the use of banknotes and coins, helping to reduce waste and protect the environment.

3. Results

3.1. Research time and data

The COVID epidemic began to spread in December 2019 in Wuhan city, Hubei province, China and then quickly spread around the world. In Vietnam, from January 2020, the government has implemented epidemic prevention and control measures including border control, closing entry points and issuing guidelines on how to prevent and control the epidemic. On January 23, 2020, Vietnam recorded its first case of COVID and then the number of infections increased rapidly. However, the Vietnamese government quickly put in place measures to control and prevent the disease from spreading. These measures include monitoring, control and isolation of suspected or positive COVID cases; mandatory mask wearing in public places and on transport; Social distancing and limited gatherings. By the beginning of 2022, the epidemic began to break out strongly and peaked in mid-March 2022. By the end of the second quarter of 2022, the epidemic was basically under control.

Thus, it is possible to mark the milestones of starting the epidemic in the first quarter of 2020, ending in 2022.

So, the study time is also divided as follows:

- Before the pandemic: Q1 2018 to Q4 2019
- In the pandemic: the first quarter of 2020 to the end of 2022

Data on payment is collected and aggregated by the author on the website of the State Bank of Vietnam. Data is published quarterly.

3.2. Current status of cashless payments in Vietnam before and during Covid

3.2.1. Current status of payment deposit accounts

To make non-cash payments, people need to have payment deposit accounts at commercial banks. The characteristics and buying habits of Vietnamese people are concentrated in concentrated and spontaneous markets, so in the past, small traders only received cash. They do not have a POS tool, nor do phone payment methods that are not yet popular and convenient. However, with the sales promotion of commercial banks, the number of accounts and payment deposit balances has increased significantly. The fourth quarter of 2019 had a total number of accounts of 88.5 million accounts, an increase of 11% over the same period in 2018. In terms of balance, the end of 2019 represented a remarkable increase compared to the same period in 2018 with an increase of 32%. This shows that consumption habits and payment through bank accounts have increased, which should motivate people to keep more money in their accounts.

When the epidemic began to increase, due to blockade measures, restrictions on mass gatherings and concerns about hygiene when using paper money to pay, many small businesses and people all over the country opened more accounts. account and maintain more payment deposit balance. In the fourth quarter of 2020, the number of accounts is more than 100 million and the balance is 666.7 billion VND, up 13% and 33% respectively over the same period in 2019. The fourth quarter of 2021 marks a strong increase with 21% in volume and 41% in current account balance compared to the same period in 2020. The deposit account balance was maintained at a record level of 1,051,018 billion dong by the end of the first quarter of 2022, as well. This is when the number of people infected with Covid also reached its peak. It is clear that the Covid epidemic has a strong impact on people's payment habits. From being forced to use payment by wire transfer, scanning QR codes, cards, etc., now people have formed a habit and realize the convenience and enjoy the added benefits of payment methods. new. By the third quarter of 2022, the number of accounts was 141.2 million and the balance was maintained at VND 986 trillion, up 88% and 163% respectively over the same period in 2018.

3.2.2. Status of domestic transactions via payment methods

- Before covid:

Total domestic payments through cashless payment methods increased significantly in 2019 at a fairly significant rate of 57% and 27% respectively in terms of transaction

volume and value. Thus, even before the Covid-19 epidemic, Vietnam had a growth in both quantity and quality in non-cash payment activities.

Table 1. Domestic payment via payment methods in the period of 2018 -2019

	2018				2019			
	Quantity (transaction)	%	Value (Billion VND)	%	Quantity (transaction)	%	Value (Billion VND)	%
Bank card	229,220,567	20.9	592.205	0.6	326.727,521	19.0	798,870	0.6
Check	708,258	0.1	358,439	0.4	307.861	0.0	191.446	0.2
Payment orders	767,884,062	70.1	83,945,308	86.3	1,333,719,713	77.6	110,838,369	89.6
Payment by collection	47,657,994	4.3	5.555,308	5.7	10,372,756	0.6	6,000,644	4.8
Other	50,176,624	4.6	6,833.378	7.0	48,291,525	2.8	5,906,807	4.8
Total	1,095,647,505	100	97,284.638	100	1,719,419,376	100	123.736,136	100

Source: compiled and calculated by the author

Structurally, the old payment methods such as checks, payment by collection and other methods (bills, domestic letters of credit, money orders, etc) have also shown a clearly loss of position and gradually replaced by payment via electronic payment order.



Figure 1. Structure of domestic payment transactions by payment methods 2018-2019

Source: author's own synthesis and calculation

- During and after Covid:

The trend of increasing cashless domestic payments continues to increase at an impressive rate, especially after the Covid-19 raging. In 2020, the total number of transactions through payment methods increased by 72% compared to 2019. However, the growth rate of transaction value is quite modest at 16%. The reason is due to the increase in small value transactions, demonstrating the participation of individual consumers in payment as well as changes in people's payment habits.

In 2021, the growth rate of the number of transactions will slow down, partly because 2021 is the year the epidemic is at its peak. Almost all economic and commercial activities

are significantly affected. However, in 2021, Vietnam's stock market boomed again because the country has demonstrated good disease control capabilities and had appropriate recovery and disease prevention strategies. The development of financial technology makes it possible for retail investors at home to still buy and sell securities through non-cash payment. Therefore, although the growth rate in the number of transactions was only 36% (half of the previous year), the transaction value still increased by 16% (equal to the previous year).

The year 2022 marks an amazing growth of total number and value of cashless payments with 89% and 32% respectively. In early 2022, although the number of people infected with Covid reached its peak, the vast majority of people had been vaccinated, so symptoms were mild and no longer a cause for concern. People are also ready for herd immunity. The state completely lifted the blockade and other negative measures on the economy. By this time, the habit of paying via banks and e-wallets has been formed. Many people clearly see the benefits and continue to pay cashless in their daily small purchases.

Table 2. Domestic payment via payment methods in the period 2020-2022

	2020		2021		2022	
	Quantity (transaction)	Value (Billion VND)	Quantity (transaction)	Value (Billion VND)	Quantity (transaction)	Value (Billion VND)
Bank card	456,166,880	993.813	502,288,731	1,058,716	695,891,489	1,480,310
Check	65,404	60,609	54.678	124.843	50,448	96,886
Payment orders	2,400,952,853	131,215,401	3,430,575.458	152,666,100	6,830,019,745	211,881,183
Payment by collection	10,305,507	5,597,029	11,035.102	6,774,118	3,505,909	1,526,389
Other	89,786.397	5,956,194	73.017,481	5,637,601	64,631,461	4,504,777
Total	2,957,277,041	143,823,046	4,016,971,450	166,261,378	7,594,099,052	219,489,546

Source: author's own synthesis and calculation

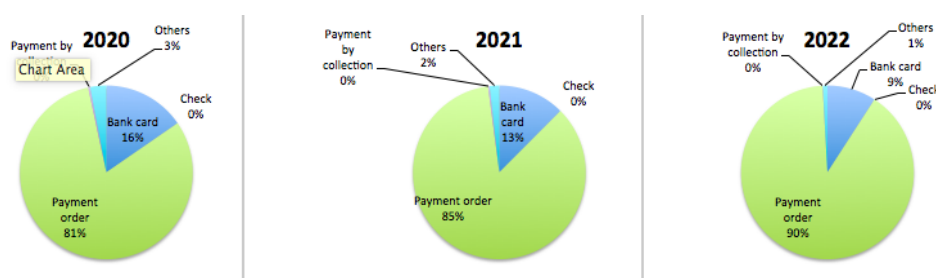


Figure 2. Structure of domestic payment transactions through payment methods 2020 - 2022

Source: author's own synthesis and calculation

Payment method via electronic payment order continues to dominate in non-cash payment. By 2022, the proportion of payment transactions via payment orders has reached 90%. While checks, collection and other methods are almost no longer used and will disappear in the not too distant future.

Here we will go deeper into the payment situation of each method.

- Data of domestic payment transactions via bank cards

Data on domestic payment via bank card reflects the number and value of domestic payment transactions made by card reported by the issuing bank, excluding: (i) payment transactions international transactions of cards issued by overseas banks; (ii) deposits, withdrawals or transfers where the sender and receiver are one; and (iii) payments between credit institutions and customers (such as loans, repayment of loan principal/interest, or fees,...).

In 2018, each quarter the number and value of transactions via cards fluctuated insignificantly, totaling 229.2 million items and reaching a value of 592.2 trillion VND. Through 2019, the total number of transactions and the value of domestic transactions via cards increased by 43% and 35% respectively compared to 2018. Every quarter there was an increase in both the number and value of payments. In the fourth quarter of 2019, the number of domestic transactions via card increased by 57% compared to the same period in 2018. Transaction value also increased by 48% after only 1 year. Thus, the trend of using bank cards for domestic payment transactions has increased strongly even though Covid has not appeared at this time.

By 2020, domestic payment transactions via bank cards will still increase, but the rate will decrease compared to before Covid. Specifically, in 2020 the number and value of transactions increase by 40% and 24% compared to 2019. In 2021, it will only increase by 10% and 7%. This is understandable because during the epidemic, people are restricted from going out, so they do not directly use cards to pay. Instead there are more effective methods of payment such as scanning QR codes, or wire transfers. After 2021, especially after the community immunity, people have completely entered the new normal period and domestic payments via bank cards will increase again with an increase of 39% in 2022 compared to 2021. for quantity and 40% for transaction value.

- Data of domestic payment transactions via check

It can be clearly seen that the form of payment by check has decreased sharply and significantly due to the introduction of faster and more convenient payment methods and replacing traditional checks. In 2019, the number and value of domestic payment transactions via check dropped sharply by 57% and 47%. Contrast with the increasing speed of payment via bank card.

When the Covid epidemic broke out, the decline was even stronger. Compared to 2019, 2020 marked a dramatical decrease of 79% and 68% in the number and value of transactions. Transactions will continue to decline in 2021 and 2022. But at a slower rate. This also signals that in the future the method of payment by check will disappear, replaced by more modern and smarter cashless methods.

- Data of domestic payment transactions via payment orders

In contrast to check transactions, the growth rate of payment orders increased at an amazing rate. Payment order or payment authorization means a payment order of an account holder made according to a pre-printed form of the Bank or State Treasury to request the Bank or State Treasury to serve them (where the deposit account is opened) to deduct the his

account to pay the beneficiary. Account holders can place money orders through e-banking applications on mobile phones or computers easily. The increasingly developed 24/7 domestic electronic payment system has facilitated payment via payment orders to increase sharply over time. From the number of transactions of only 767 million items in 2018, after only 1 year, this number has reached 1.33 billion items, a dramatical increase of 74%. Transaction value also increased by 32%.

After the outbreak of the pandemic, the growth rate of payment transactions via payment orders continued to increase sharply. Regarding the number of transactions, the growth rate is 80% in 2020, 43% in 2021 and extremely impressive 99% in 2022. Transaction value increases at a more modest rate with 18%, 16%. and 39% over the respective years. The payment via payment orders has increased sharply in number of items but not in value, possibly because people use the application to pay for small expenses, even to buy food and daily consumer goods. The habit of going to the market to buy and sell with cash has been forced to change due to the epidemic.

- Data on domestic payment transactions via collection

The domestic payment via collection method is mainly used by enterprises in commercial activities. Over time, this method also loses its position because of the complicated application requirements, long processing time, as well as expensive bank fees. From the number of transactions of 47.6 million items with a value of 5.5 million billion VND in 2018, the numbers have decreased to only 3.5 million items and 1.5 million billion VND in 2022. However, it is quite interesting that during the complicated epidemic period, the rate of decline is not too strong, even slightly increased in 2021. During the epidemic period because of contact restrictions and your credit level. Customers are quite difficult to identify, so businesses will choose to go through a bank to collect money for goods to increase security. In 2022, after the epidemic was under control, this payment method dropped sharply by 68% in quantity and 77% in value compared to 2021.

3.2.3. Status of payment via ATM and POS

- Payment via ATM

Domestic payment via ATM in the period from 2018 to 2022 has almost no significant changes. The number and value of annual transactions are quite even, ranging from approximately 900 million to 1 billion items, and 2.5 to 3 million billion Dong, with no obvious impact of the epidemic.

Table 3. Data of ATM payments in the period of 2018 - 2022

	Quantity (transaction)	Value (billion VND)
2018	879,008,013	2,465,008
2019	1,002,928,660	2,787.556
2020	1,027,745,089	2,799,931
2021	949,272,561	2,721.062
2022	1,070,570,265	3,077,310

Source: State Bank of Vietnam

- Payment via POS

Domestic payment via POS tends to increase over time. 2019 marked a turning point in this payment method with an increase of 49% in volume and 35% in transaction value compared to 2018. However, when the epidemic broke out, people limited shopping at stores, as well as commercial centers, payment via POS has increased, but at a much lower speed. Specifically, in 2020, the number and value of transactions increased only 17% and 2% respectively compared to 2019. The numbers are 13% and 14% respectively when comparing the figures in 2021 with 2020. If the disease is under control, the growth rate will reach 52% and 47% in terms of transaction volume and value. Thus, unlike ATM, domestic payment transactions via POS are significantly affected by the Covid epidemic.

Table 4. POS payment figures in the period of 2018 - 2022

	Quantity (transaction)	Value (billion VND)
2018	208,195,398	447,058
2019	310,354.640	604,650
2020	362,222,382	619,189
2021	410,557,381	704.513
2022	623,214,527	1,032,498

Source: State Bank of Vietnam

3.2.4. Status of payment via internet banking and mobile banking

Payment via internet banking and mobile banking have many similarities leading to confusion between these two forms. It can be said that these two methods both need the condition that the devices must be connected to the internet. However, there are some differences as follows. Firstly, for mobile banking, customers can only use it on smart devices that can install applications. And internet banking can be used on any device such as mobile, laptop, ipad, connected to the internet, and customers will access the bank's internet banking website. Second, with mobile banking, customers need to enter their phone number and password to log in. As for internet banking, customers log in with the account code, the password provided by the bank and the confirmation code. Third, the transaction fee for internet banking is usually lower than for mobile banking.

In fact, both types of transaction methods will really explode in 2021. From 2021, the State Bank of Vietnam will also have complete and specific statistics on the number and value of transactions. If in the first quarter of 2020, the number of new internet banking transactions is 94.8 thousand items, in the same period of 2021 this number is 156.2 million items and in the same period of 2022 it is 243.5 million items. Thus, 2021 marks the explosive development of this payment method with an incredible growth rate of 164629%. This is an astonishing number. This is also a very serious epidemic period. For the whole year of 2021, the number of transactions via internet banking is 707 million items, and by 2022 the number has doubled to 1,404.4 million items. Transaction value also increased by 87%.

The above scenario also happens almost exactly with payments via mobile banking, even with a stronger growth rate. In 2022, the number and value of domestic payment

transactions via mobile banking increased by 139% and 107% compared to 2021. The number of payments via mobile banking is also many times higher than that of internet banking, but the payment value Mobile banking is lower than internet banking. This can be explained by the fact that the users of mobile banking are mainly retail and individual customers, with a large number of transactions but small amounts. While internet banking is usually used by institutional customers and businesses.

Table 5. Payment data via internet banking

	Quantity (transaction)	Value (billion VND)
Q1/2020	94.833	55,533
Q2/2020	533,334	54,345
Q1/2021	156,217,294	811,717
Q2/2021	169,191,030	8,949,906
Q3/2021	167,313,020	8,444,405
Q4/2021	214.712,794	11,264.690
2021	707,434,138	29,470,718
Q1/2022	243,583,107	12,464.731
Q2/2022	325,192,636	13,366,354
Q3/2022	381.812,052	13,491,315
Q4/2022	453,858,701	15,933,632
2022	1,404,446,496	55,256,032

Source: State Bank of Vietnam

Table 6. Payment data via mobile banking

	Quantity (transaction)	Value (billion VND)
Q1/2020	56,233	543.454
Q2/2020	34.234	643,534
Q1/2021	395,052,964	4,630,883
Q2/2021	467,775,361	5,884,244
Q3/2021	506,596,199	4,993,449
Q4/2021	712,919,032	8,140,533
2021	2,082,343,556	23,649,109
Q1/2022	958.561,941	10,839,550
Q2/2022	1,135,514,401	12,571,542
Q3/2022	1,309,525.094	12,195,629
Q4/2022	1,579,777,519	13,272,494
2022	4,983,378,955	48,879,215

Source: State Bank of Vietnam

4. Discussion and Conclusion

It can be said that cashless payment has really developed very quickly in both quality and quantity from 2019 onwards. 2019 is a year when the economy has made important qualitative progress in the context of the world economy's decline and complicated developments. Especially, the market service industry has a high growth rate of 8.41%, which is the main driving force contributing to the economic growth of our country. Thereby creating a premise for remarkable development in the future. Modern non-cash payment methods gradually replace traditional payment methods. Payments via payment orders, via the internet and mobile banking gradually dominate due to the development of banking technology and the trend of the times. For a country that is used to cash payments and reserves, a strong push is needed to gradually transition to cashless payments. The development of banking technology is an important factor, but perhaps it is the Covid epidemic that is a significant push to change the habits of consumers and businesses.

However, despite the rapid and strong development in the past 5 years, non-cash payment has not been able to cover the whole country and completely replace cash. The reasons for this can be summarized as follow:

Firstly, the popularity is not high. Although cashless payment is becoming a trend, however, the adoption and use of this means is still not fully popular in Vietnam, especially in rural areas where the internet and payment devices as well as people's understanding is still limited.

Second, the dissemination of knowledge and information to the entire population is not complete and synchronous. Some users still lack information and experience in using non-cash payment methods, which leads to difficulties in the process of using and becomes a barrier in popularizing the use of this means.

Third, Cybersecurity risks make many users afraid to expand the use of cashless payment methods. Cashless payments can create cybersecurity risks such as loss of personal information, hacked accounts, or cyberattacks against payment service providers.

- Some recommendations to increase the popularity of cashless payments:

Firstly, building infrastructure: Organizations need to invest in infrastructure to support cashless payments, including the development of electronic payment systems, network infrastructure, card readers, electronic terminals.

Secondly, promote cashless payment solutions: Organizations need to promote cashless payment solutions such as e-wallets, credit cards, online transfers, payments via mobile apps motion. Organizations can create promotions to attract users to use these payment methods.

Thirdly, Education and advice: Organizations need to educate and advise users about cashless payment methods, the benefits and safety of using them. Policies that encourage the use of cashless payments also need to be clearly communicated for users to understand and apply.

Fourthly, create trust and safety: Organizations need to ensure that cashless payment methods are secure and safe. Additionally, organizations should have policies in place to support customers in the event of problems or errors using these payment methods.

Fifthly, Support for businesses: Organizations need support for businesses to transition to cashless payments, including providing equipment, staff training and guidance, technical support, etc.

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CREDIT RISK MANAGEMENT ENABLING BY MACHINE LEARNING

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Abstract

Application of Machine Learning (ML), a branch of Artificial Intelligence (AI) in banking, particularly credit risk management, has been a most discussed topic for some time. A growing number of organizations and institutions are exploring different variants of how the technology can be effectively applied. This has happened because ML has been proven to genuinely add value across the entire credit value chain. This article contains two main ideas: (i) systematization of Machine Learning and (ii) literature review the advantages of Machine Learning algorithms in banks' credit risk management.

Keywords: *Machine Learning, risk management, credit risk.*

1. Introduction

Machine Learning advances heavily affected a wide variety of industries in the past decades, ultimately transforming people's daily life. Artificial Intelligence has been applied to almost every human activity, including pattern recognition, image classification, business, agriculture, transportation, and finance. This paper focuses on ML applied to finance and banking sectors. Modern financial systems rely on credit and trust. Credit risk is a fundamental parameter that measures and predicts the default probabilities of a debtor. The correct estimation of credit risk is paramount for the entire system. Failing in the credit risk estimation can lead to systemic failures. Consequently, lenders devote large amounts of resources to predict the credit worthiness of consumers and companies to develop appropriate lending strategies that minimize their risks. Historically, credit risk approaches use statistical methods such as Linear Discriminant Analysis and Logistic regression. These methods, however, do not easily handle large datasets.

Advances in computing power and availability of large credit datasets paved the way to AI-Driven credit risk estimation algorithms such as traditional ML and Deep Learning. Conventional ML techniques (e.g. k-Nearest Neighbor, Random Forest and Support Vector Machines, etc.) are more effective and flexible than statistical methods. In particular, the vital branch of ML techniques applied to large credit risk data lake outperform their predecessors both in accuracy and efficiency. This paper presents a systemic review of the advantages of ML algorithms in banks' credit risk management.

2. Conceptual Framework

Definition

When it comes to Machine Learning (ML), we must first mention **Artificial Intelligence (AI)**. McCarthy (1998) described AI as computer behavior of simulating humans and eventually solving problems as humans do. Machines have typical human intelligence such as knowing how to think, how to solve problems, and how to communicate due to understanding language and speech, learning and adapting on their own. The advent of AI led to the development of the concept of Machine Learning and Deep Learning (DL). AI is the largest circle, followed by the Machine Learning circle and finally the smallest circle in Deep Learning. Machine learning is a branch of AI and computer science which focuses on the use of data and algorithms to imitate the way that humans learn, gradually improving its accuracy. In particular, Deep Learning is an ML technique involving neural networks (neural networks) that allows machines to train themselves. DL is driving the strong development of AI in many fields today. This article focused on ML.

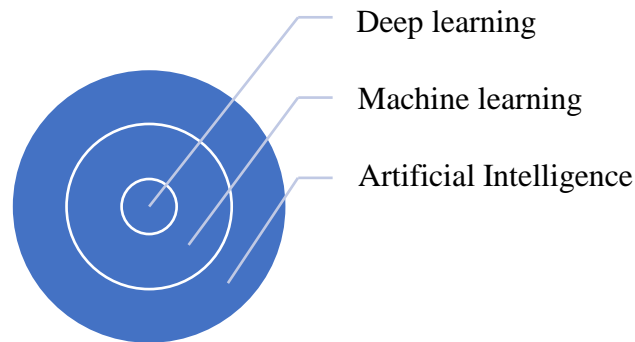


Figure 1. AI, Machine Learning, and Deep Learning

Source: Goodfellow et al. (2016)

ML is a combination of computer science, engineering, and statistics. It has been highlighted as a tool that can be applied to various problems, especially in areas that require data to be interpreted and informed (Awad and Khanna 2015). ML is capable of detecting meaningful patterns in data and has become a universal tool for almost any task faced with the requirement to extract meaningful patterns from datasets. When faced with the requirement to extract meaningful samples from data with the vast complexity of the samples to be studied, a programmer may not be able to provide a clear and detailed description of the implementation process. ML addresses this challenge by providing programs with the ability to "learn and adapt." ML programs learn and improve and can be applied when the problem to be handled has the dual challenge of complexity and the need for adaptability (Shalev-Shwartz and Ben-David 2014). Simply put, the standout feature when it comes to ML is the ability to "self-learn", meaning that over time, space, with more data, algorithms allow the system to calculate more "intelligently", thereby "narrowing" errors and giving more accurate results. For the sake of simplicity, the more it operates, the more "self-learning" the ML application system becomes, the smarter it is, and the less dependent it is on human intervention.

General application

ML has a wide range of applications in science and manufacture, especially those that need to analyze big data. Some popular applications as follows:

- Natural Language Processing: word processing, human-machine communication...
- Pattern Recognition: speech recognition, handwriting, fingerprint, computer vision ...
- Search (Search Engine).
- Medical diagnostics: X-ray image analysis, automatic diagnostic expert systems.
- Bioinformatics: classification of gene sequences, the process of forming genes/proteins.
- Physics: astronomical image analysis, interparticle impact...
- Financial fraud detection: credit card fraud.
- Stock market analysis.
- Game play: automatic chess play, action of virtual characters.
- Robots: is a synthesis of many sciences, in which Machine Learning creates the nervous system/brain of robots.

Categories

Supervised Learning: Suppose you are trying to learn a new concept in maths and after solving a problem, you may refer to the solutions to see if you were right or not. Once you are confident in your ability to solve a particular type of problem, you will stop referring to the answers and solve the questions put before you by yourself. In Supervised Learning, the model learns by example. Along with our input variable, we also give our model the corresponding correct labels. While training, the model gets to look at which label corresponds to our data and hence can find patterns between our data and those labels. Supervised Learning is divided into Classification and Regression.

Unsupervised Learning: This approach is applied to examine data's inherent structure and derive insightful information from it. This technique looks for insights that can produce better results by looking for patterns and insights in unlabeled data. There are two types of unsupervised learning such as Clustering and Dimensionality reduction.

Semi-supervised Learning: Semi-supervised learning lies on the spectrum between unsupervised and supervised learning. It combines the most significant aspects of both worlds to provide a unique set of algorithms.

Reinforcement Learning: The goal of reinforcement learning is to create autonomous, self-improving algorithms. The algorithm's goal is to improve itself through a continual cycle of trials and errors based on the interactions and combinations between the incoming and labeled data.

Popular algorithms

The regression algorithm involves modeling the relationship between variables. The most common regression algorithms in Machine Learning are: Ordinary Least Squares Regression (OLSR), Linear Regression, Logistic Regression, Stepwise Regression, Multivariate Adaptive Regression Splines (MARS), Locally Estimated Scatterplot Smoothing (LOESS) ...

Instance-based including k-Nearest Neighbor (kNN), Learning Vector Quantization (LVQ), Self-Organizing Map (SOM), Locally Weighted Learning (LWL)...

Regularization including Ridge Regression, Least Absolute Shrinkage and Selection Operator (LASSO), Elastic Net, Least-Angle Regression (LARS)...

SVM (Support Vector Machine) algorithm: SVM is an algorithm belonging to the Supervised Learning group (Supervised Learning) that is very commonly used in classification or regression problems. SVM is based on the statistical learning theory formulated by Vapnik and Chervonenkis (1995). The idea of SVM is to find a hyper plane that can separate the data sets to be classified so that the margin from the superplane to the sets to be classified is equivalent and largest.

Decision Tree algorithm: A decision tree is a model that belongs to the group of Supervised Learning algorithms. A decision tree is a structured hierarchical tree used to classify objects based on a series of rules. When giving data about objects with properties along with their classes, the decision tree generates rules to predict classes of unknown objects. This algorithm includes Classification and Regression Tree (CART), Iterative Dichotomiser 3 (ID3), 5 and C5.0 (different versions of a powerful approach), Chi-squared Automatic Interaction Detection (CHAID), Decision Stump, M5, Conditional Decision Trees...

Bayesian including Naive Bayes, Gaussian Naive Bayes, Multinomial Naive Bayes, Averaged One-Dependence Estimators (AODE), Bayesian Belief Network (BBN), Bayesian Network (BN)...

Clustering algorithms, like regression, describe the problem class and the method class. Clustering methods are organized according to modeling methods such as centroid-based and hierarchical. All methods involve the use of structures inherent in the data. It is a need to best organize data into maximally popular groups. Including k-Means, k-Medians, Expectation Maximisation (EM), Hierarchical Clustering...

The combined rule-learning algorithm extracts the rule, which best explains the relationships between variables in the data. These rules can discover important and useful combinations in large multidimensional datasets. That can be exploited by an organization. Popular associative rule learning algorithms include Apriori algorithm, Eclat's algorithm.

Artificial neural network algorithms are models that are inspired by the structure of biological neural networks. The most popular artificial neural network algorithms are Perceptron, Back-Propagation, Hopfield Network, Radial Basis Function Network (RBFN) ...

The Deep Learning algorithm is a modern update to Artificial Neural Networks. The most popular Deep Learning algorithms are: Deep Boltzmann Machine (DBM), Deep Belief Networks (DBN), Convolutional Neural Network (CNN), Stacked Auto-Encoders...

The algorithm reduces the size of the search for the structure inherent in the data. Includes Principal Component Analysis (PCA), Principal Component Regression (PCR), Partial Least Squares Regression (PLSR), Sammon Mapping, Multidimensional Scaling (MDS), Projection Pursuit, Linear Discriminant Analysis (LDA), Mixture Discriminant Analysis (MDA), Quadratic Discriminant Analysis (QDA), Flexible Discriminant Analysis (FDA) ...

Aggregation algorithms are models that consist of weaker models. Includes Boosting, Bootstrapped Aggregation (Bagging), AdaBoost, Stacked Generalization (blending), Gradient Boosting Machines (GBM), Gradient Boosted Regression Trees (GBRT), Random Forest...

3. Applying Machine Learning to Credit Risk Management of Banks

Credit risk is most simply defined as the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms. The goal of credit risk management is to maximise a bank's risk-adjusted rate of return by maintaining credit risk exposure within acceptable parameters. Banks need to manage the credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions.

A precise credit risk assessment system is vital to a financial institution for its proper and impeccable functioning. Accurate estimations of credit risk will allow them to continue their operation in a gainful and transparent way. As the rate of loan defaults are gradually increasing, bank authorities are finding it more and more difficult to correctly assess loan requests. Thus, the subject of credit risk has become a highly conferred and examined topic throughout the world. Numerous solutions have been given, ML included. Banks or other loan providers should select only those applicants who have the lowest chance of defaulting. And this is where the power of machine learning and data science comes in.

First, ML comes into play in *screening loan applicants* with the lowest likelihood of default out of the thousands of loan proposals banks receive. According to S. Z. H. Shoumo et al. (2019), ML can be applied in this case to develop a model capable of understanding and learning from the behavioral patterns of successful customers and defaulters. When someone applies for a new loan, the model can accurately predict an applicant's likelihood of default based on patterns it has previously learned, and credit institutions such as banks or other lenders use this result to make decisions whether to accept an applicant's loan request. Khashman, A. (2010) describes a credit risk assessment system using a supervised neural model based on a back propagation learning algorithm. The author trains and deploys three neural networks to decide whether to approve or reject a loan application. Neural networks were trained using a bank loan approval dataset in Germany of 1000 cases (700 cases where applicants are credible "good" or "accepted" and 300 cases are unreliable "bad" or "rejected"), each case has 24 numerical attributes to decide whether each loan application is accepted or rejected. As a result, the overall accuracy rate in credit decision-making was

83.6%; the neural model training was completed in about 184 seconds, while the decision-making time for the trained neural model was very fast. Hamid, A. J. and Ahmed, T. M. (2016) used Bayes-net, Naïve Bayes, and Decision Tree (j48) algorithms for this purpose. Based on borrower characteristics such as gender, credit history, occupation, loan purpose, age, type of housing, and loan amount to predict whether the new applicant will become a defaulter. According to this study, the Decision Tree algorithm (j48) was their preferred choice with an accuracy of 78.3784%.

ML is proven to be superior to traditional methods of predicting credit risk through comparisons between the application of ML's algorithms and traditional methods. Many studies have compared with traditional statistical methods to highlight the effectiveness of applying ML algorithms. Galindo and Tamayo (2000) assert that the only way to assess the risk of financial intermediaries is through the search for reliable predictors of individual risks in the credit portfolio. They compared statistical classification techniques and ML by building more than 9,000 models and comparing the performance of different algorithms. By using various ML algorithms to classify mortgage loan data, the study found that decision-making algorithms provided the best estimate of defaultability with an average error rate of 8.13%, with neurological algorithms providing the second-best results with an average margin of error of 11%, followed by the kNN algorithm and the Probit algorithm. Bekhet, H. A. and Eletter, S. F. K. (2014) used multilayer feed relay neurons and compared with a logistic regression model. They used data on 492 cases collected from Jordanian commercial tendons. The results showed that the regression model was more accurate in properly classifying accepted loan applications, and neural network had an advantage in classifying rejected customer cases. Hamori et al. (2018) studied and compared the accuracy of predictions and the classification capabilities of Random Forest Neural Network the analysis of insolvency data. They also see the superiority of ML methods. Nguyen Minh Kieu et al. (2017) based on collecting data from past records of banks including Vietcombank, Vietinbank, Sacombank, Dong A, MBbank over the period of 2012-2014, applying supervised Artificial Neural Network (ANNs) models based on transmission learning algorithms for the purpose of training to decide on approval or rejection denial of granting credit. Based on the research results, the ANNs model is effective in supporting quick and simple credit decision making with the accuracy rate of forecasts up to 95.45%. The results of the study are similar to the results of Vita Jagric, Davorin Kracun and Timotej Jagric (2011), Adnan Khashman (2010) ... In conclusion, ANNs support quick decision-making with high accuracy.

Much of the research seems to focus on *credit scoring* techniques, as seen in the large number of studies in this area (Ala'raj and Abbod, 2016; Bellotti and Crook, 2009; Cao et al., 2013; Wang et al., 2015; Wójcicka, 2017). These studies mostly focus on the classification and application of credit scoring algorithms. Studies have generally concluded that ML offers comparable accuracy and is better equipped to capture common non-linear relationships of credit risk (Bacham and Zhao, 2017; Hamori et al., 2018; Zhang, 2017). Techniques such as logistic regression and discriminant analysis are often used in credit

scoring to determine default. SVM has been successful in classifying defaulting customers and has been shown to deliver significantly better results in credit scoring (Van Gestel et al, 2003). This algorithm is also said to compete in discovering the most important characteristics in determining default risk when examined and compared to traditional techniques (Bellotti and Krook, 2009). Among the techniques used in credit scoring, such as differential analysis, logistic regression, artificial neural networks, and decision trees neural networks have been shown to perform more accurate classification than the rest of the methods (Yeh and Lien 2009). Harris (2013) compared SVM-based credit scoring models that used broad definitions (overdue dates <90 days) and narrow definitions (overdue dates >90 days) and found that models built using a broader definition were more accurate, thereby allowing improved accuracy of predictions.

ML is also applied to *Stress test* in credit risk management (Islam et al., 2013). Stress test requires modeling the link between macroeconomic development variables and banking operations variables to determine the impact of extreme scenarios on banks. Adaptive Least Absolute Shrinkage and Selection Operator in the supervised H method is used in the absence of theoretical models to test endurance from a set of thousands of specifications. It has been shown to provide non-deviation and approximation solutions by looking for variables that best describe the behavior of credit loss ratios, providing a clear description of the relationship between credit loss ratios and macroeconomics. An important problem when applying this algorithm is that large amounts of data are required to train the model (Blom, 2015). Model selection and forecasting become challenging as stress scenarios become more comprehensive with an increasing number of underlying variables. ML techniques for identifying patterns (patterns) and relationships between data can facilitate model selection and forecasting. These techniques do not appear to have been widely applied in endurance tests. When there are a large number of potential covariants and the number of observations is small, Lasso regression is found to be suitable for building predictive models. These models outperform traditional statistical models in forecasting the performance indicators required in endurance test. They can also handle complications that arise during endurance tests (Chan-Lau, 2017). In addition, the Multivariate Adaptive Regression Splines (MARS) algorithm, another ML technique, also demonstrates greater accuracy in endurance testing with superior samples, providing more reasonable forecasts (Jacobs, 2018). Probabilistic graphs can be used to model and assess credit concentration risk with Bayesian network algorithms (Bayesian Network) provides a better understanding of risk. This algorithm was also found to be suitable for analyzing endurance testing with the ability to provide an estimate of the likelihood of losses due to changes in the borrower's financial condition (Pavlenko and Chernyak, 2009).

4. Conclusion

It can be seen that Machine Learning is useful in credit risk management of banks, especially the first two stages in the risk management process: identification and measurement. The application of ML risk management in general and credit risk management in particular is inevitable. However, the challenges to adoption are not small.

For instance, the challenge of the quality of the data. Data is one of the most important components of an ML model because the performance of the model directly correlates with the quality of the data it is provided. When it comes to the use of AI in general and ML in particular, it is essential to increase the confidence factor for the performance of the model by ensuring that the data used is huge, diverse, and regularly updated. The data collection process should not be taken lightly because building a high-quality dataset requires a lot of time and effort. Or the issue of data security is also a challenge that banks must overcome. The large amounts of data used in these models can be considered very sensitive. The customer's name, age, address, credit card number, bank account, and other information may be included in such data. In these cases, a data breach would jeopardize customers' personal privacy while also allowing attackers to gain access to their financial assets. To solve this problem, it is necessary to take additional security precautions to prevent sensitive data from falling into the wrong hands. Next, it is impossible not to mention the legal challenge. This is an issue that has been talked about a lot since new financial technologies spread and are applied in the provision of financial services and banking.

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EXPLORING FARMERS' CURRENT ACCESS AND INTENTION TO USE DIGITAL SEASONAL FORECAST AND ADVISORY SERVICE IN THE MEKONG RIVER DELTA, VIETNAM

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Abstract

This paper examines farmers' current access and desired use of seasonal forecast and advisory service as well as their intention to use digital climate advisory service (DCAS) in the Mekong River Delta of Vietnam. Data collected through a survey of 665 farmers showed that access to seasonal climate advisory service was quite high for farmers primarily engaging in rice, fruit and rice-shrimp farming, with over 50% of farmers in these systems could access to this service. Rice and rice-shrimp farmers, in particular, have significantly greater access than rice-shrimp farmers. The main sources and channels utilized by farmers to obtain such information were TV/Radio, other farmers/family members, local authorities, and cooperatives. Variations were observed in sources and channels employed to obtain seasonal forecast and advisory service among farming systems. Fruit farmers had higher access to this service through other farmers/family members and phones; while rice farmers relied more on cooperatives and are more likely to access this service via village loudspeakers. Rice-shrimp farmers, on the other hand, displayed a higher likelihood of obtaining seasonal forecast and advisory for shrimp from input providers. The study revealed that the surveyed households commonly owned TVs, smartphones, and basic phones. The proportion of smartphone usage among the respondents (68.78%) was comparable to the smartphone penetration in rural areas (68%), but slightly lower than the nationwide rate (73.5%). The respondents demonstrated a preference for interactive channels with visual aids which was not supported by their current sources and channels of seasonal forecast and advisory. However, they showed a neutral stance toward using digital tools to access DCAS without guidance. While farmers in our survey recognized the potential benefits of DCAS, their inclination to use a phone to access such services remained neutral. In our survey, male respondents expressed a higher intention to use DCAS.

Keywords: *digital climate advisory services (DCAS), seasonal forecast and advisory, intention to use*

1. Introduction

While being one of the main agricultural production zones in Vietnam, the Mekong River Delta region is particularly susceptible to the impacts of climate change (ADB, 2009; WWF, 2009). That leads to an increasing need for solutions to help farmers in the region adapt and improve their agricultural practices. Climate Advisory Services (CAS), more specifically seasonal forecasts and advisories, have emerged as one potential solution.

CAS entails the generation, distribution, and contextualization of climate knowledge and information to assist decision-making (Vaughan & Dessai, 2014). In the agricultural sector, these services offer weather and climate forecasts, crop management advice, pest and disease alerts, and other bundled information such as insurance, market, and input (Ferdinand et. al. 2021).

One type of CAS, which is the focus of this study, is seasonal forecast and advisory service for farmers. Based on anticipated weather and climate conditions for a specific period, such as a growing season or planting season, this service assists farmers in making informed decisions and adjusting their agricultural practices accordingly. For example, it can provide weather forecasts and crop management advisory for the whole season, allowing farmers to plan their activities, such as crop selection, planting dates and manage their crops to minimize risk and optimize yields.

Digital CAS, more specifically in this paper, seasonal forecast and advisory service, can take the form of online tools and platforms such as websites, mobile applications, mobile messaging, products or bulletins that make use of Information Communication Technologies (ICTs) to provide on-time and tailored climate-related information and knowledge for decision making (Vaughan & Dessai, 2014). Easy and timely access to decision-relevant scientific climate-related information can assist users, particularly vulnerable ones, in making use of favorable climate conditions and coping with and building resilience to climate-related disasters.

In Global North, CAS are typically initiated and provided by private actors, such as multinational ag-tech, big tech companies, and start-ups. On the other hand, in Global South countries, the stakeholders that are mainly involved in CAS delivery are government, international donors, nonprofits and research organizations through projects (Simelton & McCampbell, 2021). In Global South, in particular, a great deal of discussion has revolved around how to “bring tailored and actionable climate information to the ‘last mile’ - the small-scale agricultural producers and actors in the food value chain” (FAO, 2021, p.ix). It is critical to address this challenge as the last-mile farmers are those most vulnerable to the impacts of climate change while being the backbone of global food security.

In Vietnam, CAS has become an emerging topic in the climate change adaptation agenda. Given the high Internet and smartphone penetration rates as well as the fact that the agricultural sector makes up 14% of the GDP and employs 40% of the total workforce in Vietnam (ILO, 2021), there is a promising market for this service in Vietnam. The research topic about digital CIS also aligns well with the digitalization trend in Vietnam’s economy.

In recent years, the Vietnamese government has prioritized the development of a digital economy, recognizing its potential to drive innovation, competitiveness, and sustainable growth (Vietnam's Government, Decision No. 749/QD-TTg). Thus, there is a growing interest in the role of digital technologies in agriculture, and the potential for digital CAS to support climate adaptation and mitigation in the Mekong River Delta.

In Vietnam, government actors play crucial roles in delivering CAS. The Ministry of Natural Resources and Environment (MONRE) has the responsibility for state management over climate service delivery in Vietnam, as mandated by the Law on Hydro-meteorology. The Viet Nam Meteorological and Hydrological Administration (VMHA) is responsible for providing public weather forecasts, managing the national hydrological monitoring system, as well as providing free public weather forecast and information or data for individuals and organizations upon request with fee (Care International, 2020). In agricultural sectors, the Ministry of Agriculture and Rural Development (MARD) will utilize the forecast and information shared by VMHA to provide recommendations on crop planting and management for farmers through its support services. Local authorities at different levels, including provincial, district, and communal levels, closely collaborate with relevant organizations such as local plant protection departments and agricultural extension centers to deliver CAS to farmers.

This paper is timely and relevant, given the increasing impacts of climate change in the Mekong River Delta. By exploring farmers' access to and intention to use digital seasonal forecast and advisory, our paper will provide insights into how to design the service that cater to farmers' needs.

2. Method

2.1. Overview of survey design and implementation

To inform this study, the field survey of farming households is the key methodology. The study was conducted in four provinces in the Mekong River Delta region of Vietnam, namely **Can Tho, Hau Giang, Kien Giang, and Soc Trang**. The selection of these provinces was based on several criteria to ensure the best representation of the agroecological zones, prioritized farming systems, and climate risk and vulnerability.

Firstly, the provinces were selected based on **the three agroecological zones**: freshwater, salt-brackish water, and transition areas, as defined by Decision 287/QD-TTg 2022. Can Tho and Hau Giang provinces were selected because they are situated in Zone 1, which is a freshwater area. Soc Trang and Kien Giang provinces were selected because they belong to all three zones.

Secondly, the **prioritized farming systems** for this study were rice, rice-shrimp, and fruits. Can Tho, Hau Giang, and Soc Trang provinces were selected for the rice and fruit systems as they have large areas of rice and fruit farming. Kien Giang and Soc Trang provinces were selected for the rice-shrimp system.

Lastly, provinces were selected based on **climate risk and vulnerability**. The risk of salinity intrusion along the main rivers was considered. Hence, provinces located along the

Hau River connecting with the East Sea (Can Tho, Hau Giang, and Soc Trang) were chosen. Kien Giang province was selected to represent salinity intrusion risk from the other seaside (Thailand Gulf).

Based on the common formula suggested by Cochran (1963), a sample size of 600 participants was identified for the study:

$$n_o = \frac{Z^2 pq}{e^2} = \frac{(1.96^2). (0.5). (0.5)}{(0.04)^2} = 600$$

Where, n_o is the sample size, Z is the abscissa of the normal curve that represents level of confidence, p is the estimated proportion of an attribute that is present in the population, q is $1-p$, and e is the sampling error. Z -squared is equal to 1.96 with a confidence level of 95%. If we assume the adoption level p is 0.5 and the sampling error e is 0.04, then the calculated sample size is 600.

However, our study did not only rely on the common statistical formula to determine the sample size due to two main reasons. First, the research questions in the study focused on farmers' perception of climate services quality and readiness to use digital climate services, which were measured using Likert-scale questions. These questions cannot be quantified in real numbers. Second, to achieve high-quality outputs, non-linear modeling techniques, such as structural equation modeling, were likely necessary for data analysis. To address our research needs, we undertook a rigorous literature review in order to learn about possible sample sizes in relevant previous studies. The relevant studies were selected based on criteria that they were similar to our study in terms of (i) research topics (ii) research context/location (iii) data analysis techniques. The literature review indicated the range of sample size from 450 to 690 farmers. In the end, our sample size was 665 farmers.

The survey was undertaken from December 19 to 30, 2022, in Can Tho, Kien Giang, Soc Trang, and Hau Giang provinces, using tablets with questionnaires coded on KOBO toolbox. A total of 667 responses were collected, of which two were identified as duplicates and removed, leaving a final dataset of 665 responses. Of these, 68% were male and 32% were female. The table below summarized the sample breakdown by provinces and farming systems.

Table 1. Sample breakdown of the study

Province	Farming system			Sub-total by province
	Rice	Fruit	Rice-shrimp	
Can Tho	59	84		143
Hau Giang	60	81		141
Kien Giang	51	0	150	201
Soc Trang	50	80	50	180
Sub-total by farming system	220	245	200	665

2.2. Characteristics of the sample

Table 2 presents the demographic characteristics of surveyed respondents. We also investigated the differences in demographics between farming systems. ANOVA and Chi-square tests were applied to see if the differences between interested groups are statistically significant.

The results of ANOVA and Chi-square tests show **significant differences** among the three farming systems in terms of **land, farming experience, number of vehicles/machines owned by household, ethnicity, gender, and education level.**

Rice (M = 2.00ha) and fruit (M = 1.87ha) farmers have more arable land than rice-shrimp farmers (M = 1.40ha), $p < 0.001$

Rice farmers (M = 27.29 years) have more farming experiences than fruit (M = 9.96 years) and rice-shrimp farmers (M = 9.45 years), $p < 0.001$

Fruit farmers (M = 113.8 mil VND) earned more than rice farmers (M = 96.1 mil VND) in 2022.

Fruit farmers are more likely to own a high school degree or higher than rice and rice-shrimp farmers ($p < 0.017$)

Table 2. Demographic characteristics of surveyed respondents by farming system

Variable	Whole sample N = 665		Rice N = 220		Fruit N = 245		Rice-shrimp N = 200		P-value
	Mean / %	SD	Mean / %	SD	Mean / %	SD	Mean / %	SD	
	Age	51.30	11.67	50.52	11.67	50.52	11.67	52.45	
Household member	4.37	1.66	4.40	1.58	4.40	1.58	4.27	1.72	NS
Members working on the farm	2.26	0.96	2.29	1.05	2.29	1.05	2.16	0.83	NS
Average agricultural land (own + rent)	1.77	1.51	2.00	1.48	1.87	1.70	1.40	1.19	< 0.001
Farming experiences (year)	15.54	12.62	27.29	13.15	9.96	6.68	9.45	7.64	< 0.001
Income 2022 (mil VND)	104.35	69.62	96.14	66.61	113.76	74.03	101.85	66.19	0.02
Educational level									0.017
Lower than high school	79.70%		82.70%		73.90%		83.50%		
High school and higher	20.30%		17.30%		26.10%		16.50%		

3. Results

3.1. Farmers' current use of seasonal forecast and advisory service

Seasonal forecast and advisory service provides climate forecast for 3-6 months, with recommendations on planning and crop management for the whole season. In Vietnam, seasonal forecast and advisory are often provided by the Government and/or non-governmental organizations (NGOs). Example of seasonal forecast and advisory is the seasonal calendar on planting dates and rice variety structure or “Lịch thời vụ và cơ cấu giống lúa” in Vietnamese provided by provincial departments of agriculture and rural development. These calendars often include an assessment of hydrological conditions, water availability, and weather forecasts for the whole season, along with specific advice on planting date, harvesting time and varieties used to optimize their rice cultivation outcomes. Another example of seasonal forecast and advisory provided by NGOs is the Seasonal Agro-Climatic Bulletins for rice, vegetables, and dragon fruit, provided by DeRisk SE Asia project. These bulletins encompass weather forecasts for the entire season, assess the potential impact of extreme weather events on selected crops in different cropping stages, and provide recommended farm management practices to mitigate such impacts.

Overall, **access to seasonal forecast and advisory** is high, with 68.42% of surveyed farmers receiving or actively this service. 16.99% didn't have access but would like to, while 14.59% indicated not being interested in this type of service. Among the three priority farming systems, there is a significant difference in access to seasonal forecasts and advisories. Results of chi-square tests show that rice farmers (82.37%) and rice-shrimp farmers (70.50%) have significantly higher access to this service than fruit farmers (53.88%) ($p = 0.003$, $p < 0.001$)

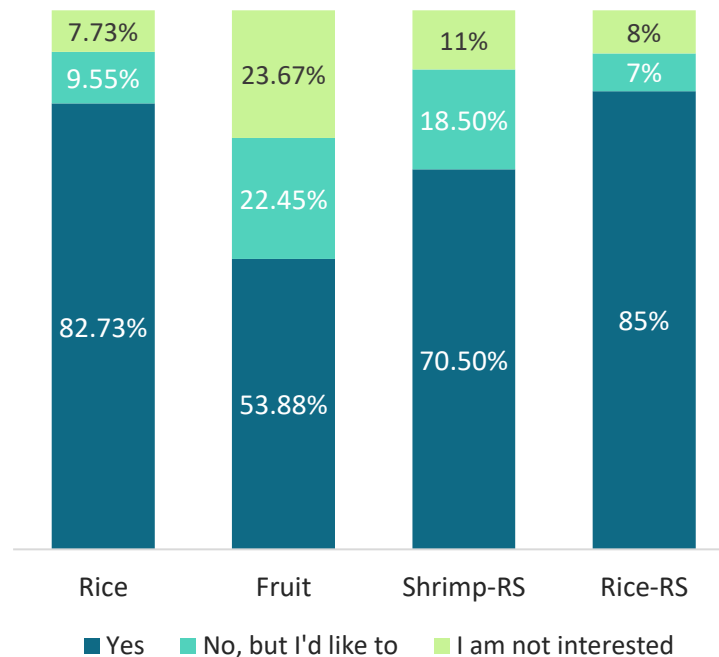


Figure 1. Access to seasonal advisory service by farming system

While only 8%-11% of rice and rice-shrimp farmers are not interested in seasonal forecasts and advisories, 23.67% of fruit farmers indicated not being interested. The three most common reasons for not being interested in the seasonal forecast and advisory services are that farmer can rely on their experience, they need to follow certain practices for each group growth stage, and they do not know the source/provider of the service. Fruit farmers are more likely to choose “I have to follow certain practices for each crop growth stage anyway” than farmers in other systems.

With regards to the **type of information** that farmers are most interested in when seeking seasonal forecast and advisory, data from the survey show that:

- The top 3 types of information interested by **rice farmers** are **advice on planting dates, varieties to plant, and weather forecast** for the whole season.

- For **fruit farmers**, the top 3 most interested types of information are **fertilizer application, when to start a new season, and pest and disease management** for the whole season. However, unlike rice-rice and rice-shrimp farmers, they are less interested in advice on planting dates and varieties to plant, with nearly 40% choosing these types of information, compared to nearly 90% for rice and rice-shrimp farmers.

- **Rice-shrimp farmers** are most interested in the **advice on shrimp fingerling to stock and stocking date, agrochemical and medicine for shrimp, shrimp feed, and weather forecast** for the whole season. Only a small percentage of rice-shrimp farmers expressed interest in advice on water management and fertiliser application for mixed rice-shrimp systems for the whole season. It is possible due to the low prevalence of this type of farming among the surveyed rice-shrimp farmers (only 3.5% practice mixed rice-shrimp farming) and the fact that farmers often don't apply fertilizer for mixed rice-shrimp farming.

Concerning **sources/channels** of seasonal forecast and advisory, farmers in the three farming systems commonly access seasonal forecast and advisory via **TV/Radio, other farmers/ family members, local authorities and cooperatives** with around 40% reported using these channels/sources.

- Overall, among those who have access to seasonal forecast and advisory services, **other farmers/family members (54.29%), TV/radio (50.99%), local authorities (40.89%), cooperatives (36.70%), and phone (31.87%)** were commonly used channels/sources. In terms of phone, surveyed farmers obtain seasonal forecast and advisory from Google, Youtube and Zalo.

- The results of Chi-square tests revealed significant differences in the accessibility of seasonal forecast and advisory service among the three farming systems via **other farmers/family members, cooperatives, phone, input providers and village loudspeakers**. Specifically, fruit farmers were more likely (62.12%) to obtain seasonal forecast and advisory from other farmers/family members compared to rice farmers

(45.60%) ($p = 0.008$). Rice farmers had a higher likelihood (52.75%) of accessing this service through cooperatives compared to fruit farmers (23.48%) and rice-shrimp farmers (28.37%) ($p < 0.001$). Fruit farmers were more likely (41.67%) to receive this advisory through the phone than farmers in the other systems ($p = 0.016$). Rice-shrimp farmers (28.37%) had a higher likelihood of obtaining seasonal forecast and advisory for shrimp through input providers, while rice farmers were less likely to do so ($p = 0.001$). Rice farmers (14.84%) had higher access to this service via village loudspeakers compared to fruit farmers (3.79%) and rice-shrimp farmers (4.26%).

• **For those who don't have access but would like to** receive Seasonal forecast and advisory: **TV/radio** (54.87%), **phone** (34.51%), **local authorities** (38.94%), and **other farmers/family members** (30.97%) are the most preferred sources.

In relation to **lead-time**, refers to how far in advance the farmers actively seek or need seasonal forecasts and advisories to prepare for their upcoming crop. Overall, a **2 - 4 week lead time** is most preferred by the surveyed respondents. Results of the chi-square test revealed a significant difference in preferred and current lead time among the three farming systems ($p < 0.001$). Specifically, rice farmers prefer a lead time of less than 2 weeks (40.90%) or 2-4 weeks (40.90%) to make plans for the upcoming season. Similarly, rice shrimp farmers need seasonal forecasts and advisories less than 2 weeks or 2 - 4 weeks to prepare their shrimp. Fruit farmers, on the other hand, prefer a longer lead time (2-4 weeks or 1-2 months).

Regarding **farmers' perceived quality** of seasonal forecast and advisory, the farmers surveyed generally find this service to be relevant ($M = 3.99$), timely ($M = 4.06$), and having good quality ($M = 3.99$). Results of Wilcoxon-signed tests show there are significant differences in Relevance, Timeliness, and Overall quality ratings of Seasonal advisory among three farming systems. Rice farmers ($M = 4.08$) and rice-shrimp farmers ($M = 4.06$) perceive seasonal forecasts and advisories more relevant than fruit farmers ($M = 3.80$), $p = 0.004$ and $p = 0.001$ respectively. Rice farmers ($M = 4.19$) and rice-shrimp farmers ($M = 4.10$) perceive seasonal forecasts and advisories more timely than fruit farmers ($M = 3.84$), $p = 0.001$ and $p < 0.001$ respectively. Rice farmers ($M = 4.06$) and rice-shrimp farmers ($M = 4.04$) perceive seasonal forecasts and advisory as having higher overall quality than fruit farmers ($M = 3.85$), $p = 0.026$, and $p = 0.010$ respectively.

3.2. Farmers' intention to use digital climate advisory service

This section focuses on farmers' digital device ownership and behavior and their intention to use digital climate advisory services (DCAS).

Concerning household ownership of digital devices, three digital devices that are mostly owned by the surveyed households are **TV (95.49%)**, **Smartphone (94.44%)** and **Basic phone (60.75%)**. For respondents that have TVs at home, 63% reported that they can access the Internet via this device.

For respondents that have smartphones at home, **62% reported using the smartphone**, 27.17% said that the phone was used by other household members, and 10.83% shared with other household members. Among respondents that have a basic phone at home, **71.95% of those who had basic phone at home reported using this device**, 23.12% said that the phone is used by other household members and 4.94% share it with other household members.

The survey results revealed that 68.78% of the respondents reported using smartphones. This percentage aligns closely with the smartphone penetration rate in rural areas, which stands at 68% (Mobile Marketing Association, 2019). However, it is slightly lower than the nationwide smartphone usage rate of 73.5% (Ministry of Information and Communications, 2022).

74% of respondents reported paying for an online monthly subscription, which is mostly for WIFI and/or TV packages. Results of Chi-square tests show that there are significant differences in household ownership of digital devices among farming systems. Specifically, fruit households are more likely to own a smartphone ($p = 0.002$) and a laptop ($p = 0.014$) than households in other farming systems.

Table 3. Household ownership of digital devices

Unit: %

	TV	Radio	Basic phone	Smart phone	Tablet	Computer	Laptop
Household ownership (whether the respondent has the device at home)	95.49	11.13	60.75	94.44	8.87	5.56	16.54
% of respondents use the device they have at home	7.25	58.33	71.95%	62.00	8.77	22.22	10.19
% of respondent whose other HH members use the device	2.64	18.06	23.12	27.17	85.96	69.44	83.33
% of respondents share the device with other HH members	90.12	23.61	4.94	10.83	5.26	8.33	6.48
Internet access via the device	63,0	2,0	3,0	99,0	100	100	100

To support their farming activities, respondents use their digital devices mostly to check weather forecast (59.37%), which is followed by seeking crop advisory (41.79%) and searching input prices (41.49%), obtaining market information (35.16%). However, very few respondents (3.65%) use it as a market-place to sell their products.

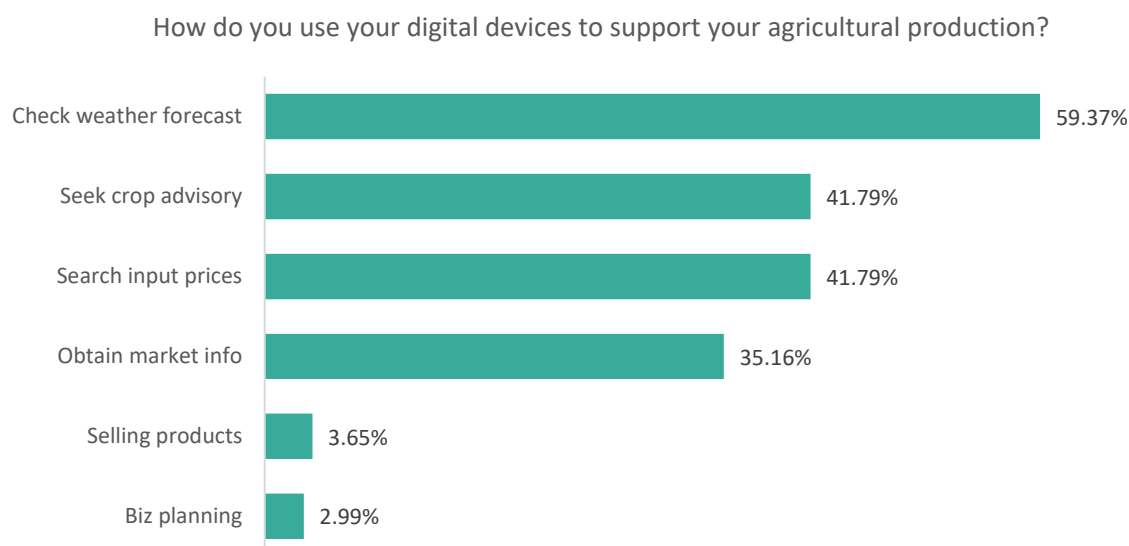


Figure 2. Farmers' use of digital devices for farming activities

To examine farmers' intention to use DCAS, we presented them with a scenario in which a paper seasonal forecast and advisory bulletin were being digitized and asked them to rate their intention to use it on a scale from 1 (Very unlikely) to 5 (Very likely). 31.7% held relatively neutral opinions about their intention to use the digital climate advisory bulletin. Overall, respondents were relatively neutral regarding their intention to use the digital climate advisory bulletin ($M = 3.21$). 12.8% and 10.7% are very unlikely and unlikely to use DCAS respectively. 32.2% and 12.6% are likely and very likely to use DCAS respectively. Results of the t-test show that male respondents ($M = 3.33$) are more likely to use DCAS+ than female respondents ($M = 2.97$) ($p < 0.001$).

Table 4. Respondents' Intention to use digital climate advisory services (DCAS)

Intention to use	Mean	SD
Whole sample (N = 665)	3.21	1.18
Rice (N = 220)	3.26	1.20
Fruit (N = 245)	3.16	1.17
Rice-shrimp (N = 200)	3.23	1.18

The most common reason for not intending to use the digital bulletin is difficulty accessing climate and agricultural advisory through digital channels, followed by the fact that they can rely on existing sources of information and lack of digital devices.

4. Conclusion

The study provided insights into farmers' current access to seasonal forecast and advisory service as well as their intention to use DCAS.

Regarding the current access to seasonal forecasts and advisories, rice farmers and rice-shrimp farmers have significantly higher access to this service than fruit farmers. In

terms of sources and channels used to access this service, farmers commonly rely on TV/Radio, other farmers/family members, local authorities, cooperatives.

The study results indicate disparities in access to seasonal forecast and advisory service among different farming systems. Fruit farmers have higher access to this service through other farmers/family members and phones compared to rice farmers. Rice farmers, on the other hand, have greater access to this service through cooperatives and village loudspeakers. Rice-shrimp farmers demonstrate a higher likelihood of obtaining seasonal forecast and advisory for shrimp from input providers.

The surveyed households commonly own TVs, smartphones, and basic phones, with a lower proportion of smartphone usage among respondents than the national average in Vietnam. Among the individuals surveyed, the proportion of smartphone usage is comparable to the rate of smartphone adoption in rural areas, though slightly lower than the overall national rate. The findings indicate significant smartphone adoption among the surveyed population, reflecting the increasing prevalence of mobile devices in rural areas. Although slightly below the nationwide average, it highlights the potential for leveraging mobile technology in rural contexts.

The surveyed farmers prefer interactive channels with visual aids but are neutral about using digital tools without guidance. They see the potential benefits of DCAS, but they are neutral regarding intending to use a phone to access the it. Male farmers expressed a higher intention to use DCAS than female.

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EVALUATIONS OF E-WALLETS IN VIETNAM FOR SUSTAINABLE DEVELOPMENT TARGET

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Abstract

To meet the needs of today's consumers, Fintech companies have been establishing a payment ecosystem via e-wallets. This is in line with the Government's policy of developing non-cash payments. It can be seen that, one of the most special marks in the payment market in the past 5 years is the emergence of E-wallets. The article will describe the current situation of E-wallets of Vietnam in recent times, make some comments, evaluate and propose some policy suggestions.

Keywords: *E-wallets , Vietnam, non-cash payment, Fintech*

1. Introduction

The 4th technology revolution along with the impact of the Covid-19 epidemic has promoted electronic payment forms, the E-wallet market has also become more and more exciting. According to statistics, the number of people using E-wallets and cashless payment applications has increased sharply recently, especially since the Covid-19 pandemic. To the latest data from the State Bank of Vietnam, more than 200 million transactions were carried out through E-wallets, with a value of about VND 77.7 trillion in the first months of 2021 (MOF, 2021). This is the result of the growing trend of online shopping and people's interest which focus on safety and reducing the risk of disease transmission. Credit institutions and banks in Vietnam have also actively cooperated with many Fintech companies to accelerate digital transformation in the banking sector, providing safe and convenient products and services at affordable prices and suitable for customers.

Customer satisfaction is an extremely practical factor that ensures customer loyalty to a certain product, service or brand, which determines the existence of any brand. Ira. P, Alvin. N and Purbandini. S (2021) stated that Indonesians use E-wallets because of their convenience, security and advantages over cash when the number of E-wallets have grown to more than 50 providers by 2020 in this country.

The study "Customer Expectations in E-wallet Service" by Muhammad Asyraf Hasim, Sanusi Abdul Manaf and Aeshah Mohd Ali (2020) adds another important factor that is that brand image and price have almost no influence. Their survey conducted through the internet to reach out to different social groups to be more objective. Based on data obtained from 500 responses, the author concludes that service quality, brand image and trust are the 3 most important factors affecting the satisfaction and loyalty of wallet users. Ahmad

Daragmeh et al (2021) published a study on named "Continuous Intention to Use E-Wallet in the Context of the COVID-19 Pandemic" to predict the factors that strongly influence consumers". From the research, in the short term, decision makers need to take advantage of the health concerns to use e-wallets as it is considered a factor to help protect consumers themselves from harm. disease through non-contact. In the long term, commercial banks should develop strategies to increase consumer loyalty to e-wallet products.

2. Context framework

The study will use the qualitative method to accessing the situation of E-wallets in Vietnam. Firstly, regarding the current status of E-wallets development in Vietnam, it can be seen that after 10 years of development, E-wallet has become popular with users, but there are still many gaps and potential to exploit. The government is required to support the development, create conditions for payment intermediaries to innovate, actively contribute to the promotion of non-cash payments, and manage and orient the market in the right direction. So, at the end of 2019, the State Bank of Vietnam issued Circular 23/2019/TT-NHNN amending Circular 39/2014/TT-NHNN guiding intermediary payment services with many new points to create favorable conditions for payment as well as enhancing security, protecting users' interests.

According to Circular 23/2019/TT-NHNN, customers are allowed to connect identity-verified E-wallets with multiple payment accounts, and debit cards, allowing them to maintain multiple wallet accounts. In addition, to ensure safety, prevent fraud, and money laundering, and protect the interests of customers, organizations providing e-wallets must comply with the provisions of the circular on opening and maintaining digital wallets...

These new regulations have received quite positive feedback after a period of implementation. In the first 6 months of 2021, e-wallet activities have achieved very positive results. Specifically, according to statistics from E-wallet service providers, the total number of successfully processed E-wallet transactions increased by 85.38% in the number of transactions and 91.57% respectively from 2021 to 2022. (Statista, 2022).

Secondly, about the trends of using E-wallets in Vietnam. According to a survey by Visa, in the context of the Covid-19 epidemic, Vietnamese consumers are gradually choosing to use E-wallets as well as contactless payments and payments with QR codes. The survey also shows that 57% of consumers have up to three E-wallet apps on their phones, and 55% of consumers prefer an app that can do all transactions. According to the data of Vietnam National Payment Joint Stock Company (Napas) announced in 2020, non-cash payment transactions via Napas reached more than 1.2 billion transactions, equivalent to 10 million billion VND, the corresponding growth of 75% in quantity and 121% in value compared to 2019. The proportion of cash withdrawal transactions at ATMs via Napas also decreased from 42% in 2019 to 26% in 2020.

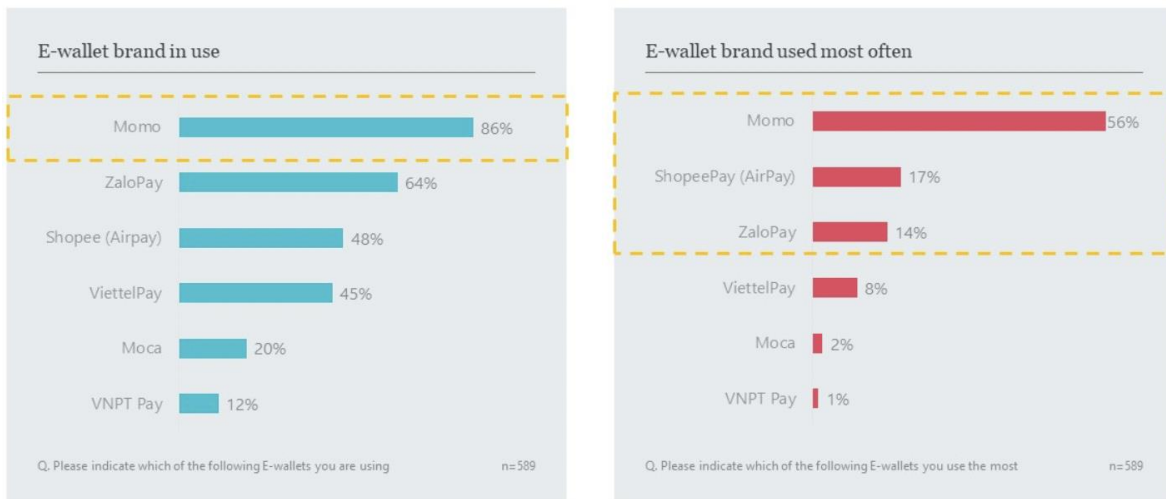


Figure 1. Popular transactions of customers using e-wallets

Source: Decision Lap (2021)

Momo, ShopeePay (AirPay), and ZaloPay are the top three most popular E-wallets in the market, based on penetration rates (Decision Lap, 2021). Simultaneously, the study also showed that E-wallets are used the most to recharge phones, transfer money, pay periodic bills, pay for food delivery services, and order technology cars. In which, Momo and ZaloPay are used the most to recharge phones, transfer money and pay periodic bills. Moca is mainly used for the needs of technology car payments, phone recharges, money transfers, and food delivery. The research results also show that the usage frequency and average daily consumption value of popular E-wallets on the market are both at a high level. Specifically, consumers spend an average of 230,000 - 274,000 VND/transaction. In which, Moca users are currently using the wallet most often. On average, Moca users make 2.2 transactions per day, Momo users make 2 transactions and ZaloPay users with 1.6 transactions.

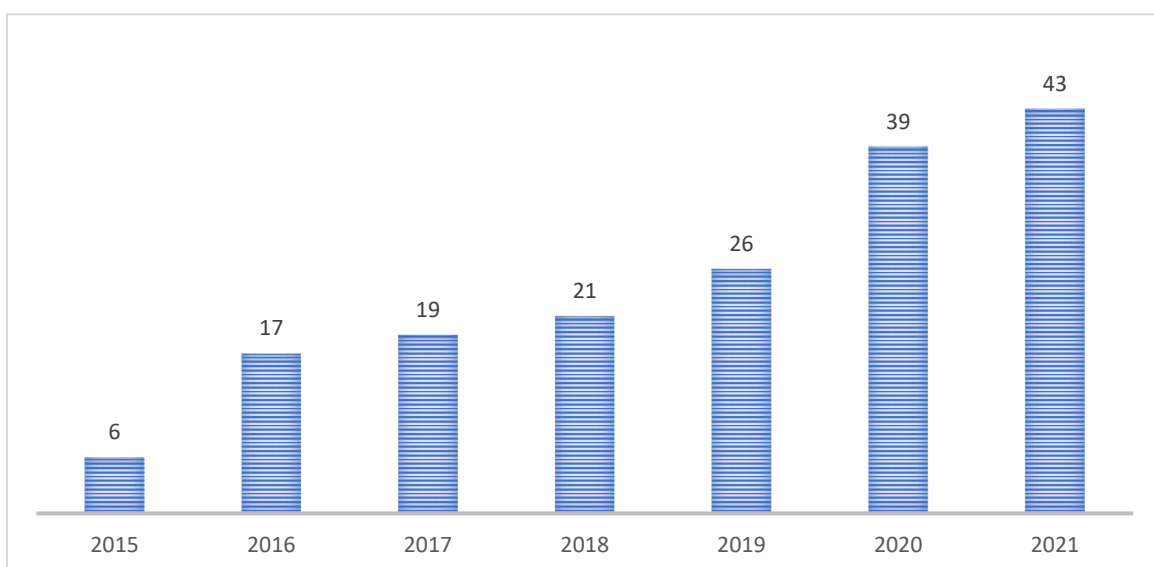


Figure 2. The growth of Vietnam's E-wallets market

Source: Vietnamnet.vn (2021)

As of July 2021, the number of E-wallets of payment intermediaries in Vietnam is up to 43 firms with a population of more than 97 million people, not to mention E-wallets of banks. Thus, the number of E-wallets has increased 7 times compared to 2015.

3. Results

The study will evaluate the current situation of E-wallets in Vietnam in terms of opportunities and challenges.

In terms of opportunities

First, the Government of Vietnam set a target: "The ratio of cash to total means of payment at 8% by 2025". Along with that, due to the impact of the Covid-19 epidemic, consumers have changed their habits of using cash in payment, instead buying goods and paying online to limit contact and spread of the epidemic".

Second, vendors update many new features for E-wallets to increase their market share. In addition to QR scanning payment technology, some E-wallets apply QR scanning technology to create a new experience for customers. It can be seen that the 4.0 technology revolution contributes to creating many opportunities for the development of electronic payment forms in general and E-wallets in particular.

Third, at present, the number of people using smartphones and using the Internet through these devices has increased significantly. The number of Internet users in Vietnam ranks 12th worldwide and 6th out of 35 countries/regions in Asia. On average, Vietnamese spend about 7 hours a day, up from 2020 (5.1 hours/day) connecting to the Internet via mobile, and 94% of Internet users use the Internet daily. Through the statistics, we can see that in Vietnam, it is difficult for users to separate Internet-related activities for more than a week. The impact of Covid 19 and the time of social distancing has changed habits and increased interaction time with smart electronic devices. This is an opportunity to increase the number of E-wallet users in the future.

Fourth, E-commerce has been a familiar transaction method of many large trading companies in the world and is growing, becoming familiar to users in Vietnam. This method changes the buying and selling habits of consumers. Payment by cash has decreased from 86% to 78%, while the proportion of payment via e-wallets and cards has increased slightly compared to previous years. Thus, with the explosion of e-commerce, the E-wallet market will have great opportunities to grow more and more shortly.

In terms of challenges

Firstly, changing the spending habits of Vietnamese people is not easy. In recent times, more and more E-wallets appear and with the Covid-19 pandemic to reach more customers. However, in general, the habit of paying in cash of Vietnamese people is still undeniable, and there is a fear of fraud and risks in the payment process, so a part of people still choose payment in cash. On the other hand, the lack of flexibility and versatility when each type of E-wallets integrates a few similar features is also a common

barrier that makes the rate of use of E-wallets in Vietnam still low. Therefore, how to nurture customer's new habit and convince them to continue using when there is no promotion is what E-wallets need to make more effort.

Second, user acquisition costs are high but the average user transaction value is low. Despite the high rate of mobile payments, the average transaction value per user in Vietnam is still very low. "Developed countries like the US, UK, Norway, Italy have lower mobile payment rates than Vietnam, but the average transaction amount of customers in these countries is much higher. Americans spend an average of nearly \$8,000 on mobile payments, while Britons spend more than \$7,000. At the same time, in Vietnam, consumers only pay an average of about 21 USD via E-wallets. This proves that Vietnamese transactions are only payments for daily consumption. The payment value of each Vietnamese person is so low, but this electronic payment segment "consumes" a large amount of investment capital. It is not difficult to understand that the top Wallets have been reporting losses for many years, for example MoMo lost 854 billion VND in 2019, double the loss in 2018. However, to maintain the user growth rate and serve the next funding rounds, no business has given up this expensive "game", and the prospect of loss may continue to linger.

Third, users are subject to risks related to network security while performing online transactions using E-wallets. "This is a challenge that could hold back the future development of E-wallets. In fact, worrying about the risk of losing money, stealing personal information, and fraud has not stimulated consumers to use E-wallets immediately. In addition, fear of being attacked by hackers or facing an attack of malware, and data leakage are also reasons why consumers feel insecure when using this payment method. Besides, an internet connection is a big obstacle for users to use E-wallets because the availability of e-wallets depends on the internet to work and devices such as tablets or mobile phones. Users will not be able to access the E-wallets if the phone runs out of battery or has no internet" (Y.Meikeng, 2019). The last but not least, the E-wallets market is a problem of the legal corridor. Currently, many subjects have taken advantage of the loopholes of the E-wallets to commit fraud to appropriate property, or even carry out illegal activities through the E-wallets such as money laundering, and betting.

4. Discussion and conclusion

E-wallet is undeniably trend around the world. E-wallet satisfies many needs of users with diverse features to minimize time and cost, quick and simple payment, especially the accompanying incentives. Along with the development of diverse features, and expanding the ecosystem, E-wallet is increasingly difficult to control fraud and scams....so competent authorities need to take measures to tighten the management legal framework and establish a legal corridor to prevent legal loopholes.

First, some recommendations to the Government:

The government needs to have strict regulations for cases where the payment service provider hides fraudulent activities such as money laundering and betting. Issuing strict conditions with the procedures for which payment units open E-wallet accounts for new customers according to Circular 23/2019/TT-NHNN.

Second, some recommendations to the State Bank:

Completing the policy and legal corridor in the form of payment by E-wallets. The State Bank needs to coordinate with agencies and ministries to build and complete the legal corridor in the field of non-cash payment in general and Fintech in particular based on ensuring the harmony of interests between the different stakeholders. Fintech companies, banks, and legal interests of customers.

Policy on infrastructure development, building a digital payment ecosystem such as upgrading interbank electronic payment system, developing switching system, integrating and synchronizing payment technical infrastructure, Banking application with other industries and service areas.

Actively monitor the electronic wallet payment service system, and non-cash payment at commercial banks to provide solutions if there are risks.

Conduct training sessions, and seminars to guide society to understand the direction, policies, and guidelines of commercial banks.

Strengthen communication with users, so that customers can understand the principles of security, and how to use them by the instructions of banks and payment intermediary service providers to ensure real performance money transfer payment transactions and related services safely and securely.

Third, some recommendations for commercial banks

Currently, E-wallets of Fintech companies have become familiar to customers. Therefore, commercial banks, with their important role in the system of credit institutions and the economy, need to promote marketing activities, and increase product and service recognition for customers so as not to be deceived. lost market share to Fintech companies. Commercial banks need to continuously upgrade and improve modern technologies in payment activities. It is extremely necessary to coordinate with payment units, and product and service providers to integrate their information technology with the payment systems of banks.

Partnering with financial technology companies can bring great advantages to banks. Commercial banks need to change the way they operate and diversify their utilities. Currently, banks and companies providing E-wallets services are linked with each other. This is shown in that the customer must have a bank account, money from the bank account will be loaded into the E-wallets, and money transfer, deposit, or withdrawal must go through the bank. This is a premise for cooperation between banks and companies providing convenient services, ensuring the supply of quality products to customers.

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USING INFLUENCER MARKETING TO PROMOTE VIETNAM TOURISM

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Abstract

The prevalence of electronic commerce has given rise to the emergence of influencer marketing which are playing an important role in attracting customers not only in e-commerce businesses but also in the field of tourism. Influencers become effective marketing strategies to promote travel destinations of many countries across the world. And Vietnam has recently also witnessed the meteoric rise of influencer marketing, capturing the attention businesses and consumers. On the basis of analyzing the current situation of influencer marketing in Vietnam, the article proposes several observations and suggests some solutions to improve this activity for coming years.

Key words: *influencers, influencer marketing, travel promotion, tourist, Vietnam tourism*

1. Introduction

The digital revolution has encouraged consumers to connect, communicate, and interact with each other on convenient and accessible platforms such as Facebook, Twitter, Tiktok..., leading to a huge change in marketing strategies for tourism. With the development of new technologies, tourists are currently able to search travel information much easier on the internet. Information that consumers gain from interpersonal sources has stronger effects on consumer decision-making than traditional advertising techniques (Goldsmith and Clark 2008). As a result, the popularity of influencer marketing, which involves the use of travel social influencers, has increased in the tourism industry (Yilmaz et al., 2020).

Before the COVID-19 pandemic, Vietnam was a popular destination for tourists due to its diverse landscapes, rich culture, and delicious cuisine. Many influencers created attractive content in popular tourist destinations like Hanoi, Ho Chi Minh City, Halong Bay, Hoi An, and other cities across Vietnam. However, with the travel restrictions and safety measures implemented over the whole country in response to the pandemic, the influencer marketing scene for tourism in Vietnam has been affected. Many travel influencers had to postpone their trips or cancel their plans altogether. Despite the challenges, influencer marketing in Vietnam over past years still keeps developing and travel influencers have adapted to the current situation by creating informative and inspiring content from different topics and helping to recover Vietnam tourism.

Although the significance of understanding influencer marketing strategies becomes a crucial concern in the development roadmap of Vietnam tourism, a few researchers are focusing on this issue. Therefore, this article aims to explore the current situation of using

influencer marketing to promote Vietnam tourism, and then suggest some recommendations to help this marketing strategy gain more success in the future.

2. Conceptual Framework

2.1. Influencers

According to Brown & Hayes (2008), influencers are third parties that have significant impacts on a customer's purchasing decision and are responsible for such influences. They described influencers as being similar to consumers who have a direct impact on their followers' behaviors.

De Veirman et al (2017) define influencers as people who are content creators and accumulated a solid base of followers. Through blogging, vlogging or creating short-form content, they provide their followers an insight into their personal, everyday lives, their experiences and opinions. Influencers build a large network of followers and are considered as trusted tastemakers in one or several niches. By involving influencers, brands aim to stimulate influencers to endorse their products and through this way build up their image among influencers' often huge base of followers.

Based on Wikipedia, influencers are influential people on social networks and have a large number of followers. Influencers can come from many different fields and industries, not only artists, doctors, entrepreneurs or celebrities in general, but any individual can become an Influencer if they meet a certain criteria.

Basically, influencers are people who possess qualifications, expertise or social effects on their field. Influencers are also people who impact a large number of followers (from a few thousand to several million). With the trust of the public as well as the followers, influencers will have positive effects on consumers' perceptions of brands and products, leading consumer purchase intention. Influencers will help businesses obtain the trust of targeted customers more easily and convince them to choose advertised products /services.

2.2. Influencer marketing

Influencer marketing is a marketing strategy that uses the influence of key individuals or opinion leaders to drive consumers' brand awareness and/or their purchasing decisions (Brown and Hayes 2008; Scott 2015). According to the Center for Influencer Marketing, influencer marketing is the process of identifying, researching, engaging, and supporting people who create high-impact conversations with customers about brands, products, and services.

Forbes (2018) defines influencer marketing as a type of marketing that focuses on using key leaders to get your brand's message across to a broader market. Instead of marketing directly to one large group of consumers, you pay influencers instead to get your message across. Besides, Hootsuite describes influencer marketing as a form of social media marketing that uses endorsements and product mentions from influencers - individuals with a dedicated social media following and are seen as experts in their field to promote products and services.

There are different definitions, but they have the common meaning that influencer marketing is a way for brands to leverage the power of social media and the influence of individuals with large followings to promote their products or services to a wide audience. In influencer marketing, influencers are typically compensated for their promotion of a product or service, either through payment or through receiving free products or services. Influencer marketing can be an effective way for brands to reach new audiences and build trust with consumers, as influencers are often seen as trusted sources of information and recommendations. However, it is important for brands to carefully select influencers who align with their values and target audience, and to ensure that any sponsored content is clearly disclosed to consumers.

2.3. Influencer marketing in the field of tourism

Influencer marketing has become increasingly important in the field of tourism, as more travelers turn to social media to research destinations and make travel plans. According to Bokunewicz (2017), in the context of global competition, influencers will help to attract more people, as they normally have many engaged followers, and easily to reach demographic targeted segments such as women. In addition, influencer marketing can improve and enhance the tourist destination, as a result creating a critical part of destinations' branding strategy (Gretz, 2018).

The rise of influencer marketing as a cost effective and high expansion results tactic of marketing has created new types of influencers in the tourism sector, such as Instagram travel influencers. Basically, influencers will provide real experienced recommendations more trustworthy than traditional advertising. This can help potential travelers feel more confident in their decision to visit a particular destination or use a specific. Influencers will provide real-experienced recommendations for tourists. Travel influencers often share their honest opinions and experiences, making their recommendations more trustworthy than traditional advertising. This can help potential travelers feel more confident in their decision to visit a particular destination or use a specific service.

Besides, influencer marketing also helps to build awareness and interest in travel destinations. By partnering with influencers who have a large following in the travel space, the travel destinations will be more famous and attract more tourists to visit. Influencer marketing will also drive bookings. By including links to tourism websites or booking platforms in their content, influencers can help drive bookings and increase revenue for tourism brands. Additionally, Influencer marketing helps to measure success. Its campaigns can be measured through metrics such as engagement, reach, and conversions, providing tourism brands with valuable data to inform future marketing strategies.

Therefore, influencer marketing can be a powerful tool for tourism actors who are looking to reach new audiences, build trust with potential travelers, and drive bookings.

3. Method

With the aim of understanding the current situation of influencer marketing in Vietnam, the study identifies systematic literature survey to gather information. It is clarified in Figure 1 as below:

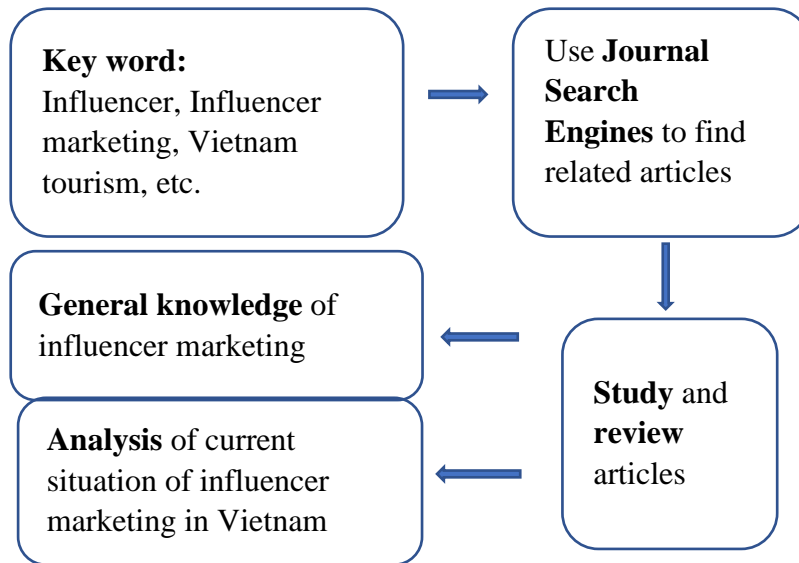


Figure 1. Literature survey process

4. Results

Influencer marketing is a rapidly growing and evolving industry in Vietnam, with both opportunities and challenges for brands and influencers. According to “The State of Influence in Asia 22/23” Report of Anymind Group, Vietnam is one of Southeast Asia’s most dynamic and fastest-growing markets for social media influencer marketing. With a population around 100 million people, there are over 145 million mobile phone connections (150% population penetration rate), with 68.17 million people (70% of total population) connected to the internet, and 65 million people on social media (67% of total population). Facebook is a platform dedicated to influencer marketing campaigns, with more than a quarter of all campaigns (79.1%) being conducted on the platform, followed by Instagram (9.8%), TikTok (7%) and YouTube (4.2%). TikTok is the most mentioned brand by Instagram influencers in Vietnam and it is also the only market where the platform leads in search. Following TikTok are two e-commerce platforms Shopee and Lazada, showing the market's interest in online commerce. In addition, no domestic brands appear on this list and 70% of the brands mentioned by influencers in Vietnam are Japanese and Korean brands. Based on another report from AJ Marketing, Influencer marketing in Vietnam skyrocketed especially by 26.4% in 2022. That's a staggering \$13 million increase from the previous year, pushing the total size of Vietnam influencer marketing in 2022 to reach \$64.23 million USD, including the money spent on online advertising activities such as posting on social media channels, published newspapers, etc. Vietnamese influencers have an abundance of opportunities to connect with their audience. Nearly a quarter (23.7%) of Vietnam's internet users follow influencers or experts on social media, spending a whopping 2 hours and 32 minutes each day scrolling through their feeds. 77% of them have been influenced to buy a product endorsed by an influencer. Additionally, Vero Asean's report said that 78% of businesses have spent a large amount of money on influencer marketing through advertising campaigns and it is expected to continue to increase for at least 2 more years.

As can be seen, in recent years more brands has recognizing the potential of working with influencers to reach Vietnamese consumers on social media. Influencer marketing has become one of the fastest-growing marketing strategies in Vietnam, as more brands shift their marketing budgets towards social media and influencers. Micro-influencers, who have smaller followers but high engagement rates, are becoming increasingly popular in Vietnam, as brands seek to reach niche audiences and increase authenticity. Vietnamese influencers tend to create content that is tailored to local audiences and culture, which can be especially effective in reaching Vietnamese consumers. The Vietnamese government has also recently introduced new regulations for social media and influencer marketing, requiring influencers to disclose sponsored content and imposing fines for violations. According to the Search Engine Journal's statistics on the objects and geographical territories of social networks, the highest percentage of social network users comes from the Millennials. Because they account for 32% of the world's population and 35% of the population of Vietnam, this generation is and will be the key generation in the global workforce, and also the main consumer that many brands are targeting. Especially, in the next few years, Millennials will become the main consumers in the travel industry, because they love to travel more than older generations. While Baby Boomers prioritize buying high-value items like homes and cars, Millennials tend to spend money on experiences, so Millennials are people who will spend on traveling at the highest level. In addition, when compared with other generations, Millennials use a variety of online information sources in travel decision making, because travel is a social experience of browsing information, decision making, purchase and post-purchase behavior (Schiopu, 2016). These factors are the main reason why travel influencer marketing is growing so fast recently. Influencer marketing will be one of the main strategies for tourism to develop. It is becoming increasingly clear that influencer marketing will greatly benefit the tourism industry. The emergence of influencer marketing not only energizes and dynamics the domestic travel market, but also helps brands connect with potential foreign markets. Travel advertising via influencer marketing just started around a few years ago, but now it has already become a big industry. Travel influencers are people who love to travel, experience exploring all over the world. They have high followers for certain audiences who are adventurous and passionate about discovery. Through posts shared on social networks, they will present and evaluate tourist attractions from their point of view and get the support and trust of the followers. Most users trust influencers more than ordinary advertisers or celebrities, therefore, the use of influencers in marketing strategies for businesses is extremely important. Not only does it help improve brand awareness, but it also returns a higher conversion rate than other communication methods.

Travel influencers have been a popular concept in recent years among young people in Vietnam, inspiring millions of young people to travel around the country and the world. They have many different ways to create online travel content according to their strengths and interests in that field, such as famous technologists, travel experts, people with deep experience in food or people with strong knowledge of fashion. In Vietnam, with the purpose of stimulating tourism, many localities have cooperated with leading influencers such as Khoai Lang Thang, Hoang Anh, Tran Thai Linh... This tourism trend has made many places

like Phu Quoc, Da Lat always in the top of the hottest tourist destinations in the list of travel agencies. Otherwise, some travel attractions are promoted by celebrities who are also famous people and have great influence on the public. Celebrities are often chosen to be the face of the brand, the brand's image ambassador such as actors, singers, television MCs...however there are also famous people who are influential in the tourism industry such as singer Quang Vinh, model Quang Dai, actress Diem My... Along with them, reputable people with extensive knowledge of different fields like fashionista, yoga teachers, travel bloggers, journalists, reporters...are also travel influencers, for example hot travel bloggers Le Ha Truc, Chan La Ca... Other influencers are ordinary people who have high followers and interactions on social networks like hotmom, entertainment vlogger...

Overall, influencer marketing in Vietnam currently develops fast and is expected to continue to grow in the coming years. However, this activity still faces different threats. For example, marketers are unclear of knowing how to connect with Influencers because they still largely depend on personal relationships, with no automated process. Or travel agencies have not invested enough time to manage multiple influencers for advertising campaigns, and they also lack a budget for the size of the campaign, leading to bad profit. Additionally, some local firms also do not have experience of working with influencers and as a result businesses will lose a lot of money, time and are not as effective as expected. There is also no particular system to measure the effectiveness of each advertising campaign corresponding to each influencer. So, travel firms cannot determine which source of profit depends on which group of influencers, it will be wasteful.

5. Discussion and Conclusion

5.1. Discussion

Influencer marketing in Vietnam tourism is getting great opportunities when it has a huge quantity of young effective influencers with many creative ideas, but this activity needs to be built into a long-term strategy. Based on analyzing the current situation, there are some proposed recommendations as follows.

Firstly, the Government and Ministry of Culture, Sports and Tourism need to continue to set up, amend and supplement the legal system and policies related to influencer activities to improve its efficiency. And travel companies or influencers need to follow updated regulations concerning influencer marketing in Vietnam to ensure that the campaigns are compliant and avoid any potential fines or penalties.

Secondly, the travel agencies need to develop clear strategies. They have to define the goals, target audience, messaging, and work with influencers to create content that aligns with their strategies. They also should have suitable measurements for success of influencer marketing campaigns and predict apparent future marketing performances.

Thirdly, travel locals also need to identify the right influencers to work with, carefully consider their niche, audience, and engagement rates. They should look for influencers who have a genuine interest in travel and who create content that aligns with your brand values and target audience.

Fourthly, the travel brands should collaborate with local tourism authorities who can help them reach a wider audience and access to destination-specific resources and expertise.

Last but not least, both travel agencies and influencers should focus on creating real content that showcases local culture and experiences and avoid content that feels overly promotional.

By following these recommendations, it is hoped that tourism brands in Vietnam can effectively leverage influencer marketing to reach and engage with travelers on social media, build trust and credibility, and drive bookings and revenue.

5.2. Conclusion

The explosive industrial revolution 4.0 has led to a shift to digital marketing strategies in promoting tourism, where influencer marketing plays an important role and is considered as one of the most effective ways to support travel brands and tourist destinations. Influencer marketing not only helps increase travel enterprise profits, promoting tourist attractions but also contributing to the development of Vietnam tourism. Despite some difficulties, Vietnam is one of the countries with many favorable conditions to develop this activity. In the coming time, influencer marketing will be one of the most popular strategies for tourism marketing campaigns in Vietnam.

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DUAL PANEL MODEL OF CORPORATE GOVERNANCE AND FIRM PERFORMANCE IN PUBLICLY HELD ENTERPRISES

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Abstract

Although the corporate governance of publicly held enterprises today have changed drastically over the last 40 years, the businesses have remained under on-going threats of management failures and corporate financial scandals. This paper attempts to search for a new corporate governance system to accelerate the long-term performance of publicly held enterprises. We challenge the most prevalent assumptions about the public companies: Who is the owner of the firm? and what is really objectives of the modern firm? Based on historical and theoretical framework, we argue that neither shareholders nor stakeholders are the best “firm’s controllers”. Rather, we realize the role of the “firm-specialized investors” as key actors in our corporate governance model. After re-defining the firm’s objective and the firm’s owners (or controllers), we develop an original corporate governance model. In particular, we introduce an independent arbitration panel which is separated from management panel to form a dual panels system. The Dual panel model of corporate governance is expected to (1) eliminate the agency problem by an integration between ownership and management in management panel and (2) enhance team work and firm-specific investment by interest protection for the specific investors which is done by the internal court or Arbitration panel.

Our empirical results are robust to endogeneity concern. We found empirical evidence supporting the benefits of the Dual panel model of corporate governance to both market and accounting base measure of firm performance (Tobin’s Q and ROA). However, when we examine the relationship between our model and Economic profit (or Economic Value Added -EVA), no significant effect was found. A further exploration of the Dual panel model’s impact on EVA revealed the role of Arbitration panel in a corporate governance model. Especially, the incomplete independence of the panel might cause devastating damages for long term performance of publicly held enterprises.

Keywords: *Corporate governance; German firms; organization structure; Dual panel model*

1. Introduction

The Global Finance Crisis has unveiled a critical reason for the serial debacles of many giant companies worldwide during 2008-2009. That is a weak corporate governance

of publicly held enterprises where unaccountable auditors, faulty information disclosure, and misleading incentives can be found (Clarke, 2005, Gordon, 2002, Coffee, 2003-2004). The lessons from the collapse of Enron, WorldCom, Tyco, etc. have induced the enforcement of stricter controls on management (Samontaray, 2010, Shil, 2008, Wu, 2005). However, no matter how effective a control mechanism is acclaimed by theory, empirical studies have been unable to produce consistent conclusions about its performance (Adams et al., 2010). It reveals the fact that focusing on the control mechanisms for shareholders' interests alone maybe not be enough to improve the overall quality of corporate governance. Indeed, as the discussion by (Schmidt, 2004), instruments available for the stakeholders to exercise their rights are only one of the factors determining the characteristics of a corporate governance system. Other equally important elements include which stakeholder groups control power over the key decisions of the company, and how effectively they use the instruments. Although today's economics and finance textbooks follow the Nobel-prize-winning essay by Milton Friedman (1970) to describe shareholders as the only firm's "principals" and ultimate owners, historical evidence suggests that this is not always the case.

Indeed, from a historical perspective, the overproduction in the 1890s provoked "the Great Tycoons" to set up vertical integration which aimed at substituting uncertain market transactions with an under-control system using internal management bureaucracies. However, the success of internalization is conditional upon the existence of an internal decision-making structure where an effective group of managers is able to take over the functions that were formerly conducted by price and market mechanisms. When the form of business rapidly grew by dispersing their stock ownership during the 1920s, it also started to plant a seed of management disaster. The Great Depression in October 1929 which created unprecedented catastrophic consequences has raised serious questions about the role of modern enterprises. While the Populists believed that "big is bad" and the complex structure of organization makes it impossible to manage and control, Berle and Means (1932) argued that modern corporations were not the bottom line causing the Great Depression. The form of business still works as a remarkably effective engine, the problem lies in the remnants of the Great Tycoons' control which he believed totally useless, destructive, and appendage.

The historical lesson inspires us to challenge shareholder primacy after the Global Financial Crisis (Stout, 2012). Thus, it is high time we implemented an extensive search for a member who is greater knowledge about the business, is more reliable to stakeholders, and has stronger motivation in running the firm toward long-term development. The changes in the fundamental framework of modern firms induce a need for an innovative structure of corporate governance that can enhance teamwork in management, minimize agency problems, and encourage firm-specific investment should be recommended.

Our paper adds to the existing body of corporate governance area by proposing an original model of corporate governance which can enable publicly held enterprises to facilitate the firms' long-term development. The innovation of this paper lies in the original design of the corporate governance structure which is operated on the basis of two separate panels: the management panel which is run by highly motivated firm owners and the arbitration panel which works as an independent internal court.

The study is organized as follows: Section 2 will review the existing models of corporate governance. After evaluating the strength and weaknesses of each model, we will propose the Dual panel model of corporate governance in Section 3. The explanation for the method and empirical analysis of the relationship between the Dual panel model and long-term firm performance will be provided in Sections 4 and 5.

2. Literature review and theoretical framework

2.1. Literature review

An initial question that has bombarded economists is: Why do firms exist? Put differently, for organizing transactions, what factors shift market mechanisms to the internal arrangement? After Roald Coase published the book “The Nature of the Firm” in 1937 (Coase, 1937), the issue renewed scholars’ attention. Since then, the literature on this topic has evolved into three main streamlines of organizing economic activities including property right analysis, principal-agent analysis, and team production analysis.

From a contractual perspective, firms are established as a solution for dealing with transactional difficulties resulting from the uncertainty of long-term production relationships. Under this circumstance, designing complete contracts can be too expensive or impossible. The high degree of uncertainty makes contracting parties find difficulties in negotiation over who does what and who gets what. Consequently, it discourages them from maintaining the contractual relationship. In an attempt to fix this problem, the property rights analysis suggests a mechanism in which interest conflicts can be cleared up through a specific allocation of property rights. In particular, explicit contracts can be substituted by cooperation in which property rights are transferred to one of the involved parties who contributes critical inputs to the joint production.

Building on this view, the conventional model of corporate governance focuses on the relationship between principals and agents in which productive relationships within a firm are organized into a vertical hierarchy (See Figure 1). At the top of the pyramid is the principal who is seen as the ultimate owner of the firm’s assets. The owner transfers their authority over the assets to agents who are practically in charge of running the business.

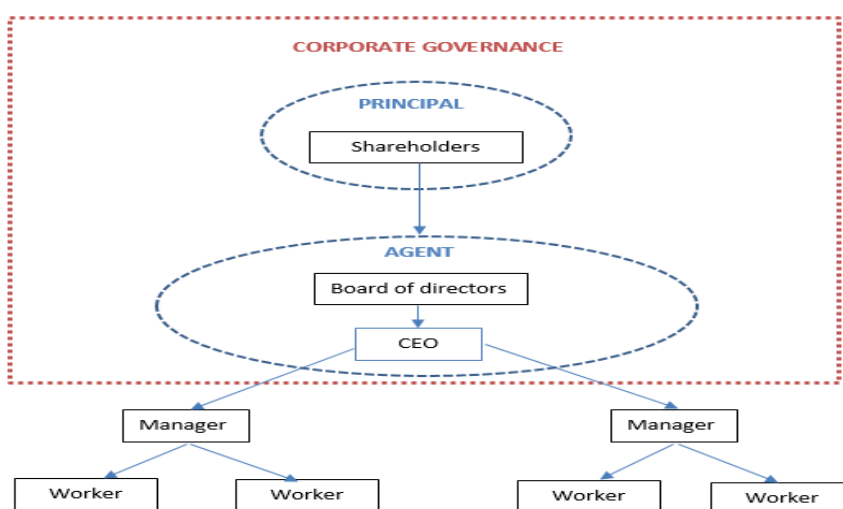


Figure 1. Conventional model of corporate governance

The conventional model has been criticized for its assumption of a clear definition of principle. In publicly held enterprises, critical inputs for joint production are provided by a group of people which ignites a major dilemma in devising incentives to overcome the free-riding and rent-seeking of team members (Alchian and Demsetz, 1972). The suboptimal outcomes, which result from self-interest motivations in team production, induce a viable solution adopted by Alchian and Demsetz (See Figure 2). In their suggested system, one member will step aside and perform a role of a monitor who keeps an eye on the rest of the team members' performance to detect and punish the selfish behaviors of the members. As a consequence, the monitor will have residual rights over the group return. Whereas, other team members turn into employees who received a fixed income. The system's benefits, therefore, are argued to be twofold. While it provides sufficient incentives for the monitor to police against shirking, the pre-determined wage for other team members can disable motivation for rent-seeking.

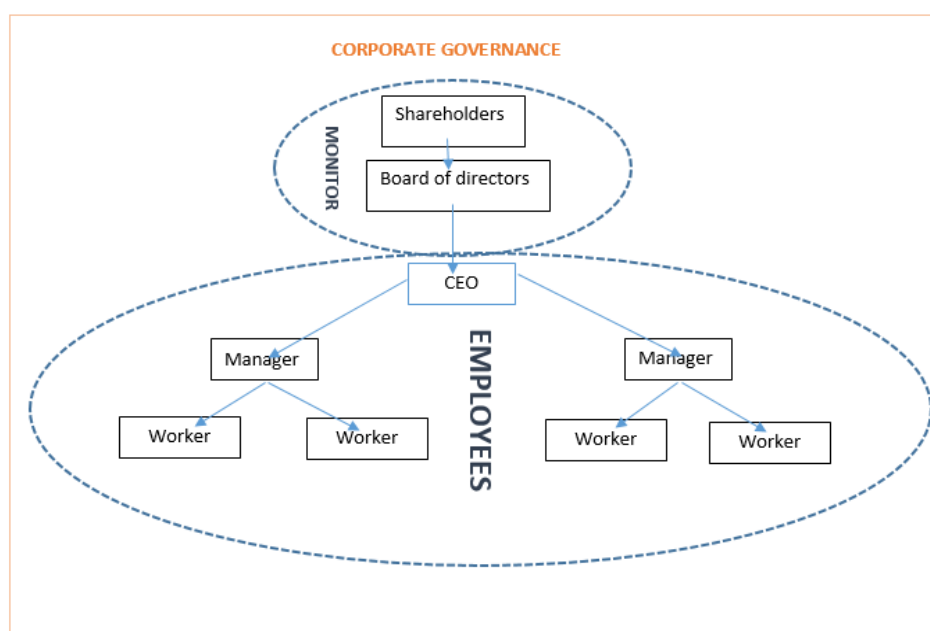


Figure 2. Monitor- employee model of corporate governance by Alchian and Demsetz

In this model, its assumption of uniform or interchangeable “employees or inputs” which can be hired on the market through explicit contracts is questioned by Bengt Holmstrom (1982) who proved that it is impossible to write such kind of contracts. “Holmstrom’s impossibility theorem” is especially true in case a firm needs specialized inputs which cannot easily find on the market.

According to Raghuram Rajan and Luigi Zingales (1998), a fundamental reason for the existence of joint production lies in the potential value from the aggregation of different specific-input providers. Undeniably, gains from team production projects are undertaken only if all members make some form of firm-specific investment. It can be succinctly explained by the fact that if all necessary firm-specific investment is put in the hand of a single member, there will be no motivation for him to enter a corporation with other members because he can simply hire interchangeable workers on the market which its prices and

quantities are explicitly pre-set like any other inputs. The only reason for him to invite others to join his project is that his partners can provide potential resources that he does not have and it is not easy to find on the market. Hence, the added value of new partners to the team production comes from their contribution of productive resources which are specific to the team’s needs.

In order to deal with the obstacles for firm-specific investors, Blair and Stout (1999) organize a corporate into several layers of hierarchy (See Figure 3). At the top layer is a board of directors who possess ultimate power over the corporate assets. This unit is formed by individuals who are representatives of team members and some outsiders. Members at lower layers can negotiate with their “direct boss” on his decisions that they are unhappy with. Generally, they will make the best efforts to arrive at a compromise by themselves or by the judgment of BOD. Otherwise, the dissenting members will either voluntarily leave or be forcefully removed from the corporation, as a result, lose their firm-specific investment or future rent.

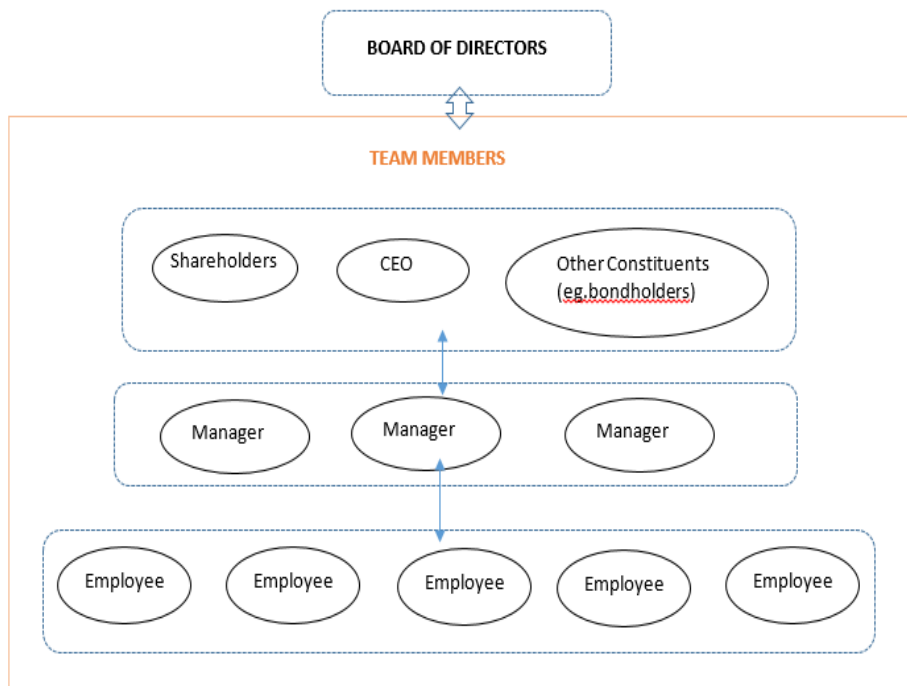


Figure 3. Mediating hierarchy model of corporate governance by Blair and Stout

In the mediating hierarchy model, Blair and Stout have added two more functions to the hierarchy. Besides the benefits to higher levels of hierarchy from boosting upward information flow and downward decision processes, the model also benefits horizontal relationships by overseeing shirking behaviors and conciliating disputes among team members. As a result, the last two functions have significant contributions to encouraging all members to make sufficient firm-specific investments. The introduction of mediating function to hierarchy implies that no team member takes the role of a principal because ultimate control rights over the team’s assets and outputs are transferred to an independent entity.

Dual panels model of corporate governance

After reviewing the existing models of corporate governance, we develop a dual panels system of governance which is formulated in line with radical revision in basic assumptions of public corporates. The ultimate aim of this model is to drive the managerial team to undertake long-term strategies that focus on value creation for the economy, their business, and inherently for themselves.

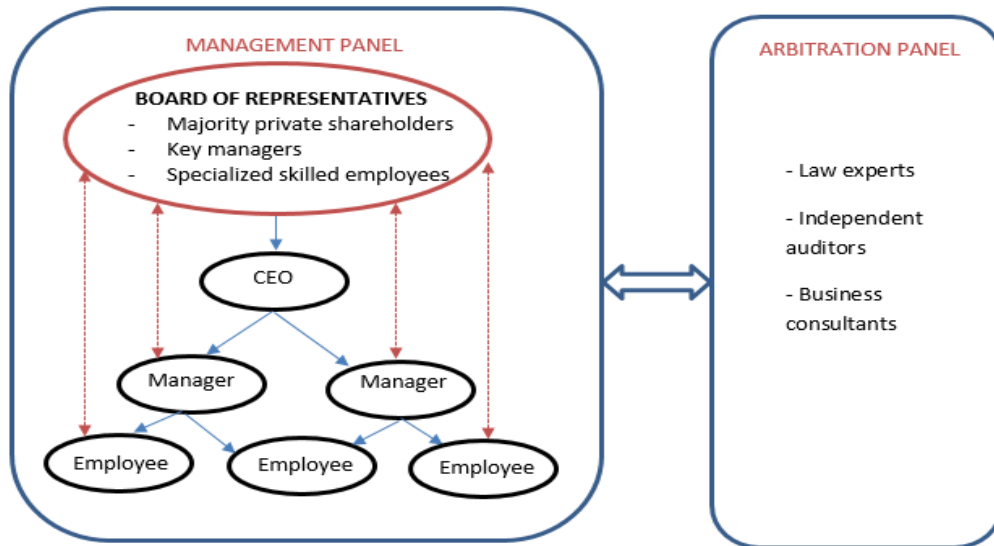


Figure 4. Dual panels of corporate governance

In order for the model to achieve the above objectives, we introduce an independent arbitration panel which is separated from the management panel to form a dual panels system (See Figure 4). The management panel is organized as a vertical hierarchy. At the top of the panel is the Board of Representatives who take ultimate control over the firm's decisions and receive residual income. The distinctive feature of the Board of Representatives (BoR) is that all of its members are composed of the firm's long-term owners who have a long-term stake in the firm. They are expected to exclusively work for a single objective of value creation because as a private company, the firm's owner has no choice but to make money and to create added value. In other words, BoR is treated as a single unit where, just like the private owner, the BoR's members are the key firm's owners who are also in charge of management.

Since we delegate control rights to firm-specific investors (as discussed in the previous part), BoR, in the dual model, is proposed to be composed by the control owners in order to fuel the management panel with strong motivation for seeking higher value. Indeed, the investment of the control owners is locked in the firm which makes their private interests align with the long-term interests of the firm, just like private owners in private companies. As a result, they are willing to run the business toward long-term objectives.

As control owners who provide key inputs to the production, BoR's members should be given property rights over the firm assets. It means that they possess two control rights over the firm: (1) control rights over the firm's decisions and (2) residual rights over the firm's outputs as suggested in the property rights theory. Regarding the control rights over

the firm's decisions, the BoR's members have the right in participating in making both operational and strategic decisions. Also, the BoR's members have the right to appoint a CEO who is one of the BoR's members to lead the board into cooperative decisions. The peculiar feature of the CEO is that she has limited power over the firm's decisions because all the decisions must be consulted with all the BoR's members. Indeed, as Galbraithian CEO, the most important role of the CEO is to coordinate and exploit his team members' knowledge to improve the overall efficiency of the firm's decisions that an individual working alone could not achieve. In this sense, the BoR is a powerful decision-making engine that includes all internal experts on managerial, and technical issues. A successful CEO, therefore, must exploit powerful resources to make valuable decisions for the business. As a result, the CEO has to actively consult with other BoR's members to run daily business operations in line with the technocracy's strategic goals.

2.2. Hypotheses and constructs

Besides investigating the overall effect of the Dual panel model, we develop five hypotheses which manifest the five typical characteristics of the model besides in order to test the effect of the Dual panel model on firm performance in more details. As mentioned in previous section, the five main features of the Dual panel model include (1) Incentive for management; (2) Interests alignment; (3) Mutual monitor; (4) Board performance; and (5) Independent arbitration panel.

2.2.1. Incentive for management and firm performance

In an agency relationship, the principal faces an information asymmetry problem which gives agents opportunities to reap private benefits from hidden action (or moral hazard) and hidden information (or private information) (Bohlin, 1997).

In the Dual panel model, management is encouraged to pursuit sustainable objectives rather than an investment myopia. We, thereby, expect an incentive scheme that depends mainly on pay for performance and long-term managers' tenure to attach the management's interests to the enterprise's long-term strategies.

Hypothesis 1: Managerial incentives which emphasize on pay for performance and long-term interests' attachment to the firm will improve the firm performance in the long run.

2.2.2. Interest alignment and firm performance

The managerial ownership can benefit the firm performance because as their stake increases, managers bear a greater share of the cost of interest's deviation. They, therefore, are more likely to act in shareholders' best interests. The standpoint is known as the "convergence of interest hypothesis" which suggests that insider ownership increase with market value. Stulz (1988) revealed an advantage of increasing the shares owned by managers which can protect the company from a hostile takeover. He argued that the chance of successful takeover bids is substantially lessened as the managerial ownership increase. Even, the probability of success would reduce to zero when managers' ownership reaches a 50% fraction of equity. Similarly, Weston (1979) also found that there were no attempts to take over the firm with over 30% insider ownership.

The Dual panel model aligns the different interests of stakeholders through the integration of management and ownership. In particular, we suggest that the firm-specific investors, who provide key inputs to the firm, are also responsible for managing the business. In this case, the firm's owners also engage in both managing and directing the business. The interests of managers and owners, therefore, are converged.

Hypothesis 2: The closer interests and relationship between manager and owners a firm has, the higher firm value they make in the long run.

2.2.3. Mutual monitor and firm performance

In a corporation, although the CEO plays a central part in the decision-making process, management of the enterprise requires extensive efforts via teamwork. Thus, promoting mutual monitoring within the management team can effectively control unethical, self-serving, and absenteeism behavior in top managers. As a result, CEOs who seek for "quiet life" will be easily noticeable and removed by other managers. The more active and capable CEOs are, the more willing they undertake potential projects with high returns (Dominguez-Martinez et al., 2008, Hermalin and Weisbach, 1998). We, therefore, expect that mutual monitoring within the management team can benefit a firm performance.

Hypothesis 3: Under a gain-sharing incentive scheme, mutual monitoring within board management can boost a firm performance by curbing its CEO from empire-building and seeking a 'quiet life'.

2.2.4. Board performance and firm performance

In the Dual panel model, the Board of Representatives (BoR) plays a central role in the management panel. Like Supervisory Board, the BoR is suggested to fulfill two major roles: overseeing CEOs and setting strategy. Although a board is, in theory, expected to successfully fulfill its duties when it is composed of highly qualified members, the board may not function properly if its directors are negligible to their job. Empirical evidence shows that boards tend to be passive when exercising control and disciplining their CEOs (Lorsch and Young, 1990); statistics of Demb and Neubauer (1993) indicate less than a quarter of directors agree that they serve as watchdogs for shareholders. The board's functions, therefore, can be effectively carried out only if directors are active to engage in the board's activities. The board performance, accordingly, can be judged by the board size, meeting, and board attendance.

From an organizational perspective, larger boards can lead to cooperation difficulties which can be harmful to the board's effectiveness. As the size increases, the board's decisions are likely to be harder to reach and the board's productivity can be hurt due to the emergence of free-riding and cooperation problems. Some empirical evidence of an inverse association between board size and firm value can be found in a sample of the large US firm (Yermack, 1996), and smaller Finnish firms (Eisenberg et al., 1998).

In the Dual panel model, the board plays a crucial role in overseeing and advising CEO. They are, therefore, expected to be active and closely work with the CEO.

Hypothesis 4: The more active efforts of directors dedicated to a board, the more effective the board work to monitor the CEO's performance. As a result, it can improve the firm performance.

2.2.5. Arbitration panel and firm performance

It is expected that the higher quality the board committees can enhance the board monitor over the management, and alleviate agency problems, resulting in greater firm performance (e.g., (Carcello and Neal, 2000, Carcello and Neal, 2003, Andres and Vallelado, 2008, Ahn and Choi, 2009, Morey et al., 2009). For instance, the compensation committee is designed to develop, advise, administer, and oversee executive compensation schemes. The better performance of the compensation committee, therefore, can establish and implement more effective compensation plans which align the interests of different stakeholders and motivate management to make preferable decisions. The audit committee is responsible for the disclosure of accounting information. Their competency will ensure stakeholders obtain reliable, relevant information in a timely manner. Thus, it provides efficient control monitor on management, leading to fewer failures in firm performance. Similarly, the role of the nomination committee is interpreted to be director selection and board appointments. It determines the quality of directors appointed to the board and, therefore, affects the board's performance.

Hypothesis 5: The more objective the Arbitration panel is, the more interests of the firm-specific investors are better protected. Investors have more incentive to make sufficient investments for the firm-specific needs which can enhance the firm performance.

3. Method

3.1. Corporate governance index

3.1.1. Developing CG index (Dual_Score)

For the purpose of exploring the effectiveness of the Dual panel model, we developed a corporate governance index based on five distinctive features of the Dual panel model. Specifically, five correspondent sub-indices has been employed to represent these distinguished characteristics of our model of corporate governance including: (1) Incentives for long term objective; (2) Interests alignment between owners and managers; (3) Self-monitoring within management team; (4) Board performance; and (5) Independent justification for internal relationships and conflicts (which I use the independency of firm's committees as a proxy).

3.1.2. Measurement Corporate governance index

We rely on 33 individual governance attributes to construct five sub-indices of corporate governance. In order to quantify these attributes, we give a score to each attribute on five scale basis (from zero to four). In principle, a firm will be rated according to its compliance with recommended practices by the Dual panel model. Specifically, we use the same approach as Aggarwal et al. (2009) who assign the highest score (four points) to a firm that has recommended CG attributes in place, and the lowest score is given to a firm if we

cannot find the evidence for its implementation of the model's suggestions. In case of missing data, the firm will be penalized by getting zero points. The score not only implies that we treat the firm as if it had not adopted the recommended corporate governance but also evidently indicates the failure of its corporate governance when the firm handicaps its public owners' power by deliberately or unintentionally failing to disclose relevant information.

After recording the score, total points rewarded to a sub-index will be computed by adding up scores of all attributes under the same category. The earned points are then, divided by the maximum score a firm can get, that is, multiplying four points by the number of attributes in the sub-index. The result produces a relative number (percentage) that indicates the level of a firm's CG adoption in relation to the benchmark suggested by the Dual panel model. Finally, we take the average of all five sub-indices to produce the DUAL_SCORE for each firm.

3.2. Firm performance

Among market-related indicators, Tobin's Q is the most outstanding proxy for firm performance due to its advantage in anticipating the impact of corporate governance structure on current and future firm performance. However, Bhagat and Jefferis (2002) provide strong evidence that the relationship is more spurious than causal. In particular, the denominator of Tobin's Q tends to exclude the firm's investment in intangible assets. At the same time, firms which are made up of a majority of intangible assets are more likely to have a greater level of managerial ownership. This is because when it is difficult for shareholders to monitor intangible assets, the firm can stimulate interest alignment by providing managers with the firm's ownership. As a result, firms with higher levels of intangible assets or higher Tobin's Q (due to a smaller denominator) tend to have greater ownership by managers. In this case, the positive correlation between firm performance and the aspect of corporate governance, therefore, is not casual. Another claim for the spurious relationship argues that while market power might positively affect Tobin's Q, the firm's power also protects managers from the market's disciplines. The lack of control over the managers pushes shareholders to share their ownership with the managers. In this case, we would again expect a spurious relation between Tobin's Q and corporate governance.

3.3. Data collection method

We try to acquire a representative sample to equip our findings with external validity and allow generalization. Specifically, we use a simple random sampling method to collect data. To obtain a simple random sample, we, first, define our sample frame which is German firms listed on the Frankfurt stock market (CDAX). As of 2019, there are more than 500 companies listed on the stock market. Each of these companies, then, is assigned to a specific number. Finally, we use the random function in Excel ("RANDBETWEEN (1, 500) to choose companies with the corresponding number produced by the Excel. The chosen firms will be used to construct our sample.

More specifically, we, first, start with a preliminary sample of 250 firms over six-year period from 2017 to 2019. Our choice of this time frame aims to obtain a sample of

listed companies characterized by the most variation in their corporate governance practices as a consequence of the 2007 global financial crisis. As a result, it can make the interpretation of statistical results on the relationship between corporate governance and firm performance more meaningful.

For each firm, we collect 33 attributes of corporate governance every year. After obtaining the data, we decided to exclude from our analysis 175 firms due to their missing information on one or more attributes of corporate governance. This yields a sample of 75 firms having completed data on corporate governance for the above six-year period. We, then, acquire data on control variables and take logarithms for all variables which further eliminate 35 firms for their lack of information. The remaining 40 firms, which is equivalent to 240 observations, make up our preliminary sample used in our analysis.

4. Results

4.1. Overview of the sample

We use firm-level data provided by Bloomberg to acquire our sample. It comprises 40 listed companies from all sectors classified by GICS for a six-year period. As can be seen in.

Table 1. Summarize of observations by Sectors and by Firm Size.

PANEL A: SECTOR	Freq.	Percent	Cum.
Communications	6	2.5	2.5
Consumer Discretionary	42	17.5	20
Consumer Staples	12	5	25
Energy	6	2.5	27.5
Health Care	30	12.5	40
Industrials	60	25	65
Materials	54	22.5	87.5
Technology	18	7.5	95
Utilities	12	5	100
Total	240	100	

4.2. Multivariate analysis

For empirical analysis, we use fixed effects regression for lagged, transformed variables and with standard errors that are clustered at the firm level. The regression investigates the relationship between corporate governance and firm performance based on a number of alternative setups.

We, first, examine the overall effect of the Dual panel model of corporate governance on different measures of firm performance including Economic profit (EVA), Tobin's Q and Return on assets (ROA). Table 2 shows the statistical results for the three models which

reveal two main following points. In the first place, all models yielded identical results about the effect of capital intensity on the firm performance. Specifically, the Capital intensity negatively correlated with all performance measures such as EVA, Tobin'sQ and ROA. This result is acceptable for our sample which covers the period of the global financial crisis. The economic turmoil posed extra business risk to German firms. As a consequence, the high density of capital generated financial burden on the business and harmed the firm performance.

The second point, which is also the most important feature to note, is that the statistical results found consistent but not solid evidence supporting the role of Dual panel model of corporate for promoting firm performance. As can be seen in the Table 2, although all models consistently produce positive coefficients of the DUAL_SCORE which empirically prove the benefit of the Dual panel model to German firms, significant effects were only seen in Model 2 and 3. In particular, while the Dual panel model significantly improve the firm performance measured by TOBIN'sQ and ROA at 5% and 1% significant level, we cannot find a similar extent of effect on Economic profit (EVA).

Table 2. Corporate governance and firm performance

	Model 1		Model 2		Model 3	
	EVA_SPREAD		TOBIN_Q		ROA	
L.DUAL_SCORE	0.9770497	(0.623)	0.269211	(0.021)**	2.518737	(0.006)***
L.Log_NUM_OF_EMPLOYEES	-0.0000208	(0.111)	8.09E-07	(0.183)	1.32E-05	(0.002)***
L.Log_TOT_DEBT_TO_TOT_CAP	0.8683734	(0.508)	-0.06135	(0.562)	1.046373	(0.1)
L.Log_CAP_INTENSITY	-12.42722	(0.049)**	-0.58142	(0.078)*	-9.52919	(0.004)***
L.Log_RD_EXPENDITURES_PER_CF	1.372771	(0.177)	-0.0189	(0.493)	0.039719	(0.932)
_cons	-28.37559	(0.148)	-0.24952	(0.761)	-27.1436	(0.006)***
N	200		196		200	
R-sq: within	0.0882		0.119		0.1537	
R-sq: between	0.0016		0.0334		0.0024	
Overall	0		0.0352		0.0043	
Rho	0.88048		0.93753		0.9254	
Recommended Model	FE		FE		FE	

Under significant level of 10%; ** Under significant level of 5%; * Under significant level of 1%*

Moreover, the Model 1, which focuses on the relationship between Dual_Score and Economic profit, is also the least efficient model in comparison with the last two models. In particular, the Model 1 gains the lowest within-R² as well as the Rho's value, only 0.0882 and 88% respectively. We, therefore, tried to improve the model by a further exploration of

the Dual panel model's impact on EVA in the next model. The Model 4 was conducted by decomposing the DUAL_SCORE into five sub-categorizes which represent distinguished characteristics of the Dual panel model including: (1) Incentives for long term objective; (2) Interests alignment between owners and managers; (3) Mutual-monitoring within management team; (4) Board performance; and (5) Arbitration panel. In the Model 4, we also introduce interaction term to examine how the sub-indices substitute or compliment to each other. The model's result is shown in Table 3.

Table 3. Sub-indices of Dual panel model and firm performance

Variables	Model 4 EVA_SPREAD	Variables	Model 4 EVA_SPREAD
INCENTIVE_SCORE	1.941536 (0.732)	L.L.ARB_PANEL	
INTEREST_SCORE	8.44896 (0.064)*	#L.L.SELF_MON	-5.09937 (0.129)
SELF_MON_SCORE	14.14224 (0.036)**	L.L.PANEL_SCORE#L.	
BOARD_PERF_SCORE	3.479209 *	L.INCENTIVE	-2.471457 (0.165)
ARBITRATION_SCORE	-15.98609 (0.033)**	L.L.INTEREST	(0.065)
NUM_OF_EMPLOYEES	7.382009 (0.307)	#L.L.SELF_MON	6.433197 *
TOT_DEBT_TO_TOT_CAP	.1486629 (0.914)	L.L.INTEREST	
CAP_INTENSITY	-8.381763 (0.081)*	#L.L.ARB_PANEL	-1.481014 (0.365)
RD_EXPENDITURES_PE		_cons	-74.91424 (0.315)
R_CF	1.633361 (0.155)	N	200
L.L.INCENTIVE#c.L.L_S		R-sq: within	0.2225
ELF_MON	3.843327 (0.3)	R-sq: between	0.1082
		Overall	0.0303
		Rho	0.9135

Under significant level of 10%; ** Under significant level of 5%; * Under significant level of 1%*

More importantly, the Arbitration panel variable has the largest absolute effect size on EVA which indicate the fact that the Arbitration panel, in the Dual panel model, plays a key role in determining the long-term performance of publicly held enterprises. Adding to this point, the negative link between the independence level of “board committees” and EVA due to the lack of perfect independent committees in German firms confirms a central idea of the Dual panel model. That is to set up a structure of corporate governance that separates management from a perfectly independent monitoring panel that is able to provide objective judgment on any disputes and conflicts among members of the Board of Representatives. We can argue that if the shareholders need to monitor their management team to protect their self-interests, the managers also want to check on shareholders' behavior before contributing

their efforts because this human capital is the firm-specific investment that can be taken by shareholders. In this situation, the independent Arbitration panel must protect the interests of all parties, instead of one or some particular groups of stakeholders. To sum up, although our model cannot explicitly prove the positive effect of the Arbitration panel on EVA the findings reveal that the Arbitration panel which gives a group of stakeholders the advantage of control power is a pivotal component in a corporate governance model and the less independence of the panel might cause devastating damages for the long term performance of publicly held enterprises.

Finally, Model 4 also revealed the inter-relationship among the sub-indices of the DUAL_SCORE. The significant effect of the interaction terms between Interest alignment and Mutual monitoring means that what is the effect of Interest alignment mechanisms on EVA will depend on the level of Mutual monitoring within the management board. The positive value for the coefficient of the interaction term would imply that the stronger the mutual monitor exercised on the management board, the greater effect of mechanisms for Interest alignment on EVA. In other words, the two indices complement to each other and our model which is designed with the co-existence of the two mechanisms can boost Economic profit growth more rapidly.

5. Conclusion

Our empirical results provide support for the claim that public companies can gain great benefits from the Dual panel model. The finding is strongly corroborated by robustness tests which show the significant positive impact of the model on both market and accounting-based measurement of firm performance (Tobin's Q and ROA). However, EVA, a more recently developed indicator that financial experts believe to be a guideline for firms' long-term performance, unexpectedly has no association with the Dual panel model. It raises a tricky question as to the effectiveness of the model in the long run

In an attempt to explain the odd result, further exploration of the Dual panel model has revealed an interesting implication for practice. By decomposing the DUAL_SCORE into five sub-categories which represent typical features of the Dual panel model, we find that all the corporate governance features confirm our hypothesis on its impact on the firm performance except for the last characteristic of the Arbitration panel. In particular, mechanisms for Interest alignment, Mutual monitoring, and Board performance significantly improve the Economic profit, but mechanisms for the Arbitration panel surprisingly obstruct the firm performance. An explanation for the unusual result, however, provides us with an important conclusion. The lack of perfect independent committees in the Arbitration panel in German firms may cause a negative impact on EVA. This empirical evidence accentuates an important feature of the Dual panel model which tries to separate management from a perfectly independent monitoring panel that is able to provide objective judgment on any disputes and conflicts among members of the Board of Representatives. Any Arbitration panels which are influenced by a group of stakeholders might cause devastating damages to the long-term performance of publicly held enterprises.

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**SESSION 4:
RESOURCES, ENVIRONMENT
AND CLIMATE CHANGE**

FACTORS AFFECTING THE CLASSIFICATION OF DOMESTIC WASTE IN THE HANOI CITY

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Abstract

Environmental issues, especially domestic waste (DMW), are always one of the most notable concerns of every country in the world, including Vietnam. The article refers to the current situation of garbage classification of people in the city of Hanoi; thereby analyzing and evaluating the factors affecting the decision to classify domestic waste of people. The study was conducted from the survey results of 349 valid questionnaires from people living in Hanoi. By using regression analysis, Cronbach's Alpha test, exploratory factor analysis, the research paper identifies the factors affecting the classification of household waste in Hanoi city including: (1) Attitudes, (2) Subjective Standards, (3) Perception, (4) Expectations, (5) Legal system, (6) Propaganda activities, (7) Knowledge. From the research results obtained, the article proposes some solutions to improve people's awareness in building the habitual practice of classifying domestic waste at source, thereby contributing to great benefits in improving the quality of life of the people accommodating in Hanoi city in particular and the surrounding environment in general.

Keywords: *Classification of domestic waste, Domestic waste, Hanoi people.*

1. Introduction

Domestic waste (DMW) has always been an extremely chronic problem for every country in the world, requiring governments to take the right measures to handle the huge

amount of waste that is multiplying every day. World Bank's statistics (The World Bank, 2018) indicate that every year, 2.24 billion tons of municipal solid waste are generated, with at least 33% not being managed in an environmentally secure way. With this situation, it is extremely necessary and urgent to execute in-depth research on waste as well as measures to classify domestic waste in order to reduce and treat waste thoroughly.

In the United Kingdom in 2016, authors Ebikapade Amasuomo & Jim Baird of Glasgow Caledonian University, UK conducted a research project on "The definition of waste and waste management" to provide answers to 3 questions: What exactly constitutes waste? How much do we know about what should be classified as waste? What is the historical background of waste management? From their research, the authors have come up with the most basic definition of waste through previous studies, the context of foundation and development of waste management as well as 3 waste classifications based on: condition, origin and level of impact on the environment. Through this, the authors have suggested that the government should take pre-planned measures to thoroughly deal with the amount of waste in the future. On the other hand, in China, the study of two authors Baiqiang Gan, Chi Zhang (2006) through interviews and questionnaire surveys in Guangzhou to collect sample data, thereby obtaining the influence levels of residents' attitudes towards garbage sorting, subjective norms, perceived behavioral control and situational factors, and government legislation on residents' willingness to sort household waste. The results of the study showed that people's attitudes towards the segregation of household waste are very important and the government regulatory control factors are the main elements influencing the people's willingness to sort garbage.

In Vietnam, according to the National State of the Environment Report for the period 2016-2020, the volume of DMW discharged into the environment continued to increase across the country. It is estimated that the amount of waste generated in urban areas nationwide increases on average 10 - 16% annually. The amount of municipal solid waste has increased sharply in big cities such as Hanoi, Ho Chi Minh City, Da Nang, and Hai Phong. The total volume of domestic solid waste generated nationwide is about 64,658 tons/day, equivalent to 23.6 million tons/year. Particularly in Hanoi, the second largest city in Vietnam, up to 7000 tons of domestic solid waste is generated and needs to be treated every day. In order to solve this situation, scientists, environmental management agencies and policy makers in our country have been paying more attention and research to waste and waste classification and management. Le Ai Tam, Nguyen Thi Hong Nhung and Ho Huu Loc (2018) investigated the main factors that influence the intention and behavior of household waste disposal according to EFA (Exploratory Factor Analysis) method and TPB (The Theory of Planned Behavior) model. Initial results show that factors such as attitudes, social definitions and perceptions affect people's actual behavior, and attitudes strongly affect the level of waste classification of residents in District 8. Then in 2020, in order to expand the analysis scope of solid waste classification behavior, author Nguyen Thi Hong Hue and colleagues analyzed the factors affecting the decision to classify domestic solid waste as a source of the people in the northern provinces of Vietnam, thereby providing

practical suggestions and solutions to the government, the agencies, companies, environmental organizations and the people themselves. In addition, Decree 45//2022/ND-CP of the Government of the Socialist Republic of Vietnam on "Regulations on administrative violations in the field of environmental protection" implemented since August 25, 2022, has shown the State's special attention to waste management as well as making waste sorting at source a mandatory action for individuals and households.

In the capital city of Hanoi, which has the highest population density in Vietnam, every day up to 7,000 tons of domestic solid waste is discharged and needs to be treated every day. However, there are still many limitations in waste management, leading to the accumulation of waste and no treatment method, which seriously affects the landscape, environment and human health. Meanwhile, the method of waste treatment in almost all treatment sites is still mainly landfilling, not yet putting advanced technologies into treatment, such as technology to convert waste into energy, etc. Because of that, over time, the area used for landfilling is increasingly shrinking and the infrastructure is overloaded, leading to incidents. Such times make the collection and treatment of garbage interrupted, causing a backlog of garbage in the environment for many days. This situation has prompted the People's Committee of Hanoi City to immediately deploy the classification of domestic waste at source in order to reduce the amount of waste that needs to be treated every day. In fact, as soon as it is deployed, the movement of garbage sorting is gradually becoming animated, being executed with great enthusiasm by everyone. According to the report of the Department of Natural Resources and Environment of Dong Anh district, by the end of March 2022, in the district, there were 23 communes and towns participating in the program of collecting, sorting and treating garbage at home. However, the policy of classifying domestic waste is still facing many difficulties due to lack of facilities or because people's awareness has not yet been changed.

Therefore, based on practical requirements, the article conducts a study on factors affecting the classification of domestic waste of people living in Hanoi city. This study will detect and measure the factors affecting the decision to classify waste of people in Hanoi city as well as propose some recommendations and solutions to help the classification of waste become more accessible, thereby promoting people to actively participate in the classification of DMW.

2. Theoretical framework and Methodology

2.1. Theoretical framework

The study is based on the following three theories:

The Theory of Planned Behavior (TPB) was developed by Ajzen in 1985 with the inheritance and development from the Theory of Reasoned Action (TRA). During the research, Aizen (1991) found that behavioral intention will be constrained by the environment, so he added an influencing factor to the TPB model of planned behavior theory. Accordingly, the TPB behavioral theory suggests that there are three factors that affect behavior: Attitude (AT), Subjective norms (SN) and Perceived behavioral control (PBC) controls).

The Expectation Theory, put forward by Victor Vroom, a professor at the Yale School of Business Administration, shows that an individual's working motivation is influenced by their expectations of the results to be achieved and the attractiveness of the results to the individual. The Expectation Theory is an important theory on the process of recognizing human characteristics. The Expectation Theory assumes that the desired reward or outcome will be able to stimulate a person's behavior. Indirect experience, anticipation, and associations can in fact induce behavior, and it can also create associations between hope and outcomes. From there, applying the theory of expectation to the study shows the factors that constitute direct and indirect motivations for the formation of garbage sorting habits of people in Hanoi city.

Intrinsic Motivation, according to two psychologists Edward L. Deci and Richard M. Ryan, refers to the fact that actions are motivated by internal motivations, which are derived from the inherent satisfaction of the activity (*Intrinsic Motivation and Self-Determination in Human Behavior*, 1985). This motivation is determined by three essential, innate, psychological human needs that directly lead to behavioral motivation: autonomy, competence, and relevance (Ryan & Deci, 2000). In addition, intrinsic motivation is determined by conformity with personal values. Individuals can do this by achieving clarity around their values and identifying how activities promote and support them (Vansteenkiste et al., 2018). These factors all affect people's decision-making about garbage classification.

2.2. Hypothesis Development

Based on the background theory and previous research models, the study proposes a model of factors affecting the garbage classification behavior of people in Hanoi, including 7 factors: *Attitude towards garbage classification behavior (AT)*, *Subjective norm (SN)*, *Perceived behavioral control (PBC)*, *Expectations about garbage sorting behavior (EXP)*, *Legal and regulatory system (LS)*, *Propaganda activities (PA)*, *Knowledge of garbage classification (KN)*.

$$\text{WASTECLASSIFICATION} = \alpha + \beta_1\text{AT} + \beta_2\text{SN} + \beta_3\text{PBC} + \beta_4\text{EXP} + \beta_5\text{LS} \\ + \beta_6\text{PA} + \beta_7\text{KN}$$

In particular, the factors of the research model are explained as follows:

Hypothesis H1 - Attitude has a positive impact on the classification of garbage of people in Hanoi city

Attitude in the TPB theoretical model is defined as the positivity or negativity, satisfaction or dissatisfaction that an individual feel when performing a certain behavior. In the study of Best & Mayerl, 2013; Nixon & Saphores, 2007, attitude is defined as the perception of people's behavioral trends towards the classification of garbage. Therefore, if there is a positive attitude towards waste segregation, then people will have a greater intention to participate with a greater tendency to do so and vice versa.

Hypothesis H2 - Subjective norm has a positive impact on the classification of garbage of people in Hanoi city

Subjective social norms or subjective norms are often thought to control an individual's perception of being important to others in a social environment in which they desire or expect that person to behave in a certain way (Ajzen 1991). In this study, subjective social norms refer to the influence of external social pressures on people's willingness to sort garbage. The greater the social pressure people perceive about garbage segregation, the more willing they are to participate (Matthies, Selge, & Klöckner, 2012; Ru, Wang, & Yan, 2018).

Hypothesis H3 - Perceived behavioral control has a negative relationship with the garbage classification of people in Hanoi city

Perceived behavioral control (PBC) was defined by Ajzen (1991) as a type of belief held by a person about how easy or difficult it is to perform a behavior. An individual will think that the more resources and opportunities they possess, the fewer difficulties and obstacles they will have, and the greater their perceived control over behavior. Previous studies have demonstrated that the application of behavioral control does not predict intention in many cases (Eagly & Chaiken, 1993; Mcmillan & Conner, 2003). When putting perceived behavioral control into the research topic, the authors found that people tend to control their garbage sorting behavior based on barriers or factors that support garbage classification.

Hypothesis H4 - Expectations affect the garbage classification of people in Hanoi city

The individual's perception is reflected in overcoming barriers to performing a behavior. In addition, an earlier study (Kraft, P.; Rise, J.; Sutton, S.; Røysamb, E. *Perceived difficulty in the theory of planned behaviour: Perceived behavioral control or affective attitude? Brit. J. Soc. Psychol.* 2005, 44, 479-496) proposed that perceived behavioral control includes both intrinsic and extrinsic cognitive factors. Internal factors mainly refer to skills, knowledge, information identification and confidence, while external cognitive factors include time, energy, costs and other aspects. In this study, the internal factors of perceived behavioral control are equivalent to the expectation factors of the expectation theory.

Hypothesis H5 - The legal and regulatory system has a positive relationship with the garbage classification of people in Hanoi city

Noehammer and Byer (1997) argued that mandatory recycling programs introduced by the government have a higher participation rate than residents who voluntarily recycle. Yu, He, Li, Huang and Zhu (2014) demonstrated that the legal and regulatory system has a positive impact on people's willingness to classify solid waste. It proves that the legal system and government regulations play an important role in the classification of people's domestic solid waste.

Hypothesis H6 - Propaganda activities have a positive relationship with people's garbage classification in Hanoi city.

Previous research has shown that attitude towards the environment is a poor predictor of subsequent behavior (Costarelli and Colloca, 2004). It is clear that in order to change behavior, awareness must be enhanced (Gunton and Williams, 2007). Therefore, forms of

waste management need to be fully communicated to the public, by changing old habits for the better (Read, 1999, Gunton and Williams, 2007). Propaganda activities can also promote people's awareness of the importance of waste segregation, thereby encouraging people to do garbage sorting more actively.

Hypothesis H7 - Knowledge about garbage classification has a positive relationship with people's garbage classification in Hanoi city

Through previous studies, knowledge about garbage classification is divided into two categories (Zhang, Huang, Yin & Gong, 2015). The research focuses on general knowledge of the concept, usefulness of garbage classification and technologies for waste segregation (Fryxell & Lo, 2003). They are considered as one of the main drivers of garbage classification. Many articles have shown that there is a significant relationship between knowledge of garbage classification and garbage sorting behavior (Hansmann et al., 2006; Wang, Guo, & Wang, 2016).

Research model has been designed in Figure 1, below:

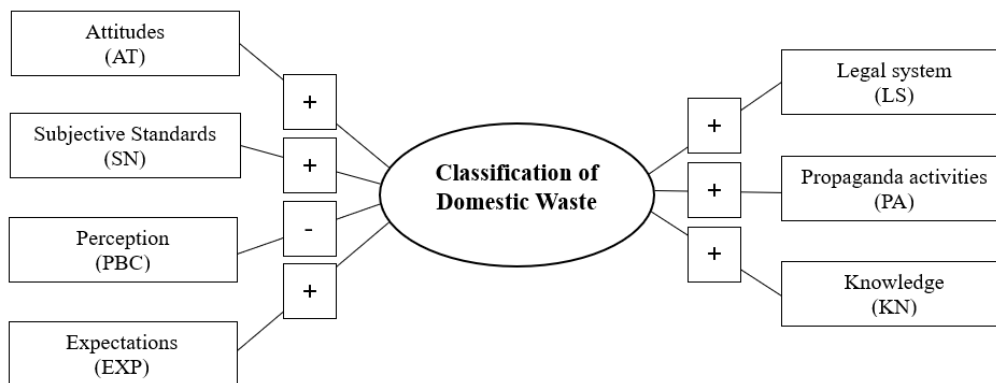


Figure 1. Proposed Model

Scale: Based on the background theories and previous studies related to the factors affecting the garbage classification, a number of factors and hypotheses have been selected, along with the current situation and problem of garbage classification of the people of Hanoi today, the article proposes a scale of influencing factors in the proposed research model before consulting experts according to Appendix No 1.

3. Method

For this study, the research paper was done in a quantitative research method. On the basis of data collection and preliminary data processing, the research paper was executed with the following steps:

Step 1: The research paper involves collecting descriptive statistics to find out the proportion of respondents and determine the number of samples. The research paper has collected data from 349 people living in Hanoi city (through direct survey combined with online) to conduct observations. Observed variables are used a 5-point Likert scale (from

completely disagree to completely agree) to measure. After coding, cleaning, the data is included in the analysis.

Step 2: Use the reliability test method of Cronbach's Alpha to check the rigor and correlation between the observed variables, thereby removing the unsuitable variables and keeping the relevant variables in the research model. Variables with coefficients of Cronbach's Alpha > 0.6 and Corrected Item - Total Correlation > 0.3 will be kept.

Step 3: The research paper uses EFA (Exploratory Factor Analysis) to reduce a set of many interdependent measures into a smaller set of factor variables so that they are more meaningful but still contain most of the information content of the original set of variables.

Step 4: Finally, the research paper uses multivariable linear regression analysis, the aim is to estimate the value of the dependent variable Waste Classification (WC) on the basis of the values of the given independent variables and test the research hypotheses. From the results of the regression model analysis, the research paper discusses the research results and finds solutions to overcome the notable problems and improve the garbage classification of people in Hanoi city.

4. Results

4.1. Descriptive statistics

According to the results of descriptive statistics the team has analyzed, the survey sample has no significant difference in gender with the male-female ratio (the number of female residents participating in the survey is 52.4% while that of the male residents is 47.8%). In addition, the majority of respondents were between 18 and 25 years old (47%) and 26 to 40 years old (26.6%). Finally, the majority of residents participating in the survey do not have the habit of sorting garbage with a rate of up to 62%, so it is representative of the whole.

4.2. Cronbach's Alpha test

The results of Cronbach's Alpha test in Appendix 2 below show that, out of 25 variables analyzed, there are 20 observed variables of the factors that achieve Cronbach's Alpha coefficients ranging from 0.61 to 0.865 and Corrected Item - Total Correlation > 0.3 . Thus, there are 5 unsatisfactory observed variables that were removed in the research paper, including SN2, SN3, SN6, LS3, KN5. Appendix 2 shows that 20 variables representing 7 factors are completely consistent and satisfactory. Therefore, we keep the 20 observed variables that satisfy the conditions to proceed with the next steps of analysis.

4.3. Exploratory Factor Analysis

When the study conducted the EFA analysis, the results showed that the KMO value = 0.805 (Sig. = 0.00), so the data used for factor analysis is appropriate. With the analysis results from the software, we can extract 7 factors that have the best value of summarizing information in order including: Subjective norm (4 variables); legal system (3 variables); knowledge (4 variables); expectations (3 variables); attitude (2 variables); propaganda activities (2 variables), in which 2 observed variables PBC1, PBC2 of the observed scale

Perception is unsatisfactory because the difference of the 2 loaded factors is less than 0.2. The research paper also received the Eigenvalue = 1,148 > 1 and the total extracted variance (Cumulative %) = 70.744% > 50%, which proves that 70.744% of the variation of the data is explained by 7 measurement factors through 18 observed variables is completely consistent.

4.4. Results of regression analysis and test

After analyzing EFA, the research paper used a regression analysis, the regression results are shown in Appendix 3 below.

Appendix 3 shows that the given regression model is relatively consistent with the 95% confidence level. This shows that the more favorable the factors are, the more satisfied businesses are when using e-tax services. The coefficient R^2 is 0.489, showing that all 6 factors (SN - Subjective norm, LS - Legal system, KN - Knowledge, EXP - Expectations, AT - Attitude, PA - Propaganda activities) have a significant impact, in which attitude, legal system and knowledge are the three most influential factors. Besides, the adjusted R^2 index is 0.481, which explains 48.1% of the variation depending on the satisfaction level of enterprises when doing waste classification, which is predetermined by the independent variables in the model with 51.9% of the remaining variation explained by other variables.

From the results obtained after running the linear regression model, the research paper derives the following equation with a dependent variable WC (Waste Classification):

$$\mathbf{WC = 0.028 + 0.280*AT + 0.236*LS + 0.198*KN + 0.106*SN + 0.091*PA + 0.073*EXP}$$

The results show that all variables have a positive impact on customer satisfaction when using e-tax services and are statistically significant (Sig. is less than 0.05), with AT factor (Beta = 0.28).) having the strongest and most positive impact on user satisfaction. Next is the factor of LS (Beta = 0.236) and KN (Beta = 0.198) which also have a large impact on user satisfaction. SN and PA factors with Beta level equal to 0.106 and 0.091 respectively, have a positive effect and are in descending intensity. Finally, the factor EXP (Beta = 0.073) has the weakest positive impact on customer satisfaction when using e-tax services.

The study carried out other tests, the results showed that the model does not occur multicollinearity (VIF coefficients of all variables are < 2), does not occur autocorrelation and is completely consistent with the data. From the analysis above, it can be concluded that the theoretical model is suitable with the research data and accepts the research hypotheses H1, H2, H4, H5, H6, H7.

5. Discussion and conclusion

5.1. Discussion

Through a linear regression model and data source collected from more than 300 people in Hanoi city, the research paper has found out the influence of these factors on people's garbage sorting activities. The results show that there are 6 main factors that all affect in the same direction on the implementation of garbage classification of people in Hanoi city. The influence of the factors is arranged in descending order with the following meanings:

Attitude factor: Attitude factor has 2 observed variables, in which “People feel interested in sorting garbage” is the observed variable with a greater influence than “Garbage segregation is the responsibility of each individual”. Thus, if people feel more interested and responsible for garbage classification, the number of people sorting garbage in Hanoi city will increase. However, in fact, most people in Hanoi city do not have a positive attitude towards garbage classification. They believe that the implementation of garbage classification is the responsibility of the whole community, it does not have a certain impact and is not related to them personally. This explains the fact that there are still a large number of people in Hanoi who have no intention of doing garbage classification.

Legal system factor: In the observed variables of the Legal System (LS) factor, the observed variable: "Residents agree and comply with the state's laws on garbage classification" has the highest value. The largest value, followed by “The regulations on the process and system of treating the local waste are reasonable and effective” and finally “The State has been closely involved in promulgating legal regulations on garbage classification”. Thus, the more drastic the legal regulations on garbage classification are implemented by the state and competent officials, the higher the percentage of people in Hanoi city who perform waste classification.

Knowledge factor: Among the observed variables of the Knowledge factor, the variable "Residents know to distinguish the symbols and colors of the garbage sorting bins" has the greatest influence, followed by "Residents know to distinguish the basic types of waste" and finally the 2 observed variables "Residents know to distinguish the basic types of waste" and "Residents know where to collect each type of waste". This shows that the more people understand the basic knowledge in the field of garbage classification such as distinguishing the symbols on the trash can, recognizing the basic types of garbage, understanding the classification and treatment process after collection, the more inclined to perform garbage classification.

Subjective norm factor: Among the observed variables of the Subjective norm factor, the variable "Family members have a habit of sorting garbage" has the largest influence, followed by 2 important variables, respectively “People around residents always talk well about garbage sorting behavior” and “Residents’ friends support/encourage garbage sorting”, and finally “Family members support/ encourage garbage sorting”. This shows that the more people receive advice and encouragement from relatives, friends and people around them, the more they tend to do garbage classification.

Propaganda activities factor: In which, the variable "Propaganda activities about garbage sorting have helped people to raise awareness about this behavior" has the highest rating and has a greater influence than the variable: “Propaganda activities on garbage classification motivate people to do this behavior.” Thus, the more propaganda activities to raise public awareness and create motivation for garbage classification, the higher the number of people doing garbage classification in Hanoi city.

Expectation factor: The Expectation factor represents 3 observed variables, in which the variable "Residents expect that the habit of sorting garbage will bring good values to the environment" is rated the highest, next is the variable "Residents expect the habit of sorting garbage will bring good values to themselves", finally "Residents expect to receive recognition, respect and love from society when spreading spread the habit of garbage sorting". This shows that, if people expect garbage sorting to contribute to the environment or will receive appropriate rewards and recognition, they will tend to do more active garbage classification.

5.2. Conclusion

On the basis of theoretical research and evaluation models of human psychological behavior, the research paper has found and evaluated the main factors affecting the implementation of garbage classification of people in the city of Hanoi. The research results show that the attitude factor has the most positive and strongest impact on the people's implementation of garbage classification, followed by the legal system factor, the knowledge factor of the people about garbage classification, subjective norm and finally propaganda activities and expectations. This result is similar to previous studies, the results also confirm that the policies of the state and the authorities to improve attitudes, knowledge and widely disseminate information about the classification of garbage in particular and the environment in general to the people is very important.

In fact, the number of people sorting garbage in Hanoi city is not high. Therefore, some specific recommendations are as follows:

● For state management agencies

State management agencies need to supplement and strengthen regulations on severe penalties and sanctions to be subject to cases of intentional failure to classify garbage and obstructing behaviors for the State's management and inspection activities in the field of environment for households in Hanoi city. In addition, the management agencies also need to supplement the reward and commendation regimes for individuals with outstanding performance in supporting the state in setting up innovative and effective regulations and solutions with a positive impact on the situation of waste segregation. State management agencies can provide financial support, infrastructure and facilities to help implement and actualize new solutions. This will create a great motivation to promote notable individuals, from which, more and more great contributions will have a positive impact on the socialization of people's garbage classification.

● For some other related agencies

First, educational and training institutions, especially the primary, secondary and high school levels, need to strengthen the integration of garbage classification knowledge. At the same time, schools need to deploy and diversify practical activities inside and outside the school, giving students more opportunities to experience and apply the knowledge about garbage classification they have learned. For students, higher education institutions and colleges need to further strengthen the organization of seminars and projects on the environment, organize voluntary activities to sort waste at locations in Hanoi city.

Second, media agencies need to further promote propaganda activities for people in Hanoi city. The transmission of information needs to be done synchronously and optimized on many different media. Media agencies need to promote propaganda on current social networking platforms and use leaflets, banners and slogans to raise public awareness and call on people to separate their garbage.

• *Contribution of research paper*

The research paper is a scientific product with the aim of determining and finding out the factors affecting the garbage classification of people in Hanoi city. The research paper has applied many theoretical models, methods including qualitative and quantitative methods on the basis collected from people aged 18 to 70 years old in Hanoi city. This study will be a reference source for authors, scientists, etc. related to the environment, waste, authorities of Hanoi city and serve as a basis for similar studies.

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Appendix 1: Summary of observed variables - proposed scale

AT Attitude	<ol style="list-style-type: none"> 1. Garbage segregation is the responsibility of each individual 2. Residents feel interested in sorting garbage
SN Subjective norm	<ol style="list-style-type: none"> 3. Family members have a habit of sorting garbage 4. Residents' friends have a habit of sorting garbage 5. Colleagues of residents have the habit of sorting garbage 6. Family members support/encourage garbage sorting 7. Residents' friends support/encourage garbage sorting 8. Residents' colleagues support/encourage garbage sorting 9. People around residents always talk well about garbage sorting behavior
PBC Perceived behavior control	<ol style="list-style-type: none"> 10. Do residents feel comfortable in starting the habit of sorting garbage? 11. Residents receive the necessary support from those around them in forming the habit of sorting garbage
EXP Expectation	<ol style="list-style-type: none"> 12. Residents expect that the habit of sorting garbage will bring good values to the environment 13. Residents expect the habit of sorting garbage will bring good values to themselves 14. Residents expect to receive recognition, respect and love from society when spreading the habit of garbage sorting
LS Legal system	<ol style="list-style-type: none"> 15. Residents have a good understanding of the legal regulations on garbage classification 16. The State has been closely involved in promulgating legal regulations on garbage classification 17. Residents agree and comply with the state's laws on garbage classification 18. The regulations on the process and system of treating the local waste are reasonable and effective
PA Propaganda activities	<ol style="list-style-type: none"> 19. Propaganda activities about garbage sorting have helped you to raise awareness about this behavior 20. Propaganda activities on garbage classification motivate people to do this behavior

KN Knowledge	<ol style="list-style-type: none">21. Residents are well aware of the method of garbage separation22. Residents know how to distinguish the basic types of waste23. Residents know to distinguish the symbols and colors of the garbage sorting bins24. Residents know where to collect each type of waste25. Residents know how to use each type of waste for different purposes
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Source: Research and collection of research team

Appendix 2. Reliability of the scale

Observed variables	Number of observed variables	Cronbach's Alpha	Minimum Total Correlation coefficient	Result
Attitude	2	0.851	0.741	High reliability
Subjective norm	4	0.712	0.548	High reliability
Perceived behavior control	2	0.834	0.717	High reliability
Expectation	3	0.865	0.725	High reliability
Legal system	3	0.719	0.608	High reliability
Propaganda activities	2	0.615	0.444	High reliability
Knowledge	4	0.610	0.408	High reliability

Source: Collection of research team

Appendix 3. Regression result

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.700 ^a	.489	.481	.66899

a. Dependent Variable: WC
b. Predictors: (Constant), SN, LS, KN, EXP, AT, PA

Nguồn: nhóm nghiên cứu tổng hợp

Independent variable	Coefficients ^a						
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Multicollinearity	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	0.028	0.190		0.147	0.884		
SN	0.106	0.040	0.115	2.631	0.009	0.779	1.284
LS	0.236	0.043	0.235	5.498	0.000	0.819	1.222
KN	0.198	0.037	0.232	5.349	0.000	0.792	1.263
EXP	0.073	0.034	0.090	2.175	0.030	0.864	1.158
AT	0.280	0.034	0.349	8.148	0.000	0.816	1.226
PA	0.091	0.039	0.097	2.357	0.019	0.886	1.129

a. Dependent Variable: WC

Source: Collection of research team

CARBON TAXES AND OIL PRICES: DRIVING INFLATION UP OR DOWN?

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Abstract

The global economy is developing at a rapid pace, but this progress is accompanied by severe environmental consequences, posing a major problem for countries and policymakers seeking appropriate solutions, especially in the context of the COVID-19 pandemic's long-term impact and economic instability caused by conflicts and political fluctuations. We believe that carbon taxes are a macro factor contributing to changes in the inflation rate. Therefore, this paper aims to estimate and analyze the impact of carbon taxes on inflation and their level of influence on the relationship between oil prices and inflation. We anticipate that carbon taxes can alleviate inflation pressure caused by an increase in oil prices. Our research provides valuable information for policymakers to adopt a dual approach of protecting the environment while stabilizing inflation. The results of our research models demonstrate that carbon taxes have a significant impact on inflation and can mitigate the adverse impact of oil prices on inflation. Overall, these findings have important implications for countries devising economic and environmental policies, serving as a foundation for reference and discussion to guide the development of environmental protection and economic policies.

Keywords: *carbon taxes, climate change, inflation, oil prices*

1. Introduction

Oil and other fuels are currently a choice of vital resources for the global economy since it is appropriate in nearly all economic areas. They are used for economic and social activities such as production, transportation, ect. And these activities cause carbon emissions, which are one of the elements that cause climate change. Any changes in oil prices can impact both microeconomic choices and macroeconomic policies (Korhan, Vahid, and Nigar, 2015). Moreover, oil prices also have a prime impact on the fall and rise of

inflation in any country throughout the world. Hooker (2002) separated his research period (1962 - 2000) into two terms to ascertain the connection between inflation and oil prices. He found that in the first period (1962-1980), the price of oil significantly influenced inflation, except during the second phase (1981-2000). Trehan validated Hooker's studies in 2005 by researching a similar issue and reaching the same conclusions. Additionally, Bermingham (2008) investigated Ireland's meager free economy and discovered the influence of rising oil prices on inflation. Jacquinet et al. (2009) investigated a similar problem for the Eurozone and discovered that oil price fluctuations have a significant impact in short-term inflation forecasting, even supposing the impact is much more complicated as an eventual outcome.

Previous researches have shown that the carbon taxes accomplish their purpose of lowering emissions such as studies by Martin, De Preux, and Wagner (2014), Andersson (2019); Murray and Rivers (2015), for Canada; Lin and Li (2011), and Best, Burke, and Jotzo (2020), for Europe. McKibbin, Morris, and Wilcoxon (2017), for example, considered a \$15 carbon tax established in America and discovered that it generated a 0.8 percent escalation in inflation during the initial year of the program. This is, as far as we know, the initial research to validate the influence of a carbon price on inflation. Moessner (2022) investigated the impact of carbon dioxide emissions on inflation and showed that higher carbon dioxide emissions can be associated with higher inflation at the country level. This suggests that climate change policies would not lead to higher inflation.

To the best of our knowledge, there is no study researching the causality of carbon taxes, oil prices and inflation rate. To generalize, this study examines how carbon taxes and oil prices are affecting inflation in 22 countries, both developing and developed ones, spanning all continents, including Europe, Asia, America and Africa, by annual frequency, based on the largest currently available data set of countries participating in the pricing and implementing the policy of imposing carbon taxes on each ton of CO₂ emitted into the environment. This research uses secondary data collected from Datastream and other reliable sources with unbalanced table displayed for the period from 1991 to 2021. In an effort to slow down the process of climate change, many countries levied a tax on the amount of carbon emissions, which are emitted by using energy sources such as oil. A climate policy scheme which can reduce carbon emission is carbon taxes. Some countries keep carbon taxes unchange in several years such as Chile. However, most of countries in our research sample change the carbon tax each year because it effectively reduces the amount of carbon emissions and support for the target of net zero emissions. Revenue from carbon taxes might be also reinvested in political choice for climate purposes, such as investing in inventing low-carbon technologies or other low-carbon energy replacing fuels. We wonder "If inflation is caused by a rise in oil prices, can we raise the price of taxes on carbon emissions both to cut emissions and to stabilize inflation?" For these reasons, we conducted this research: ***“Carbon Taxes and Oil Prices: Driving Inflation Up or Down?”*** to examine whether carbon taxes affect inflation as well as how carbon taxes impact on the adverse relationship between the price of oil and inflation. Our study proposes a new method for measuring how oil prices affect inflation under the context of imposing a carbon tax on the amount of carbon emitted into the environment.

2. Literature Review and Hypotheses development

2.1. Literature Review

2.1.1. Climate change policy and carbon emission reduction plan

Nearly all nations have enacted climate actions (Eskander and Fankhauser, 2020). Thus, a number of climate advisory groups have been built up during the past several decades (Averchenkova et al., 2021). The wording of international climate change discussions is vulnerable to lobbying, and even when agreements are reached, nations occasionally break their commitments or make insufficient pledges. One of the crucial factors of climate change is the decrease of carbon emissions (Hong et al., 2022). The findings indicated that the carbon emission reduction (CER) plan has stringent conditions for acceptance and that executors of the CER plan must be included in the planning process. The adoption of the growth of clean industries and low-carbon technology may help optimize and modernize industrial construction, increasing industry variety and synergy while lowering the dependency of urban expansion on natural resources under strict emission reduction targets.

2.1.2. Carbon pricing mechanisms and the impact of levying carbon taxes

A technique for reducing greenhouse gas emissions is carbon pricing. The governments do not use repressive instruments but provide a market mechanism for emission facilities. This leaves manufacturers with a choice between reducing emissions to avoid paying high prices or continuing to emit but paying a fee for their emissions. Two main carbon pricing mechanisms are Emission Trading System (ETS) and Carbon taxes (CT). However, in this research, we only focus on carbon taxes. There is an obvious difference between ETS and CT: the carbon taxes' emission reduction results are not predetermined, whereas the trading in ETS emissions credits is. Creating a worldwide carbon tax to supplant service and income taxes was pioneered by Finland in 1990. Norway imposed carbon taxes in 1991, covering 65 percent of all CO₂ emissions. Sweden started imposing carbon taxes in 1991. Between 1987 and 1994, the country's CO₂ emissions decreased by 600-800 million tons, or 13 percent in total. The United Kingdom (UK) imposed an extra 15 percent tax in 2001 as a result of climate change, which affected taxation standards in the public and commercial sectors that are based on energy prices. Funding for energy efficiency and conservation technologies came from the 0.3 percent of income tax revenue that was given back to the employers' national insurance accounts.

2.2. Hypotheses development

2.2.1. The relationship between carbon taxes and inflation

Several scholars have examined how carbon prices might affect the overall economy. According to Kaenzig (2021), ETS carbon price surprises in Europe, carbon pricing, and related carbon policies have a positive impact on emissions reductions, assisting in meeting emission reduction targets and softening the transition to climate change, but doing so must come at a cost, which is related to energy prices and consumption. McKibbin et al. (2021)

found that a carbon price only temporarily affects inflation using simulation models. The advantages of continuous innovation in renewables in response to carbon pricing, reduced power prices, and increased energy efficiency, however, might offset these larger inflationary pressures, which could also cause a decline in the share of energy contained in the CPI consumption basket, according to Andersson et al. (2020). According to Konradt and Weder di Mauro (2023), carbon taxes did not appreciably boost inflation, with dynamic impacts estimated to be near zero in most scenarios. Instead, they found support for relative price increases, which increased the cost of energy while leaving other goods and services unchanged. For the subsamples of Canada, they found slightly deflation responses in Canadian provinces, with an increase in energy prices having more offset by a fall in the prices of services and other non-tradables. To summarize, the available analysis of how carbon prices affect the economy is still ambiguous and contentious. Our study contributes to this topic by determining the influence of carbon prices on inflation and the variables that influence inflation, with the expectation that carbon taxes would have a positive effect on stabilizing inflation. Therefore, our first hypothesis is given:

H1. The carbon taxes help reduce the inflation rate.

2.2.2. The relationship between oil prices and inflation

Many studies have implied that there is a pass-through between oil prices and headline inflation, although the effect is weak, cyclical, and diminishing with time. According to Blanchard and Galí (2007) research, inflation and activity were significantly more affected by oil price shocks up to the mid-1980s than they were afterwards. They place the blame for this on the weakening of wage rigidities, the increasing credibility of monetary policy, and a drop in the proportion of oil in consumption and output. Similar findings are reached by De Gregorio et al. (2007), who claim the pass-through was five times as powerful before 1980 versus after (when a 10 percent increase in oil prices results in a 0.3 pp rise in inflation). Once again, this research will estimate the effect of rising oil prices on the rate of inflation, which is the basis for examining the connection among carbon taxes, oil prices, and the inflation rate.

H2. Oil prices directly make the inflation rate increase.

2.2.3. The relationship among carbon taxes, oil price and inflation

Baffes et al. (2015) have suggested that temporary drops in worldwide inflation have been observed after drops in oil prices. Falling oil prices also cause a decrease in overall energy costs since they drive the prices of competing energy products to drop and lower the cost of producing electricity using oil. Hamilton demonstrated in a number of works (see, for instance, Hamilton (1983, 1996)) that the majority of the United States depressions were anticipated by increasing the oil price, indicating that oil price hikes are one of the main causes of recessions. The advantages of continuous innovation in renewables in response to carbon pricing, reduced power prices, and increased energy efficiency,

however, might offset these larger inflationary pressures, which could also cause a decline in the share of energy contained in the CPI consumption basket, according to Andersson et al. (2020). Moessner (2022) investigated the impact of carbon dioxide emissions on inflation, his study suggests that implementing climate change policies does not lead to higher inflation. Moreover, higher carbon dioxide emissions can be associated with higher inflation at the country level. His study suggests that climate change policies would not lead to higher inflation. We support the scheme to control carbon emission such as carbon taxes, which help to reduce the amount of carbon dioxide emissions, therefore can help to control inflation. Konradt and Weder di Mauro (2023) showed that any inflationary effects of carbon taxes are limited to headline inflation and do not spread to core inflation. Although they discovered modestly deflationary reactions in Canadian provinces, the findings in Europe hint at moderate and imprecisely measured effects. In general, empirical data from European countries and Canadian provinces give scant support for the inflationary impacts of carbon pricing. Understandably, this research showed no change in inflation but there were other explanations that suggest the existence of an inflationary reaction, namely deflation when imposing a carbon tax. Firstly, British Columbia has adopted a tax scheme that causes families with high incomes to consume less products and services. Secondly, levying a carbon tax leads to increased energy costs, which forces manufacturers to lower the net present value of products using lots of energy, resulting in reduced pricing. Thirdly, consumers will tend to utilize fewer energy-intensive products and services, leading to greater supply than demand, which will be a surplus over demand and cheaper pricing. To the best knowledge of the authors, there is currently no clear evidence relating to the connection between oil price and inflation rate in the presence of the carbon tax factor. As a result, the authors conducted this research to go over the influence of carbon taxes on inflation as well as the link between inflation and oil prices, thereby providing useful reference data to policymakers in their efforts to stabilize inflation. Our last hypothesis is given:

H3. The carbon taxes mitigate the adverse effects of the rise in oil prices on inflation.

3. Method

Research data consists of 22 advancing and developing countries in the 1991-2021 period, including 327 observations shown in the form of an unbalanced table. With the carbon tax is chosen as the main explanation of the models, two following equations:

$$(1) \text{INF}_{i,t} = \beta_0 + \beta_1 \text{INF}_{i,t-1} + \beta_2 \text{CT}_{i,t-1} + \beta_3 \text{OIL}_{t-1} + \beta_4 \text{CONTROL}_{i,t-1} + \mu_i + \varepsilon_{i,t}$$

$$(2) \text{INF}_{i,t} = \beta_0 + \beta_1 \text{INF}_{i,t-1} + \beta_2 \text{CT}_{i,t-1} + \beta_3 \text{OIL}_{t-1} + \beta_4 \text{OIL}_{t-1} \times \text{CT}_{i,t-1} + \beta_5 \text{CONTROL}_{i,t-1} + \mu_i + \varepsilon_{i,t}$$

Where *i* and *t* respectively refer to country and time. The dependent variable $\text{INF}_{i,t}$ is the annualized percentage change in a consumer price index extracted from the Datastream for country *i* at time *t*. The key independent variables are proxied to observe macroeconomic factors' effects such as carbon taxes, global oil prices on inflation. A detailed list of variables, definitions, and sources can be found in Table 1.

Table 1. Variable definitions

Variables	Measurement	Sources
Dependent variable		
INF	Change in consumer price index (CPI) over the previous year	Datastream
Main explanatory variables		
OIL	Change in global oil price over the previous year	Macrotrends and Authors' calculation
CT	Change in the price of carbon tax over the previous year	World Bank and Authors' calculation
Interactive variable		
OIL×CT	Interactive between change in global oil price and change in carbon tax	Authors' calculation
Control variables		
OUTPUT	The distinction between actual and prospective output (the yield gap percentage)	Datastream
M2	M2 money supply growth over the previous year	Datastream
REER	Change in the real effective exchange rate index over the previous year	World Bank and Authors' calculation
TRADE	Trade surplus and trade deficit (dummy variable)	Datastream
PPI	Change in the producer price index from the previous year	Datastream

Source: Compiled by the authors

Firstly, to minimize the impact of outliers, the variables are winsorized at 2% level. Secondly, we used different regression methods including Pooled ordinary least squares regression (Pooled OLS), fixed effects model (FEM), random effects model (REM) to choose the best one. After this progress, we find that FEM is the most suitable model among the three of them. Thirdly, we use FEM with robust standard errors to compare and validate the robustness of our models. We also use the Breusch and Pagan Lagrangian to test heteroscedasticity. Finally, we consider that there are endogenous variables in our models that make the results unreliable and inaccurate. One of the causes of endogeneity is the concurrent effect between the dependent and independent variables, and it is possible that the model has encountered this cause. To solve endogenous variables and heteroscedasticity, we use system generalized methods of moments (S-GMM) developed by Arellano and Bover (1995) and Blundell and Bond (1998).

4. Results

As an outcome of the Pearson correlation coefficient matrix between the variables used in this study, most of the independent variables are correlated with dependent variables, in which the variables OIL, OUTPUT, M2, REER, and PPI are positively correlated with INF. The variables CT and TRADE are negatively correlated with INF.

We used Pooled OLS and FEM to regress the models and simultaneously test their robustness. However, we consider that there are some endogenous variables that make the results incorrect and unreliable. The results need to be validated by using another econometric method for certainty. Therefore, we conduct estimation of three models using the S-GMM method, which helps us handle endogenous problems, double-check the previous results using Pooled OLS and FEM, and give out the best outcomes for this research. To ensure that the S-GMM method is used correctly for estimating models, users should be aware of two tests. The first is the Hansen Test to check the appropriate level of the group of instruments used in models. The Hansen test's null hypothesis is that the instruments are valid. Table 2 shows that models (1) and (2) have p-value of the Hansen test greater than 5% and the number of instrument variables is 19, 15, respectively. This amount is less than 22 groups of countries. The outcomes of the Hansen test and instrument variables indicate that our models fulfill this condition. The second condition of using the S-GMM method with the null hypothesis is that there is no autocorrelation of order 2, which means the p-value (AR(2)) must be higher than 5% to accept this hypothesis. From the last line in table 2, p-values (AR(2)) for two models are 0.504 and 0.873, respectively, which are all higher than 5%. As a result, the research models have no autocorrelation of order 2. Because the models satisfy the Hansen test's two hypotheses, we can regress them using the S-GMM method.

The S-GMM method provides similar results as the Pooled OLS and FEM methods. The difference is that most of the variables become more statistically significant. Inflation has been influenced by the changes in historical carbon taxes and the price of oil. Specifically, the higher changes in carbon taxes will make the inflation level decrease. The evidence is that the regression coefficient of $CT_{i,t-1}$ is negative and significant at the 5% or 10% levels. In the S-GMM method, an increase of 1 percentage point in the carbon taxes will give rise to a 0.0076 percentage point decrease in the inflation rate in model (1), which is the same effect as model (2).

Table 2. Regression results using the Pooled OLS, FEM, S-GMM

Variables	Pooled OLS		FEM		S-GMM	
	(1) INF _t	(2) INF _t	(1) INF _t	(2) INF _t	(1) INF _t	(2) INF _t
INF _{i,t-1}	0.502*** (8.53)	0.512*** (8.79)	0.395*** (3.93)	0.395*** (4.26)	0.132* (1.76)	0.342** (1.96)
CT _{i,t-1}	-0.0079 (-1.56)	-0.0116** (-2.23)	-0.0052 (-1.19)	-0.0084* (-1.92)	-0.0076** (-1.97)	-0.0329* (-1.89)
OIL _{t-1}	0.0034 (0.84)	0.0035 (0.87)	0.0081*** (3.79)	0.0080*** (3.00)	0.0167*** (7.17)	0.0143* (1.87)

Variables	Pooled OLS		FEM		S-GMM	
	(1)	(2)	(1)	(2)	(1)	(2)
Model	INF _t	INF _t	INF _t	INF _t	INF _t	INF _t
OUTPUT_{i,t-1}	-0.0631*	-0.0585*	-0.0634	-0.0520	-0.121***	-0.111***
	(-1.90)	(-1.79)	(-1.31)	(-1.07)	(-3.07)	(-2.68)
M2_{i,t-1}	0.122***	0.119***	0.116***	0.112***	0.119***	0.112***
	(6.87)	(6.75)	(4.86)	(4.73)	(6.50)	(4.26)
REER_{i,t-1}	-0.0454	-0.0433	-0.0577**	-0.0554**	-0.0388***	-0.165***
	(-1.59)	(-1.53)	(-2.28)	(-2.17)	(-5.14)	(-2.94)
TRADE_{i,t-1}	-0.0014	-0.0011	0.0006	0.0003	-0.0042***	-0.0015
	(-0.69)	(-0.57)	(0.19)	(0.10)	(-3.28)	(-0.50)
PPI_{i,t-1}	0.0181	0.0269	-0.0103	-0.0013	-0.0155	-0.108**
	(0.63)	(0.94)	(-0.34)	(-0.04)	(-0.85)	(-2.04)
OIL_{t-1} × CT_{i,t-1}		-0.0385**		-0.0403**		-0.0582**
		(-2.56)		(-2.53)		(-2.41)
_cons	0.0009	0.0015	0.0026	0.0038	0.0093***	0.0085*
	(0.35)	(0.54)	(0.74)	(1.10)	(5.31)	(1.72)
Obs	223	223	223	223	223	223
R-sq	0.528	0.542	0.354	0.377		
Hansen test					0.193	0.726
(p-value)						
Number of					19	15
Instruments						
AR(2)					0.504	0.873

Notes: *, **, and *** are statistically significant at the 1%, 5% and 10% levels, respectively

Source: Statistic results using the authors' dataset were exported from Stata 16.0

After regressing model (1) and examining the effect of CT and OIL on INF, we added the interactive variable $OIL_{t-1} \times CT_{i,t-1}$ in model (2) to study the relationship among the carbon taxes, oil price, and inflation. The variable $CT_{i,t-1}$ in model (2) are more impactful than the one in model (1), which means that an increase of 1 percentage point in the carbon taxes will lead to a 0.0329 percentage point decrease in inflation. In contrast with the carbon taxes, oil, which represents global oil prices, produces positive results. In model (1), an 1 percentage point increase in the price of oil causes an increase in inflation of 0.0167 percentage point, which is reasonable both in academic research and in practice. The increase in oil prices will raise logistics costs, causing goods and services to become more costly. $OIL_{t-1} \times CT_{i,t-1}$ in model (2) negatively affects INF_t at the 5% levels of statistical significance. With the regression coefficient of -0.0582 of $OIL_{t-1} \times CT_{i,t-1}$, we can explain that the short-term bullishness of the oil price will drive the inflation rate to rise. However, in the context of

levying the carbon taxes, the positive effect of a higher oil price on the inflation rate will be mitigated. Our results from S-GMM are similar to the one of Konradt and Weder di Mauro (2023) in the case of Canadian provinces. However, we fully support that levying carbon tax will reduce inflation with a 1-year lag. And, we also find that carbon taxes positively mitigate the adverse influence of oil price increase on inflation rate. Therefore, our hypotheses 1 and 2 are demonstrated and accepted. Besides the OIL_{t-1} , $CT_{i,t-1}$, interactive variable $OIL_{t-1} \times CT_{i,t-1}$, control variables such as $OUTPUT_{i,t-1}$, $M2_{i,t-1}$, $REER_{i,t-1}$, and $TRADE_{i,t-1}$ are statistically significant at the 1% level by using the S-GMM method. For further details, the intention in the previous year's money supply will contribute to a rise in the current year's inflation rate. The variable TRADE in model (1) is significant at the level of 1%, meaning that net export countries have a lower inflation rate than net import countries. These results are reasonable because importing goods and services from foreign countries will indirectly bring inflation factors into domestic markets, such as higher prices, changes in the exchange rate, increase in demand, etc.

5. Discussion and conclusion

Our study outcomes match up with our given expectations. The results indicate that the global oil price and carbon taxes significantly impact inflation in both developing and advanced countries. The model of lag variables shows that levying carbon taxes mitigates the acceleration of inflation caused by the higher oil price. Moessner (2022) also studied that higher carbon emissions are associated with higher inflation and nations with better climate policy rankings tend to be associated with lower inflation across countries. Based on these results, we can explain that carbon taxes help reduce carbon emissions, and therefore help mitigate the adverse effect of higher inflation. Using the interaction variable $OIL_{t-1} \times CT_{i,t-1}$ in model (2), we can see that the impact of oil prices on inflation decreases. This is an optimistic and meaningful result. There are some reasonable explanations for the deflation effects of implementing carbon taxes. Firstly, levying carbon taxes can depress household income and force them to cut back consumption, which leads to a downward trend in price. Secondly, levying carbon taxes then intensifies investing and producing less energy-intensive goods and services and gradually does not use much energy for producing, which may cause less use of nonrenewable energy sources. Based on this outcome, the enforcement of a carbon tax to accelerate the movement to zero carbon is not constrained by considering the inflationary impact. This is significant since carbon pricing regimes have been demonstrated to reduce carbon emissions. The research's findings are in line with the author's expectations relating to the government's policy as well as the stagnant economy at that time.

Regarding the case of Vietnam, the government has made considerable efforts in establishing and implementing domestic laws and strategies to speed green growth. However, the biggest worry is leading to expensive goods because of higher tax expense and then inflation increase. Our research can help policymakers answer this question. The authors agree that carbon taxes can accelerate the prices in the first period of levying but it can help the price decrease after that to avoid paying high taxes or buy carbon credits from

others. Therefore, the demand for using oil and other unrenowable fuels will decrease as people are aware of the adverse effect on their spending. Therefore, raising oil prices will not accelerate the inflation rate like before.

In conclusion, according to our findings, levying carbon taxes not only does not have a pessimistic impact on the aim to reach net zero emission in 2050 but also helps reduce the inflation rate and mitigate the effect of increasing oil price. The authors suggest that Vietnam accelerate the progress of establishing a carbon pricing mechanism such as carbon taxes in the near future. From the perspective of the political economy, the central bank should have supportive policies for the imposition of a country's carbon taxes. However, revenue from carbon taxes should not be reserved for any specific purpose, but it can contribute to reducing social costs, maintaining stable supply and demand, and serving as a useful subsidy when the domestic economy fluctuates.

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Appendix
List of 22 countries in the sample

Countries	Year of implementation
	2019
1. Canada	(2010 - 2018: the authors used British Columbia's carbon taxes as a representative price)
2. Chile	2017
3. Colombia	2017
4. Denmark	1992
5. Estonia	2000
6. Finland	1990
7. France	2014
8. Iceland	2010
9. Ireland	2010
10. Japan	2012
11. Latvia	2004
12. Mexico	2014
13. Norway	1991
14. Poland	1990
15. Portugal	2015
16. Singapore	2019
17. Slovenia	1996
18. South Africa	2019
19. Sweden	1991
20. Switzerland	2008
21. Ukraine	2011

FACTORS AFFECTING THE IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT ACCOUNTING: A CASE STUDY OF MANUFACTURING ENTERPRISES IN HANOI

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Abstract

This study investigates the impact of factors on the implementation of environmental management accounting (EMA) in manufacturing enterprises in Hanoi, Vietnam. This study employed a survey conducted in Hanoi manufacturing enterprises. Validity and reliability tests were carried out on the collected questionnaires. Data analysis was performed using SPSS 22. The results show that Level of Technology; Stakeholder Pressures; Perception of Manager; Accountant Qualifications positively impact on the implementation of EMA in manufacturing enterprises in Hanoi. Results of the study lay the groundwork for the application of EMA in Hanoi manufacturing firms in particular, and Vietnam in general.

Keywords: *environmental management accounting, environmental accounting, manufacturing enterprises, Hanoi.*

1. Introduction

Economic growth associated with ensuring environmental quality towards sustainable development is now becoming a trend and common goal of most countries in the world. Realizing the above goal, the Governments of countries including Vietnam have set increasingly strict requirements on environmental protection, forcing businesses to change their perception of environmental issues when conducting environmental activities. investment or production activities. This policy requires enterprises, not only producing products to meet the market demand but also to create environmentally friendly products, and fulfill environmental protection responsibilities such as limiting waste, cleaning up waste, or having to compensate for damage when causing environmental problems... In that context, environmental accounting was created to support enterprises to fulfill their obligations to the environment in the process of production and business.

Although environmental protection in economic development has been a concerned by the State as well as by environmental management agencies, up to now, environmental accounting in Vietnam has not been paid attention to, and current legal documents and accounting standards have not yet mentioned the organization of environmental accounting in enterprises. The current accounting system does not have regulations guiding enterprises in accounting and recording costs incurred related to the environment as well as revenue and

income. There are no effective tools in environmental management, in the operation of enterprises, legal documents, and environmental standards have not been synchronized...

Factors affecting the implementation of environmental management accounting in enterprises is a topic that attracts great attention from administrators and researchers. The examination of the variables influencing how environmental management accounting is implemented in businesses is carried out in many different countries such as Portugal, Australian, Malaysian, Thailand,... Ribeiro & Aibar-Guzman (2010) studied determinants of environmental accounting practices in local entities from Portugal; Christ & Burritt (2013) examined the state of the literature by evaluating whether the type of organizational structure could be used to increase knowledge of EMA use by Australian organizations; Setthasakko (2015) has discovered factors affecting the implementation of environmental management accounting in pulp and paper enterprises in Thailand; Mokhtar et al., (2016) measurement and identified factors affecting implement EMA of Malaysian public listed companies,....

Many studies have been conducted to explore the factors influencing the implementation of EMA, but the findings are still varied and inconsistent as a result of the research being conducted in various nations, fields, professions, and eras. Manufacturing enterprises are one of the industries that greatly impact the environment. With their sensitive characteristics to the environment, production and business activities will also have more impact on the environment. Therefore, to ensure their prestige, reputation, position, and production and business activities, manufacturing enterprises in Hanoi produce the products that impact the environment and are more likely to implement EMA. Moreover, there are few empirical studies on factors affecting the implementation of environmental accounting in manufacturing enterprises in Hanoi, where the implementation of environmental accounting is still voluntary demand for most enterprises.

Therefore, this study's aim is to identify the factors and quantify the level of influence of each factor on the implementation of environmental accounting in manufacturing enterprises in Hanoi, Vietnam. The results of the study will be useful to corporate executives and policymakers in environmental management accounting.

2. Literature review and research hypotheses

The factors affecting the adoption of EMA have been the subject of numerous studies, but the findings are still varied and inconsistent as a result of the research being conducted in various nations, fields, professions, and times.

Kokubu and Nashioka (2005) used a questionnaire survey to characterize corporate environmental accounting procedures in companies listed in the first section of the Tokyo Stock Market. The results showed that a well-established environment department actively engaged in decision-making across the firm; top and middle management awareness of environmental accounting concepts; and usage of specialist EMA tools affect to the environmental accounting procedures.

Ribeiro and AibarGuzman (2010) investigated the impact of three variables (organizational size, accounting regulation, and the level of development of environmental

management practices) on the extent to which a sample of Portuguese local organizations established a set of environmental accounting practices. They have discovered evidence indicating a positive and statistically significant relation between the level of development of environmental accounting practices and two of the factors (organizational size and level of development of environmental management practices).

According to Ferreira et al. (2010), EMA use is positively associated with process innovation but not with product innovation. However, there was no significant statistical relationship between the application of EMA and strategy. According to the study's findings, companies that engage in delicate industries are more likely to use environmental accounting.

Christ & Burritt (2013) have shown that environmental strategy, industry and enterprise size have an important relationship to the implementation of EMA in Australia. However, the organizational structure does not affect the adoption of environmental management accounting.

Setthasakko (2015) has discovered three primary factors influencing the adoption of environmental management accounting: top management roles, knowledge sharing and building corporate in pulp and paper companies in Thailand.

Mokhtar et al., (2016) measurement and identified factors affecting implement EMA of Malaysian public listed companies. The results show that complying with environmental regulations is more important than incorporating EMA information into performance measurement, control and reporting.

Susanto (2019) concludes that senior managers' environmental awareness, business characteristics, and qualifications of accountants have a significant influence on environment accounting.

The study on this issue in Vietnam has been verified by Ha (2022) when analyzing the factors affecting the implement EMA of manufacturing enterprise in Vietnam. The research shows that the implement EMA have a significant correlation with the pressure from stakeholders; Business sector; Qualification of accounting staff; Managers' perception of environmental accounting; and Enterprise size. Duong et al., (2022) surveyed 321 chief accountants and managers working for 200 manufacturing enterprises in Da Nang, Vietnam. Research results showed that technology level, enterprise characteristics; performance pressure; accounting staff qualifications, and managers' awareness affecting EMA implementation.

Based on the empirical research on EMA, the authors set up 5 research hypotheses to clarify the significance of the factors influencing the application of EMA in Hanoi's industrial businesses is as follows:

Business characteristics: Research by Ferreira et al., (2010), Mokhtar et al., (2016) indicate that companies with sensitive business sectors such as the chemical, mining and metallurgical industries are more likely to apply environmental accounting than all other companies considered in the study. Manufacturing companies with environmentally sensitive business areas are in high demand in the implementation of environmental

accounting because they often incur unanticipated risks, impact on the environment, causing enterprises to face many compensations incurred, increasing costs, affecting the interests of enterprises. This result is also proved by the research of Deegan & Gordon (2001), Christ & Burritt (2013). Christ & Burritt (2013) have demonstrated that the industry has a positive relationship to the implementation of environmental accounting. With the above analysis, the business sector of the enterprise influences the implementation of environmental accounting in manufacturing enterprises. Therefore, the first hypothesis is established, as follows:

H1: The business characteristics positively impact on the implementation of EMA in manufacturing enterprises in Hanoi.

Level of technology: In order to draw conclusions about the capacity of information technology to significantly influence environmental accounting in Indonesia, Susanto (2019) analyzed different obstacles that could prevent the effective functioning of environmental accounting information systems. The importance of supporting information technology is also emphasised by this study. To completely comprehend the true nature of technological competence in environmental accounting, a complex infrastructure and a highly-skilled personnel are required. According to Jasim & Raewf (2020), the usage of information technology causes considerable changes in accounting practice. Users can complete tasks more effectively thanks to information technology. Accountants may no longer simply copy and assess financial data to serve as a foundation for decisions in the future. Therefore, the hypothesis proposed by the authors is as follows:

H2: Technology positively impact on the implementation of EMA in manufacturing enterprises in Hanoi

Accountant Qualifications: Accountants' qualifications are reflected in the skills, knowledge and the skills they acquire through education and training. Stakeholders can get financial and non-financial environmental information through environmental accounting. Accounting personnel must possess the necessary knowledge and abilities to record, present, and disclose environmental information in order to carry out this duty. To get around the limitations of traditional accounting, accountants must precisely assess and distribute costs, which is not an easy operation. According to Setthasakko (2010), the incorporation of environmental issues into accounting systems practices in Thai businesses can be constrained by a lack of environmental knowledge and expertise. Education level is one element influencing the company's decision to apply to EMA, according to research by Alkisher (2018). Based on the above analysis, the author considers that:

H3: The qualification of accounting positively impacts on the implementation of EMA in manufacturing enterprises in Hanoi

Stakeholder Pressures: The pressure of stakeholders mentioned in the studies of Kisher (2013), Jamil et al., (2015) when studying the impact of pressures from the community, from the press media or from government agencies on environmental protection standards will create pressure for enterprises to perform environmental accounting. Environmental reporting is increasing both in quantity and quality because

environmental accounting is increasingly spreading by imitating the behavior of one business to another to achieve the enormous benefits of sustainable development. Research by Zeng et al., (2012) showed that industries with many enterprises involved in environmental information disclosure activities will be able to disclose environmental information more. Based on the above analysis, the author considers that:

H4: Stakeholder Pressures positively impact on the implementation of EMA in manufacturing enterprises in Hanoi

Perception of manager: Senn and Giordano-Spring (2020) demonstrated that environmentally responsible businesses will have a higher environmental impact, resulting in increased environmental expenses and improved environmental cost awareness. Several previous research studies have indicated that senior management's attention and support are essential for any environmental management strategy to be successful (Setthasakko, 2010; Jamil et al., 2015). The ability of the management team and the backing of the administrators determine whether EMA implementation in businesses is successful or unsuccessful. One of the crucial elements in EMA practice is management perception, as managers have a say in policy decisions and environmental strategy in business operations (Kokubu & Nashioka, 2005). Business managers' lack of environmental awareness and active support for EMA preparation, on the other hand, can limit EMA implementation (Jamil et al., 2015). Based on the above analysis, the author considers that:

H5: Perception of management positively impact on the implementation of EMA in manufacturing enterprises in Hanoi

3. Method

Based on the review of previous scholars, we use the following model to clarify the significance of the factors influencing the application of EMA in Hanoi's industrial businesses, as follows (see Figure 1):



Figure 1. Research Model

With multiple regression model as follows:

$$IEMA = \beta_0 + \beta_1*BC + \beta_2*TECH + \beta_3*AQ + \beta_4* SP + \beta_5*PM + \epsilon$$

In which:

β_1, β_2, \dots is the regression coefficient, β_0 is the blocking coefficient, ϵ is the residual

Dependent variable

IEMA: Implementation of environmental accounting in manufacturing enterprises in Hanoi

Independent variables, including:

BC: Business Characteristics

TECH: Level of Technology

AQ: Accountant Qualifications

SP: Stakeholder Pressures

PM: Perception of Manager

The authors collected information from the questionnaire about the factors affecting EMA implementation. The research questionnaire is based on the study by Senn & Giordano-Spring (2020); Mokhtar et al. (2016); Susanto et al. (2019); Alkisher (2013); Fuzi (2019); Duong et al. (2022) and adjusted to suit the study object. Respondents answer questions related to EMA, Business Characteristics, Level of Technology, Accountant Qualifications, Stakeholder Pressures, Perception of Manager. Also, age, gender, job, firm size, email, education, and experience are included. These independent factors are assessed in this study using a 5-point Likert scale, with 1 being "Strongly disagree," and 5 being "Strongly agree." Each independent variable has a variety of questions listed in this section.

Business managers, chief accountants of Hanoi manufacturing companies with significant accounting knowledge, and managers with EMA knowledge operate as the research subjects and provide advice and assistance for the planning of each concept-related study. The setting was chosen as Hanoi because of major environmental problems. The respondents were management and accountant in 208 manufacturing companies. The total questionnaires distributed numbered 280, but the number of returned questionnaires was 226 from 208 companies. The data found that only 226 sets of data could be analyzed because many answered did not answer the questionnaire completely. To test the hypotheses, exploratory factor analysis (EFA), difference analysis (ANOVA), and exploratory factor analysis (EFA) were used to analyze, assess, and synthesize data from 267 samples using SPSS software

4. Results

4.1. Testing the reliability of the scale

As shown in Table 1, all factors and variables are acceptable since Cronbach's Alpha values for each variable are larger than 0.6 and the differences between the eliminated items are minimal.

The average correlation between all the components that comprise the scale is shown by Cronbach's Alpha. The corrected item-total correlation and Cronbach's Alpha coefficient are both above 0.4 in the results. The scale of subjective factors is therefore acceptable.

Table 1. Testing the reliability of the scale

Variables	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Cronbach's Alpha of IEMA: .897		
IEMA1	.869	.835
IEMA2	.796	.861
IEMA3	.815	.854
IEMA4	.640	.914
Cronbach's Alpha of BC: .834		
BC1	.837	.619
BC2	.681	.805
BC3	.618	.851
Cronbach's Alpha of TECH: .927		
TECH1	.816	.909
TECH2	.824	.906
TECH3	.799	.915
TECH4	.881	.888
Cronbach's Alpha of AQ: .805		
AQ1	.779	.640
AQ2	.685	.723
AQ3	.553	.831
Cronbach's Alpha of SP: .836		
SP1	.667	.796
SP2	.704	.784
SP3	.621	.808
SP4	.470	.850
SP5	.742	.773
Cronbach's Alpha of PM: .891		
PM1	.622	.981
PM2	.871	.770
PM3	.888	.755

Source: Data processing results of authors

4.2. EFA Factor Analysis

Exploratory factor analysis (EFA) helps examine the convergent value and discriminant value. EFA must satisfy the following requirements: factor loading > 0.5 ; KMO $\leq 0.5 \leq 1$; Bartlett test the statistical significance (Sig. < 0.05); percentage of variance in Extraction Sums of Squared Loadings $> 50\%$.

The KMO index is $0.757 > 0.5$ as a result of the factor analysis, which indicates that the data were absolutely suitable for this study. Results of Bartlett's test with Sig = 0.000 0.05. The observed variables do not generally related to one another, so the hypothesis H0 is rejected. Variables are therefore correlated with one another and meet the criteria for factor analysis. The outcomes also revealed that the 18 observed factors were divided into five groups. It may be concluded that these five factors contributed for 75,583% of the data variability because the value of the total variance retrieved = 75,583 $> 50\%$, which is acceptable. Finally, factor loadings are greater than 0.5, and there is no case in which the upload of both factors at the same time has a close load factor.

So, when analyzing EFA, factors maintain confluence and differentiation. Furthermore, there is no factor disruption, therefore it is impossible to switch up one question with another. Consequently, following factor analysis, neither of these independent components is increased nor decreased.

Table 2. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.757
Bartlett's Test of Sphericity	Approx. Chi-Square	2832.335
	df	153
	Sig.	.000

Source: Data processing results of authors

There was a factor investigation done upon that 18 survey items. As a result, all items had factor loading values greater than 0.5. Moreover, there is no factor disturbance, therefore it is impossible to mix up one question with another. Consequently, following factor analysis, neither of these independent components is increased nor decreased. A total of 18 observed variables were organized into 5 groups of factors by the use of rotation.

Table 3. Rotated Component Matrix^a

	Component				
	1	2	3	4	5
TECH4	.902				
TECH2	.886				
TECH1	.877				
TECH3	.877				
SP5		.879			
SP2		.839			

	Component				
	1	2	3	4	5
SP1		.823			
SP3		.690			
SP4		.554			
PM3			.941		
PM2			.938		
PM1			.730		
BC1				.904	
BC3				.809	
BC2				.800	
AQ1					.893
AQ2					.800
AQ3					.787

Source: Data processing results of authors

4.3. Regression Analysis

The findings demonstrate that, at a significance level of 0.05, the regression model produces results that are comparatively consistent. The adoption of EMA is described by the fluctuation of the independent variables: Level of Technology; Stakeholder Pressures; Perception of Manager; Business Characteristics; Accountant Qualifications. with a R coefficient of 0.567, indicating a 56.7% variance of the dependent variable, IEMA. Other factors not taken into account by the model account for the remaining 43,3% variation in EMA adoption (such as ownership status, enterprise size, corporate culture, etc.).

There is no autocorrelation in the sample, as indicated by the Durbin-Watson statistic's value of 1.729. The findings demonstrated that ANOVA refers to the statistical significance of the used regression model. For the sig = 0.000 < 0.005, the result offers evidence that the model used is suitable for forecasting the outcome (see Table 5). The linear regression equation of the proposed research model after the regression analysis with coefficients described in Table 6 is shown as follows:

$$\text{IEMA} = 0.457*\text{TECH} + 0.120*\text{SP} + 0.182*\text{PM} + 257*\text{AQ} + \varepsilon_i$$

Table 4. Respondent Profile

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.567 ^a	.321	.306	.83316855	1.729

a. Predictors: TECH, SP, PM, BC, AQ
b. Dependent Variable: IEMA

Source: Data processing results of authors

Table 5. Anova

ANOVA ^a						
	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	72.283	5	14.457	20.826	.000 ^b
	Residual	152.717	220	.694		
	Total	225.000	225			

a. Dependent Variable: IEMA
b. Predictors: (Constant), TECH, SP, PM, BC, AQ

Source: Data processing results of authors

Regression model results show: The variables TECH, PM, and AQ are the positive factors affecting IEMA with a 1% significance level and the impact level is 0.457; 0.182; and 0.253. Besides, the SP variable positively affects IEMA at 0.120 with 5% significance. There is no correlation relationship between the BC variable and IEMA.

Table 6. Coefficients

Coefficients ^a						
	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.628E-16	.055		.000	1.000
	TECH	.457	.056	.457	8.235	.000
	SP	.120	.056	.120	2.157	.032
	PM	.182	.056	.182	3.282	.001
	BC	-.017	.056	-.017	-.310	.757
	AQ	.253	.056	.253	4.560	.000

a. Dependent Variable: IEMA

Source: Data processing results of authors

4. Discussion and Conclusion

The research results show that there is no correlation between business characteristics and the implementation of environmental accounting in manufacturing enterprises in Hanoi (Sig. = 0.757 > 0.05) (H1 is rejected). This result is contrary to the research hypotheses and studies of Chang and Deegan (2010), Jamil et al. (2015), Mokhtar et al. (2016). The reason could be due to a lack of regulatory incentives or enforcement mechanisms for implementing environmental accounting in Hanoi. If there are no regulations or policies that require or incentivize businesses to implement environmental accounting, they may not see it as a necessary or profitable investment.

The factor of technology level has the positive significance and impact on EMA implementation. This result is completely consistent in practice. Regression analysis

showed that the technology level had a positive and significant impact on implementation of environmental accounting in manufacturing enterprises. The beta value showed a coefficient of 0.457, with the Sig. of 0.000. Therefore, it can be argued that the technology level positively impacts the implementation of environmental accounting in manufacturing enterprises (H2 is acceptable)

Third, Implementation of environmental accounting in Hanoi industrial businesses is positively correlated with accountant qualification (accepting H3). The findings of the study show that when accountants' qualifications raise by one unit, EMA implementation in Hanoi manufacturing businesses rises by 0.253 units. This outcome is in line with the research done by Duong et al. (2020) and Setthasakko (2010). This study explains why companies with highly skilled and experienced accountants will aid in the smoother implementation of EMA.

Fourth, there is a relationship between relevant stakeholders and the application of environmental accounting in Hanoi's manufacturing facilities (H4 is acceptable). While the government issues several environmental and environmental accounting requirements, stakeholder pressure is an important aspect that will help promote the use of EMA in Hanoi's manufacturing firms. Also, the more investor and customer pressure there is on environmental issues, the more EMAs will be implemented in these businesses.

Fifth, the implementation of environmental accounting in manufacturing firms is positively correlated with manager perception (accepting H5). The beta coefficient of the manager perception variable is 0.182, and the accreditation sig is $0.001 < 0.05$. This result is similar to Jamil et al. (2015) and Kokubu & Nashioka (2005). In actuality, managers and business operators are the individuals who choose or take the lead in leading departments in the firm to use EMA. They are also the ones who are at the forefront of understanding the role of EMA.

In summary, through a set of data collected from Hanoi manufactured enterprises, the authors analyzed the impact of factors on the implementation of environmental accounting in manufacturing enterprises in Hanoi. Empirical results show that Level of Technology; Stakeholder Pressures; Perception of Manager; and Accountant Qualifications have a positive impact on the implementation of environmental accounting in manufacturing enterprises.

This study has enabled EMA implementation in Hanoi industrial businesses in an attempt to increase economic benefits, safeguard the environment, and promote sustainable development. Therefore, the Government of Vietnam should implement propaganda to raise awareness of environmental information disclosure for enterprises and issue strong enough administrative sanctions to encourage the disclosure of environmental information, in addition to issuing regulations on environmental accounting and complying with environmental regulations. Also, accountants must be completely qualified, professionalized, and have professional ethics on the environment and sustainable development if environmental accounting is to advance in the future. In order to develop high quality human resources to satisfy the requirements of society for sustainable development, closer access to international practices, environmental accounting should be part of the education systems for accounting - auditing majors at economic schools for undergraduate and master's degrees.

The scope of the study is still narrow, so it is possible to expand the scope to a wider area. In addition, the following studies can continue to analyze the confirmatory factor CFA to retest the model. At the same time, the implementation of EMA can be studied extensively with more factors affecting other scales.

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THE IMPACT OF GREEN SUPPLY CHAIN MANAGEMENT ON BUSINESS PERFORMANCE: THE CASE OF TEXTILE ENTERPRISES IN VIETNAM

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Abstract

The objective of this study is to analyze and assess the impacts of green supply chain management (GSCM) on the business performance of Vietnamese textile enterprises. The study was carried out through a linear structural model (SEM) with 235 enterprises in the textile industry in Vietnam through direct investigation method and online survey. The results have shown that environmental protection in cooperation with customers and suppliers has a direct and positive impact on all three aspects of business performance. Furthermore, reverse logistics activities have a positive impact on the environmental performance of Vietnamese textile enterprises. In addition, the study also shows that there are differences in the impact on environmental performance of enterprises by different sizes and operating periods.

Keywords: *Textile enterprises, business performance, green supply chain management.*

1. Introduction

In a world focusing on environmental protection and building a green economy, the green supply chain is also a new direction for the development of businesses, helping enhance their competitive capability (Humphreys et al., 2003; Shu and Zhang, 2004; Lee et

al., 2009). Green supply chain (GSC) is gradually becoming the mainstream tendency aiming towards a sustainable development and core values in business performance of enterprises, in order to create common benefit for businesses and society as a whole. This development direction not only helps businesses maintain their position as well as increase their competitive advantage in the market, but also contributes to shaping a friendly and sustainable brand.

Business performance is the foundation of the business's reproduction and expansion. In the context of intensive economic integration, improving operational efficiency is an urgent issue that every business is concerned about. In the past, there have been many studies discussing the impact of green supply chain management (GSCM) on the performance of enterprises, but these researches are mainly conducted in countries with developed economies such as the United States or Europe. For developing countries like Vietnam, there are quite a few research works on this topic. Moreover, these studies are limited to a few industries, not comprehensive but only cover several certain aspects. Therefore, the responsibility to participate in or implement GSCM as well as the influence of GSCM on business performance has not been related and extended to all industries.

The textile and garment industry is one of the major export sectors of Vietnam, contributing dramatically to the economic growth of the country. In 2021, this industry contributed 40.4 billion USD to Vietnam's export turnover and witnessed a 8.9 percent growth, touched 44 billion USD in 2022 (Vietnam Textile and Apparel Association, VITAS, 2022). By 2022, Vietnam's textile and garment products have been exported to 66 countries and territories with 47-50 different items (Vietnam Textile and Apparel Association, VITAS, 2022). Despite making significant contributions to the economy, this industry has a high risk of causing environmental pollution in Vietnam. Cotton production for raw materials as well as the stages of washing, bleaching, dyeing and final cleaning require a huge demand for water resources. Additionally, emissions and solid waste are also major problems of textiles. Therefore, "greening" the textile industry is essential to ensure a sustainable development of future generations.

From these practices, it can be affirmed that GSCM is crucial and a prerequisite for Vietnamese textile enterprises to develop sustainably and participate in the global value chain. However, there is no research on the level of GSCM implementation in textile enterprises, what benefits that GSCM brings to these enterprises, or how GSCM affects their performance. Therefore, the research and evaluation of the impact of green supply chain management on the performance of Vietnamese textile enterprises in the current context is both theoretically and practically meaningful.

2. Theoretical basis

2.1. Theoretical basis

2.1.1. Green supply chain management

The research literature has generated much debate over the past few decades about the definition and scope of green supply chain management. Among them, the two most commonly used terms are green supply chain management and sustainable supply chain management (Ashby et al., 2012).

According to Zhu and Sarkis (2004), green supply chain management is understood as a combination of elements in corporate environmental management and supply chain management. Srivastava (2007) emphasizes that green supply chain management is “integrating environmental contemplation into supply chain management, including product design, material sourcing, manufacturing processes, delivery of final products to the customers as well as the management of the products after using”. This definition has been accepted and inherited by many later authors in the following research periods (Sundarakani et al., 2010; Wee et al., 2011; Wu and Pagell, 2011;...). Ahi (2013) defined green supply chain management as the creation of coordinated supply chains through the integration of environmental, economic and social factors into inter-organizational business chains, designed for efficiently managing materials, information, and capital flows for the procurement, production, and distribution of products or services to meet partners’ requirements and improve profitability, competitiveness and resilience of the organization in the short and long term. The reason why enterprises need to implement green supply chain management is because they are under pressure to minimize their impact on the environment and the ecosystem. Therefore, it can be simplified that green supply chain management is the integration of environmental management functions into inter-organizational activities, with three subjects including suppliers, businesses and customers.

Sarkis et al. (2011) emphasize that there are many organizational theories applied to the topic of green supply chain management, namely institutional theory, resource-based theory, stakeholder theory, transaction cost theory. However, in this topic, resource-based theory is the most suitable to explain the relationship between GSCM and business performance while other theories play the role of investigating the motivation for enterprises to participate in GSCM practice.

2.1.2. Business performance

Due to different perspectives, previous researchers have been unable to agree on a common concept of business performance:

According to Hui et al. (2008), the performance of an enterprise is considered as a composite efficiency, which is measured through: financial efficiency and operational efficiency. In which, financial efficiency is reflected through factors related to profit (ROA, ROE, ROS). Operational efficiency is reflected through indicators of labor productivity, level of commitment of employees to the enterprise and investment efficiency. Operational efficiency can be determined through the following indicators: Profit growth rate, revenue growth, return on equity.

From the perspective of profit maximization, according to author Tang Thi Thanh Thuy (2020): “Business performance of an enterprise is an economic category that reflects the utilization level of production resources, organizational management level of the enterprise to achieve the highest socio-economic goals at the lowest cost.” Authors Nguyen Thanh Do and Nguyen Ngoc Huyen (2001) said that: “Business performance reflects the utilization level of production resources (labor, raw materials, cash flow, machinery) in the output production process of the enterprise”.

Our research team identifies enterprises as a cell of the economy - society, so within the scope of this research, the team conducts an assessment of business performance based on composite efficiency. Accordingly, business performance is a category that reflects the level of the enterprise's use of aggregate resources to achieve the highest results at the lowest costs. The results are considered based on the following factors: production - business, capital attraction, investment, environmental and social protection.

2.2. Research model and hypothesis

On the basis of implementing resource-based theory and referring to previous studies, the authors propose a model with 6 independent variables corresponding to 6 factors affecting the performance of textile enterprises, including: Internal green practices of business (THXBT), environmental protection in cooperation with suppliers (HTNCC), environmental protection in cooperation with customers (HTKH), environmental supervision with suppliers (GSNCC), environmental supervision from customers (GSKH) and reverse logistics (RL). In order to maximize the reliability of the research results, the research authors add 3 control variables into the model, including: size of business, operating period of business and type of business. Meanwhile, the dependent variable - business performance - is measured by 3 components: Financial performance (HQTC), environmental performance (HQMT) and export performance (HQXK).

Research hypotheses:

Most previous studies have indicated that there is a positive relationship between internal and external green practices of enterprises and financial performance (Gil et al., 2001; Rao and Holt, 2005; Wong et al., 2012). Therefore, the authors propose the following hypothesis:

H1a: Internal green practices of enterprises have a positive impact on financial performance.

Several studies (e.g. Zhu & Sarkis, 2004; Yang et al., 2013; Laari et al., 2016; Zaid et al., 2018; Ahmed et al., 2020) have shown the implementation of internal green practices has a positive effect on environmental performance. Therefore, the authors propose the following hypothesis:

H1b: Internal green practices of enterprises have a positive impact on environmental performance.

Singh et al (2016) assert that the implementation of green practices will facilitate the export of products to various developed and developing countries with strict regulations on importing environmental products. Therefore, the authors propose the following hypothesis:

H1c: Internal green practices of enterprises have a positive impact on export performance.

Laari (2016) concludes that both environmental cooperation with customers and environmental cooperation with suppliers can directly lead to financial improvements. Therefore, the authors propose the following hypothesis:

H2a: Environmental protection in cooperation with suppliers has a positive impact on financial performance.

The literature review indicates that a large number of researchers agree that in a manufacturing environment, strong relationships with suppliers help improve environmental performance, including Geffen and Rothenberg (2000), Lee and Klassen (2008), Vachon and Klassen (2008), Gimenez et al (2012), Tachizawa et al (2015), Wang et al (2017) and Thongrawd et al (2019). Therefore, the authors propose the following hypothesis:

H2b: Environmental protection cooperation with suppliers has a positive impact on environmental performance.

Research conducted by Karrim and Bhuiyan (2020) suggests that cooperation with suppliers can reduce production costs, which also improves export efficiency. Therefore, the authors propose the following hypothesis:

H2c: Environmental protection in cooperation with suppliers has a positive impact on export performance.

Enterprises can better address environmental requirements and suggestions downstream by partnering with customers. This activity directly improves customer satisfaction and increases the reputation of the business in the market, which leads to financial performance (Wolf, 2011; Tang et al., 2012). Therefore, the authors propose the following hypothesis:

H3a: Environmental protection in cooperation with customers has a positive impact on financial performance.

There are many studies that support the existence of a positive correlation between customer cooperation and the environmental aspect of sustainable business performance, such as Diabat et al (2013), Zhu et al (2013) and Ahmed et al (2020). Therefore, the authors propose the following hypothesis:

H3b: Environmental protection cooperation with customers has a positive impact on environmental performance.

Teng et al (2014) indicate that customers in export markets tend to give preference to products that are manufactured and transported by procedures with less negative impact on the environment, as well as preferentially seeking products and services with environmental certification and other environmental protection standards (Choi and Lee, 2019). The fact that businesses improve their position in front of customers helps them create higher value. Therefore, the authors propose the following hypothesis:

H3c: Environmental protection in cooperation with customers has a positive impact on export performance.

Gimenez Cristina and Sierra Vicenta (2013) show that environmentally assessing suppliers can positively affect financial performance. Therefore, the authors propose the following hypothesis:

H4a: Environmental supervision with suppliers has a positive effect on financial performance.

The findings of Murray (2000), Theyel (2001), Klassen and Vachon (2003), Laari et al (2016), Khan et al (2018), Thongrawd et al (2019) and Ahmed et al (2020) all show that monitoring suppliers improves environmental performance. Therefore, the authors propose the following hypothesis:

H4b: Environmental supervision with suppliers has a positive impact on environmental performance.

Research by Wu et al. (2017) found that environmentally supervising suppliers can improve the quality of products and reduce environmental risks in businesses' supply chains. This can help enterprises increase export efficiency by improving the reputation and reliability of their products. In this study, the research team expects that there is a relationship between environmental supervision with suppliers and export performance.

H4c: Monitoring supplier environment has a positive impact on export performance.

Green et al. (2012) and Khan et al. (2018) both demonstrate that customer monitoring has a significant positive impact on environmental performance. Therefore, the authors propose the following hypothesis:

H5b: Environmental monitoring from customers has a positive impact on environmental performance.

A great deal of research has pointed out that effective reversed logistics management allows enterprises to reduce costs as well as improving customer satisfaction (Dowlatshahi, 2000; Franke et al., 2006; Rubio, Chamorro and Miranda, 2008; Chen, 2010; Weeks et al., 2010). Reverse logistics impact on the bottom line is clear to industries with return rates varying from between 5% and 20% (Daugherty, Autry, and Ellinger 2001) up to approximately 50% (Prahinski and Kocabasoglu 2006). From there, the authors propose the following hypothesis:

H6a: Reverse logistics has a positive effect on financial performance.

Since reverse logistics not only plays an important role in the closed supply chain in general (Govindan et al., 2015) but is also considered as an aspect closely related to the sustainable supply chain (Gupta and Palsule-Desai, 2011) and green supply chains (Srivastava, 2007). Environmental aspects, besides financial aspects, are concerned the most. Therefore, the authors propose the hypothesis:

H6b: Reverse logistics has a positive impact on environmental performance

Increasingly, manufacturers realize that a production system should not be a one-way system; rather it is a two-way closed loop (Lai et al., 2013). In fact, in many instances, export processing enterprises need to handle returned products which can be resulted from damaged or defective shipments, incorrect delivery, overstocks, and customer return due to dissatisfaction. Adopting and implementing reverse logistics is an effective method to solve this situation (Lai et al., 2013). On that basis, the authors propose the following hypothesis:

H6c: Reverse logistics has a positive effect on export performance.

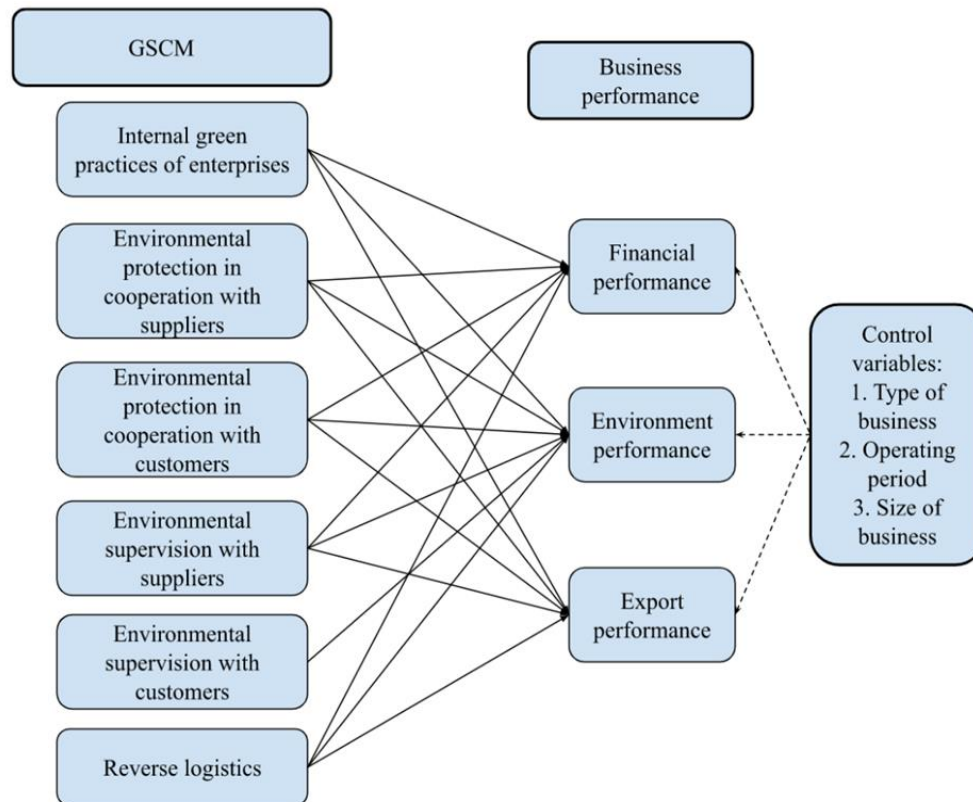


Figure 1. Proposed research model

Source: Authors' synthesis

3. Method

3.1. Research process

To achieve the research objectives, the authors use both qualitative and quantitative research methods. For qualitative research, the authors synthesize and analyze available data from reliable sources to clarify information related to the topic of green supply chain management within textile enterprises and transfer it into a relationship with business performance. Next, the quantitative research step is executed through SPSS 20 and AMOS 20 software, including assessing the reliability of the official scale through Cronbach's Alpha coefficient, performing exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). When the CFA results have satisfied all the conditions, the research team continues to deploy the linear structural model (SEM) to determine the influencing factors and the influence level of each factor. In addition, the authors also used one-way analysis of variance (One-Way ANOVA) to study whether there is a difference in business performance by business characteristics.

3.2. Official sample selection

This study uses the random sampling method. The list of enterprises participating in the survey is randomly drawn from the overall study of textile enterprises across the country.

3.3. Data collection

The study was conducted on 235 textile and garment enterprises of Vietnam. We conducted a survey of Vietnamese textile businesses from August 2022 to February 2023. After 6 months of collecting data via email and through direct interviews we collected 286 questionnaires. However, after the process of data entry and elimination of the inadequate responses, only 235 answers were qualified to be analyzed. The questionnaire was developed based on the studies of Tran Thi Thuy Hang (2021), Laari et al (2016), Yang et al (2013), Green et al (2012a), Flynn (2010), Zhu (2008), Vachon & Klassen (2006), Akyol & Akehurst (2003), Zou, Taylor & Osland (1998), which focus on assessing the impact of green supply chain management on business performance. Specifically, the survey consists of three parts: general business information, questions concerning green supply chain management and questions relating to business performance. The second and third part of the questionnaire (about green supply chain management and business performance) are based on two different five-point Likert scales, which are briefly explained at the beginning of each part.

4. Results

The reliability analysis results using Cronbach's Alpha coefficient and Corrected Item-Total Correlation are presented in Table 1. If the testing results of the components on the scale have the Cronbach's Alpha > 0.6 and the Corrected Item-Total Correlation > 0.3, the scale has sufficient reliability to perform the next testing steps (Nunnally and Bernstein, 1994). As the results of Table 1 show, there are 49 out of 51 variables satisfying the preceding conditions.

Table 1. Cronbach's Alpha Test

Factor	Number of variables		Cronbach's Alpha
	Before testing	After testing	After
Internal green practices of business	13	13	0.992
Environmental protection in cooperation with suppliers	3	3	0.765
Environmental protection in cooperation with customers	4	3	0.775
Environmental supervision from suppliers	4	4	0.875
Environmental supervision from customers	5	5	0.857
Reverse logistics	4	4	0.803
Financial performance	7	6	0.882
Environmental performance	4	4	0.899
Export performance	7	7	0.906

Source: Result from SPSS 20

Exploratory Factor Analysis (EFA)

Table 2. KMO and Bartlett's Test (2nd time)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.857
Bartlett's Test of Sphericity	Approx. Chi-Square	6887.883
	df	1128
	Sig.	0.000

Source: Result from SPSS 20

After removing unsuitable variables, the results of the second KMO test gave a KMO value of $0.857 > 0.5$ and Bartlett's test with $\text{Sig.} = 0.000 < 0.05$; showing a high level of significance. In addition, the Total Variance Explained is $59.559\% > 50\%$ and the eigenvalues of the factors are all > 1 , so it is appropriate to use Exploratory Factor Analysis. Apparently, these 9 extracted factors have condensed 59.559% and lost 40.441% of the observed variables.

Confirmatory Factor Analysis - CFA

$\text{CMIN/DF} = 1,511 (< 3)$; TLI, CFI respectively receive the values 0.908 and 0.915 , satisfying the condition greater than 0.9 ; $\text{RMSEA} = 0.047 (< 0.08)$ is appropriate. Therefore, the model is compatible with the research data.

All scales have composite reliability higher than 0.7 ; Specifically, it ranges from 0.778 to 0.933 and the Average variance extracted (AVE) is also higher than 0.5 . Therefore, the scales are generally reliable.

The analysis results also show that all the Standardized and Unstandardized Coefficients of the scale are higher than 0.5 ; at the same time, the AVE values are also higher than 0.5 as suggested by Gerbing & Anderson (1988) and Fornell & Larcker (1981), so it can be concluded that the factors have convergent validity.

The discriminant validity test results show that all p -values are less than 0.05 . Therefore, it can be asserted that the correlation coefficient between the pairs of factors is different from 1 at 95% reliability level. On the other hand, the AVE of each factor is larger than the square of the correlation coefficients between that factor and the others. Therefore, the author concludes that the scales have discriminant validity.

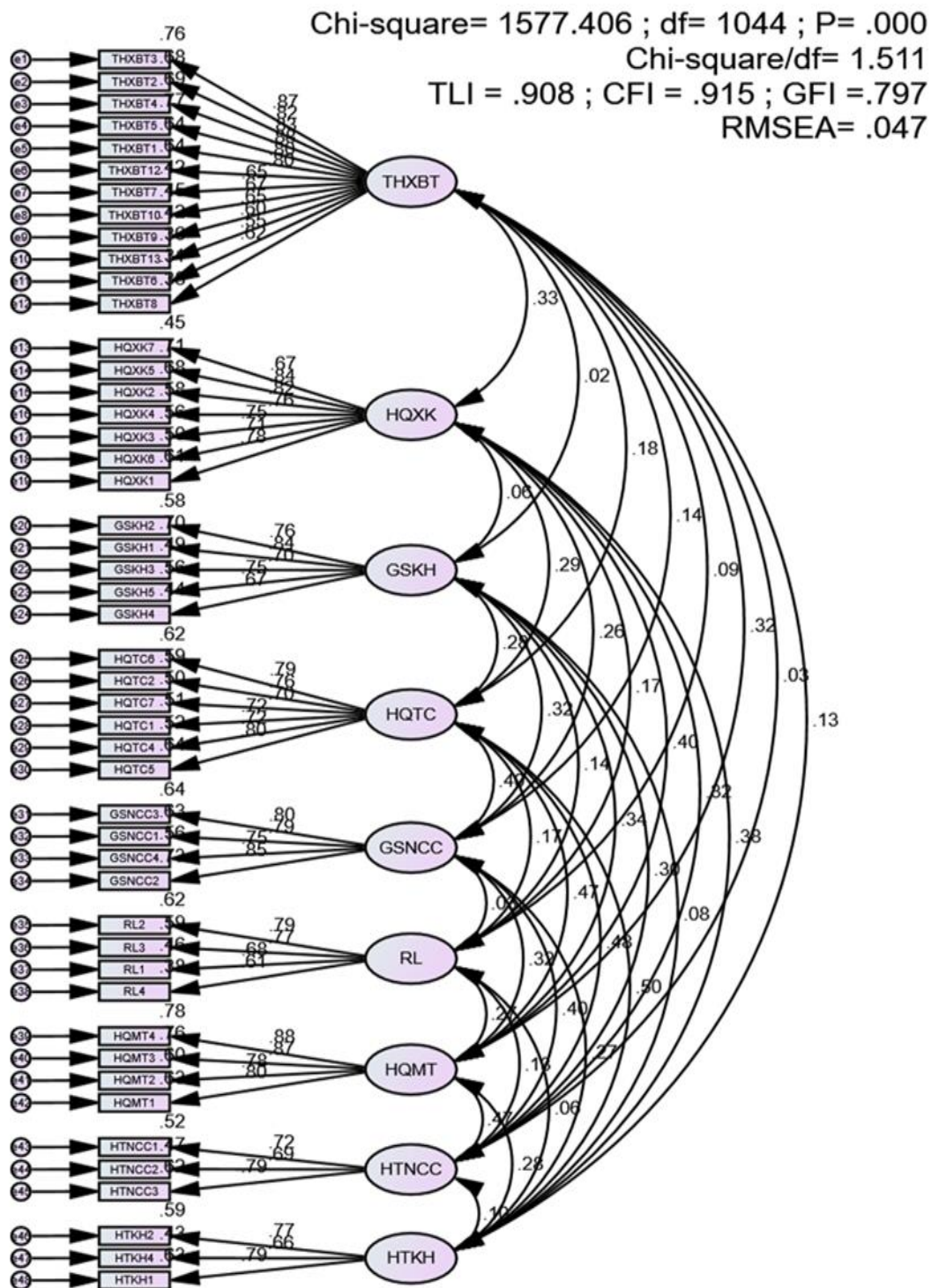


Figure 2. Confirmatory Factor Analysis Model

Source: Result from AMOS 20

After analyzing the Structural Equation Modeling SEM, the analysis results show that the Chi-square = 1587,038; CMIN/DF = 1,513 (< 3); CFI = 0.914 (> 0.9); TLI = 0.908 (> 0.9) and RMSEA = 0.047 (< 0.08). These figures all satisfy the conditions, so it can be concluded that the measurement model is suitable for the market data.

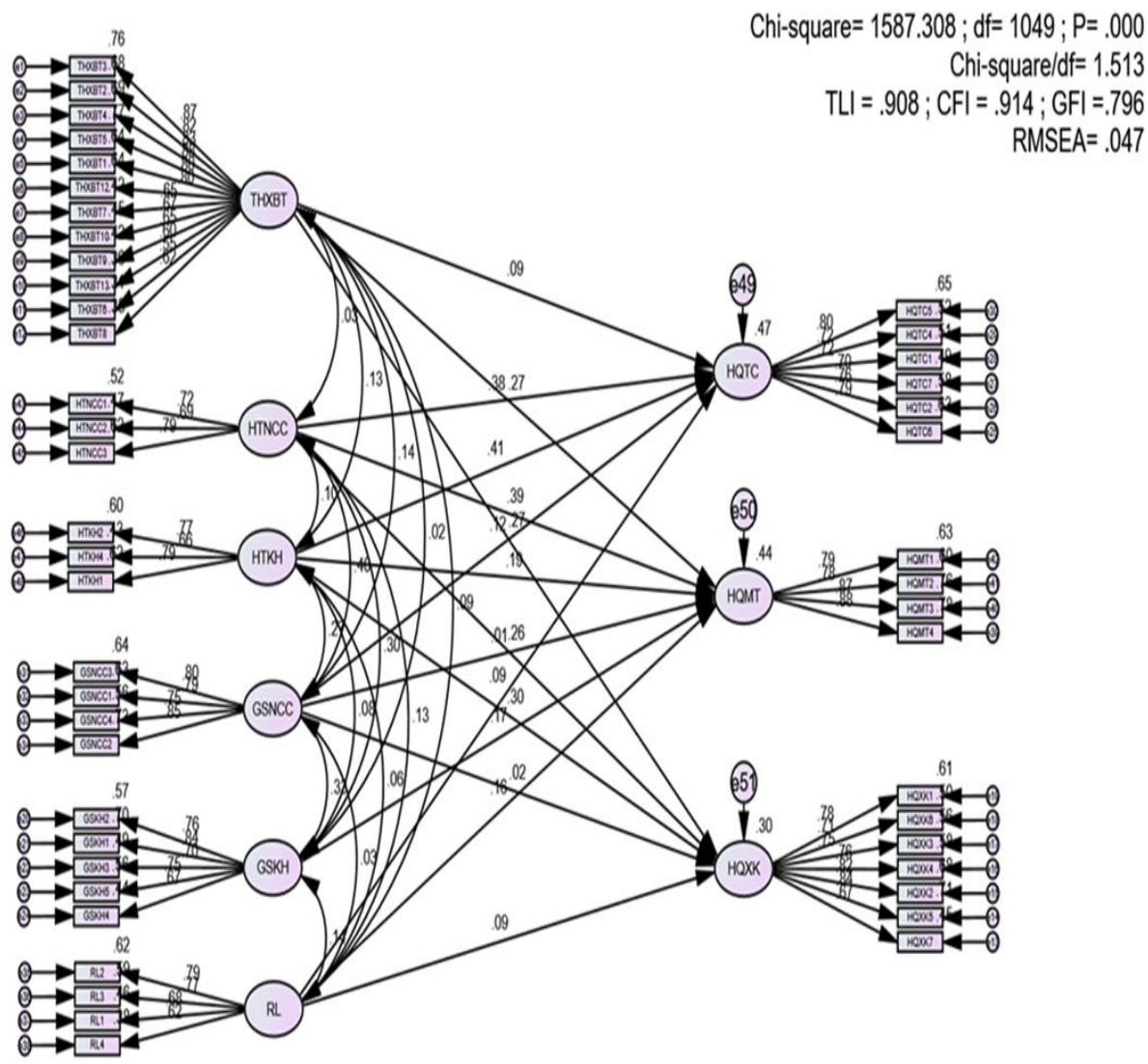


Figure 3. SEM Result

Source: Result from AMOS 20

Table 3. SEM Result

Hypothesis	Correlation between factors		Unstandardized Coefficient	Std. Error of the Estimate (S.E.)	Critical Value (C.R.)	P_value	Standardized Coefficient
H1a	HQTC	<--- THXBT	0,108	0,070	1,539	0,124	0,092
H1b	HQMT	<--- THXBT	0,273	0,061	4,449	***	0,266
H1c	HQXK	<--- THXBT	0,227	0,056	4,061	***	0,270
H2a	HQTC	<--- HTNCC	0,339	0,070	4,854	***	0,383
H2b	HQMT	<--- HTNCC	0,299	0,061	4,934	***	0,387

Hypothesis	Correlation between factors			Unstandardized Coefficient	Std. Error of the Estimate (S.E.)	Critical Value (C.R.)	P_value	Standardized Coefficient
		<---						
H2c	HQXK	<---	HTNCC	0,165	0,051	3,245	0,001	0,262
H3a	HQTC	<---	HTKH	0,493	0,089	5,515	***	0,408
H3b	HQMT	<---	HTKH	0,205	0,071	2,909	0,004	0,195
H3c	HQXK	<---	HTKH	0,258	0,066	3,929	***	0,299
H4a	HQTC	<---	GSNCC	0,133	0,078	1,695	0,090	0,122
H4b	HQMT	<---	GSNCC	0,014	0,069	0,196	0,844	0,014
H4c	HQXK	<---	GSNCC	0,019	0,059	0,321	0,748	0,024
H5b	HQMT	<---	GSKH	0,175	0,068	2,561	0,010	0,171
H6a	HQTC	<---	RL	0,077	0,055	1,397	0,163	0,089
H6b	HQMT	<---	RL	0,121	0,048	2,513	0,012	0,161
H6c	HQXK	<---	RL	0,055	0,042	1,315	0,189	0,089

(Note: ***<0,001)

Source: Result from AMOS 20

The SEM analysis results show that:

- In the relationship with Financial performance: Environmental protection in cooperation with customers with standardized coefficient of 0.408 has a stronger influence on Financial performance than Environmental protection in cooperation with suppliers does (standardized coefficient = 0.383).

- In the relationship with Environmental performance: Environmental protection in cooperation with suppliers has the strongest influence with the standardized coefficient of 0.387; followed by Internal green practices of business (0.266); Environmental protection in cooperation with customers (0.195); Environmental supervision from customers (0.171) and finally Reverse Logistics (0.161).

- In the relationship with Export performance: Environmental protection in cooperation with customers has the standardized coefficient of 0.299, which has a stronger influence than Internal green practices of business (0.270) and Environmental protection in cooperation with suppliers (0.262).

In summary, the test results demonstrate that the research model is highly compatible with the research data of the textiles sector in Vietnam with 10 accepted hypotheses.

Table 4. Result of hypothesis testing

Hypothesis		Result
Green supply chain management and Financial performance		
H1a	Internal green practices of business has positive impact on Financial performance	Not accepted
H2a	Environmental protection in cooperation with suppliers has positive impact on Financial performance	Accepted
H3a	Environmental protection in cooperation with customers has positive impact on Financial performance	Accepted
H4a	Environmental supervision from suppliers has positive impact on Financial performance	Not accepted
H6a	Reverse logistics has positive impact on Financial performance	Not accepted
Green supply chain management and Environmental performance		
H1b	Internal green practices of business has positive impact on Environmental performance	Accepted
H2b	Environmental protection in cooperation with suppliers has positive impact on Environmental performance	Accepted
H3b	Environmental protection in cooperation with customers has positive impact on Environmental performance	Accepted
H4b	Environmental supervision from suppliers has positive impact on Environmental performance	Not accepted
H5b	Environmental supervision from customers has positive impact on Environmental performance	Accepted
H6b	Reverse logistics has positive impact on Environmental performance	Accepted
Green supply chain management and Export performance		
H1c	Internal green practices of business has positive impact on Export performance	Accepted
H2c	Environmental protection in cooperation with suppliers has positive impact on Export performance	Accepted
H3c	Environmental protection in cooperation with customers has positive impact on Export performance	Accepted
H4c	Environmental supervision from suppliers has positive impact on Export performance	Not accepted
H6c	Reverse logistics has positive impact on Export performance	Not accepted

Source: Authors' synthesis

5. Discussions and Conclusions

On the basis of research model and collected data from 235 surveyed enterprises, the authors draw some conclusions on the hypotheses about the impact of green supply chain management on business performance:

Firstly, in terms of environmental performance, the results show that most green supply chain management practices have a positive impact on environmental performance, except for Environmental supervision from suppliers which does not create a significant direct impact. The factor having the strongest impact on environmental performance is Environmental protection in cooperation with suppliers, with the standardized coefficient of 0.387.

Secondly, in terms of financial performance, the research results also indicate that Environmental protection in cooperation with customers have stronger influence on financial performance than Environmental protection in cooperation with suppliers, while Internal green practices of business, Environmental supervision from suppliers and Reverse logistics do not have direct impact.

Thirdly, in terms of export performance, the results show that there is a direct and positive impact of Internal green practices of business, Environmental protection in cooperation with suppliers and customers on export performance. Specifically, Environmental protection in cooperation with customers with the standardized coefficient of 0.299 has the strongest influence.

Finally, the results of testing the difference in business performance by enterprise characteristics point out that the larger the enterprise size is, the higher environmental performance and export performance are; the longer business's operating time is, the better the financial and environmental performance are; however, distinct types of business ownership make no difference in business performance.

Recommendations

The study has focused on examining the relationship between green supply chain management and the business performance of enterprises in the Vietnamese textile industry. Although the statistics and results are objective due to data limitations, through the research results, the authors are able to make several conclusions about the impact of green supply chain management on the business performance of Vietnamese textile enterprises and thereby suggest some solutions to enhance green supply chain management practices.

Analyzing the estimated results from the model has helped the authors bring up with some specific results:

First, most green supply chain management practices have a positive impact on environmental performance, except for the Environmental supervision in cooperation with suppliers practice which does not have a significant direct impact. In which, the factor showing the strongest impact on environmental performance is the Environmental protection in cooperation with suppliers. Through suppliers' sharings about experiences, lessons about innovation in improving technology, production and distribution process in an

environmentally friendly way, businesses can exchange in order to help develop their environmental management capacity as well as to acquire and transform the knowledge learned from suppliers into intangible assets to apply to their businesses, thereby develop the environmental management ability of both sides.

Second, the implementation of green supply chain management in the textile industry in particular and the economy in general is essential and has a positive impact on financial performance. Implementing green supply chain management will help businesses increase the efficiency of environmental management, improve their competitiveness, representation and reputation, and thus improve their financial performance.

Third, there is a direct and positive impact of the Internal green practice of business, Environmental protection in cooperation with suppliers and customers factors on export performance. Textile enterprises can enhance their global competitive advantage, improve their export performance by conforming international environmental standards through enhancing the use of green materials, green production, minimizing the use of hazardous materials, chemicals and unsafe machinery.

In general, within the study area of Vietnam with domestic textile enterprises as researched targets, it is apparent that Environmental protection in cooperation with customers and suppliers is a comprehensive option due to the positive impact on all three aspects: financial, environmental and export. In addition, cooperation will generally bring better results than environmental supervision. The study also shows that businesses with different characteristics (size, operating period and ownership type) also have different effects on business performance.

The practice of GSCM needs to be carried out inclusively from the business itself and all stakeholders, as well as throughout the supply chain from the preparation of input materials to the product quality assurance before delivery. Since all activities in the textile supply chain are inherently linked to each other, it is not enough to apply only one or a few steps in the entire chain, but to perform well in all aspects of the supply chain and the enterprises to create a unified and complete overall connection. In order to do that, the major requirement is that each business needs to have a clear and correct awareness of the value that GSCM can provide, going beyond the benefits for the business itself is the contribution to the sustainable development of the domestic textile industry in particular and the overall national economy in general. Thereby, the research team proposes a number of solutions to enhance green supply chain management activities as follows:

For textile enterprises, it is crucial to be properly aware of the necessity and importance of implementing green supply chain management in the present situation; strengthen and improve the internal quality of individuals being in charge of green supply chain management. In addition, it is critical to promote cooperation and supervision from customers to understand the current requirements and forecast their needs in the future, as well as to connect and closely support suppliers to transform knowledge obtained from them into intangible assets to increase business performance.

For the Government, it is vital to develop preferential policies that promote enterprises to produce and use green materials and increase environmental tax on polluting materials. Along with that, it is necessary to strengthen support for enterprises to participate in research and transfer advanced technology in the textile sector for the purpose of sustainable development; Further, enhance the association with textile enterprises as well as supporting enterprises in the process of training managers and highly qualified experts.

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THE ROLE OF GREEN INNOVATION IN PROMOTING THE CIRCULARITY PERFORMANCE IN EUROPE

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Abstract

This paper shows the importance of environmental innovation on the circularity performance of each country that creates favorable conditions to help countries move towards the circular economy. Six measures are used to reflect environmental innovation, including the percentage of enterprises that invest in environmental innovation, the percentage of enterprises implementing environmental innovation activities, the number of ISO 14001 certificates, patents related to environmental innovation, the total R&D personnel and researchers, and the amount of green early-stage investments. We provide empirical evidence that innovation in environmental activities is crucial for an economy's circularity performance, especially in the long term. Environmental innovation is also an essential enable of circularity.

Keywords: *green innovation; circularity performance; economic circularity; European countries.*

1. Introduction

As humans continue to abuse and misuse natural resources, ecosystems worldwide are on the verge of collapse. The environment has already reached several tipping points, increasing the possibility that irreversible changes could occur in the future. There has been a growing recognition of the necessity to decouple social and economic development from the extraction of resources and waste disposal in recent decades. In the 21st century, one of the most challenging issues appears to be balancing economic growth among competing countries while raising the standard of living for a population projected to exceed 10 billion in the mid-century. The OECD (2012) reports that the sustainable development of global biodiversity cannot be compromised by a limited number of natural resources.

A circular economy is gaining traction because of the limitations of conventional economies. Business organizations, industrial organizations, and national agendas have been urged to place closed-loop thinking at the core of the "circular economy" (CE) (Preston, 2012). In recent years, CE has grown in importance as a study issue with the support of institutions like the UN and the EU (UNEP, 2014). However, there remains confusion over what changes need to be made and how they can be achieved (Schulte, 2013), even though

change is necessary for businesses and governments. Although "eco-innovation" (EI) is a critical factor in promoting change, the sustainability transition is seen as the primary driver of change. According to Carrillo et al. (2010), innovation can take various forms, including products, processes, marketing, and organizational benefits. Essentially, sustainability has been acknowledged by the European Commission as an integral component of achieving "environmental benefits," which include more efficient use and consumption of resources (EC, 2012) and more competitive business models and technologies (Al-Ajlani et al., 2021). In policy, transitioning to a circular economy has been referred to as a "catalyst" (Russo, 2018).

However, several researchers have examined the EI's significance to a CE rather than using methodologies that focus on the confluence of CE and EI (EIO, 2016). Innovation efforts should be coordinated with sustainable approaches to bring about a tech-economic paradigm shift (Mirata & Emtairah, 2005). EI can be used to facilitate the changes needed to deploy and reinforce the CE framework in its current form. It is still unclear, however, how EI will facilitate a pro-CE transition. A relationship between environmental innovation and circularity is explored to contribute to the debate regarding sustainable transition. It is the first study to provide a theoretical basis for examining the effect of countries' economic inclusion on circularity performance. The six factors that measure environmental innovation include the percentage of investments in environmental innovations, the percentage of enterprises implementing environmental innovations, the number of ISO 14001 certifications, the number of patents related to green innovation, the number of researchers and R&D personnel, and the total amount invested in companies at their inception. This article uses several measures to assess the efficiency of the circularity process. Circularity can be measured by the amount of waste generated, patents relating to circularity, circular materials used, recycling rate, biowaste recycling, and e-waste recycling. Combining various techniques and practical approaches, we analyze a sample of European countries from 2012 to 2019. Because no other area offers thorough metrics of circularity, this database was selected. The other measurements, which are relatively dated and unable to reflect the diversity of circularity, do not accurately depict circularity performance. After continually analyzing the cross-sectional dependence and stationarity, we employ the PCSE (panel-corrected standard errors) model in the following section to study the relationship between EI and circularity. Our findings are further confirmed by utilizing the FGLS (feasible generalized least squares) model to account for heteroscedasticity. Additionally, the ARDL (autoregressive distributed lag) approach is linked with the PMG (pooled mean groups) estimator to assess both short- and long-term effects. Both time-fixed impacts and country-specific effects can be addressed with PMG-ARDL.

An integrated, dynamic corporate model and pro-CE governmental policy will promote this transformation. Therefore, research with a broader scope seems essential to understanding its dynamics. The remaining sections are organized in the manner shown below. In Section 2, a review of the literature is done before the creation of hypotheses. A model, data, and estimating strategy analysis is done in Section 3. The following section includes a discussion in addition to the empirical findings. The final stage will examine research findings and their policy implications.

2. Literature review: Circular economy and eco-innovation

2.1. A brief review of the link

It seems impossible to obtain CE on its own, given the link between CE and EI that is intuitively obvious. However, the specifics of this have yet to be determined. In actuality, not all aspects of CE require innovation, nor are all aspects of CE related to an EI. There will undoubtedly be some overlap between the two, however. To decide which improvements will be most suitable for CE models and what technological modifications are required to create a CE, it is crucial to have a deeper grasp of these two ideas.

Since Joseph Schumpeter's seminal writings (1934), innovation has been recognized as more than newness (Schumpeter, 1934). Instead, this is what happens when production variables are combined with fresh ideas. Adapting to a particular context, such as integrating a brilliant idea into an unconventional economic or institutional situation, requires more than technical competence (Fagerberg et al., 2010). To put it another way, innovation does not just refer to improvements in science and technology. This viewpoint has led to the conclusion that innovation is not a natural outcome of increasing research and development, nor is it passively impacted by market factors (Caraça et al., 2009).

Innovation does not necessarily result in more beneficial outcomes for welfare or sustainability: Sometimes, tackling new issues does not lead to improved outcomes (Soete, 2013). Technological viability is not necessarily a guarantee of morally righteous conduct or environmental sustainability (UNEP, 2011). In retrospect, the mass production methods developed in the 20th century that were extraction-based and carbon-intensive create essential issues. This may result in some innovative concept revisions or some intellectual property damage. A crucial transitional element is altering "how we innovate." (Schot & Steinmueller, 2018). A transition is a complicated, dynamic process in which numerous people take part, specific actions are taken, and ongoing activities last for a considerable time. During this time, new organizational structures, products, and business models replace or supplement the existing ones characterized by an interconnected series of technological and non-technology advancements. As the environment became a significant policy concern, innovation ideas began to focus on transitional issues and broader societal concerns (Boons et al., 2013; Rennings, 2000). During the industrial era, there was no scope for this growing 'pro-environment' innovation agenda (Freeman & Soete, 1997).

As the environmental perspective has entered and spread, there have been specific linguistic changes in innovation studies. As a dynamic process encompassing several activities and changing over history, the idea of innovation has become more and more prevalent (Castellacci et al., 2005). In addition to the "high-tech" sector's suppliers' research and development, social and cultural elements influenced its development. Several studies on transition and sustainable development have benefited research on innovation (Smith et al., 2010). Studies on sustainability and transition focus on science and technology as a socially embedded process; knowledge and mental models are connected depending on user skills, institutions/regulations, and infrastructure, and consumer expectations are shaped (Markard et al., 2012).

There is no agreement on how sustainability transition techniques should be implemented. Numerous theoretical methods, including those based on evolutionary economics and niche management, are helpful and coexist with a variety of opinions (Kemp et al., 1998) and technology innovation systems or approaches that utilize multiple levels of analysis to understand sociotechnical changes (Geels, 2011) or innovative ecosystems are some examples. Even though creativity in terminology can be viewed as an indication of the concept of restlessness, the "Proliferation of labels" may hinder development in a field (Barney, 2017). "Environmental innovation refers to innovation that benefits the environment (van den Bergh et al., 2011). The notion of "sustainable innovation" indicates an innovation that considers ecological, economic, and social factors, thus taking into account spatial, temporal, and cultural contexts, in addition to product and process innovations (Clark & Charter, 2007) as organizational models. According to Cuerva et al. (2014), "green innovation" involves developing, improving, or creating new products or processes that promote environmental sustainability. In recent years, "Business model innovation" has also gained traction within the semantic field. In this case, business model innovation enhances the organization's ability to produce, deliver, and capture value to maximize its contribution to society (Bocken et al., 2014).

Given that (E)recent's expansion of its purview beyond its initial emphasis on "end of pipe" technologies, Economic performance today is described as creating a business climate that does not impede sustainable development (i.e., economically, ecologically, and socially sustainable). The European Commission (EC) describes it more favorably as a strategy for accomplishing or striving for actual advancement in the pursuit of sustainable growth, which includes minimizing environmental damage, enhancing environmental resilience, or making more responsible use of natural resources (EC, 2011a). EI is crucial to sustainability and can promote enhanced competitiveness without negatively affecting society and the environment (OECD, 2009). (EC, 2011b). Despite some irreducible variability, there may not be many worthwhile attempts to simplify and consolidate in this case. Following the choice in the article, the word "environmental innovation" will be used to refer to a standardized and inclusive phrase for all ecologically conscious innovations. Innovations that consider the environment positively impact the environment or address environmental issues. We use EI and CE together as the fulcrum of establishing a new transparent, coherent paradigm for tech-economic development in light of the revamping of studies on "transformative innovation." (Schot & Steinmueller, 2018).

2.2. Refocusing and untangling the concept of eco-innovation

Understanding EI and its dimensions is necessary for policy-making, entrepreneurship, and academic research. An innovation that prevents, mitigates, or recovers environmental damage can be defined as a broad, applicable, operational definition. According to Barbieri et al. (2022) and Veefkind et al. (2012), a definition of this type must include: (i) Environmentally friendly innovation (e.g., green innovation); (ii) Creating clean and efficient results for the market (e.g., environmental innovation); (iii) Socially responsible and lasting benefits (e.g., sustainable innovation); (iv) Change of the whole business model (i.e., innovation of a sustainable business model).

This definition offers a strong foundation for finding other sides of the argument and providing an analysis of EI from other angles. EI is studied from three different perspectives: innovations (targets), mechanisms of change (mechanisms), and overall effects, in accordance with the innovation recommendations in the Oslo Manual (OECD, 2009) and the existing EI typologies (impacts). EI can be defined as an innovation that: a) has a positive impact on the environment; b) provides cost-efficiencies, market enhancements, or regulatory considerations while preventing natural capital damage; c) creates new or enhanced products, services, technologies, organizational, or marketing strategies; d) reflects radical change or incremental growth; and e) involves single or multiple actors. This definition puts this discussion into operational terms.

2.3. Changing to a sustainable approach through CE-friendly approaches: a family of CE-friendly concepts

With the signature of the inaugural accord by 175 governments (including the US and China as the founding signatories), the European Union, and 174 countries following the Paris Climate Conference 21, a high degree of expectation has been generated (UNFCCC, 2016). Diverse entities compete in a dynamically dynamic global market, but their interests are not aligned as they deal with the effects of ongoing environmental degradation while trying to stay competitive. The new methods would emphasize prolonging the useful lives of materials, reusing them, remanufacturing them, and recycling them while separating resource consumption from development (UNEP, 2011). While it is increasingly recognized that change is necessary, the specific pathway of transition is much less clearly defined. Literature has proposed several approaches to frame the CE discussion, which has shaped our understanding of it today.

CE is based on several concepts that are not new. Utilizing waste materials from animals (e.g., pelts, blood, and bones) for clothing, shelter, weapons, and jewelry dates back to the Neolithic period (Desrochers, 2000). Similar to today, cooperative arrangements between manufacturers and consumers were already in use during the 19th century through the exchange of byproducts in exchange for services (Desrochers, 2000, 2002). It emerged during the latter half of the twentieth century, along with concerns about resource exhaustion on a planetary scale that emphasized the necessity of finding a new equilibrium within the "System of ecological cyclicality"; Georgescu-Roegen's (1986) view of economic complexity as a function of entropy. A whole chapter by Pearce & Turner (1989) argues that environmental values are economically viable in the light of Boulding and Georgescu-claims Roegen's that natural systems are capable of producing garbage. However, they absorb and recycle it as opposed to conventional open-ended economies. This is the first discussion of CE as a label. The authors make a case for circular material flow in the economy that man has created. A loop system that replicates nature will result in fewer fresh inputs and slower depletion of the environment's resources and trash (by sourcing materials and eliminating waste). Instead of merely trashing the environment or producing things that will become outdated over time, resource use should create new resources that can be recycled.

Frosch & Gallopoulos (1989) popularized the concept of CE in industrial ecology, particularly in the US (1998). The literature on industrial ecology proposes that organizations adopt natural systems' tactical approaches. The idea of "material symbiosis," which uses waste byproducts to make materials for other processes and enterprises, is a crucial part of the theory (Kiefer et al., 2019). Numerous European institutions have adopted the idea of industrial symbiosis, which is growing in popularity. This essay's primary focus is identifying a "systems integration" strategy whereby businesses exchange byproducts and complete their material cycles. This strategy has been seen as an essential part of implementing CE.

The "Cradle to Cradle" method, one of the cornerstones of CE, highlights the tight production requirements that must be transformed into a self-feeding services nexus that collaborates to produce jobs, save resources, and cut waste (W. R. Stahel & Reday-Mulvey, 1981). Eventually, it was realized that services have the potential to revitalize the economy. In 2010 and 2013, Stahel (2010, 2013) claimed that by offering "services," manufacturers might extend the lifespan of their products while using fewer fresh inputs. This benefits both producers (who can continue to control their assets) and consumers (who only pay for the advantages).

In addition, several concepts that follow the 3Rs of "reduce, reuse, and recycle" are discussed, as well as the conception of a closed loop, such as zero emissions or a system where everything is used and cycles of nature are performed (Pauli, 2010). McDonough & Braungart (2010) have furthered the "cradle to cradle" concept; and the concept of "zero waste." A concept that emerged from multiple ideas and schools of thought, it has many applications today. As the CEs have different meanings and responsibilities for different stakeholder groups, all of these contributions should be considered in their respective contexts (EIO, 2016).

2.4. The formal concept of circular economy

To "bring circular economy theory into action through industry sectors, major economic areas, and urban demonstration projects," two batches of circular economy pilot projects were carried out between 2005 and 2007. The Circular Economy Promotion Law was passed in 2008 and came into effect in 2009 in order to promote energy efficiency, sustainable development, and environmental protection (Geng et al., 2012). A key message of the 12th Five-Year Plan (2011E15) was eco-industrial importance.

The EU unveiled a circular economy action plan to enter the western policy sphere in 2015 (EC, 2015). The CE study has received significant support from think tanks and private organizations in recent years, notably the Ellen MacArthur Foundation (EMF). This momentum appears to be influenced by many factors. It has been noted that the CE concept offers both financial advantages and commercial solutions simultaneously, making it more practical and real-world than other environmental conservation strategies (Sauvé et al., 2016). Finland, France, the Netherlands, Spain, and Sweden are a few nations that have emphasized its potential to increase trade balance, decrease CO₂ generation, and create jobs. According to the Groupo Interministerial Economia Circular from 2017, Portugal has also

started holding discussions over its CE Action Plan for 2017 through 2020. Along with considering the idea as a tool for enacting policy, the EU Circular Economy Action Plan's (EC, 2017) financial prospects have also been considered.

As a result, the CE cannot be considered a consensus concept, nor can its definition be agreed upon (Kirchherr et al., 2017). Many other definitions have been offered by organizations, including the United Nations, non-governmental organizations, and academic institutions. While the definitions highlight specific components that describe what the CE entails, they also highlight a set of fundamental elements: i) minimizing waste and utilizing renewable resources efficiently; ii) extending the life cycle and reconceptualizing systems; (repairing, reconditioning, and remanufacturing; procuring and outsourcing; and innovating on business and procurement models); and iii) valorizing output reductions and waste (recycling, recovering, and valuing byproducts and waste).

In an attempt to extend Freeman & Soete's (1997) work, de Jesus et al. (2018) propose the notion of clean convergence, i.e., convergence between technological and social subsystems capable of overcoming the problems associated with Fordist, depletion-prone, carbon-intensive times. CE is the most durable, self-reinforcing, and enduring among all positive congruences.

In order to understand the level of granularity of CE implementation, three levels of analysis are required (Ghisellini et al., 2016). An individual actor may be targeted by CE at a micro level, especially a company (Zhu et al., 2010). Examples include initiatives to limit resource usage, the use of labels, eco-friendly consumer patterns, and environmentally friendly production techniques. On a meso level, it concerns actor interactions, particularly between businesses. Examples include the management of green supply chains and industrial symbiosis (Zhu et al., 2010). On a national or international scale, CE has typically been associated with legislation, regulatory impact evaluations, zero-waste policies, and communities that prioritize recycling.

The following are some definitions of CE in this context: a) Towards "clean congruence" through the direction of new institutional arrangements balancing environmental concerns with socioeconomic performance while simultaneously promoting technological development that is independent of finite resources; b) the development of multi-level frameworks (microscopic, mesoscale, and macroscale) for reshaping and reorienting resilience and sustainability in production and business models; and c) a concept.

2.5. The circular economy and eco-innovation: connecting the two

Cheap resources drove the 20th century for widening markets, and the early 21st century has brought heightened volatility in prices and uncertainty in the geoeconomic arena (Barney, 2000). Despite recycling being considered essential, waste production is still relatively unchecked (WWF, 2014). By 2050, global consumption is expected to triple due to a dramatic rise in consumption over the last two centuries (van Langen et al., 2021). Consumers are growing more conscious of climate change, and environmental regulations are tightening. A closed-loop economic model that encourages innovation along the entire

value chain can be an alternate strategy to reduce the waste of resources and energy in a competitive, dynamic, but limited environment, as advocated by UNEP (2006, 2011, 2012).

Since the Lisbon Strategy was announced in 2000, the EU has assumed a global leadership position in creating and implementing sustainable economies and communities. The EC has recently created several flagship programs, and action plans to support the transition to sustainability, including EI (EC, 2011a); and efficiency in resource use (EC, 2011c). The Circular Economy Action Plan confirms that the EU is committed to creating a circular economy and highlights the direct connection between CE and innovation and EI (EC, 2017). This argument says that the CE depends on methodically implementing eco-innovation, which encompasses all participants in value and supply chains (EC, 2016).

It is a dynamic company that constantly rewrites overlaps between diverse activities to change manufacturing processes and consumption patterns (EMF, 2013, 2012). Due to the advent of new technology as well as new business models and structures, Tregner-Mlinaric & Repo (2014) identified EI as a crucial tool for achieving this. Consequently, it is possible to investigate the EI-CE linkages, which is the study's main objective.

Even if the relationships between the two concepts are intricate, there are still numerous parallels. Both have ambiguous borders that cover many related words. Even though it seems intuitively evident that they are and that CE cannot be attained without EI, it is yet unknown how CE and EI are connected. EI affects more than just the CE; it can also have an impact on the CE in other contexts. Even though there is an undeniable connection between the two, a more in-depth examination may make use of both the micro and macro levels of CE (vertical axis) as well as all the previously described factors (horizontal axis) to provide better insight. The horizontal axis of the picture depicts the dimensions of each level of CE in relation to the EI dimensions. The subsequent literature study distills useful insights in addition to offering supporting data. Specific sorts of change must be implemented once a closed-loop, production-utilization congruence has been reached through a deeper comprehension of the overlap between CE and the EI. These self-reinforcing tendencies can be tracked and mapped by policy and decision-makers in their search for CE transition strategies. The concept of "clean congruence" resolves discrepancies between ecological and economic sustainability from several angles in the context of a new (green, innovative) techno-economic paradigm.

3. Method

A model explaining the nexus between environmental innovation performance (EPI) and circularity performance (CIR) is as follows:

$$CIR_{it} = \beta_0 + \beta_1 EPI_{i,t} + \beta_2 EG_{i,t} + \beta_3 TS_{i,t} + \beta_4 FDI_{i,t} + \beta_5 IND_{i,t} + \beta_6 EPI_{i,t} + \beta_7 NR_{i,t} + \beta_8 DM_{i,t} + \varphi_t + \omega_i + \varepsilon_{ijt}, \quad (1)$$

where i and t respectively represent country i and year t . φ_t and ω_i are added into the model to capture the country and year-fixed effects, and ε_{ijt} is the error term.

Circularity performance (CIR)

To measure the performance of circularity in European countries, we use six different measures, including the proportion of the municipal waste generated per capita (kilograms) is measured by the CIR_MW; the number of patents related to recycling and secondary raw materials (*CIR_PA*); circular material usage (*CIR_MA*) calculated as the circular material use rate (%); CIR_RW performance based on all waste excluding major mineral waste (%); the recycling rate of biowaste (*CIR_RB*); CIR_RE measures the recycling rate of e-waste (%). Statistics are taken from Eurostat (2012-2019).

Key explanatory variable:

Following Al-Ajlani et al. (2021), Six metrics are used to assess the effectiveness of EI in European nations, including the proportion of businesses making EI investments (% of firms surveyed); the proportion of businesses engaging in EI activities (such as implementing resource efficiency actions, sustainable products, or ISO 14001 certifications) based on the share of certified firms among firms surveyed; the proportion of businesses with 14001 registrations; and the number of businesses with EI investments (per min population). We investigate the effects of total investments in R&D employees and researchers (EI RD), evaluated as a share of total employment, and the total value of green early-stage investments per capita (EI GREEN), to further illuminate this connection. The OECD Statistics from 2011 to 2019 are the sources for these variables.

Control variables:

To determine the control variables, we used literature-based empirical studies, especially Bu et al. (2019) and Nham & Ha (2022). We have taken economic growth (*EG*), trade share (*TS*), industrialization level (*IND*), and democratization level (*DM*) as explanatory variables. We also use the percentage of net FDI inflows in our theoretical model. Following Le & Nguyen (2019), we consider the effects of natural rents (*NR*), while a level of democratization (*DM*) is also added. These variables are taken from World Development Indicators (WDI). Information and statistics about all variables are provided in Table 1. The final sample contains cleaning data from 18 countries during the 2012-2020 period. As shown in Table 2, all variables that suggest a positive correlation between Municipal waste per capita and EI are included in the correlation matrix.

Notably, the project's short-term and long-term effects are considered. Accordingly, Pesaran & Smith (1995) developed the ARDL method. Considering the potential presence of endogeneity in this model, a pool means group (PMG) is used to account for causal relationships between variables and heteroscedasticity across countries. To begin estimating the relationship between the two variables, we use the Kao (1999), Pedroni (2004), and Westerlund (2005) 's tests. In Table 4, we find that economic complexity, product proximity, and circularity co-integrated over the long run.

To shed light on the distinct effects of environmental innovation, we concentrate on nonlinear impacts of economic complexity and product proximity on circulation in the subsequent analysis.

Table 1. Description of Variables

Variable	Definition	Measure	Source	Obs	Mean	SD	Min	Max
CE_MW	Municipal waste per capita	Generation of municipal waste per capita (Kilograms per capita)	Eurostat	171	478.49	129.45	239.00	830.00
EI_ENTER	Enterprises with Environmental innovation	The percentage of enterprises implementing environmental innovation investment (% of surveyed firms)	OECD.Stat	162	77.60	36.21	0.00	155.00
EI_ACT	Environmental innovation activities	The percentage of enterprises implementing environmental innovation activities (e.g., implementation of resource efficiency actions, sustainable products, or ISO 14001 certificates) (% of surveyed firms)	OECD.Stat	162	94.09	32.91	38.00	171.00
EI_ISO	Enterprises with new 14001 registration	Number of ISO 14001 certificates (per min population)	OECD.Stat	162	93.31	46.77	0.00	168.00
EI_PATENT	Environmental innovation-related patents	Environmental innovation-related patents (per min population)	OECD.Stat	162	127.40	72.89	0.00	322.00
EI_RD	Investments in R&D personnel and researchers	Total R&D personnel and researchers (% of total employment)	OECD.Stat	162	113.98	60.47	25.00	226.00

Variable	Definition	Measure	Source	Obs	Mean	SD	Min	Max
EI_GREEN	Environmental early-stage investments	Total value of green early-stage investments (USD/capita)	OECD.Stat	162	105.91	114.01	0.00	422.00
EG	Economic growth	The real GDP per capita (constant 2010 US dollars).	WDI	171	36.93	27.75	1.02	111.15
TS	Trade share	The proportion of GDP.	WDI	171	1.29	0.70	0.55	4.08
FDI	Net inflow of foreign direct investment	The proportion of GDP.	WDI	171	0.04	0.27	-1.54	1.63
IND	Industrialization level	The value added to GDP.	WDI	171	0.23	0.06	0.11	0.37
EPI	Environmental performance index	The score is scaled between 0 and 100, where 0 and 100 mean worst and best performance, respectively.	YCELP	171	71.81	7.41	60.18	82.86
NR	Natural rents	The share of the sum of coal rents, mineral rents, natural gas rents, and forest rents to GDP (%).	WDI	171	0.88	1.73	0.01	10.97
DM	Level of democratization	The index of democratization	FSSDA	171	1.60	0.49	1.00	2.00

Table 2. Correlation coefficients

	CE_MW	EI_ENTER	EI_ACT	EI_ISO	EI_PATENT	EI_RD	EI_GREEN	EG	TS	FDI	IND	EPI	NR	DM
CE_MW	1													
EI_ENTER	0.0957	1												
EI_ACT	0.0190	0.744***	1											
EI_ISO	0.125	0.615***	0.754***	1										
EI_PATENT	0.332***	0.456***	0.610***	0.733***	1									
EI_RD	0.612***	0.371***	0.457***	0.624***	0.817***	1								
EI_GREEN	0.611***	0.232**	0.226**	0.314***	0.634***	0.757***	1							
EG	0.628***	0.463***	0.334***	0.450***	0.695***	0.830***	0.706***	1						
TS	0.124	0.0145	-0.165*	-0.183*	0.0298	0.161*	0.212**	0.461***	1					
FDI	0.183*	0.0843	0.0887	0.107	0.0771	0.136	-0.0605	0.163*	0.0787	1				
IND	-0.594***	-0.0247	0.210**	0.0273	-0.146	-0.406***	-0.480***	-0.598***	-0.260***	-0.131	1			
EPI	0.582***	0.376***	0.496***	0.301***	0.332***	0.404***	0.378***	0.626***	-0.217**	0.245**	-0.407***	1		
NR	-0.194*	-0.431***	-0.395***	-0.262***	-0.255**	-0.317***	-0.0970	-0.384***	-0.0893	-0.0546	0.239**	-0.305***	1	
DM	-0.512***	-0.395***	-0.393***	-0.381***	-0.374***	-0.434***	-0.452***	-0.433***	-0.123	-0.195*	0.335***	-0.459***	0.175*	1

Table 3. Cross sectional dependence tests and stationary tests

Variable (in level)	CD-test, Pesaran (2004)	Im-Pesaran-Shin test (Z-bar)	Variable (in difference)	Im-Pesaran-Shin test (Z- bar)
CE_MW	7.712***	4.135	DCE_MW	-2.524***
EI_ENTER	4.561***	-0.453	DEI_ENTER	-4.251***
EI_ACT	0.56	5.055	DEI_ACT	-4.224***
EI_ISO	19.481***	-0.376	DEI_ISO	-5.212***
EI_PATENT	0.184	-0.068	DEI_PATENT	-5.050***
EI_RD	8.126***	0.871	DEI_RD	-3.483***
EI_GREEN	5.672***	-0.237	DEI_GREEN	-4.722***
EG	20.739***	-1.559**	DEG	-5.225***
TS	42.070***	3.007	DTS	-3.698***
FDI	14.973***	0.463	DFDI	-3.241***
IND	0.103	-4.056***	DIND	-4.653***
EPI	7.381***	0.247	DEPI	-3.663***
NR	12.463***	1.136	DNR	-3.219***
DM	0.034	9.771	DDM	-3.370***

Table 4. Cointegration test

Model: f(Environmental innovation and circularity)	Kao test	Pedroni test
	Dickey-Fuller test	Phillips-Perron t
CE_MW		
EI_ENTER	-2.33***	-23.52***
EI_ACT	-3.28***	-18.88***
EI_ISO	-4.52***	-11.86***
EI_PATENT	-4.38***	-22.95***
EI_RD	-4.23***	-17.95***
EI_GREEN	-3.47***	-18.93***

4. Results

4.1. Environmental innovation and circularity

The effect of environmental innovation-related activities on the performance of circularity security is shown in Table 5 (CIR). We primarily concentrate on examining the association between variables using the PCSE estimate and FGLS estimate. When assessing how EI-related actions (EI ENTER, EI ACT, EI ISO, EI PATENT, EI RD, EI GREEN) would affect the amount of municipal garbage generated per person (CE MW). The FGLS and PCSE calculations come to identical findings in Panels A and B. The findings show that all effects on municipal trash per capita (CE MW) of EI ENTER, EI ACT, EI ISO, and EI PATENT are at a 1% significant and negative level. EI ENTER, EI ACT, EI ISO, and EI PATENT, specifically, have coefficients of -0.95, -1.34, -1.77, and -0.53, respectively. As a result, municipal waste per capita will also decrease due to increased environmental innovation-related activities, such as the percentage of investments in enterprises implementing EI, the percentage of enterprises implementing EI activities, the share of certified firms among surveyed firms, and the number of EI-related patents. Environmental innovation will also lead to an improvement in the quality of the environment. Our research supports this. Similarly, Rodríguez-Espíndola et al. (2022) also provide empirical evidence on the link between EI and circularity performance. Suchek et al. (2021) also provides systematic literature on this association.

Table 5. Linear impacts of environmental innovation on the circulation

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	PCSE estimates					
	Enterprises with EI	EI activities	Enterprises with new ISO 14001 registration	EI-related patents	Green R&D	Green Investment
L.EI	-0.95*** (0.275)	-1.34*** (0.271)	-1.77*** (0.099)	-0.53*** (0.087)	0.55*** (0.148)	0.48*** (0.067)
L.EG	2.50*** (0.434)	2.50*** (0.353)	2.05*** (0.374)	3.35*** (0.209)	1.04*** (0.292)	0.17 (0.418)
L.TS	-20.91*** (7.792)	-18.08*** (5.792)	-54.03*** (5.269)	-30.44*** (4.117)	-12.40** (5.603)	-13.01** (6.010)
L.FDI	15.17 (15.325)	10.44 (12.219)	21.75 (16.285)	1.10 (11.313)	17.08 (13.361)	61.32*** (23.764)
L.IND	-612.34*** (109.844)	-280.03* (147.497)	-367.45*** (49.057)	-546.77*** (48.323)	-932.56*** (49.484)	-776.22*** (53.899)
L.EPI	3.93*** (0.744)	7.12*** (0.866)	2.27*** (0.702)	4.40*** (0.672)	2.45*** (0.910)	1.85* (1.067)
L.NR	-11.48 (17.707)	-2.26 (14.354)	-6.63 (11.701)	30.76** (14.512)	22.13 (14.498)	-1.18 (14.117)
L.DM	-6.11 (9.549)	5.98 (8.904)	-156.25*** (17.277)	-9.62 (8.998)	12.28 (9.191)	-8.07 (13.013)
Observations	144	144	144	144	144	144
Number of economies	18	18	18	18	18	18

	(7)	(8)	(9)	(10)	(11)	(12)
	FGLS estimates					
VARIABLES	Enterprises with EI	EI activities	Enterprises with new ISO 14001 registration	EI-related patents	Green R&D	Green Investment
L.EI	-0.95*** (0.318)	-1.34*** (0.356)	-1.77*** (0.278)	-0.53*** (0.195)	0.55* (0.329)	0.48*** (0.110)
L.EG	2.50*** (0.790)	2.50*** (0.759)	2.05*** (0.675)	3.35*** (0.966)	1.04 (0.839)	0.17 (0.790)
L.TS	-20.91 (18.251)	-18.08 (17.727)	-54.03*** (17.689)	-30.44 (19.440)	-12.40 (18.317)	-13.01 (17.336)
L.FDI	15.17 (27.691)	10.44 (27.121)	21.75 (25.201)	1.10 (27.796)	17.08 (28.730)	61.32** (29.360)
L.IND	-612.34*** (199.265)	-280.03 (235.492)	-367.45** (182.359)	-546.77** (215.111)	-932.56*** (190.397)	-776.22*** (176.601)
L.EPI	3.93* (2.372)	7.12*** (2.446)	2.27 (2.180)	4.40* (2.380)	2.45 (2.658)	1.85 (2.358)
L.NR	-11.48 (20.893)	-2.26 (18.291)	-6.63 (16.375)	30.76* (17.442)	22.13 (17.581)	-1.18 (17.593)
L.DM	-6.11 (31.635)	5.98 (31.237)	-156.25*** (37.352)	-9.62 (31.835)	12.28 (33.856)	-8.07 (30.616)
Observations	144	144	144	144	144	144
Number of economies	18	18	18	18	18	18

4.2. Robustness checks

4.2.1. Short-run and long-run effect: Dynamic fixed effect ARDL model

We perform robustness testing in a later stage to confirm our earlier conclusions. First, we make a distinction between the impact of environmental innovation on the long- and short-term performance of circularity security. Table 6 provides an overview of the outcomes. The short-term results show that only EI ISO has a statistically significant impact on EC MW, suggesting that raising the proportion of 14001 (EI ISO) registered firms will reduce municipal trash per capita. The other EI variables' coefficients lack statistical significance, indicating that the EI ENTER, EI ACT, EI PATENT, EI RD, and EI GREEN, municipal trash per capita, are not immediately apparent from empirical data. The long-term

effects of businesses with environmental innovation, businesses with environmental innovation activities, businesses with new 14001 registration, businesses with patents related to environmental innovation, businesses with investments in R&D personnel and researchers, and businesses with investments in early-stage environmental investments are statistically significant at 5% and 1% and positive, with the coefficients being 31.69, 0.85, 4.52, 0.52, 1.45, and 0.12, respectively. The findings point to a positive impact of environmental innovation, but this benefit is more likely to last over time.

Table 6. The influence of economic complexity on circularity: Short-run and long-run effects

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Enterprises with EI	EI activities	Enterprises with new ISO 14001 registration	EI-related patents	Green R&D	Green Investment
	The short-term effect					
EC term	-0.14*	-0.55***	-0.50***	-0.52***	-0.22**	-0.64***
	(0.083)	(0.107)	(0.118)	(0.119)	(0.103)	(0.111)
D.EI	1.82	0.40	-2.16***	-0.26	-0.44	0.10
	(1.330)	(0.280)	(0.555)	(0.265)	(0.439)	(0.160)
	The long-term effect					
EI	31.69**	0.85***	4.52***	0.52***	1.45***	0.12**
	(12.394)	(0.230)	(0.242)	(0.068)	(0.254)	(0.049)
Observations	144	144	144	144	144	144

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: PMG-ARDL is employed.

4.2.2. Endogeneity control: Two-step GMM

Finally, endogeneity may result from circularity and environmental innovation occurring at the same time. We utilized a two-step GMM estimate depicted in Table 7 to overcome this issue, following Nham & Ha (2022). In Panel A, municipal garbage generated per person is statistically influenced by EI ENTER and EI ACT. In Panel B, we employ the squared term of EI, and the results show that, with the exception of the impact of all EI on circulation patents, which is statistically significant at 10% and positive, all EI measures have a negative influence on circularity. Additionally, because the squared term of environmental innovation's negative correlation with circulation patents is statistically significant, the negative effects of environmental innovation are reported. However, we also uncover evidence supporting the positive impacts of product proximity.

Table 7. Two-step GMM estimates

	(1)	(2)	(3)	(4)	(5)	(6)
	Linear Effects					
VARIABLES	Enterprises with EI	EI activities	Enterprises with new ISO 14001 registration	EI-related patents	Green R&D	Green Investment
EI	6.1208*	1.5678*	-0.0876	0.3121	-1.1656	0.2207
	(3.306)	(0.946)	(0.121)	(0.668)	(0.721)	(0.295)
EG	6.3886	-0.9706	7.9766*	1.7347	3.0484	5.7487
	(8.505)	(0.666)	(4.523)	(9.207)	(2.317)	(7.192)
TS	1.519*	-13.596	-2.459	-1.195	37.1681	-13.478
	(0.827)	(23.018)	(158.179)	(2.186)	(40.344)	(16.903)
FDI	-4.4666	345.5854**	52.6791	53.3517	14.0081	78.2295
	(291.994)	(145.034)	(33.056)	(66.930)	(14.834)	(77.018)
IND	-8.445*	-3.017**	3.852*	8.071	1.549	1.625
	(4.635)	(2.363)	(2.910)	(1.880)	(0.122)	(1.236)
EPI	-17.3024	-15.9063***	-3.2292	-4.2989	-0.6645	12.6224
	(26.060)	(4.057)	(3.266)	(8.384)	(3.829)	(19.992)
NR	-8.5707	-2.9853	-7.3860*	31.9744	2.6319	62.9445
	(7.7281)	(2.273)	(4.1802)	(48.146)	(48.223)	(104.564)
DM	2.1036	-4.4842*	-1.9892*	-5.5932	-1.1561**	1.3243
	(2.968)	(2.3611)	(1.0964)	(5.8813)	(0.7025)	(5.1929)
Observations	144	144	144	144	144	144
Number of economies	18	18	18	18	18	18

5. Conclusions

We are the first to distinguish clearly between the significance of environmental innovation on each nation's performance in terms of circularity. Our study is anticipated to evaluate the enablers of circularity in depth by using a variety of variables to capture diverse circularity difficulties. This study demonstrates how environmental innovation has uneven, nonlinear consequences on circularity. We do, however, offer empirical proof that innovative efforts, including the environment, are crucial for improving a nation's performance in terms of circularity, particularly over the long term. Another crucial enabler of circularity is environmental innovation.

According to the facts discussed above, environmental innovation is more practical for stabilizing the circulating economy and assisting in limiting emissions to the environment from an economic standpoint. Therefore, increasing the quantity and quality of businesses investing in environmental innovation activities should be one of the top economic priorities. The government should also develop sophisticated capabilities to promote economic advancements. A more successful development strategy is to make it easier for businesses to invest in and develop green spaces.

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ASSESSMENT OF AGRICULTURAL LAND QUALITY IN THE BUFFER ZONE OF TAM DAO NATIONAL PARK

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Abstract

The conflict between forest and land conservation of Tam Dao National Park and the need for land use of people living in the buffer zone is increasingly severe. Therefore, it is necessary to determine the quality and potential of agricultural land to orient sustainable development for people in the buffer zone. With that requirement, from 2021 to 2022, a study on sustainable use of agricultural land in the buffer zone of Tam Dao National Park was carried out. The method of conducting this research is to survey and analyze the current situation of the study area according to current regulations. Research results show that: The entire land of Tam Dao district belongs to the buffer zone of Tam Dao National Park and includes 5 soil groups with 9 soil types divided into 2 subregions 1 and 2. On the basis of overlapping 6 single-use maps: soil type map, soil thickness map, slope map, climate sub-region map, irrigation regime map and soil fertility map, identified the buffer zone of Tam Dao National Park in Tam Dao district with 51 quality units of agricultural and forestry land. Out of a total of 20,378.04 hectares of land in the buffer zone of Tam Dao national park in Tam Dao district, there are 6,192.22 hectares of high-quality land, accounting for 30.39%; the average quality land area reached 3,928.97 ha, accounting for 19.28% and the area of low quality land was very high, up to 10,256.85 ha, accounting for 50.33 %.

Keywords: *National park buffer zone, Land unit map; Soil quality; Tam Dao district*

1. Introduction

Tam Dao National Park is a national park of Vietnam, located entirely on the Tam Dao mountain range, a large mountain range over 80 km long, 10-15 km wide running in the Northwest - Southeast direction. Tam Dao National Park is adjacent to the districts of the three provinces of Vinh Phuc, Thai Nguyen and Tuyen Quang. The entire area of Tam Dao district of Vinh Phuc province lies within the buffer zone of Tam Dao National Park.

The living source of the majority of people in Tam Dao district mainly depends on Tam Dao National Park, so the pressure on natural resources in the region is very high. The conflict between forest and land conservation of the National Park and the need for land use of people living in the buffer zone is increasingly severe.

To satisfy people's needs for food, agricultural production must go in two directions: Intensive farming to increase crops, increase crop productivity or expand agricultural land

area. Either way, investigating and researching land to master the land fund in both quantity and quality is essential.

Therefore, the correct assessment of the land use status of the buffer zone and the proposal of sustainable agricultural land use orientation is a reliable scientific and practical basis for the good exploitation of land resources on the one hand, on the other hand, to find the optimal solution to both preserve the National Park and improve the living standards of the people sustainably.

2. Method

2.1. Selecting research sites

On the basis of specific characteristics, the national park area occupies the majority in Tam Dao district, Vinh Phuc province and the objectives of the study, divided into two research subregions as follows:

- Subregion 1: It has the economic, cultural and political centers of the locality. Including 3 towns are Tam Dao, Hop Chau and Dai Dinh.

- Subregion 2: The remaining 6 communes of the buffer zone including Ho Son, Dao Tru, Minh Quang, Tam Quan, Yen Duong and Bo Ly.

2.2. Soil classification

On the basis of inheriting the results of the First survey to assess land quality and land potential in Vinh Phuc province in 2019, the topic will separate the Tam Dao district, then carry out a re-investigation through the survey route. Field observations on soil types, parent rock and landscape to synthesize soil type data for the whole district.

2.3. Building land unit map (soil quality unit)

Based on the characteristics of soil, topography, climate, water regime and land use characteristics, according to the requirements of Circular No. 60/2015/TT-BTNMT, a set of criteria for soil quality assessment has been determined, including: 6 groups of indicators: Soil type, topography, soil thickness, climate, water regime and soil fertility.

Using Microstation SE software to digitize and build simple maps including: Soil type map, slope map, soil thickness map, climate map, irrigation regime map, degree map soil fertility. Using ArcGIS 10.2 software in superimposing single-use maps (thematic maps) to build a unit map of soil quality of the buffer zone of Tam Dao national park.

3. Results

3.1. The results of determining criteria and hierarchical criteria to build a map of land units

To build a map of land units, the study was based on the following bases:

Based on the inheritance of the soil map and the results of soil quality assessment of Vinh Phuc province in 2019 along with the results of the survey and investigation on the characteristics of agricultural land types of Tam Dao district and with the results synthesize current documents on natural conditions (land, climate) of the district.

Based on the characteristics of soil, topography, climate, water regime, land use characteristics and the requirements in Circular No. 60/2015/TT-BTNMT, a set of criteria has been determined to build a map. Land unit map of the buffer zone of Tam Dao national park in Tam Dao district, Vinh Phuc province. Including 6 groups of indicators (*Table 01*).

Table 1. Result of decentralization of criteria for building a map of land units in the buffer zone of Tam Dao National Park

Indicators	Hierarchy	Symbol
1. Soil type (G)	Dystric Fluvisols (Pbc)	G1
	Gleyic Fluvisols (Pg)	G2
	Haplic Acrisols (B)	G3
	Umbric Gleysols (D)	G4
	Red yellow soil on acid magma rock (Fa)	G5
	Red-yellow soil changes due to wet rice cultivation (Fl)	G6
	Light yellow soil on sandstone (Fq)	G7
	Red and yellow soil on clay rock (Fs)	G8
	Red yellow humus soil on acidic magmatic rock (Ha)	G9
2. Slope (SL)	0 - <8°	SL1
	≥ 8 - <15°	SL2
	≥15 - <25°	SL3
	≥ 25°	SL4
3. Soil layer (D)	> 100 cm	D1
	≥ 50 - 100 cm	D2
	< 50 cm	D3
4. Climate (KH)	Amount of rain ≥ 2.500 mm (R3), Total temperature < 7,0000C (T1), dry month < 2 month	KH1
	Amount of rain 1,500 - < 2,500 mm (R1), Total temperature ≥ 7,000 - 8,000 ⁰ C (T2), dry month ≥ 2 - 3 month	KH2
5. Irrigation (I)	No waterlogging, watering due to rain	I1
	No waterlogging, semi-active irrigation	I2
	No waterlogging, active watering	I3
6. Fertility* (DP)	Low fertility	DP1
	Average fertility	DP2
	High fertility	DP3

Notes: * Including OM, N, P, K total; Density, pH, Mechanical Composition and CEC

3.2. Result of building land unit map

3.2.1. Analysis results from target groups

3.2.1.1. Criteria for soil type

The data resulting from the construction of a map of agricultural land in the buffer zone of Tam Dao National Park (in Tam Dao district, Vinh Phuc province) at the scale of 1/25,000, has identified that the whole district has 5 groups of soil with 9 types of soil classified as: out in 2 subregions 1 and 2 (*Table 02*). In which, red yellow soil group on acid magma has the largest area with 2,640.03 ha in subregion 1 and 7,990.42 ha in subregion 2; group of red-yellow humus in the mountains is 2,129.59 ha, mainly in subregion 2 with 1,278.10 ha. Light yellow soil on sandstone is mainly concentrated in subregion 2; The alluvial soil group is only 66.06 ha and is concentrated in subregion 1.

Table 2. Area of land type in the buffer zone of Tam Dao national park by subregion

<i>Unit: ha</i>				
No	Soil type	Symbol	Sub-region 1	Sub-region 2
1	Dystric Fluvisols (Pbc)	G1	53.99	12.07
2	Gleyic Fluvisols (Pg)	G2	339.89	868.37
3	Haplic Acrisols (B)	G3	286.25	1,430.75
4	Umbric Gleysols (D)	G4	396.92	637.23
5	Red yellow soil on acid magma rock (Fa)	G5	2,640.03	7,990.42
6	Red-yellow soil changes due to wet rice cultivation (Fl)	G6	18.94	424.24
7	Light yellow soil on sandstone (Fq)	G7	121.10	2,159.90
8	Red and yellow soil on clay rock (Fs)	G8	240.05	628.30
9	Red yellow humus soil on acidic magmatic rock (Ha)	G9	851.49	1,278.10
<i>Evaluation area</i>			<i>4,948.66</i>	<i>15,429.38</i>
<i>Area not rated</i>			<i>3,091.84</i>	
<i>Total natural area</i>			<i>23,469.88</i>	

3.2.1.2. Topographic criteria - Slope

Topography is one of the factors that form the soil, in other words, the soil groups and types of soil formed in certain terrains are characterized by the distribution of the soil. The results of the assessment of land distribution characteristics by topographic level of the buffer zone of Tam Dao national park in Tam Dao district, Vinh Phuc province are presented in Table 03 specifically as follows: Most of the land in the buffer zone is distributed. At a slope of $\geq 25^\circ$ with 13,100.77 ha concentrated in both subregions 1 and 2; then the soil group at the slope of $0 - < 8^\circ$ with 5,408.57 ha; soil group at slope $\geq 15 - < 25^\circ$ accounts for only 825.39 ha. Thus, it can be seen that the land in the buffer zone of Tam Dao National Park in Tam Dao district is mainly very sloping land.

Table 3. The results of the classification of land slope indicators in the buffer zone of the national park Tam Dao by subregion

No	Indicators	Symbol	Area (ha)	Ratio (%)	Subregion 1 (ha)	Subregion 2 (ha)
1	0 - < 8°	SL1	5,408.57	26.54	903.32	4,505.25
2	≥ 8 - < 15°	SL2	1,043.31	5.12	257.95	785.36
3	≥ 15 - < 25°	SL3	825.39	4.05	286.05	539.34
4	≥ 25°	SL4	13,100.77	64.29	3,501.34	9,599.43
<i>Evaluation area</i>			<i>20,378.04</i>	<i>100.00</i>	<i>4,948.66</i>	<i>15,429.38</i>
<i>Area not rated</i>			<i>3,091.84</i>			
<i>Total natural area</i>			<i>23,469.88</i>			

3.2.1.3. Criteria for the thickness of the soil layer

Corresponding to the soil type/soil group with different soil thickness, the soil layer thickness is divided into 3 levels: > 100 cm; 50 - 100 cm; < 50 cm. According to the actual survey results, the soil layer of the buffer zone of Tam Dao National Park in Tam Dao district, Vinh Phuc province is summarized in Table 04, showing that: Most of the land area of the buffer zone has a thin layer of less than 50 cm with an area of 13,631.77 ha, mainly belonging to the group of red-yellow soil and red-yellow humus in the mountains, this group mainly concentrates in sub-region 2. The land area with thickness > 100 cm occupies the second area with 4,340, 91 ha mainly belongs to alluvial soil group, degraded gray soil on ancient alluvium and sloping soil. Thus, the land in the buffer zone of Tam Dao National Park in Tam Dao district is mainly thin and has a steep slope.

Table 4. Results of classification of soil thickness indicators in the buffer zone of Tam Dao national park by subregion

No	Indicators	Symbol	Area (ha)	Ratio (%)	Subregion 1 (ha)	Subregion 2 (ha)
1	> 100 cm	D1	4,340.91	21.30	1,092.05	3,248.86
2	≥ 50 - 100 cm	D2	2,405.36	11.80	356.73	2,048.63
3	< 50 cm	D3	13,631.77	66.89	3,499.88	10,131.89
<i>Evaluation area</i>			<i>20,378.04</i>	<i>100.00</i>	<i>4,948.66</i>	<i>15,429.38</i>
<i>Area not rated</i>			<i>KDG</i>	<i>3,091.84</i>		
<i>Total natural area</i>			<i>23,469.88</i>			

3.2.1.4. Climatic indicators

The entire buffer zone of Tam Dao National Park in Tam Dao district is divided into two climate zones with different sub-climate characteristics (*Table 05*):

Area KH1: With rainfall $\geq 2,500$ mm (R3), total temperate zone $< 7,000^{\circ}\text{C}$ (T1), number of dry months < 2 months. This is the climate zone that accounts for the majority of the buffer zone area of Tam Dao National Park in Tam Dao district with 19,461.18 ha distributed mainly in subregion 2 with 14,770.57 ha and subregion 1 with 4,690.61 ha.

Area KH2: With the characteristics of rainfall 1,500 - $< 2,500$ mm (R1), total temperature $\geq 7,000 - 8,000^{\circ}\text{C}$ (T2), number of dry months $\geq 2 - 3$ months. This is a climate zone occupying a small area of the buffer zone of Tam Dao National Park in Tam Dao district with only 916.86ha and distributed 258.05 ha in subregion 1, 658.81 ha in subregion 2.

Thus, it shows that most of the land area of the buffer zone is in the Tam Dao mountain range and this is also a feature that needs attention in land use of the buffer zone of Tam Dao national park in Tam Dao district.

Table 5. Result of classification of climate indicators in the buffer zone of Tam Dao national park by subregion

No	Indicators	Symbol	Area (ha)	Ratio (%)	Subregion 1 (ha)	Subregion 2 (ha)
1	Amount of rain ≥ 2.500 mm (R3), Total temperature $< 7,000^{\circ}\text{C}$ (T1), dry month < 2 month	KH1	19,461.18	95.50	4,690.61	14,770.57
2	Amount of rain 1,500 - $< 2,500$ mm (R1), Total temperature $\geq 7,000 - 8,000^{\circ}\text{C}$ (T2), dry month $\geq 2 - 3$ month	KH2	916.86	4.50	258.05	658.81
<i>Evaluation area</i>			<i>20,378.04</i>	<i>100.00</i>	<i>4,948.66</i>	<i>15,429.38</i>
<i>Area not rated</i>		<i>KDG</i>	<i>3,091.84</i>			
<i>Total natural area</i>			<i>23,469.88</i>			

3.2.1.5. Criteria for Irrigation

Water regime is an indicator to establish land quality unit for agricultural land. In the project, the water regime is determined according to the following criteria: the irrigation regime includes active irrigation, semi-active irrigation and non-active irrigation completely dependent on nature; Inundation indicators include mild flooding and no flooding. Information about the water regime is entered into each land block forming a layer of information about the water regime.

The results of the classification of water regime indicators in the buffer zone of Tam Dao National Park in Tam Dao district in Table 06 show that:

Currently, there are 15,684.34 hectares, accounting for 76.97% of the land in the buffer zone of Tam Dao National Park in Tam Dao district, thanks to the inactive water

of rain. Most of the soils belonging to the red-yellow soil and the red-yellow humus in the mountains belong to this group. The area of active irrigated land is only 3,828.66 ha, mainly alluvial soil, gray soil on ancient alluvium, sloping land and soil changed by wet rice cultivation.

Table 6. The results of the classification of water regime indicators in the buffer zone of the national park Tam Dao by subregion

No	Indicators	Symbol	Area (ha)	Ratio (%)	Subregion 1 (ha)	Subregion 2 (ha)
1	No waterlogging, watering due to rain	I1	15,684.34	76.97	3,849.79	11,834.55
2	No waterlogging, semi-active irrigation	I2	865.04	4.24	92.15	772.89
3	No waterlogging, active watering	I3	3,828.66	18.79	1,006.72	2,821.94
<i>Evaluation area</i>			<i>20,378.04</i>	<i>100.00</i>	<i>4,948.66</i>	<i>15,429.38</i>
<i>Area not rated</i>		<i>KDG</i>	<i>3,091.84</i>			
<i>Total natural area</i>			<i>23,469.88</i>			

3.2.1.6. Index of soil fertility

This is a complex indicator consisting of 5 indicators of soil properties, in which total nutrients are synthesized from 4 total indicators (total nitrogen, total phosphorus, total potassium and total organic matter). In addition to total nutrients, the criteria determining soil fertility also include density, soil acidity, mechanical composition and absorption capacity.

The results of soil fertility assessment of agricultural soils in the buffer zone of Tam Dao national park in Tam Dao district (*Table 07*) show that:

The vast majority of land area of the buffer zone of Tam Dao national park in Tam Dao district is low fertility (DP1) with a total area of 9,118.17 hectares, this is a group of soil belonging to gray soil on old alluvium and red-yellow soil on acidic igneous rocks.

Average soil fertility (DP2) occupies an average area with 7,411.34 ha, mainly alluvial soils.

High soil fertility (DP3) is only 3,848.53 ha, this is the majority soil group in the KH1 region and the red-yellow soil group, distributed in both sub-regions of the buffer zone of Tam Dao national park in Tam Dao district.

Thus, it shows that most of the land area of the buffer zone of Tam Dao National Park in Tam Dao district is not very suitable for agricultural crop development.

Table 7. The results of the classification of soil fertility indicators in the buffer zone of the national park Tam Dao by subregion

No	Indicators	Symbol	Area (ha)	Ratio (%)	Subregion 1 (ha)	Subregion 2 (ha)
1	Low fertility	DP1	9,118.17	44.74	2,541.49	6,576.68
2	Average fertility	DP2	7,411.34	36.37	1,277.95	6,133.39
3	High fertility	DP3	3,848.53	18.89	1,129.22	2,719.31
<i>Evaluation area</i>			<i>20,378.04</i>	<i>100.00</i>	<i>4,948.66</i>	<i>15,429.38</i>
<i>Area not rated</i>		<i>KDG</i>	<i>3,091.84</i>			
<i>Total natural area</i>			<i>23,469.88</i>			

3.2.2. Result of building land unit map

The map of land units in the buffer zone of Tam Dao national park in Tam Dao district is made in accordance with the provisions of Circular No. 60/2015/TT - BTNMT which is built on the basis of overlapping 6 single-variant maps: type maps. soil, soil thickness map, slope map, climate sub-region map, irrigation regime map and soil fertility map.

Statistical results of the number of soil quality units have determined that the buffer zone of Tam Dao National Park in Tam Dao district has 51 quality units of agricultural and forestry land. The aggregate data of land units (DVD) by soil quality in the buffer zone of Tam Dao National Park in Table 08 and Figure 01 shows that:

The total area of 51 land units in the buffer zone of Tam Dao National Park in Tam Dao district is 20,378.04 ha, accounting for 82.83% of the total natural area. The total number of circles on the map is 356.

The statistical results of the number of soil quality units distributed in two subregions of the buffer zone of Tam Dao National Park in Tam Dao district showing that:

In subregion 1, there are 22 land units with 4,948.66 ha and the total number of slices on the map is 67. The large land units are DVD 19, 20 and 51.

In subregion 2, there are 49 land units with 15,429.38 ha and the total number of slices on the map is 289. Large land units are also DVD 19, 20 and 51.

Table 8. Statistics of land units (DVD) according to the quality of land in the buffer zone Tam Dao National Park by subregion

No	Land unit	Land characteristics						Subregion 1		Subregion 2	
		Soil type	Slope	Soil layer	Clim-ate	Irriga-tion	Ferti-lity	No of slices	Area (ha)	No of slices	Area (ha)
1	DVD1	G1	SL1	D1	KH1	I3	DP1	1	53.99	3	12.07
2	DVD2	G2	SL1	D1	KH2	I3	DP1	4	166.33	5	439.95
3	DVD3	G2	SL1	D1	KH1	I3	DP1	1	121.17	3	246.88
..

No	Land unit	Land characteristics						Subregion 1		Subregion 2	
		Soil type	Slope	Soil layer	Clim-ate	Irriga-tion	Ferti-lity	No of slices	Area (ha)	No of slices	Area (ha)
50	DVD50	G8	SL3	D2	KH1	I1	DP3	1	156.33	1	12.31
51	DVD51	G9	SL4	D3	KH1	I1	DP3	6	851.49	1	1,278.10
52	KDG*	KDG	KDG	KDG	KDG	KDG	KDG	3,091.84			
<i>Number of slices/Evaluated area</i>								67	4.948.66	289	15.429,38
<i>Total natural area</i>									23,469.88		23.469,88

Note: * Non-agricultural land

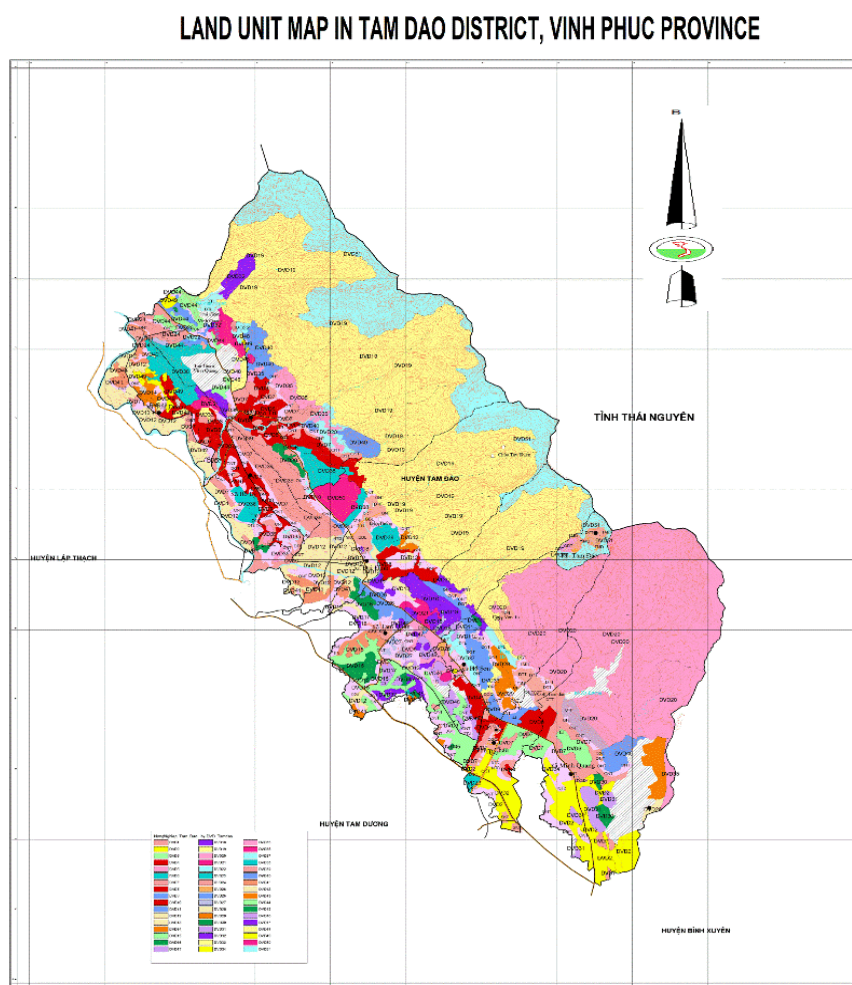


Figure 1. Land unit map (DVD) of Tam Dao district

Based on the combined assessment from 6 groups of indicators of the land unit map, the results of the quality of land in the buffer zone of Tam Dao National Park in Tam Dao district in Table 09 have been obtained, showing that:

In subregion 1: There are 1,191.81 hectares of high-quality land of 16 land units. 4 land units with a total area of 1,118.36 ha are of medium quality and 2,638.49 ha of 2 land units are of low quality.

Table 9. Land unit (DVD) by soil quality in the buffer zone of the national park Tam Dao in subregion 1

No	Rating level	Area (ha)	Land unit
1	High	1,191.81	1-4, 7-10, 12, 14, 23, 35, 41, 43, 45, 46
2	Medium	1,118.36	38, 39, 50, 51
3	Low	2,638.49	19, 20
	<i>Evaluation area</i>	<i>4,948.66</i>	
	<i>Total natural area</i>	<i>23,469.88</i>	

In sub-region 2 (*Table 10*): There are 5,000.41 ha of high-quality land of 38 land units. 9 land units with a total area of 2,810.61 ha are of medium quality and there are up to 7,618.36 ha of land of 2 low quality land units.

Table 10. Land unit (DVD) by soil quality in the buffer zone of the national park Tam Dao in subregion 2

No	Rating level	Area (ha)	Land unit
1	High	5,000.41	1-3, 5-12, 14, 15, 21, 22, 24-37, 41-49
2	Medium	2,810.61	13, 16-18, 38-40, 50, 51
3	Low	7,618.36	19, 20
	<i>Evaluation area</i>	<i>15,429.38</i>	
	<i>Total natural area</i>	<i>23,469.88</i>	

4. Discussion and Conclusion

4.1. Evaluation of soil types in the buffer zone of Tam Dao National Park

The whole district of Tam Dao has 5 soil groups with 9 soil types, the red-yellow soil group has the largest area with 14,222.98 hectares, accounting for 69.80% of the natural area, of which red-yellow soil on acid magma has the largest area with 2,640.03 hectares in subregion 1 and 7,990.42 ha in subregion 2. Land groups with a smaller area are the group of red yellow humus in the mountains, 2,129.59 ha, accounting for 10.45 %, mainly in subregion 2 with 1,278.10 ha. Gray soil group with 1,717.00 ha accounts for 8.43%, Alluvial soil group has only 1,274.32 ha, accounting for 6.25% and Valley soil group is 1,034.15 ha, accounting for 5.08%.

From the results of the area distribution of soil types, it shows that most of the land area of the buffer zone of Tam Dao National Park is sloping and is mainly located on the Tam Dao mountain range.

4.2. Developing a land unit map (DVD) in the buffer zone of Tam Dao National Park

On the basis of overlapping 6 single-use maps: soil type map, soil thickness map, slope map, climate sub-region map, irrigation regime map and soil fertility map, identified the buffer zone of Tam Dao National Park in Tam Dao district with 51 quality units of

agricultural and forestry land. The total area of 51 land units is 20,378.04 ha, accounting for 82.83% of the total natural area. The total number of circles on the map is 356.

In subregion 1, there are 22 land units with 4,948.66 ha and the total number of slices on the map is 67. Land units occupying a large area are DVD 19, 20 and 51. In subregion 2 there are 49 land units with 15,429.38 ha and the total number of slices on the map is 289. Large land units are also DVD 19, 20 and 51.

Out of a total of 20,378.04 hectares of land in the buffer zone of Tam Dao national park in Tam Dao district, there are 6,192.22 hectares of high-quality land, accounting for 30.39%; the average quality land area reached 3,928.97 ha, accounting for 19.28 % and the area of low quality land was very large, up to 10,256.85 ha, accounting for 50.33 %.

The distribution of land area by quality also differs in the two subregions:

In subregion 1: There are 1,191.81 ha of high-quality land of 16 land units, accounting for 24.08 %. 4 land units with a total area of 1,118.36 ha of medium quality account for 22.60% and the area of low-quality land is very large, 2,638.49 ha, accounting for 53.32 %, concentrated in 2 land units 19 and 20.

In subregion 2: There are 5,000.41 ha of high-quality land of 38 land units, accounting for 32.41% of the sub-region. 9 land units with a total area of 2,810.61 ha are of medium quality, accounting for 18.22% and there are 7,618.36 ha of land of 2 low quality land units, accounting for 49.38 %.

From the above results, it is shown that most of the land in the buffer zone of Tam Dao National Park is of medium and low quality. This is a big obstacle for agricultural crop cultivation because a huge amount of fertilizer must be invested, especially organic fertilizer, to ensure sustainable agricultural development in this region.

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THE IMPACT OF THE SOCIAL RESPONSIBILITY OF THE DESTINATION ON THE ENVIRONMENTALLY RESPONSIBLE BEHAVIOR OF THE COMMUNITY: A CASE STUDY IN NHA TRANG CITY, KHANH HOA, VIETNAM

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Abstract

This research analyzes the impact of destination social responsibility on the environmentally responsible behavior of people in Nha Trang City, a famous tourist destination of Khanh Hoa province. Applying stakeholder theory and social exchange theory, this research has built a model with positive and negative impacts of tourism and community satisfaction as mediating variables affecting environmental behavior protection of the community. Research results show that the social responsibility of the destination helps to raise public awareness of the positive impact of tourism, improves community satisfaction, and contributes to promoting behavior to protect the marine environment.

Keywords: *Destination social responsibility, Environmentally responsible behavior, Community.*

1. Introduction

Tourism is one of the fastest-growing economic sectors on a global scale and plays an important role in the economic development strategies of many countries. The development of the tourism industry, therefore, needs to be properly planned and managed, in which the practice of destination social responsibility is considered a key factor for sustainable development. tourism industry (Su et al., 2016). Destination social responsibility refers to the responsibility of destination stakeholders to create economic benefits for local communities, increase welfare and minimize negative economic impacts, on society, and the environment (Su et al., 2016). Previous studies have also shown that environmentally responsible destinations have a positive influence on visitor behavior. Example: Research by Scott McCabe and Stefan Gössling (2015) on tourism, climate change, and sustainability: A review of the literature; How does Su's research (2018) on the Social Responsibility of Destination contribute to environmentally responsible behavior? The point of view of destination residents; Research by Tien-Ming Cheng (2014) on How do environmental knowledge, environmental sensitivity, and attachment to place affect environmentally responsible behavior? An integrated approach to sustainable island tourism.

The sustainable development of the tourism industry and the practice of social responsibility for the destination cannot be without the attention and support of the local community, especially their environmentally responsible behavior. Because the local community at the destination is one of the stakeholders that has the greatest impact on the natural environment at the destination. According to the Stakeholder Theory and Social Exchange Theory, the social responsibility of the destination can create economic benefits for the local people, improve the quality of the destination, their lives, and reduce negative economic, environmental, and social impacts (Su et al., 2016). The benefits obtained for the local community can lead to their satisfaction with tourism development. From there, to gain more benefits from the social responsibility of the destination, the local community can adopt environmentally responsible behavior to protect the natural environment of the destination, contributing to the development of the sustainable destination.

Nha Trang is one of the major tourist centers of Vietnam. The advantage of rich marine resources has promoted the rapid development of the tourism industry in recent times. According to the report “The Situation of tourism activities in Khanh Hoa in 2022” by the Department of Tourism of Khanh Hoa province, tourism revenue is estimated to reach 13,500 billion VND in 2022, 5,6 times higher than in 2021. Staying guests is estimated at 2,540 thousand arrivals, 4,2 times higher than in 2021, with 6,030 thousand days of guests staying, 3.6 times higher than in 2021, of which international visitors are estimated at 250,000 arrivals, 10 times higher than that of 2021, 1 times compared to 2021, with 1,115 thousand days of guests staying, 9 times higher than in 2021; Domestic tourists are estimated at 2,290 thousand arrivals, 3,9 times higher than in 2021. To sustainably develop Nha Trang beach tourism, the tourism industry has implemented many management policies, focusing on the harmony between the environment, the natural environment, and the social environment. The tourism industry is also interested in practicing social responsibility through the development of responsible tourism models that bring many benefits to the local community such as increasing income and improving working conditions for the local community settlement and preservation of natural and cultural heritage. In addition to the benefits achieved, the rapid development of the tourism industry has led to many environmental and social problems. The beaches are often overloaded, the sea is polluted by garbage, and the marine ecosystem is also affected.

This poses a requirement to effectively manage the tourism industry to protect the natural environment and marine tourism resources through the participation of the community, especially responsible behavior for the marine environment from the community.

This research will apply stakeholder theory and social exchange theory to test the direct and indirect effects (through positive and negative effects and community satisfaction) of social responsibility, and destination social responsibility towards environmentally responsible behavior of people in Nha Trang city. From the research results, policy suggestions will also be proposed to manage and develop Nha Trang tourism destinations sustainably and responsibly based on the contribution of the local community.

This research aims to analyze and assess the community's perception of the destination's social responsibility practice, clarifying its impact on the perception of positive and negative impacts of tourism, community, the community's satisfaction with tourism activities as well as their support for tourism development. From there, the research will propose policy suggestions to manage and develop the Nha Trang tourism destination sustainably and responsibly based on community contributions.

To address the above general objective, this research has the following objectives:

Objective 1: To research the impact of the destination's social responsibility on the overall satisfaction of the community.

Objective 2: To research the direct and indirect effects of the destination's social responsibility on the community's support for the development of Nha Trang beach tourism.

Objective 3: Propose some policy suggestions to manage and develop Nha Trang tourism destination sustainably and responsibly.

2. Theoretical basis and research hypothesis

2.1. Theoretical basis

2.1.1. Destination social responsibility

From the traditional point of view, destinations are considered to be areas of harmonious geographical and climatic location, such as a country, an island, or a city (Hall, 2000). From a modern point of view, the destination can also be an emotional concept, subjectively perceived by tourists depending on travel itinerary, cultural background, purpose of visit, education level, and experience. Destination includes areas related to tourism, such as tour operators, transportation, accommodation, restaurants, and travel agencies. These are the key stakeholders that can influence the economic, sociocultural, and environmental aspects of the destination.

A destination includes many areas related to tourism, such as tour operators, accommodations, restaurants, etc. Key stakeholders in this area face challenges related to social responsibility as key stakeholders that can affect the economy, environment, culture, and society of the country's destination. According to Su et al (2016), the social responsibility of a destination is defined as “the collective ideology and efforts of the stakeholders at the destination to carry out socially responsible activities under the awareness of local people”. Or DSR can be understood as the collective ideology and efforts of the parties involved in the implementation of socially responsible activities as perceived by local people (Su et al., 2018). The rationale behind destination social responsibility is that destination sustainability can be achieved if stakeholders work together with a common goal - to act for the common good of society.

2.1.2. Environmentally responsibility behaviour

Environmentally responsible behavior (ERB) is actions that reflect an individual or group's concern for the natural environment and its way of solving problems (Hsu & Roth, 1998). From

that, it can be seen that the community can only be persuaded to perform environmentally responsible behavior if they have built a solid relationship with the environment.

2.1.3. Stakeholders theory

The stakeholder theory proposed by Freeman (1984) holds that an organization is characterized by its relationships with various groups and individuals, including employees, customers, suppliers, government, and members of the community. In a narrow sense, stakeholders are defined as those who participate in the operation of the organization, in other words, they are the people who are very important to the existence and success of an organization (Zammuto, 1984). In a broad sense, a stakeholder is defined as any group or individual who can influence or be affected by the achievement of an organization's goals (Freeman, 1984). Based on the definition by Freeman (1984), Donaldson and Preston (1995) have defined a group or individual that qualifies as a stakeholder if they have a legitimate interest in operational aspects of the organization.

Therefore, in this research, the author identifies four main groups of stakeholders at the destination: people, businesses, organizations, and tourists. Many researchers consider residents as the core stakeholder group (e.g. Byrd et al., 2009; Su et al., 2016), and have demonstrated that residents' perceptions of development and management destination will influence their attitudes and behaviors (Su et al., 2016).

According to this theory, each stakeholder has the right to pursue his or her own goal, not a means to some goal. Therefore, they must participate in determining the future planning of the destination to which they are related. Similarly, this theory holds that “it is the responsibility of the destination to select activities that achieve optimal benefits for all identified stakeholders, without prioritizing any other party's interests over the interests of other stakeholders”.

2.1.4. Social exchange theory

Social exchange theory analyzes interactions between two parties by focusing on the benefits and costs that accrue to each party in the exchange process. This theory argues that interactions and exchanges are likely to continue if both parties feel that they gain more than they lose in the process. From the perspective of tourism development, social exchange theory assumes that the attitudes of stakeholders towards the development and support of tourism development and environmentally responsible behavior in the community will be affected by their assessments of the actual and perceived outcomes of tourism on their communities (Andereck et al., 2005).

In this research, social exchange theory is applied to explain and explore the behavior and attitudes of people at the destination as well as provide a theoretical basis for research and assessment of tourism impacts on people at the destination. In addition, this theory is used to analyze the fact that “local people will tend to participate in the exchange and support of future tourism development in their community if they see the benefits that they get greater than the cost”.

2.2. Research hypothesis

2.2.1. The relationship between the social responsibility of the destination and the impacts of tourism.

Tourism impacts destination stakeholders through positive and negative influences (Byrd et al., 2009) on various aspects such as economic, sociocultural, and environmental (Tosun et al., 2009). According to Tosun (2002), tourism can improve and raise the standard of living of people in a destination but it can also increase the prices of goods and services. While Wang et al. (2006) demonstrate that tourism is a means of cultural revitalization, Pearce (1996) argues that tourism can be a “tool of cultural exploitation” and structural disruption. traditional culture at the destination. Richie (1988) argues that tourism can raise awareness about environmental protection and keep the local community's environment clean. In summary, the social responsibility of a destination can promote positive perceptions of tourism and minimize negative impacts.

From the above basis, the author proposes the first two hypotheses:

H1: The social responsibility of the destination positively affects the public's perception of the positive impacts of tourism.

H2: The social responsibility of the destination negatively affects the public's perception of the negative impacts of tourism.

2.2.2. The relationship between the social responsibility of the destination and the satisfaction of the community.

Community satisfaction is considered an important part of destination planning and development. The social responsibility of a destination can bring many benefits such as increased economic efficiency, protection of the natural environment, and improved quality of life (Su et al., 2016). Therefore, the relationship between the social responsibility of the destination and the overall satisfaction of the community can be positive. The destination's socially responsible activities can increase the value of the destination, which can strengthen the community's satisfaction with the destination. From that, the author put forward the following hypothesis:

H3: The social responsibility of the destination positively affects the satisfaction of the community.

2.2.3. The relationship between the social responsibility of the destination and the environmentally responsible behavior of the community.

“Environmentally responsible behavior” refers to the reflective actions of individuals or groups towards the natural environment and ways of solving environmental problems (Hungerford & Peyton, 1976). Based on the stakeholder theory, local people as the core stakeholders of the destination can benefit from the destination's socially responsible behaviors. Based on the theory of social exchange, when people perceive the benefits of the destination's socially responsible behaviors, they will support the destination’s development

through specific behaviors, such as supporting the development of tourism and implementing environmentally responsible behaviors. From there, both the destination and the people can derive corresponding benefits from the exchange, and accordingly, the exchange will be maintained for a long time. From the above bases, the author proposes the fourth hypothesis:

H4: The social responsibility of the destination positively affects the environmentally responsible behavior of the community.

2.2.4. The relationship between tourism impacts and overall community satisfaction

From social exchange theory, it can be seen that if people perceive the positive benefits of tourism as greater than the negative effects of tourism, they will tend to be satisfied and have a pro-development attitude towards tourism. Therefore, to successfully develop tourism, it is necessary to change people's perception of tourism impacts positively. People's perception of tourism impacts and overall community satisfaction is a topic that has been studied for many years and tested in many research models by many authors, such as Ko et al. (2002), Nunkoo and Ramkissoon (2011). On that basis, the author proposes the next two hypotheses:

H5: The positive impacts of tourism positively affect the overall satisfaction of the community.

H6: The negative impacts of tourism negatively affect the overall satisfaction of the community.

2.2.5. The relationship between the impact of tourism and the environmentally responsible behavior of the community

According to social exchange theory, when people see benefits from the positive impacts of tourism, they will perform positive behaviors including environmentally responsible behavior at the destination. On the contrary, when people only see the damage from the negative impacts of tourism they can stop these behaviors. From the above theory, it can be inferred that the positive impacts of tourism can promote environmentally responsible behavior of residents and vice versa, negative impacts can limit responsible behavior to the environment. their environment. Therefore, the following hypotheses are proposed:

H7: The positive impacts of tourism positively affect the environmentally responsible behavior of the community.

H8: The negative impacts of tourism negatively affect the environmentally responsible behavior of the community.

2.2.6. The relationship between satisfaction and environmentally responsible behavior of the community

From the perspective of local communities, previous research has shown that community satisfaction is an important basis for supporting and supporting their tourism development (Su et al., 2016). Similar results are also confirmed in the research of Vargas Sa'nchez et al. (2011) that there is a positive relationship between community satisfaction and support for tourism development by people. people. On that basis, the author proposes the final hypothesis:

H9: Community satisfaction positively affects their environmentally responsible behavior.

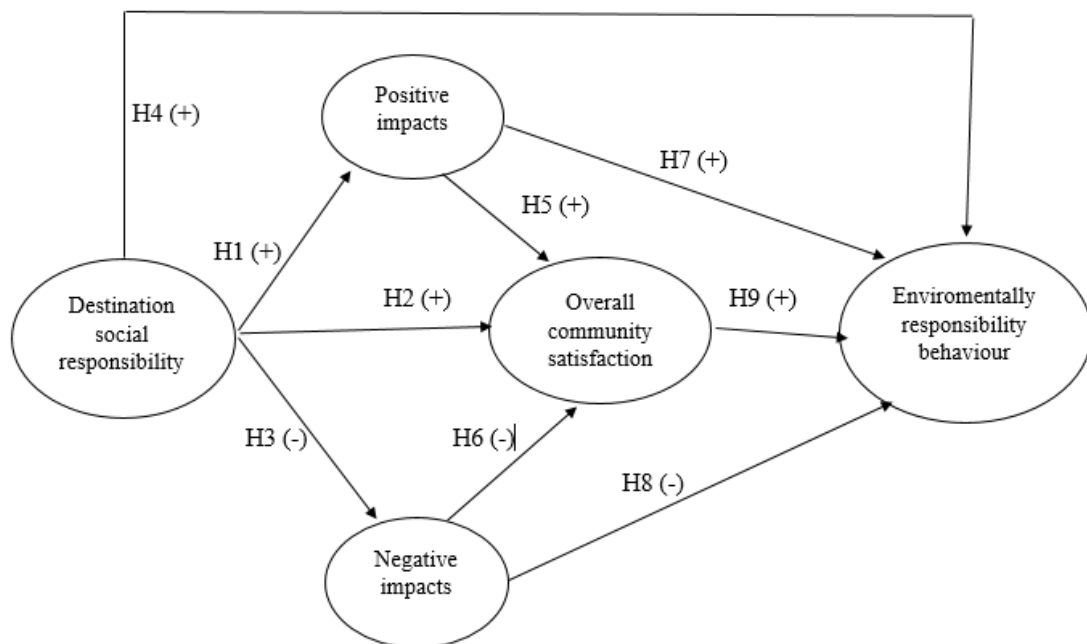


Figure 1. Proposed research model

3. Method

3.1. Research sample

The research focuses on the local community living and working in Nha Trang City. Data collection was carried out from February to April 2021.

This research uses the PLS-SEM data analysis method to evaluate variables and test research hypotheses, so to carry out this research, a large enough sample size is required. According to Hair et al (2014), “the minimum sample size to use exploratory factor analysis (EFA) is 50, preferably 100 or more”. As for the SEM model, Kline (2011) said that: “the sample size is 5 times or better than 10 times the number of observed variables”. Thus, the research model proposed by the author includes 1 independent variable, 3 intermediate variables, and 1 dependent variable, generating 20 observations. And based on the above-mentioned ways of calculating sample size, the minimum sample size of the research is 200, combined with the normative sampling method, the author chooses a sample size of 440 to satisfy the above conditions.

3.2. Methods of data analysis

This research uses the PLS-SEM method through SmartPLS 3.3.2 software to evaluate the reliability of Cronbach’s Alpha, the convergence value, and the discriminant validity of the observations in the research. In addition, PLS-SEM is also used to test the research hypotheses.

For first-order structures, the value of Cronbach’s Alpha and the combined reliability must be greater than 0,7 to ensure the internal consistency of the measurement scales. Next,

evaluate the discriminant validity and the convergent validity. Accordingly, the extracted variance of the structures must be greater than or equal to 0,5 to ensure the convergence value (Anderson & Gerbing, 1988). Besides, according to Fornell & Larcker (1981) criteria, “a structure is considered to be distinguished from other structures when the square root of the extracted variance is larger than the correlation between that structure and other structures”. In addition, to evaluate the discriminant validity, the Heterotrait-Monotrait correlation matrix (HTMT) was also used. This method is considered superior to the criteria of Fornell & Larcker (1981). The maximum HTMT value to ensure the discriminant validity of the studied structures is 0,85.

Finally, the research hypotheses are tested. The quality of the research model is assessed through the R^2 value and the Q^2 index. The reliability of the tests was retested using the bootstrap procedure with 5000 subsamples and 5% significance level. Finally, the research uses the impact magnitude index (f^2) to assess the impact of the relationships in the research hypothesis.

4. Results

4.1. The validity and reliability of the scale

First, the research will analyze the validity and reliability of the scale through Cronbach’s Alpha index, composite reliability (CR), and convergent validity through extracted variance (AVE). Each indicator has a specific requirement. For the reliability of Cronbach’s Alpha, the scale will be selected when the alpha reliability is greater than 0,6 (the larger the alpha, the higher the intrinsically consistent reliability) (Nguyen Dinh Tho et al., 2009). According to Hoang Trong et al. (2005), the combined reliability (CR) must be greater than 0,7 and the value of convergence through extracted variance (AVE) must be greater than 0,5.

The results of the data analysis show that Cronbach’s Alpha values, the combined reliability values, and most of the load factors meet the requirements of each of these indicators.

From the results of the above scales, the extracted variances of the conceptual structures are all greater than the value of 0,50. Therefore, the scales achieve convergent values. The detailed analysis results are shown in the table below:

Table 1. Results of measurement model

Concept structures	Factor loading	Alpha	CR	AVE
<i>Destination social responsibility: Tourism agencies in Nha Trang</i>		0,90	0,93	0,68
Pay great attention to the protection of the marine environment and marine ecosystem.	0,72			
Pay great attention to the lives of local people.	0,79			
Bring about mass of profit for the city's economy.	0,87			

Concept structures	Factor loading	Alpha	CR	AVE
Create many jobs and improve the workers' lives.	0,87			
Build up good relationships with stakeholders and respect them.	0,86			
Always do business ethically and comply with the law.	0,81			
<i>Positive effects:</i>		0,79	0,88	0,71
Marine tourism has contributed to improving the economic situation of Nha Trang city.	0,89			
Marine tourism promotes the construction of many modern works and the development of many available entertainment services.	0,79			
Increases people's awareness of the marine environment.	0,84			
<i>Negative effects:</i>		0,75	0,86	0,67
Increases the prices of goods and services.	0,84			
Increases the number of traffic accidents.	0,86			
Has made the beaches crowded, which has caused the increasing amount of rubbish along the coast.	0,76			
<i>Overall community satisfaction:</i>		0,94	0,96	0,89
Overall, I am satisfied with the conditions in Nha Trang city.	0,94			
I believe in the future conditions of Nha Trang city.	0,94			
Nha Trang will be a worth-living city.	0,94			
<i>Environmentally responsible behavior:</i>		0,97	0,98	0,89
I comply with relevant regulations so as not to destroy Nha Trang beach environment	0,94			
I am willing to participate in activities to protect and clean the beach environment in Nha Trang.	0,92			
I try to convince everyone in the community to join hands to protect the beach environment of Nha Trang	0,94			
I will educate my children to continue to protect and preserve the marine environment	0,95			
I try to avoid behaviors that affect the Nha Trang beach ecosystem throughout my life	0,96			

Note: CR: Composite Reliability; AVE: Average Variance Extracted

Source: Calculated from the author's survey data

To test the discriminant validity of the scales, the research uses the results of the analysis of the Heterotrait-Monotrait correlation matrix (HTMT). In a good model fit, the HTMT index should be below 1,0. Henseler et al. (2015) proposed that if the HTMT value is below 0,90 then a discriminant value has been established between a given pair of constructs. Gold et al. (2001) also use a threshold of 0,90. Besides, Clark and Watson (1995) and Kline (2015) use a more stringent threshold of HTMT criterion at 0,85. The results show that the correlation between the conceptual structures is less than 0,85. Therefore, it can be concluded that the research concepts gain discriminant validity. The results of the HTMT matrix analysis are presented in the table below:

Table 2. Correlation between conceptual structures

Concept structures	1	2	3	4	5
1. Destination social responsibility					
2. Positive impacts	0,70				
3. Negative impacts	0,60	0,77			
4. Overall community satisfaction	0,74	0,81	0,74		
5. Enviromentally responsibility behaviour	0,79	0,72	0,61	0,74	

Source: Calculated from the author's survey data

4.2. Testing the research hypothesis

The results of testing the research hypothesis by PLS-SEM show that eight out of nine proposed hypotheses are supported.

Research analysis results show that the model explains 64% of the variation in environmentally responsible behavior. Based on the impact magnitude index (f^2), the impact of the destination's social responsibility on the perception of the positive impacts of tourism is strong. Meanwhile, the impact of the destination's social responsibility on the perception of negative impacts of tourism, community satisfaction, environmentally responsible behavior as well as the positive impact of tourism to medium-sized community satisfaction. Except, the impact between the perception of negative impacts of tourism on people's environmentally responsible behavior has a magnitude $< 0,02$ so it should be considered no impact, the remaining effects are weak. The Stone-Geisser index (Q^2) of environmentally responsible behavior is 0,56 which is greater than the value 0, thereby proving a suitable research model to explain these variables.

To increase the reliability of the test results, the bootstrap procedure with 5000 subsamples is used to retest the hypothesis. The results show that the bootstrap value range of the statistically significant hypothesis does not contain any values 0. Therefore, the hypothesis estimation results in this research are reliable.

Table 3. Structural model test results and hypothesis test outcome.

	Hypothesis	Std, β	t-value	Bootstrap	VIF	Hypothesis test outcome
DSR → Positive impacts	H1	0,59	13,62***	[0,50; 0,67]	1,00	Yes
DSR → Negative impacts	H2	-0,50	9,71***	[-0,59; -0,39]	1,00	Yes
DSR → Satisfaction	H3	0,37	7,65***	[0,28; 0,46]	1,63	Yes
DSR → ERB	H4	0,43	6,95***	[0,30; 0,55]	2,01	Yes
Positive impacts → Satisfaction	H5	0,33	6,30***	[0,24; 0,44]	1,91	Yes
Negative impacts → Satisfaction	H6	-0,24	6,28***	[-0,32; -0,17]	1,65	Yes
Positive impacts → ERB	H7	0,17	3,76***	[0,08; 0,26]	2,21	Yes
Negative impacts → ERB	H8	-0,05	1,17 ^{ns}	[-0,13; 0,03]	1,82	No
Satisfaction → ERB	H9	0,26	4,45***	[0,14; 0,37]	2,75	Yes
R ²	R ² _{ERB} = 0,64					
Magnitude of impact (f ²)	f ² _{DSR → Positive impacts} = 0,55; f ² _{DSR → Negative impacts} = 0,34; f ² _{DSR → Satisfaction} = 0,23; f ² _{DSR → ERB} = 0,26; f ² _{Positive impacts → Satisfaction} = 0,16; f ² _{Negative impacts → Satisfaction} = 0,10; f ² _{Positive impacts → ERB} = 0,04; f ² _{Negative impacts → ERB} = 0,004; f ² _{Satisfaction → ERB} = 0,07;					
Stone-Geisser's Q ²	Q ² _{ERB} = 0,56					

Source: Calculated from the author's survey data

5. Discussion and Conclusion

5.1. Discussion

This research focuses on discussing and testing the impact of a destination's social responsibility on environmentally responsible behavior, through the perception of tourism impacts and overall community satisfaction. In the context of beach tourism in Nha Trang and Khanh Hoa, the results of the research are completely consistent with and similar to the results of previous research when proving that the social responsibility of the destination is the responsibility of the people at the destination to the perception during tourism development to positively influence their environmentally responsible behaviors. The relationships between the positive impact of tourism, and the general satisfaction of the community with environmentally responsible behaviors are also confirmed in a positive direction, similar to previous research results such as Su et al., 2018; Su et al., 2017; Gursoy et al., 2004. The research also did not find a statistically significant impact between the perceived negative impacts of tourism and environmentally responsible behavior.

According to the research results, there are 3 main factors affecting the environmentally responsible behavior of local people, including Social responsibility for the destination; Community satisfaction; Positive impacts with a degree of influence are arranged in descending order as follows: (1) Social responsibility of the destination with Beta coefficient (0,43); (2) Community satisfaction with Beta coefficient (0,26); (3) Positive impact with Beta coefficient (0,17). This confirms that the social responsibility of the destination plays a very important role in encouraging environmentally responsible behavior in the community.

The social responsibility of the destination has an impact on the public's perception of the positive effects of marine tourism. This result is consistent with the argument of previous research that there exists a statistically significant association between the social responsibility of the destination and the public perception of the positive impacts of tourism. In developing countries, people can support the development of tourism as a means of obtaining benefits and thus place more weight on positive impacts in assessing tourism impacts. Research by Ko et al (2002) has found a relationship between self-interest and the positive effects of tourism. Similarly, Lee's research (2013) used community involvement and attachment and also showed that both community attachment and participation were significantly affected by the benefits they received. Testing of this relationship for local communities in developing countries is rather limited. The results from this research further confirm that the local community in Nha Trang has evaluated and recognized the role of tourism in their lives and communities. In addition, in this research, the author found a statistically significant relationship between the social responsibility of the destination and the community's perception of the negative effects of tourism. This relationship in previous research is usually not statistically significant.

The research also shows that the positive effects of tourism positively affect the satisfaction of the community, while the negative effects of tourism negatively affect the satisfaction of the community. Furthermore, positive impacts have a stronger influence on community satisfaction than negative impacts. This shows that perceived tourism impacts (both positive and negative) are closely related to overall community satisfaction. Since then, promoting the positive impacts of tourism in the process of developing destinations to bring satisfaction to the community is a matter of concern for managers.

Based on the social exchange theory, this research also examines the influence of tourism impacts on people's environmentally responsible behaviors. The positive impact of tourism has a weak effect on people's environmentally responsible behavior. This result is consistent with the view that people's perception of tourism impacts is one of the main predictors of their attitudes and behaviors (Byrd & Gustke, 2004). Similarly, the scale "Community satisfaction" has the second biggest influence on "Environmental responsible behavior". This result is also completely consistent with the previous argument that community satisfaction plays an important role in shaping residents behavior (Ko & Stewart, 2002).

Finally, the research also shows that the social responsibility of the destination has an impact on the people's environmentally responsible behavior and is also the most

influential factor in the environmentally responsible behavior of the people. The experimental results show that socially responsible activities are important activities to improve the satisfaction of the resident community at the destination, thereby promoting their acceptance and implementation, environmentally, responsible behavior. By adopting destination management practices, destinations will be incentivized to effectively implement environmentally responsible behaviors by their people and contribute to the sustainable development of destinations.

5.2. Conclusion

This research has demonstrated that there exists a statistically significant relationship between the social responsibility of the destination and the perception of tourism impacts (positive and negative), community satisfaction, and behavior environmental responsibility of people. Therefore, tourism managers should invest more in the destination's social responsibility initiatives and communicate these initiatives to local people. This will positively influence residents awareness and improve their environmentally responsible behavior.

Stemming from the above arguments, tourism managers in Nha Trang City need to focus on implementing some solutions for sustainable and responsible destination development as follows:

- First, set out standards for assessing the performance of environmental protection as well as environmental assessment standards at destinations. Orienting tourism development in combination with environmental protection, promoting environmentally responsible behaviors for parties involved in tourism development. It is necessary to have regulations clarifying environmentally responsible behaviors for related parties, along with sanctions to handle acts that cause adverse effects on the natural environment and the socio-cultural environment at the destination.

- Second, develop programs and policies to encourage people to participate in tourism: Encourage people to participate in introducing destinations to tourists, providing places to stay, places to eat, and means of transport,...in a controlled manner. Along with that is to develop a clear benefit-sharing mechanism to ensure that people can receive the benefits from tourism development.

- Third, strengthen the work of supporting and encouraging tourism business units to improve their social responsibility; discuss with the people about policies and plans in tourism development to ensure that the development in the destination, brings more positive impacts than negative impacts to the community; providing a satisfactory tourism environment and services, along with monitoring changes in people's satisfaction levels and taking timely measures to resolve them.

- Fourth, focus on training and developing human resources for tourism, especially human resources from the local community.

- Fifthly, effectively exploiting the media in promoting the destination image, the actual benefits that tourism brings, bringing tourism closer to the people, giving directions

and directions, guiding on propaganda programs through the media on the contents to increase understanding, interest, and positive attitude towards marine tourism development.

- Sixth, focus on ensuring security and order, ensuring the quality of people's living environment is not affected by tourism development. There are strict regulations for tourists participating in tourism to avoid adversely affecting people's lives.

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THE POWER OF POSITIVE CHANGE: ESG AND CORPORATE DIVIDEND POLICY

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Abstract

Environmental, Social, and Governance (ESG) is a new spotlight for investors to seize the opportunity to make intelligent decisions and for corporations to easily follow the trend of the world. But does ESG have long-term value, or is it just a transient phenomenon? Our study aims to test the relationship between ESG standards and the dividend payout policy of corporations, demonstrating the importance of ESG to both corporations and investors. Using data from Refinitiv, we discovered 734 companies, comprising 166 from developing nations and 568 from developed countries, from 2015 to 2021, with an annual frequency of 5,138 observations. Our research findings support our hypothesis: there is a positive relationship between ESG standards and corporate dividend payout policy. This relationship is particularly weakened in light of the COVID-19 pandemic. Along with that is a discovery between the two groups of developed and developing countries, and between the two groups of high-ESG-corporations and low-ESG-corporations about the above correlations. Empirical evidence meets research objectives and is expected to be a reference source for managers to comprehensively evaluate and consider the business decisions of corporations in the current context.

Keywords: *COVID-19, dividend payout, ESG*

1. Introduction

The last decade has seen a "revolution" in the process of dramatic change for the sake of global sustainability. As a result, they started to concentrate on developing projects concerning environmental, social, and governance standards, which is called ESG

(Environment, Social and Governance). Dividend payout policy demonstrates the financial strength and worth of the business, generating goodwill among shareholders and driving stock demand. On the other hand, when investors enter the market, they always yearn to maximize their assets. However, in this day and age, investors not only want to make temporary benefits, but also desire to ensure that future dividends will not be reduced. To protect their own interests, they often invest in businesses with higher sustainability (Garavaglia et al., 2023). Since then, our research has focused on an important factor in sustainability indicators - ESG. Some studies have analyzed the relationship between ESG standard and dividend payout policy, such as the paper of Ellili, N. O. D. (2022). Almost all of them point out a positive relationship between ESG and dividend payout policy, demonstrating that this standard has a significant influence on shareholder interests and the corporation's dividend payout policy. Yet, certain research, such as the empirical study in China - Niccol et al. (2020), reveal a negative association between ESG and dividend payout policy. So, this subject has drawn a lot of attention.

Before the world faced the COVID-19 crisis, activities related to sustainability did not really become popular and explosive. COVID-19 has rattled markets, making investors pay more attention to a corporation's long-term viability when making investment decisions. For corporations, ESG is a strategic and urgent global trend for private and state-owned corporations, directly affecting long-term sustainable development. The good implementation of ESG standards will help corporations improve their brand value and reputation; contribute to reducing costs and increasing productivity; increase revenue; enhance the relationship between customers and partners; create competitive advantages, attract capital and investment, especially foreign investment; etc. (Freeman, 1984). On the other hand, for investors, ESG is a reputable measure for investors to make decisions. However, the authors wonder whether ESG is really important or just a transient phenomenon?

The relationship between ESG and corporations and investors is almost positively correlated. However, ESG scores do not invariably exhibit a favorable correlation with the dividend payout policy of the company. As an instance, social and environmental responsibility, such as ESG, over the short and extended periods will have different impacts on dividend payout policy and shareholders' investment decisions. Therefore, the authors want to clarify the correlation relationship between ESG standard and the dividend payout policy of corporations, thereby showing the importance and strong influence of ESG standards on investors and corporations. Previous studies usually only compare ESG and dividend payout policy within each region, such as Western Europe, the United States, China, and so on, without comparing them across different regions (Verga Matos et al., 2020). The study by Lucas (2020) still has data limitations, as a result, this is our chance to provide empirical evidence comparing two groups of developed and developing countries. At the same time, research papers usually consider a specific stable situation, not mentioning this relationship in the unstable economic situations of the times (particularly the COVID-19 pandemic). In addition, the authors expect detailed analysis of the data to clarify issues surrounding the relationship between ESG scores and dividend payout policy (Broadstock

et al., 2021) divided corporations into two groups based on ESG scores and highly appreciated the performance of corporations with higher ESG scores; however, the data is still limited to one country, China. So, this is our opportunity to provide empirical evidence between two groups of developed and developing countries as well as between corporations with high and low ESG scores, thereby expanding the research problem in different cases.

Objectives of the study including: (1) Provide empirical evidence on the effect of environmental, social, and governance activities on the dividend payout policies of corporations in developed and developing countries; (2) Analysis to show empirically evidence for the difference in the influence of high-ESG-corporation and with low-ESG-corporation on dividend policy; (3) Shows the force of ESG on dividend payout ratio amidst the COVID-19 pandemic.

2. Literature review and theoretical basis

2.1. Literature review

Managers usually use ESG as a quantitative alternative to evaluate the company's impact on society and environment. As maintained by Soppe (2004), sustainability is a phenomenon rapidly spreading across economic and financial literature. Previous studies have only analyzed a small portion of the main impacts of ESG, making it difficult to generalize the results. To address this limitation, Friede et al. (2015) conducted a thorough review that included all primary and secondary data from earlier studies. Scholars and investors have conducted over 2,000 empirical and evaluative studies on this relationship, highlighting that the positive impact of ESG on corporate financial performance (CFP) appears to be consistent over time. ESG is a crucial element that sovereign wealth funds (SWFs) should contemplate when formulating investment judgments, the higher ESG score companies have, the more attractive to SWFs (Dai et al., 2022). We are concerned about whether dividends will face short-term challenges and how investors will respond to them. Black et al. (2002) demonstrated that investors in both the stock market and hedge funds exhibit a short-term orientation. To provide further insight, Harford et al. (2014) have shown that these types of investors typically prioritize short-term returns and overlook long-term. Consequently, investors may tend to undervalue the long-term perspective. In such circumstances, adherence to ESG standards may, in the short term, result in a decline in dividends, which may be upsetting to investors. Lastly, Starks et al. (2017) investigated investors' short and long-term investing tendencies. The findings reveal that investors with long-term objectives typically favor companies with higher ESG scores, while those with short-term goals prefer the opposite. Verga Matos et al. (2020) looked at the correlation between ESG scores and corporate dividend payout policies in Europe, they found that more sustainable firms tend to have more stable dividend payouts. The research indicates that a higher ESG score results in a more enduring connection between shareholders and other stakeholders, owing to a more dependable profit sharing. Lucas (2020) showed the results support a favorable association, indicating that ESG factors continue to have a positive effect on the durability of dividend payments. Recent studies, such as Zahid's research (2022) which analyzed data from Western European listed companies (who were at the forefront of

the ESG revolution) for the period 2010 - 2019, have demonstrated a positive relationship and a significant difference between ESG and dividend payout policies. However, Zahid et al. (2022) also noted that engaging in high-quality ESG activities could lead to a slowdown in dividend growth.

These studies have shed light on the relationship between corporate sustainability and dividend payout policies. As a result, corporations may adopt business strategies related to ESG practices or consider implementing such strategies. Likewise, investors who use ESG screening as a decision-making criterion can benefit from the findings of these studies. However, there are few research studies that objectively consider ESG scores in uncertain circumstances. For instance, it remains unclear whether ESG still has a positive impact on the dividend payout ratio during an economic downturn. To answer this question, the authors use the COVID dummy variable approach to analyze data from 2015 - 2021 for companies operating in both developed and developing economies, while accounting for the COVID-19 pandemic. By comparing developed and developing countries, individual analysis will be conducted on two groups of corporations with low ESG scores and high ESG scores. We hope to provide a comprehensive understanding of the relationship between ESG and dividend payout policy.

2.2. Theoretical basis

Trade-off Theory: According to the trade-off theory found in previous studies on Environmental, Social, and Governance (ESG), typically, the study of Azmi et al. (2021) indicates that investment in ESG is likely to be an inefficient use of resources. From our perspective, in the short term, the investment in ESG negatively impacts shareholders' cash-flow. But over time, corporations will gain from investing in ESG. Besides, on the trend of sustainable development of the world, if we do not change and follow the sustainable rules, sooner or later, we will eventually be "out of the game". Thus, based on the trade-off theory, corporate managers have a choice: a trade-off between shareholders' current cash-flow or the corporation's value and shareholders' interest in the future.

Agency Theory: ESG standards and dividends both have similar goals. Giving the market clear signals increases both the reputation and the governance of the corporations (El Ghoul et al., 2011). Simultaneously, a solid reputation can assist a corporation seek outside funding, which lowers the cost of doing so and allows businesses to set away more money for dividends. Therefore, this view implies a positive relationship between ESG standards and dividend payout ratio. Formulated on agency theory, our study will argue about the information asymmetry problem that makes investors favor dividend payout policy over retained earnings.

Signaling Theory: When corporations disclose information and communicate their actions to the capital markets, it is done with the intention of reducing asymmetric information costs, optimizing financial costs, and increasing the value of the corporations. Signal theory suggests that the more transparent the information is, the more certainty investors have in managers' decisions. This becomes useful in debating and assessing the

impact ESG scores have on managers' investment decisions, and shareholders' positive or negative assessments of the ESG scores of corporations.

Stakeholder Theory: It states that successful corporations can coordinate the interests of all stakeholders to increase their sustainability (Freeman, 1984). They emphasize not only shareholder profit maximization but also the needs of the corporation's other stakeholders. As a new emerging model for corporate strategy, ESG metrics can assess a corporation's achievement and standing on a variety of important issues in the same way that financial ratios can.

The Precautionary Motive: In our study, the precautionary motive theory clarifies why firms are increasing their cash reserves in response to economic volatility and uncertainty resulting from the COVID-19 pandemic. This ensures that the company can maintain its operations and mitigate the impact of this unpredictability.

2.3. Hypothesis

H1: ESG standards positively affect the dividend payout ratio of corporations.

H2: The effect of the ESG standard on the dividend payout ratio of corporations in developing countries is stronger than in developed countries.

H3: In the context of COVID-19, the relationship between ESG and dividend payout ratio is weakened.

H4: The relationship between ESG score and a dividend payout ratio in firms with low ESG scores is stronger than in firms with high ESG scores.

H5: COVID-19 pandemic affects the relationship between ESG and dividend payout policy more strongly in low-ESG-corporations.

3. Method

3.1. Sample

Our dataset has a total of 5,138 observations for 568 companies in developed countries (USA, UK, France, Germany, Spain, Netherlands, Singapore, Japan, Korea, Australia, etc.) and 166 companies from developing countries (China, India, Brazil, Turkey, Indonesia, etc.), in the period from 2015 to 2021, at an annual frequency. We selected the companies in the industry group that have codes 10 (Energy), 15 (Materials), and 20 (Industry) according to GICS standards. We collect data on ESG scores and dividend payout ratios from Refinitiv to build the dataset for the study. Moreover, the data set is truncated at 3% at each tail of the distribution to reduce the influence of outliers.

3.2. Models and methodology

To test the assumed relationship between the Environmental, Social, and Governance standard and the corporation's dividend payout ratio, the authors estimate the following model (Verga Matos et al., 2020; Benlemlih, 2019):

$$DIV_{i,t} = \beta_0 + \beta_1.ESG_{i,t} + \beta_2.DIV_{i,t-1} + \beta_3.WACC_{i,t} + \beta_4.SIZE_{i,t} + \beta_5.CAPEX_{i,t} + \beta_6.LEV_{i,t} + \beta_7.AGE_{i,t} + \beta_8.CASH_{i,t} + \beta_9.CFO_{i,t} + \beta_{10}.ROE_{i,t} + \delta_t + \alpha_i + \mu_{i,t} \quad (1)$$

Where i refers to firm and t refers to periods; δ_t is the error term in correlation to time-specific effects; α_i is the error term associated with firm-specific effects which include unobservable firm-specific characteristics, and $\mu_{i,t}$ is the random error term.

Second, to show the effect of the COVID-19 pandemic on the relationship between the ESG standard and the corporation's dividend payout ratio, we add a dummy variable COVID (COVID) to model (1) and make an interaction term with the ESG score (ESG), with an essential explanatory variable being ESG x COVID as in model (2) as follows:

$$DIV_{i,t} = \beta_0 + \beta_1.ESG_{i,t} + \beta_2.DIV_{i,t-1} + \beta_3.WACC_{i,t} + \beta_4.SIZE_{i,t} + \beta_5.CAPEX_{i,t} + \beta_6.LEV_{i,t} + \beta_7.AGE_{i,t} + \beta_8.CASH_{i,t} + \beta_9.CFO_{i,t} + \beta_{10}.ROE_{i,t} + \beta_{11}.ESG_{i,t}.COVID_t + \beta_{12}.COVID_t + \delta_t + \alpha_i + \mu_{i,t} \quad (2)$$

Third, to show the impact of the difference between the two groups of low and high ESG corporations on the relationship between ESG and dividends, we estimate the model:

$$DIV_{i,t} = \beta_0 + \beta_1.ESG_{i,t} + \beta_2.DIV_{i,t-1} + \beta_3.WACC_t + \beta_4.SIZE_{i,t} + \beta_5.CAPEX_{i,t} + \beta_6.LEV_{i,t} + \beta_7.AGE_{i,t} + \beta_8.CASH_{i,t} + \beta_9.CFO_{i,t} + \beta_{10}.ROE_{i,t} + \beta_{11}.LOW_{i,t} + \beta_{12}.LOW_{i,t}.ESG_{i,t} + \delta_t + \alpha_i + \mu_{i,t} \quad (3)$$

Fourth, to show how the impact of COVID-19 on each group of firms with high and low ESG scores affects the relationship between ESG scores and dividends, the authors estimate the model:

$$DIV_{i,t} = \beta_0 + \beta_1.ESG_{i,t} + \beta_2.DIV_{i,t-1} + \beta_3.WACC_t + \beta_4.SIZE_{i,t} + \beta_5.CAPEX_{i,t} + \beta_6.LEV_{i,t} + \beta_7.AGE_{i,t} + \beta_8.CASH_{i,t} + \beta_9.CFO_{i,t} + \beta_{10}.ROE_{i,t} + \beta_{11}.COVID_{i,t} + \beta_{12}.ESG.COVID_{i,t} + \beta_{13}.LOW_{i,t} + \beta_{14}.LOW_{i,t}.ESG_{i,t}.COVID_t + \delta_t + \alpha_i + \mu_{i,t} \quad (4)$$

Table 1. Variable definitions

Variables	Definitions	Sources
<i>Dependent variable</i>		
DIV	Divide the cash dividend by the total assets at time t to calculate the dividend payout ratio	Calculations based on data from Refinitiv
<i>Key independent variables</i>		
ESG	The ESG total score can be measured using the natural logarithm at time t	Calculations based on data from Refinitiv
DIV _{t-1}	Divide the cash dividend by the total assets at time t-1 to calculate the dividend payout ratio	Calculations based on data from Refinitiv
<i>Control variables</i>		
WACC	Calculated using all sources of capital including equity stock, preferred stock and debt at time t, with each category of capital being weighted proportionally	Calculations based on data from Refinitiv
SIZE	Measured by the natural logarithm of the total assets of the firm at time t	Calculations based on data from Refinitiv

Variables	Definitions	Sources
CAPEX	The efficiency of using capital on assets of the corporation at time t	Calculations based on data from Refinitiv
LEV	Measure the capacity and manage by total debt on total assets owned by the corporation at time t	Calculations based on data from Refinitiv
AGE	Measured by the natural logarithm of the age of the corporation	Calculations based on data from Refinitiv
CASH	The cash ratio measures the ratio of cash holdings to total assets at time t	Calculations based on data from Refinitiv
CFO	Calculated by corporation's cash flow from operating activities to total assets at time t	Calculations based on data from Refinitiv
ROE	Express the earnings power and efficient capital of corporation by measuring net income on equity at time t	Calculations based on data from Refinitiv

Regarding econometric methods, we use a fixed-effects model (FEM), a random-effects model (REM) and the System GMM method (SGMM). The authors further test whether there is a difference between high-ESG-corporation and low-ESG-corporation on relation to dividend by using the LOW dummy variable on the magnitude of the ESG score and letting it interact with the primary independent variable of the model. Finally, the author allows these two dummy variables to interact with the primary independent variable of the model, thereby examining the force of COVID-19 on the affiliation between ESG and dividends of two different groups of high-ESG-corporation and low-ESG-corporation.

4. Results

4.1. ESG and dividend payout ratio

Table 2. Regression results by all samples

Variable	FEM	REM	GMM
DIV _{i, t-1}			0.5040*** (3.08)
ESG	0.0011 (1.27)	0.0033*** (4.57)	0.0264** (2.18)
WACC	0.0916 (0.93)	-0.0338*** (-3.68)	-0.0314 (-0.23)
SIZE	-0.0044*** (-4.77)	-0.0033*** (-8.44)	-0.0060** (-2.40)
CAPEX	0.0888*** (8.58)	0.0607*** (6.42)	0.5680*** (3.67)
LEV	-0.0459***	-0.0331***	0.0008

Variable	FEM	REM	GMM
	(-14.13)	(-12.88)	(0.02)
AGE	0.0056***	-0.0017***	0.0009
	(2.96)	(-2.81)	(0.29)
CASH	-0.0085**	-0.0052	-0.0838
	(-1.98)	(-1.35)	(-1.23)
CFO	0.0373***	0.0623***	0.0610
	(6.91)	(11.87)	(-0.63)
ROE	0.0150***	0.0245***	0.0107
	(7.36)	(12.31)	(0.75)
Obs.	5,138	5,138	5,138
Firms	734	734	734
IVs			14
AR(2) p-value			0.126
Hansen p-value			0.238

Notes: The symbols ***, **, and * respectively represent the coefficients' statistical significance at 1%, 5%, and 10%.

Source: Authors' calculation.

Regression results with the independent variable ESG have a positive correlation with dividend policy at the 5% statistical significance level and have a regression coefficient of 0.0264. This supports our hypothesis: when corporations implement and focus on environmental, social, and governance (ESG) standards, it will positively affect their dividend payout policy. The implication is that when companies improve their ESG scores, their dividend payout ratio will increase, which is in keeping with previous research (Verga Matos et al., 2020; Zahid et al., 2022; etc.).

4.2. ESG and dividend payout ratio: the difference between two groups of countries

Table 3. Regression results by country group

Variable	Developed countries			Developing countries		
	FEM	REM	GMM	FEM	REM	GMM
DIV _{i,t-1}			0.565**			0.1840
			2.09			(1.26)
ESG	0.0013	0.0029***	0.0250**	0.0004	0.0038*	0.0317*
	(1.42)	(3.85)	(2.04)	(-0.16)	(1.81)	(1.67)
WACC	0.0796	-0.0483***	0.5570	0.0325	0.0054	-0.1180
	(0.84)	(-4.54)	(1.29)	(0.09)	(0.29)	(-0.97)

Variable	Developed countries			Developing countries		
	FEM	REM	GMM	FEM	REM	GMM
SIZE	-0.0032*** (-3.41)	-0.0033*** (-7.61)	-0.0010 (-0.32)	-0.0112*** (-3.85)	-0.0041*** (-4.47)	-0.0084*** (-3.04)
CAPEX	0.0834*** (7.72)	0.0469*** (4.74)	0.9020*** (2.96)	0.1270*** (4.36)	0.1290*** (4.90)	0.5890*** (3.54)
LEV	0.0434*** (-12.94)	-0.0316*** (-11.42)	-0.0561 (-0.99)	-0.0408*** (-4.42)	-0.0327*** (-5.34)	-0.0540 (-1.09)
AGE	0.0021 (1.04)	-0.0017*** (-2.64)	-0.0109 (-1.49)	0.0266*** (3.98)	-0.0010 (-0.49)	-0.0047 (-0.93)
CASH	-0.0072 (-1.62)	-0.0064 (-1.54)	0.0877 (0.86)	-0.0240** (-2.05)	-0.0095 (-0.95)	-0.1860** (-2.49)
CFO	0.0308*** (5.35)	0.0540*** (9.52)	-0.1190 (-1.19)	0.0652*** (4.63)	0.1010*** (7.69)	0.0043 (0.03)
ROE	0.0102*** (4.81)	0.0193*** (9.34)	0.0078 (0.45)	0.0316*** (5.55)	0.0446*** (8.00)	0.0119 (0.47)
Obs.	3,972	3,972	3,972	1,162	1,162	1,162
Firms	568	568	568	166	166	166
IVs			12			14
AR(2)			0.271			0.643
p-value						
Hansen			0.446			0.674
p-value						

*Notes: The symbols ***, **, and * respectively represent the coefficients' statistical significance at 1%, 5%, and 10%.*

Source: Authors' calculation

The regression table results exemplify that the influence of ESG on dividend changes across regions. The regression coefficient of the ESG variable in developing countries is 0.0317, which is greater than the coefficient of the ESG variable in developed countries (0.0250). The implication is that: The influence of the ESG standard on the dividend policy of corporations in developing countries is highly stronger than that of corporations in developed countries, which is consistent with our hypothesis and expectancy.

4.3. ESG and dividend payout ratio: In different cases

Table 4. Regression results: In different cases

	Model (2)			Model (3)			Model (4)		
	FEM	REM	GMM	FEM	REM	GMM	FEM	REM	GMM
DIV _{t-1}			0.3490*			0.4820***			0.1650*
			(1.72)			(3.85)			(1.87)
ESG.COVID	0.0007 (0.93)	0.0007 (0.91)	0.0143* (1.74)				-0.0003 (-0.31)	-0.0003 (-0.26)	0.0290** (2.34)
COVID	-0.0045 (-1.41)	-0.0040 (-1.23)	-0.0617* (-1.86)				0.0002 (0.04)	0.0005 (0.11)	-0.1250** (-2.39)
LOW.ESG				0.0073 (1.46)	0.0094* (1.94)	0.1210** (2.05)			
LOW				-0.0002 (-0.26)	-0.0002 (-0.19)	-0.0083 (-1.00)	0.0010 (1.35)	0.0014* (1.75)	-0.0087 (-1.13)
LOW.ESG. COVID							-0.0005 (-1.57)	-0.0005 (-1.48)	0.0075** (2.14)
ESG	0.0018** (1.96)	0.0038*** (5.05)	0.0175* (1.73)	0.0017 (1.59)	0.0041*** (4.46)	0.0321*** (3.12)	0.0027** (2.43)	0.0050*** (5.05)	0.0026 (0.23)
WACC	0.0910 (0.92)	-0.0341*** (-3.71)	0.1730 (1.54)	0.0989 (1.00)	-0.0333*** (3.63)	-0.1650 (-1.11)	0.0901 (0.91)	-0.0340*** (-3.70)	0.0463 (0.57)
SIZE	-0.0038*** (3.96)	-0.0033*** (-8.25)	0.0033 (0.58)	-0.0043*** (-4.66)	-0.0033*** (-8.36)	-0.0228*** (-3.69)	-0.0038*** (-3.97)	0.0033*** (-8.20)	-0.0116*** (-3.45)
CAPEX	0.0872*** (8.41)	0.0590*** (6.22)	0.5220*** (2.71)	0.0888*** (8.58)	0.0608*** (6.43)	0.0045 (0.04)	0.0867*** (8.37)	0.0587*** (6.19)	0.0856 (1.29)
LEV	-0.0452*** (-13.91)	-0.0325*** (-12.60)	-0.0021 (-0.06)	-0.0456*** (-14.02)	-0.0326*** (-12.68)	-0.0533 (1.27)	0.0453*** (-13.92)	-0.0325*** (-12.62)	0.0022 (0.13)
AGE	0.0083*** (4.07)	-0.00149** (-2.37)	0.0005 (0.12)	0.0055*** (2.94)	0.0017*** (-2.77)	0.0013 (0.41)	0.0085*** (4.12)	0.0015** (2.32)	0.0020 (1.17)
CASH	-0.0063 (-1.45)	0.0037 (-0.97)	0.1020** (2.18)	-0.0115** (-2.42)	-0.0093** (-2.12)	-0.1880*** (-3.60)	-0.0065 (1.50)	-0.0039 (-1.01)	-0.0008 (-0.05)
CFO	0.0384*** (7.11)	0.0629*** (11.96)	0.1080** (2.15)	0.0375*** (6.95)	0.0624*** (11.90)	0.0399 (-0.59)	0.0387*** (7.16)	0.0630*** (11.98)	0.0682*** (3.25)
ROE	0.0142*** (6.91)	0.0240*** (12.01)	-0.0143 (-1.37)	0.0150*** (7.35)	0.0245*** (12.29)	0.0010 (0.09)	0.0141*** (6.88)	0.0240*** (11.98)	-0.0021 (-0.28)
Obs	5,138	5,138	5,138	5,138	5,138	5,138	5,138	5,138	5,138
Firms	734	734	734	734	734	734	734	734	734
IVs			20			22			40
AR(2) p-value			0.158			0.853			0.594
Hansen p-value			0.493			0.093			0.181

Notes: The symbols ***, **, and * respectively represent the coefficients' statistical significance at 1%, 5%, and 10%.

Source: Authors' calculation.

4.3.1. ESG and dividend payout ratio: The impact of COVID-19

ESG.COVID's regression coefficient is 0.0143, which is lower than the independent variable ESG's regression coefficient of 0.0175. In other words, although there is still a positive correlation, the force of the ESG factor on dividend payout policy in the time of COVID-19 is not as great as it usually is. This is in accordance with the findings of prior studies (Mazur et al., 2020; Ali et al., 2022; etc.) as well as consistent with our hypothesis and expectation: In the setting of COVID-19, the relationship between ESG and dividend payout ratio is weakened.

4.3.2. ESG and dividend payout ratio: the difference between high-ESG-corporation and low-ESG-corporation

In accordance with statistical evidence, the impact of ESG on dividend policy varies with different ESG ratings. The regression coefficient of the variable LOW.ESG in the group of corporations with low ESG scores is 0.1210, higher than the regression coefficient of the ESG variable representing the average ESG score of the population (0.0321). The implication is that the influence of the ESG standard on the dividend policy of corporations with low ESG scores is stronger than that of corporations with high ESG scores, and this is consistent with our hypothesis and expectations.

4.3.3. ESG and dividend payout ratio: the difference between high-ESG-corporation and low-ESG-corporation in the scene of COVID-19

To consolidate the conclusion in section 4.3.3.1, the authors divided corporations and found that the relationship between ESG and dividends is negatively affected, especially for firms with low ESG scores in social instability. LOW.ESG.COVID has a regression coefficient of 0.0075, which is lower than the variable ESG.COVID's regression coefficient of 0.0290. That is, although there is still a positive correlation, the impact of the ESG standard on the dividend payment policy of companies with low ESG scores is much smaller than that of companies with high ESG scores during the COVID-19 period. This is consistent with our hypothesis and expectations: COVID-19 pandemic affects the relationship between ESG and dividend payout policy more strongly in low-ESG-corporations.

4. Discussion and Conclusion

The research results have confirmed our expectations, hypotheses, and original objectives. It has been shown that Environmental, Social, and Governance (ESG) standards have a positive influence on the dividend payout policies of corporations. Corporations that strive for sustainability will have a competitive advantage over their competitors (Ioannou et al., 2019). Combined with the stakeholder theory, corporations that are closer to the goal of sustainable development need to consider and meet the interests of all stakeholders. According to the trade-off theory, in order for corporations to fully and truly apply ESG standards to their operations, they must accept the trade-off of necessary resources. Therefore, managers may tighten the dividend payout policy in the short term as a consequence of investing in sustainable development. But in the long term, when corporations have made achievements in implementing sustainability, they will signal to

investors and stakeholders to attract attention and investment opportunities. When investors, particularly risk-averse investors, see a company with a high ESG score, their faith in the company is increased because a high ESG score indicates that they can invest safely in this business when corporate assets are secure and working capital is stable (Wang & Chen, 2017). Similarly, investors usually possess stocks of corporations that exhibit greater information transparency, improved corporate governance, and diminished. Corporations that have strong ESG performance usually reveal more transparent and clear information. Such corporations are prepared to uphold their social engagements and exhibit long-term growth capability, which not only helps avoid environmental hazards and other significant risks linked with the initial investment but also minimizes underperformance in investments.

Notably, ESG standards have a stronger influence on developing-country corporations' dividend payout policies than it has on developed-country corporations. In order to move forward and become developed countries, developing countries not only need to overcome economic limitations but also have to focus on combining economic and other aspects of sustainable development such as ESG. The adoption of ESG norms in this group of countries will be a significant step forward, awarding them with "prizes" from the market and society. Nevertheless, adoption of ESG standards is still relatively new for governments, policymakers, Corporations, and investors in the developing countries. As a result, even if ESG is used, the level of influence on the group of developed countries will be smaller and weaker than for the group of developing countries. Following the catch-up effect states that developing nations frequently experience faster growth than developed nations. Developing countries have the ability to access and use their abundant human resources to apply new innovations from developed countries, thereby building their image and confidence with investors to attract capital and increase growth. Therefore, when applying the ESG standard, developing countries often experience rapid growth, thereby demonstrating that the positive force of ESG scores on developing countries is stronger. With a higher level of interaction than in corporations implementing ESG in developed countries, investors are more easily drawn to the investment environment in developing countries, leading to more investment in ESG-compliant corporations there.

Corporations have limited resources, such as costs, personnel,... and the difference in regulations and political institutions is also a big challenge. This leads to a classification of ESG score: high-ESG-corporations and low-ESG-corporations. However, because of the rapid changes in the world and the need for businesses to perform well in terms of environmental, social, and governance factors, investors prefer to put their money in places that will yield a higher return, such as corporations with high ESG scores (Barker & Eccles, 2019). However, corporations with higher ESG scores have lower risk, and the required rate of return will also be lower. And the fact that corporations have high ESG over an extended period will make the impact of ESG on corporate factors, namely dividend payout ratio, more stable and less volatile. This leads to a slow dividend growth (Zahid et al., 2022). According to Catch-up Effect, corporations with low ESG scores tend to grow faster than corporations with high ESG scores. Specifically, low-ESG-corporations scores will have room to develop and improve growth rates. Because there is investment capital, corporations

have the conditions to overcome the challenges and barriers mentioned above to continue to innovate and improve ESG scores. The dividend growth rate of low-ESG-corporations ratings will be faster and more pronounced than that of high-ESG-corporations scores when investing in ESG is simultaneously increased in both groups of corporations.

The study also shows that, during the severe COVID-19 pandemic, the impact of ESG on dividend policy has decreased compared to the normal situation. The authors find that ESG has a strong growth in this period (2020) because the heavy losses in many areas have prompted policymakers, non-governmental organizations, and even corporate executives to prioritize performing investments more sustainable. When combined with the regression results, it demonstrates that the business's dividend payout ratio, while lower than in the non-COVID situation, actually still increases in volatile times. To support our point of view, Hwang et al. (2021) found that when the COVID-19 pandemic struck, corporate profits decreased significantly; however, as the performance of ESG activities increases, the reduction in income becomes relatively minor. Hypothesizing and proving by econometric method, we also conclude that COVID-19 weakens the relationship between ESG and dividend payout ratio of firms with lower ESG scores than in those with higher ESG scores. Investors frequently place more (less) confidence in companies with higher (lower) ESG scores during times of market-wide crisis. Corporations with high ESG scores are more inclined to survive the pandemic, because investors are more patient and do not sell stocks to avoid losses during volatile market times. This empirical evidence supports the view of the authors that investors will feel more secure about the dividends they receive if the dividend payment policy decided by the managers at the corporation has a high ESG score. Besides, corporations with high ESG scores will attract more investment capital, so they often have abundant financial resources. Therefore, when COVID-19 appears, they will have more financial resources to support business operations than corporations with low ESG scores. Therefore, activities related to social responsibility such as CSR, ESG, etc. are capable of helping corporations cope with and recover relatively from risks in moments of crisis. This is quite true for corporations with a high ESG score, although they are not "completely immune" because they are still relatively affected by COVID-19. Consequently, it can be said that corporations with high ESG scores will be better "protected" than corporations with low ESG scores in the case of the COVID-19 pandemic.

In terms of data, our study complements the previous research direction by expanding to an international context, using data from both groups of developed countries and developing countries from 2015 - 2021 with frequency by year. Using the dependent variable DIV and the independent variable ESG in the analytical model to prove that the group's hypotheses are consistent with the actual situation. In addition, to add certainty to the results, the authors use tests to ensure the confidence level. However, the control variables are not as statistically significant as we expected. The reason is that the search for data is still limited due to the company's limitations in the energy, industrial, and raw materials industries. However, taking data belonging to these industry groups will bring a clearer and more detailed analysis effect because the level of influence of corporations on environmental, social, and governance (ESG) issues seems to be stronger.

The study's findings affirm the significance of ESG standards and their favorable impact on diverse areas, including corporate dividend payout policies, which is consistent with prior research. At present, in developing countries, most of the implementation of ESG is only encouraging, not mandatory, for corporations. Despite this, with climate change and severe environmental pollution affecting the world at large, we believe that the implementation of ESG is no longer an option but has become an obligation of every corporation. Corporations should not only follow the trend but should implement ESG in the most practical way to both bring value to themselves as well as benefit society. While developing ESG, they should also prioritize other factors such as audit quality and management setup to gauge the impact of ESG on dividend payout policies. Through this approach, corporations can determine the. With this in mind, investors can make investment decisions more carefully and thoughtfully. However, the authors still assess that ESG is not yet a factor to measure the performance of corporations. The arguments and recommendations above highlight the significance of ESG standards concerning a corporation's dividend payout policy. Nonetheless, the authors maintain that ESG is not the sole factor that measures a corporation's performance. ESG has the potential to minimize asymmetry of information, enabling investors to make transparent and well-informed investment decisions. However, relying solely on ESG scores to evaluate a corporation's performance may not always be wise, as dividends are impacted by various other factors. Making decisions based on an ESG score without assessing the actual context can lead to biased and inaccurate conclusions. Therefore, investors should adopt a comprehensive approach and scrutinize the corporation's investment model and business operations to make astute decisions that will maximize their benefits.

The above arguments demonstrate that the combination of ESG and dividend payout policy is advantageous for investors. Nonetheless, caution should be exercised when applying the conclusions of this study to firms beyond the industry group that we researched. Therefore, the authors hope that future studies will broaden the scope to enhance the generalizability of experimental results and increase the accuracy of global practices.

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ENVIRONMENTAL BARRIERS FOR VIETNAM'S SEAFOOD EXPORTS TO EU MARKET: STATUS AND IMPLICATIONS

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Abstract

Seafood is one of Vietnam's leading export products, and the European Union (EU) is one of the five most important markets. The successful signing of the EU-Vietnam Free Trade Agreement (EVFTA) has opened up many opportunities for Vietnamese seafood in this market, along with difficulties, notably illegal, unreported and unregulated fishing (IUU) yellow card, and food safety and hygiene regulations. Hence, this research aims to clarify the situation of Vietnamese seafood in the EU market and offer solutions to mentioned difficulties. This is a qualitative secondary research, based on data, information and figures provided by official sites and previous researches in order to reach further conclusions. In the Discussion section, predictions about the market trends were involved, emphasizing the outstanding challenges and opportunities in the seafood industry, which leads to recommendations for four main targets: removing IUU yellow card, ensuring food safety standards, encouraging green business strategy and products promotion.

Keyword: *European Union (EU), seafood export, Vietnam, Illegal unreported and unregulated fishing activities (IUU), Sanitary and Phytosanitary Measures (SPS), regulations.*

1. Introduction

In recent years, trade liberalization has been developing strongly in the world. The main content of the trade liberalization process is to gradually eliminate tariff barriers and non-tariff barriers, creating favorable conditions for the exchange of goods and services to develop. Following the flow of this trend, many economic organizations, regional alliances, and free trade agreements have been established. Over the past two decades, the tariffs applied have been gradually reduced, from 10% in 2000 to 7% in 2015 (Kinzius, Sandkamp, & Yalcin, 2019). From 1995 to 2014, global agricultural trade volume increased steadily and quickly, averaging over 3.5 percent per year (Beckman, Dyck, & Heerman, 2017).

The quick advancement in worldwide trade contributes to economic development and welfare advantage in all members, particularly the developing countries. However, the disparity of distribution of the profit from global trade in different countries could lead to tensions in international trade, could prompt protectionism policies to maximize trade benefit at the cost of loss in trade partners. International trade barriers have the forms of tariff and non-tariff barriers. Non-tariff barriers are more flexible and could be applied to target specific countries, industries, or products, which has been used more frequently in

international trade after the international financial crisis (Yao, Yizhen, & Jianping, 2021). Although, in theory, the WTO only recognizes tariffs as the only legal protection tool, the reality has proven that governments are constantly using new non-tariff measures (Khanh & Binh, 2020). As NTBs can be very diverse, we distinguish four groups of NTBs: (1) import controls, (2) state aid and subsidy measures, (3) public procurement and localization policies, and (4) other NTBs, which include Sanitary and Phytosanitary Standards (SPS), Technical Barriers to Trade (TBT) and capital controls (Kinzius, Sandkamp, & Yalcin, 2019).

Industrialized countries more commonly use Non-tariff measures on exports from developing countries than on exports from industrialized countries, mainly industrial products (textile products, footwear, seafood) subject to non-tariff standards. Therefore, these barriers, developing countries must find ways to overcome these barrier to trade with developed countries. Vietnam began to open up its economy and integrate more thoroughly into the international economy when the Party launched the Doi Moi program in 1986. Up to now, Vietnam has completed signing 15 FTAs at the bilateral and regional levels and is negotiating two more. The most prominent are three new-generation FTAs, including the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), the Free Trade Agreement between Vietnam and the European Union (EVFTA), and the Free Trade Agreement between Vietnam and the European Union.

Vietnam is also a trading partner with over 100 countries and a member of numerous regional and international commercial and economic organizations. Thanks to open-door policies and connecting the economy with the world, Vietnam set new milestones in commodity exports. For the EU market, after three months of implementing the EVFTA agreement, exports to this market reached about 11.08 USD, an increase of about 5% compared to the same period in 2019. However, the export of Vietnam's seafood into this market is slowing down due to technical barriers from the EU. With the scale aquaculture and fishing characteristics, Vietnam's fisheries face a significant challenge related to the IUU yellow card warning of the European Commission (EC) from October 2017. IUU yellow to trade with developed countries card has caused Vietnam's seafood exports to this market to decrease continuously. In the past time, Vietnam has also been making many efforts to remove the yellow card warning from the European Commission, including reviewing and completing the legal framework to manage fishing activities strictly, handling enforces violations or allowing violations to occur, investing in and upgrading fisheries infrastructure, guide and inspect each locality in promoting propaganda about IUU.

This article analyzes the current situation of Vietnam's seafood exports to EU countries, challenges and recommendations to remove barriers imposed by these countries. Aside from the literature review on the relationship between trade and the environment and non-tariff barriers, the content of the article will focus on 4 main groups, including (i) Current status of Vietnam's seafood exports to the world and the EU, (ii) Regulations on food safety and environment of EU in seafood import hygiene and food safety, (iii) Challenges for Vietnam's seafood export industry facing with EU regulations and (iv) Solutions recommended for Vietnam.

2. Method

This study includes an overview of Vietnam's seafood exports to the world markets in general and the EU market in particular, through which there can be a correlation, comparison, and difference between markets. Other markets and the EU market. The study focuses on the EU market, so other aspects of this market are also analyzed, the most important of which are (1) the anti-IUU regulation adopted by the European Commission promulgation and (2) EU Food Safety Law. Regarding events, the two main events analyzed in the study are about (1) Vietnam - European Union Free Trade Agreement (EVFTA) taking effect and (2) Vietnam's yellow card in the European market. The conceptual model of the research is presented in the following figure 1.

This is a long-established research topic, but there is always a cross-cutting issue that the government, businesses, and researchers are widely concerned about. Our team has taken advantage of that to collect specific information and data provided by official sites such as Ocean and Fisheries - European Commission or EU IUU Fishing Coalition. For information on the Vietnamese side, the data is taken from reliable sources belonging to state agencies to ensure objectivity and have the most accurate view of Vietnam's point of view on the issue. Seafood exports and the government's efforts promote trade and overcome significant problems. The aggregated figures were all updated to 2020, so they were not outdated when included in the study. After synthesizing the data, we analyze and come up with solutions to the problem and predict the changing trend of the market.

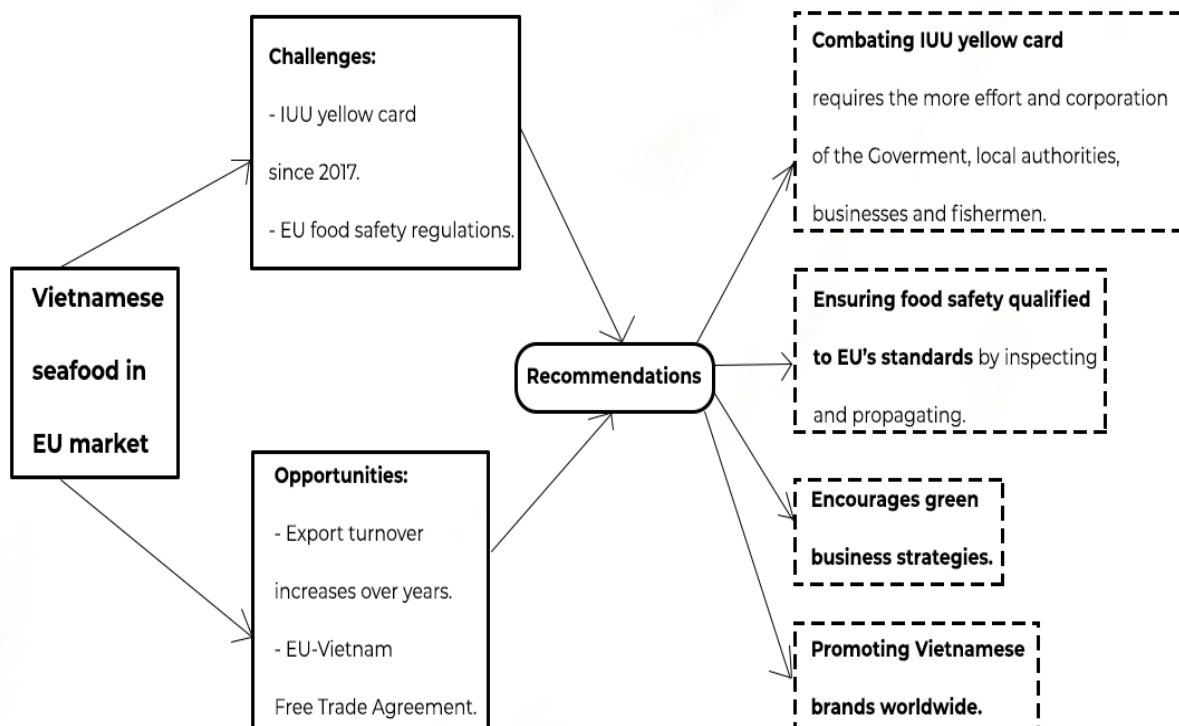


Figure 1. Conceptual Research Model

Source: Original figure of study

3. Result

3.1. Current status of Vietnam's seafood exports to the EU

For many years, the European Union (EU) has always been known as one of Vietnam's leading seafood export markets. In 2016, the total export turnover of Vietnamese seafood to the EU reached 1.16 million USD and until 2019, it reached 1.29 million USD (VASEP, 2020). The growth of Vietnam's seafood export turnover to the EU from 2016 to 2019 is shown in the following graph 2.

However, Vietnam's seafood exports to the EU have faced many difficulties, including food safety standards and import tariffs (Duijn, Beukers, & Pijl, 2012). Especially from October 2017 - the time when Vietnam was imposed a yellow card by the European Commission (EC) IUU (Customs declaration) illegal, undeclared and unregulated property) (Phuong & Huy Hoang, 2019). Therefore, seafood exports to the EU have decreased continuously from 2018 to 2020, although the previous years have consistently recorded a reasonable growth rate.

On August 1, 2020, the Vietnam - European Union Free Trade Agreement (EVFTA) officially took effect, which is expected to create a breakthrough opportunity for Vietnam's seafood exports to the market (Tuan & Trang, 2020). Thanks to a series of commitments on preferential tariffs, the EU has made Vietnamese seafood more competitive in price than similar products in neighboring countries. FDI attraction is expected to increase, production technology and product quality are focused on improving to meet EU standards; The business and institutional environment is ensured in a more stable and transparent direction because the legal system has also been adjusted and supplemented with regulations to be consistent with the signed FTA.

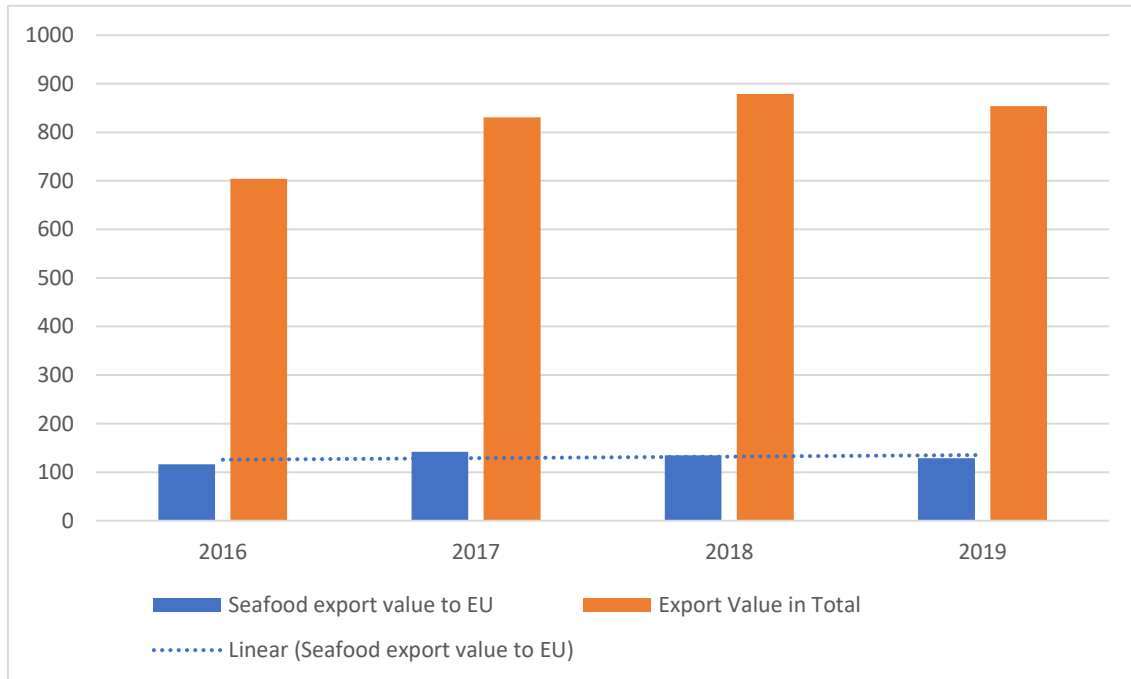


Figure 2. Total seafood exports of Vietnam to the EU (Million USD)

Source: MOIT, 2020

Nearly one year since the EVFTA took effect, Vietnam's seafood exports to the EU have been changing as Vietnamese enterprises actively promote the export of seafood products that are eligible for incentives from EVFTA in the past year. While the partner also prioritizes choosing seafood products from Vietnam because of the more competitive price. In the first six months of 2021 alone, Vietnam's seafood was exported to 25/27 EU markets with a total export volume of 104.3 thousand tons, worth \$485.3 million, up 16% in volume (MOIT, 2021), which is 20% higher than the same period last year. Export turnover to the EU market accounted for 11.8% of the total seafood export turnover of the country. The largest export markets in this market block are the Netherlands, Germany, Italy, Belgium, and France. This is a relatively positive result, especially in the context that the global economy was severely affected by the Covid-19 pandemic, freight rates increased to record highs while exporting Vietnamese seafood. The IUU yellow card has not yet been removed from the EU market.

Shrimp exports to the EU have grown enormously. Shrimp is an item with preferential import tax under the EVFTA that is cut immediately, according to the 3, 5-year roadmap; shrimp is processed according to the 7-year roadmap. Shrimp exports to the EU market in 6 months reached 255.7 million USD, up 27.5% over the same period in 2020. In which, vannamei shrimp alone reached over 205 million USD, up 31%. The EU market accounts for over 14% of Vietnam's total shrimp export turnover, ranking third after the US and Japan. Another seafood export from Vietnam to the EU is tuna. Tuna exports to the EU increased by more than 31%. Preferential import tax under EVFTA on fresh, frozen, or chilled tuna fillets will be reduced immediately (except frozen tuna loins/fillets); for canned, processed tuna (such as canned, bagged, canned tuna, fish products of the canned tuna family...), the EU exempts Vietnam from tax within a quota of 11,500 tons/year. In the first six months of 2021, tuna had the second-largest export value to the EU, reaching 73.3 million USD, up 31.6%. The EU market accounts for 21% of Vietnam's total tuna export turnover, ranking second after the United States. The export of canned tuna alone reached 35.5 million USD, up 116.6% over the same period last year (MOIT, 2021).

3.2. Regulations on food safety and environment of EU in seafood import hygiene and food safety

Food Safety Law in the EU

The European Commission (E.C.) is responsible for much of the current Food Safety laws in European Union (E.U.) nations rather than national authorities. The Commission can implement new food regulations using two primary regulatory instruments: (1). The first is Directives, which set a goal but enable national authorities to define it as attainable, and which cannot be implemented in the member state until it is codified into national law. (2). The second instrument is Regulations, which are "directly applicable" and become law in all Member States as soon as they enter into effect, without the need for national legislation to be changed. The Directives and the Regulations can be classified as "equal," addressing one characteristic of food across all commodities, such as sanitation, or "upright," addressing individual foods (VASEP, 2013)

The General Food Law is based on the framework of European food regulation. It stipulates that all food sold in the European Union must be hygienic. It establishes rules for food chain transparency. Other E.U. food regulation is built on these principles, which constitute a horizontal framework. The new legislation on importing new food goods in general, fisheries or agricultural commodities in particular, is mirrored in four E.U. legal systems, with the dominating law, law 178/2002/E.C., and four supplementary laws, including 852/2004/E.C., 853/2004/E.C., 882/2004/E.C., and 854/2004/E.C (VASEP, 2013).

a. Regulation 178/2002/ EC: General Food Law

The European Parliament and the Council pass legislation that establishes the food law system's broad principles and requirements, establish the European Food Safety Authority, and prescribes food safety procedures. The Food Law controls processing within European food regulation, requiring that all food sold in the E.U. be safe. It establishes rules for food chain transparency. Other E.U. food regulation is built on these principles, which constitute a horizontal framework. Complete information on the competent authorities responsible for the organization and administration of food safety and hygiene - guaranteeing equivalence with the E.U. legislative framework by collaborating directly and universally between the exporting country's relevant authorities (E.C, 2002).

b. Regulation 882/2004/EC: Official Control Procedures

Control procedures to guarantee that food and feed regulation is followed. Developing countries that export food to the E.U. must disclose details on how their national food inspection systems are organized and administered and ensure legal conformity. Food additive requirements (Directives 89/107/EEC and 95/2/EC); Labeling requirements (Directive 2000/13/E.C.); Animal health standards for goods of animal origin imported from foreign countries (Directive 2002/99/E.C.); Maximum permitted residue levels (Regulation 396/2005/E.C.; Regulation 2377/90/E.C.; Regulation 2073/2005, as revised by Regulation 1022/2008/E.C.; Directive 96/22/EEC and Directive 97/98/EEC); Chemical residue control programs for aquaculture (Directive 96/22/E.C. and Directive 96/23/E.C.) (E.C, 2004).

c. Regulation 852/2004/EC: Regulation of general hygiene requirements for all food business establishments

Update food hygiene standards to provide a consistent and comprehensive policy covering all farm food to the customer's point of sale. It excludes topics such as nutrition, food components, and food quality. Community or similar hygienic standards will prepare food imported into the Community. Animal-derived foods exported outside the Community must at the very least meet the rules that would apply if they were sold in the Community, as well as any additional restrictions that may be imposed. The importing country has placed an order. Basic food hygiene requirements include basic production requirements, technical requirements, HACCP standards for food handling and processing, registration/licensing for establishments that manufacture food, and national guidelines for good practice. Regulation (E.C.) 852/2004 specifies requirements based on the HACCP standard but does not mandate its application to primary production.

d. Regulation 853/2005/EC: Specifies additional requirements specific to establishments that process food of animal origin, including raw bivalve mollusks and aquatic products

Animal-derived foods specified in this regulation may pose microbiological and chemical risks. These rules go hand in hand with Regulation 852/2004 on food hygiene, essentially concerned with operator approval. This regulation applies to unprocessed and processed animal-derived goods, except foods containing a component of plant-derived products (E.C, 2005).

e. Regulation 2073/2005/EC: Microbiological Standards Regulations

One of the essential regulations implemented for all food businesses is Regulation 2073/2005/E.C. (Regulation 2073/2005/E.C. on microbiological criteria for foodstuffs) on microbiological criteria for foodstuffs, commonly referred to as the MCR, effective January 1, 2006. This regulation brings together food-specific microbiological criteria previously scattered across several vertical indicators and presents them in one popular format. Microbiological Standard (2073/2005/E.C.) (applied from 01/01/2006 and expired on 31/12/2009).

f. Regulation 466/2001/EC: Regulations on Food Contaminants

On March 1, 2007, three new European Regulations came into force to deal with a wide range of chemical contaminants in food. The most important of the Regulations from a food industry site is Regulation 1881/2006/E.C., which replaces Regulation 466/2001/E.C. and sets maximum allowable levels for specific contaminants in food. This regulation covers several contaminants, including mycotoxins, heavy metals, chloropropanol, PAHs, dioxins, and PCBs. Traceability of seafood and seafood exported to the E.U. from January 1, 2005, with the deadline of January 1, 2010, and Traceability for wild-caught seafood products (IUU - illegal fishing, unreported) (E.C, 2001).

3.3. Challenges for Vietnam's seafood export industry facing with EU regulations

Illegal, Unreported and Unregulated (IUU) Fishing

In recent years, Vietnam has experienced issues with its food safety management system, the physical conditions of fish distribution stations, and the quality of fish distributors inside domestic distribution chains (Davies, Luu, & Dunne, 2017), which path to the infringing of IUU regulations. The IUU is defined as illegal, unreported, and unregulated fishing (International Plan of Action to Prevent, Deter and Eliminate IUU Fishing (IPOA IUU)). The EU Regulation to prevent, deter and eliminate illegal, unreported, and unregulated fishing (IUU) entered into force on January 1, 2010. This regulation includes three standards for seafood imported into the EU (E.C, 2021). The first is illegal fishing, fishing vessels in waters where fishing is illegal or prohibited. Fishing vessels that are not licensed to fish or violate national and international fishing regulations are also included in the above group. Next, IUU stipulates that fishing activities should be reported to the authorities to comply with domestic and international laws. The final element requires fishing vessels to fly the flag of a particular country and not to over-fish, catch juveniles or devastate an area's

fisheries. In addition, the EU believes that overfishing in one sea can affect the ecology of other seas, thereby affecting the fishery resources of this area.

In October 2017, Vietnam's seafood industry was issued a yellow card by the European Commission (E.C.) IUU for illegal fishing practices IUU. In order to remove the E.C.'s IUU yellow card, in 2017, the Fisheries Law was born, along with a series of different efforts based on the E.C.'s request to remove the IUU yellow card. Many provinces and cities simultaneously deployed synchronous solutions, focusing on implementing four recommendations of the E.C., including that Vietnam's sea fishing fleet does not meet standards, ensuring conditions for participating in exploitation: At seas, such as the mismatch between the size of the ship and the actual resources at sea; The system of inspection and supervision of fishing activities at sea for fishing vessels is too lacking and inefficient; Lack of a system to confirm the origin of seafood caught at sea, leading to the fact that most of the seafood caught by fishermen is of unknown origin; There is also a situation where Vietnamese fishers exploit and steal seafood in the waters of other countries.

From 2012 up to 2020, in Southeast Asia, while Thailand and the Philippines have removed the "yellow card," Vietnam has not yet been revoked by the EC. The EC said that Vietnam still has illegal fishing practices, especially fishing vessels violating foreign waters, and the control of the origin of fishery products from fishing is still inadequate. If IUU issues are not resolved, Vietnam will be identified as a non-cooperative country and may be subject to a "red card" measure. Worryingly, when being "yellow card," 100% of seafood shipments originating from Vietnamese catches are inspected when exporting to the European market (EU). In applying the "red card" measure, all fishery products from the catch will be banned from being exported to the EU. Since the EU is a credit market, other markets may apply similar measures to Vietnam's seafood exports (VASEP, 2021).

Food hygiene

Governments authorize and implement sanitary and phytosanitary (SPS) measures to regulate food safety, plant health, and animal health issues and prevent the spread of exotic pests and illnesses (Cuong, Mai, Hieu, Phuong, & Henson, 2013). E.U. regulations on food hygiene cover all stages of production, processing, distribution, and placing on the market for all food intended for human consumption. In recent years, Vietnam's seafood export industry faced problems with those regulations, especially the antibiotic residues in seafood products. The E.U. has been a challenging market for Vietnam's exporting seafood because of its stringent SPS standards. E.U. rules and regulations prohibit the use of ten antibiotics in the seafood sector (zero residues is permitted) and set maximum residual limits (MRL) for the use of ten other antibiotics. Some of these antibiotics impair human health and poison the environment. As a result, food imported into the E.U. must be rigorously inspected for antibiotic or chemical residues (under E.U. regulation No. 96/23). The use of food additives in food and seafood processing is likewise restricted in the E.U. (Truong, 2006). In recent years, Vietnam seafood export products to EU has been declined several times due to “the lack of responsibility for SPS matter” (Hagerman & Jones, 2013)

The E.U. has warned about antibiotic residues in seafood products in Vietnam various times in recent years. According to the Department of Agriculture, Forestry and Fisheries Quality Management, on May 13, 2016, the General Department of Health and Food Safety (DG-SANTE), the European Commission (E.C.) issued a circular Areas(2016)2253381 sent to the Department to notify the Vietnamese side that it has not been able to overcome the abuse of antibiotic chemicals in aquatic products effectively (SPS, 2016). The E.U. has announced that Vietnamese seafood processing facilities will be removed from the list of seafood processing facilities allowed to import into this market if the shipment of seafood is exported. This school is warned of banning antibiotic chemicals specified in Annex 2, E.U. regulation No. 37/2010. In addition, on May 24, 2016, the E.U. competent authority issued a warning document No. 16-814 to E.U. member countries about the unusual death of fish in Vietnam and suggested that the countries strictly control the batches of fish. Seafood products imported from Vietnam (SPS, 2016). Previously, at the end of April 2016, NAFIQAD also informed that the E.U. warned that many seafood export shipments of Vietnam did not guarantee food safety. These are mainly products such as Frozen pangasius products with unsatisfactory organoleptic quality (with an Ammonia smell in the product) and in products containing Sodium carbonates (E 500) are not allowed to be used, frozen pangasius products containing Sodium Erythorbate (E 316) are not allowed to be used; canned tuna products due to Histamine criteria; swordfish products due to the mercury content (SPS, 2016).

3.4. Solutions of Vietnam

In order to overcome IUU's "yellow card", several solutions have been practiced.

On May 28, 2017, the Prime Minister issued Official Dispatch 732/CD-TTG on preventing, reducing, and stopping Vietnamese fishing vessels and fishers from illegally fishing in foreign waters in an effort for the E.C. to delay the application of a yellow card to Vietnam's exploited seafood. Right after Vietnam's seafood was yellow carded, on November 21, 2017, the National Assembly passed Law No. 18/2017/QH14 regulating fisheries activities; rights and obligations of organizations and individuals engaged in fisheries activities or related to fisheries activities; State management of fisheries (from now on referred to as the Law on Fisheries 2017), effective from January 1, 2019. The Fisheries Law 2017 specifically legislates contents related to IUU regulation, including recommendations from the European Commission. On November 23, 2017, the Ministry of Agriculture and Rural Development issued Decision No. 4840/QD-BNN-TCTS approving the plan to implement several urgent solutions to overcome the warning of the European Commission on mining. Illegal, unreported, and unregulated mining (Tuyen, 2017).

After more than two years of efforts to implement measures to remove the E.C.'s yellow card, Vietnam has completed the legal framework, including Law on Fisheries 2017; 2 Decrees, 1 Decision of the Prime Minister; 8 Circulars of the Ministry of Agriculture and Rural Development guiding the Law on Fisheries... Along with that, the Vietnam Association of Seafood Exporters and Producers (VASEP) has established the IUU Executive Board, in collaboration with 28 provinces, coastal cities, businesses, and

fishermen join hands with the State agency to overcome the IUU yellow card in the shortest time, proceed to implement a long-term program against IUU fishing, maintain the reputation and market for seafood products for export of Vietnam. Up to now, there have been 62 enterprises participating in the program "Seafood enterprises committed to combating IUU fishing" with the commitments: Only purchase seafood raw materials from legally fishing vessels with export origin. Clear origin, import only caught seafood with the legal fishing origin; resolutely do not buy seafood from fishing vessels that illegally catch, exploit without permits, do not log and do not report according to regulations, fishing with prohibited fishing gear; say no to rare seafood species, catches of smaller sizes than regulated. Especially, on March 11, 2021, The strategy for the development of Vietnam's fisheries by 2030 with a vision towards 2045 No. 339/QD-TTg was approved by the Prime Minister, which provides specific strategies to improve and develop Vietnam's seafood industry in different fields.

About enterprises, in four years (September 25, 2017 - October 23, 2021), Vietnam Association of Seafood Exporters and Producers (VASEP) and the seafood business community have maintained four groups of activities: Commitment activities Against IUU fishing by enterprises, the working group, proposes and gives suggestions on amending legal documents, cooperation activities of the parties, international relations, and communication. In particular, there were 62 seafood processing and exporting factories participating in the commitment to combat IUU, especially those in the VASEP Tuna club, which made great contributions to the program's strength. VASEP has released the "White Book on Efforts against IUU Fishing in Vietnam" and produced tens of thousands of leaflets to propagate to fishermen, captains, and businesses about IUU fishing (Giang, 2021)

From October 2017 to now, over 300 television products, over 300 radio products, and over 700 paper and electronic articles related to IUU fishing have been published by Vietnamese mainstream media. Downloading and reporting; 5,000 thousand propaganda books on the 2017 Fisheries Law and nearly 60,000 propaganda leaflets about IUU to distribute to fishers in 28 coastal provinces and cities. (Lan, 2021).

In order to avoid the E.U. Competent Authority gradually eliminating enterprises on the list of allowed exports to this market, the Agro-Forestry-Fisheries Quality Management Department has issued Official Dispatch No. 1041/QLCL-CL1 dated May 30, 2016, sent to seafood processing enterprises alternatively, producing in the E.U. and relevant units to implement necessary control measures for antibiotic chemicals fully. In order to avoid being taken off the list of E.U. exports to this area, seafood processing facilities need to take samples for inspection before exporting to the E.U. proactively. Up to now, there have been more legal efforts to prevent the abuse of antibiotics in seafood exports, including Official Letter No. 952/QLCL-CL1 on developing MRPL regulations for antibiotic chemicals. In fisheries, Official Dispatch No. 966/QLCL-CL1 dated May 30, 2019, on VASEP's action plan on antibiotic chemicals until 2020.

4. Discussion and Conclusion

4.1. Recommendations

It can be seen that there are many problems in the exploitation, processing, and export of aquatic products, standing in many different aspects. The responsibility still largely rests with the government, but the role of business cannot be overlooked. Based on the actual situation, it can be seen that Vietnamese seafood still faces the following problems, sorted by level of importance:

- Removing the IUU yellow card.
- Ensuring food hygiene and safety according to EU standards.
- Applying green business strategy.
- Promoting Vietnamese branded products.

1. Vietnamese government needs to take stricter measures to remove the IUU yellow card. The Stations and the Information and Monitoring System need to be upgraded and operated 24 hours daily. It is necessary to ensure that monitoring equipment is fully installed on fishing vessels, storing information on the system, and sharing data agencies between localities. Functional forces such as the Navy, Coast Guard, Inspector need to link and coordinate in inspecting and reviewing violating fishing vessels, reporting and storing information on time to issue sanctions. For the European Commission, in addition to the efforts shown by actions, the government needs to have dialogues to clearly state Vietnam's determination to ensure safe exploitation as the top priority. For example, Thailand once declared "anti-IUU fishing" as an item on the national agenda in the reform process (Kadzak & Linke, 2021). Vietnam also needs more strong statements about the country's determination to fight IUU fishing. It is necessary to actively mobilize, negotiate and report IUU violations to the EC to remove the yellow card as soon as possible.

2. Local authorities need to propagate and guide fishers about legal fishing. Accordingly, it is necessary to clarify the impact of the IUU yellow card on Vietnam's exports, and if illegal fishing continues to happen again, it will not be able to remove the card, affecting the entire seafood industry of Vietnam. There should be direct working sessions with fishers, raising self-discipline, self-monitoring, raising awareness about the importance of safe fishing, analyzing the harmful sides of illegal fishing. Next, it is necessary to guide and help fishers use cruise monitoring devices and sanctions when intentionally disconnecting the device. In addition, Sub-Departments and Local Management Boards need to coordinate with relevant departments to control the situation closely. Do not license to operate and stop supporting preferential policies for boats that repeat violations.

3. Businesses need to be aware of the importance of combating IUU. Resolutely do not buy products of unknown origin, do not cooperate with illegal fishing vessels, terminate contracts, and report to local authorities if violations are detected.

4. Food safety issues need to be ensured. According to Law, appropriate authorities need to actively review, inspect, and inspect aquaculture processing and aquaculture enterprises and

adequately handle any violations. It is necessary to disseminate to businesses to understand the EU's regulations on food safety and hygiene, from growing, harvesting, processing to packaging according to international standards. Businesses should have seminars to talk about business difficulties and share experiences to avoid violations of food safety and hygiene.

5. Encourages businesses to follow green business strategies. Accordingly, the state needs to organize training sessions to propagate the benefits of this strategy, reduce/exempt taxes for products with green materials, products with manufacturing processes—green, products applying green technology. Central and local agencies also need to listen to the difficulties and barriers of enterprises when applying green technology to production. Businesses also need to update with the trend of green business, improve the competitiveness of products in the international market.

6. It is necessary to promote Vietnamese brands abroad actively. The promotion is generally only at a trim level of private brands. It is necessary to promote the national brand vigorously. Taking Japanese Matcha or Korean ginseng as examples, we need to promote the product under the name of the country, creating advantages for not only one but also all seafood originating from Vietnam. However, this is not a short-term problem. It is necessary to ensure from the stage of packaging, packaging design, and branding of "Vietnamese seafood" in the international market while diversifying markets, increasing export turnover in potential markets, such as Bulgaria, Estonia, Lithuania and Sweden.

4.2. Conclusion

Through the studies presented above, it is possible to see the opportunities and challenges of Vietnamese seafood in the EU market. With the successful signing of the EVFTA, the export of seafood to the EU market will have many advantages and prospects in the future. In addition, other major markets such as the UK or Japan, Korea, and ASEAN all have agreements beneficial to Vietnam, promoting exports and increasing the competitiveness of Vietnamese origin products in the international market. In 2022 - 2023, it is predicted that the fishery industry will gradually recover when the vaccination is completed, bringing the country to the "new normal" state. Demand in the markets increased, prices rose again. The main distribution channel of seafood is still the service industry, so when the epidemic situation stabilizes, the demand for seafood will increase.

However, in the immediate future, due to the complicated development of the COVID-19 situation, seafood exports will still face difficulties due to the affected supply chains; aquaculture businesses are facing many problems in terms of labor and materials. In addition, the demand of the markets decreased, so the price of the product also decreased. Accordingly, in October, the price of raw shrimp and the price of raw fish decreased by 12-14% compared to the same period last year (Chi, 2021). The epidemic's impact on the global economy, including Vietnam and its partners, is weighty, so the growth and recovery of the economy in general and the seafood industry, in particular, will not be as expected.

In addition, it can be expected that the consumption habits of the EU market will experience some changes during the pandemic. In the context of spending cuts and social

distancing, aquatic products with average prices are more popular, while frozen and convenient canned products are popular. At the same time, the demand for high-priced items tends to decrease. However, other aspects such as origin and environmental friendliness remain unchanged because seafood sold in the EU market has already passed the strict regulations of IUU and food hygiene. Therefore, if Vietnamese exported seafood is expected to meet the requirements of the EU market, Vietnam needs to pay more attention to food safety and hygiene as well as sustainability. Aquaculture businesses are not proactive and still face many barriers in applying green business models. The listed difficulties in implementing enterprises' eco-friendly business strategies (Binh, 2021), based on shrimp exporting enterprises in Vietnam In Vietnam, can be mentioned as the weakness of enterprises in deploying and applying technology, the lack of attention from the government, the difficulty in the lack of information and knowledge on green business strategies. Shrimp accounts for the most significant proportion of Vietnam's total seafood export turnover.

Last but not least, within the EU, Vietnamese seafood is still relying on large markets, such as the Netherlands, Germany, Italy, etc. The three markets mentioned above accounted for 52.5% of the total export turnover of Vietnamese seafood to the EU. It is necessary to promote Vietnamese seafood consumption in other countries to increase total export turnover and diversify markets. Each country will have a different economic, political, climate, consumption trend, and there are significant risks to depending too much on specific markets. Diversifying the market also helps products with Vietnamese brands become more popular while also increasing the competitiveness of products.

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DETERMINANTS OF PERCEIVED EFFICACY OF SLUICE GATES IN KIEN GIANG PROVINCE

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Abstract

In response to salinity intrusion in Mekong Delta, infrastructure such as coastal sea dykes and sluice gates have been identified as a viable strategy for salinity intrusion risk reduction. However, many doubt the possibility of preventing salinity of these works. To gain the public support, it is important to understand the public perceived efficacy of the sluice gates system. This study aims to find out the (1) public awareness of salinity intrusion and (2) their perceived efficacy of sluice gates system in Kien Giang province. A survey of 213 households in Kien Giang province showed that the perceived efficacy of the sluice gates of the farmers is influenced by the location of the farmers (whether they are protected by a large sluice gate or not), the perceived impact of salinity intrusion on income and water for production and the trust in state's measures. This study will provide insights about how to gain the support from the public for large project by the government in response to salinity intrusion.

Keywords: *perceived efficacy, salinity intrusion, sluice gates, Kien Giang*

1. Introduction

The Mekong Delta is the southernmost region of Vietnam and is one of the important regions of the country. The Mekong Delta covers approximately 12 % of the national area and is home to one-fifth of Vietnam's population. The region provides more than 50 percent of Viet Nam's staple food crop production and marine fisheries and aquaculture, worth up to USD 2.7 billion annually (WWF, 2016). The regional GDP growth rate for the Mekong Delta averaged 6.95 % during the years 2016-18, close to the national average over the same period (Tran, 2019).

The Mekong Delta is the downstream part of the Mekong River bordering the sea, with low and fairly flat terrain with two large low-lying areas, Dong Thap Muoi and Long Xuyen Quadrangle. Along with the main streams - Tien and Hau rivers, the Mekong Delta has an interlaced system of canals, creating favorable conditions for saline intrusion due to

tides bringing salt water deep into the river and inland areas, especially during the dry season, when the flow from the upper Mekong River is low.

Due to its geographical location, the Mekong Delta is influenced by tides from both the East and West seas. During the dry season, when the flow of water in the upstream decreases, the tide strongly affects the upstream and the inland canal system, leading to deep salinity intrusion in the river and in the field. Therefore, salinity intrusion in this area is a complicated process that depends on the magnitude of the upstream flow during the dry season and the amount of sea level increase. Over 50% of the Mekong Delta area (39,330 km²) is saline, including the provinces of Long An, Tien Giang, Ben Tre, Tra Vinh, Soc Trang, Bac Lieu, Ca Mau and Kien Giang (NASATI, 2016). Increasing salinity levels in the Mekong Delta have significantly affected agricultural production, especially for crops with a low tolerance to salinity. Salinity intrusion is one of the most significant threats in the Mekong Delta, especially in the context of changing climate and rising sea level, leading to negative impacts on the livelihoods of local people.

In response to salinity intrusion, Mekong Delta farmers have adopted various strategies based on their own knowledge of farming and/or based on neighbour suggestions. The most popular non-engineering adaptation measures were changes to farming systems through altering planting times, adjusting planting techniques, shifting to other crop varieties, changing irrigation schedule, diversifying income sources reinforcing safety for humans and assets and other measures (Hoa Dang, 2014; T. Dung Khong, 2019). Alternatively, infrastructure such as coastal sea dikes and sluice gates have been identified as a viable strategy for salinity intrusion risk reduction.

Cai Lon - Cai Be sluice gate project is the largest sluice system in the Mekong Delta of Vietnam, with the cost of VND3.3 trillion (equivalent to US\$142 million). The main functions of the infrastructure include controlling water sources for cultivation and fishery production in the beneficiary area of 384,120 hectare in five provinces including Kien Giang, Hau Giang, Ca Mau, Bac Lieu and Soc Trang. It contributes to the supply of fresh water in the dry season and to reduce the flood in rainy season. The sluice gate and the west sea dyke also form an infrastructure system to proactively respond to climate change, sea level rise and natural disaster and to reduce inundation due to land subsidence. On February 5, 2021, Cai Be sluice gate was put into operation, promptly preventing salinity intrusion for Kien Giang province. Cai Be sluice gate would save VND 12 billion for the locality in the dry season 2020-2021 as otherwise 100 temporary dams must have been developed. Cai Lon sluice gate has been operating since March 2022.

Lack of public support for adaptation can present significant barriers for implementation. A systematic review found that for coastal climate change adaptation, hard protection options were often the most frequently preferred, likely due to a desire to maintain current shoreline, for the protection of recreational spaces and private property, and a perceived efficacy of hard protection options (Malette, 2021). In the case of Cai Lon - Cai Be sluice gate in particular and measures responding to salinity intrusion in the Mekong Delta in general, there is a lot of controversy. Many doubt the possibility of preventing

salinity of these works¹. Thus, to gain the public support, it is important to understand the public perceived efficacy of the sluice gates system. This study aims to find out the (1) public awareness of salinity intrusion and (2) their perceived efficacy of sluice gates system in Kien Giang province. This study will provide insights about how to gain the support from the public for large project by the government in response to salinity intrusion.

2. Literature review

Community's preferences for measures to respond to weather events have been studied in literature. Factors affecting the preferences for adaptation measures in coastal area are various, ranging from cognitive processes (e.g., perception of risk, psychological distancing, worldviews, beliefs), to social or cultural aspects (e.g., social ties, social norms, cultural traditions), to contextual aspects (e.g., location, demographic characteristics, previous experiences), to appraisal of the adaptation (e.g., financial, ecological, aesthetic benefits and concerns). However, several factors are more complex and multidimensional. For example, place attachment has aspects that are strongly emotional, cultural, social, and cognitive, and is also connected to appraisal considerations (for example, livelihood considerations). In addition, the conceptual boundaries of these factors are fuzzy, and some terms are used interchangeably (e.g., beliefs, values, worldviews). Perception of risk, place attachment, and financial considerations were the three most frequently occurring. It is commonly assumed that risk perception is directly influential on climate change beliefs, support for policies, or adaptive behaviours (Leiserowitz, 2006; Singh, Zwickle, Bruskotter, & Wilson, 2017). Some found a significant effect in either a positive or negative direction (Dachary-Bernard, Rey-Valette, & Rulleau, 2019; Milman, Warner, Chapman, & Short Gianotti, 2018; Rulleau, Rey-Valette, & Hérivaux, 2015), while others found no or mixed effect (Shao, Xian, Lin, & Small, 2017; Song & Peng, 2017). Similarly, demographic factors were one of the most reoccurring themes, but the effect of these factors is not consensus. Some found that age was important (Apine, 2011; McMichael, Katonivualiku, & Powell, 2019), while others found no differences (Treuer, Broad, & Meyer, 2018). The variable 'location' was found to have inconsistent effect (Malette, 2021). In Vietnam, farmers' preferences for sea dykes as a long-term public adaptation measure are affected by willingness-to-pay, housing value impact, impact on water supply for agricultural activities, households' habitation environment and regional economics were significant determinants of farmers' preferences. (T. Dung Khong, 2019)

The perceived efficacy of public goods are assessed in some studies. The Protection Motivation Theory and the extended Theory of Planned Behavior are used widely to identify the influencing factors (Jou & Mariñas, 2022; Kurata et al., 2023; Prasetyo, Castillo, Salonga, Sia, & Seneta, 2020). Applying the Theory of Planned Behavior, the perceived behavioural control, attitude towards behaviour and subjective norms have positive effect on perceived effectiveness (Kurata et al., 2023). Perceived efficacy can also be impacted indirectly by perceived vulnerability and perceived severity (Prasetyo et al., 2020). Perceived government response had significant effects on perceived effectiveness (Jou & Mariñas, 2022).

¹ <https://tuoitre.vn/de-nghi-dung-du-an-thuy-loi-nghin-ti-tren-song-cai-lon-cai-be-20180529084249902.htm>

3. Method

Data collection

Data were collected by direct interview method with both rice farming and shrimp-rice farming households. For comparative analysis purpose, the survey focused on the farms within the protected area of Cai Lon - Cai Be sluice gates (in Binh An Commune, Minh Hoa Commune of Chau Thanh District and in Hung Yen Commune, Dong Yen Commune of An Biên District) and also the farms outside of the protected area of Cai Lon - Cai Be sluice gates (in Binh Giang Commune, Linh Huynh Commune and Son Binh Commune of Hon Dat District). The survey had a total of 213 respondents, consisting of 50 rice farming households and 55 shrimp-rice farming households in the protected area of Cai Lon - Cai Be sluice gates and 70 rice farming households and 38 shrimp-rice farming households outside of the protected area of Cai Lon - Cai Be sluice gates. The content of the questionnaire included household information, production, expenditure and income information, perception of salinity intrusion, the private adaptation measures and assessment of public measures to salinity intrusion.

Before the official survey was implemented, the questionnaire was pilot tested with 10 household-heads to ascertain whether or not farmers could understand the questions and information provided. The pilot also had the role of training the enumerators on the questionnaires. The enumerators for the study were carefully chosen from the staffs of local Agricultural Extension Agencies.

Data analysis

Likert scales are widely employed to collect respondents' attitudes and opinions. Likert scale is simple to construct and likely to produce a highly reliable scale. Besides, from the perspective of participants, it is easy to read and complete. To date, a number of risk perception and attitudinal studies have also adopted/modified Likert-scale measurement in their field research, e.g. Hoa Dang. (2014), Hoa Dang (2014), T. Dung Khong (2019). The seven-point scale appears to be widely preferred because it contains a neutral position that enhances measurement quality (Nowlis, 2002) Hence, the dimensions in this analysis were measured based on the seven-point Likert-type scale.

The model of perceived efficacy of farmers of the sluice gates can then be expressed as follows:

$$PE = \beta_1 + \beta_2 H + \beta_3 \text{Location} + \beta_4 \text{Impacts} + \beta_5 \text{WTP} + \beta_6 \text{Trust} + \varepsilon \quad (1)$$

where PE represents perceived efficacy of farmers of the sluice gates in response to climate change; H is the group of household characteristics including gender, age, level of education, household size and monthly income; Location represents the districts where the household lives which is 0 if the farmer lives in Cai Lon - Cai Be sluice gates' protected area (Chau Thanh and An Bien district) and is 1 if the farmer lives in Hon Dat which is outside the protected area of Cai Lon - Cai Be sluice gates; Impacts are the impacts of salinity intrusion on the farmers' living condition, which are reducing income, affecting the water

for production, affecting the domestic water, reducing crop production, reducing aquaculture production, affecting human health, affecting environmental health, reducing value of assets and causing worry of damage; WTP is the willingness to pay per hectare per year for better sluice gates; and Trust captures the trust of the farmers on the states' measures. Multicollinearity is checked with the variance inflation factor (VIF) values. The results of VIF values show no significant signs of this problem.

4. Results

4.1. Demographic characteristics of the respondents

The descriptive statistics of sample is presented in Table 1. The mean age of the respondents in Chau Thanh and An Bien is 54 (standard deviation is 12.72) while in Hon Dat is 49.2 (standard deviation is 12.74). The female is 29, accounts for 13.6% and male is 177 or 86.4% of the respondents. Only 10 people interviewed are single, the others are married. Most of the households in the survey are of Kinh and Khmer ethnicity. The average household size is 4.85 and 4.23 in Chau Thanh & An Bien and Hon Dat respectively. The education level is low. 25.1% finished primary school and 19.7% reached secondary school, which are the majority of the respondents. 170 households in the sample have the annual income of less than VND 300 mil. There are 15 households which have the annual income of more than VND600 mil., all of which are in Hon Dat. They are the owners of industrial shrimp farms.

Table 1. Demographic characteristics of the respondents

		Location			
		Hon Dat		Chau Thanh & An Bien	
		Mean	Count	Mean	Count
Age		49.2		54	
Gender	Male		91		93
	Female		17		12
Ethnicity	Kinh		66		74
	Khmer		41		30
	Chinese		1		1
	Champa		0		0
	Others		0		0
Marital status	Single		7		3
	Married		101		102
Education level	No education		11		6
	Primary school		40		44
	Secondary school		45		41
	High school		5		11
	Vocational school		2		1

		Location			
		Hon Dat		Chau Thanh & An Bien	
		Mean	Count	Mean	Count
	Undergraduate		1		1
Household size		4.23		4.85	
Annual household's income	Less than VND50 mil.		12		7
	From VND50 mil. to less than VND100 mil.		18		23
	From VND100mil. to less than VND150 mil.		14		19
	From VND150 mil. to less than VND200 mil.		16		20
	From VND200 mil. to less than VND250 mil.		12		14
	From VND250 mil. to less than VND300 mil.		7		8
	From VND300 mil. to less than VND350 mil.		4		5
	From VND400 mil. to less than VND450 mil.		4		3
	From VND450 mil. to less than VND500 mil.		2		1
	From VND500 mil. to less than VND550 mil.		0		0
	From VND550 mil. to less than VND600 mil.		1		2
	From VND600 mil.		15		0
	No income		0		0
I don't know		2		0	

4.2. Perception of salinity intrusion

Each farm household head was asked to assess the impacts of salinity intrusion in recent years, ranging from 1 = not severe at all to 7 = extremely severe. The results reveal that negative influences on income, water for production and rice production are the most concern of the farmers. There are 44 missing observations in the question on the impact of aquaculture production as they are the rice farmers. Fewer were concerned about impacts on daily water supplies. Salinity is necessary for aquaculture production, and the water for shrimp farmings can be controlled by the farmers, therefore the impacts on aquaculture production is the less concerned issue.

Table 2. Perception of salinity impacts

	Reducing the income	Reducing value of assets	Affecting the water for production	Affecting the domestic water	Reducing crop production	Reducing aquaculture production	Affecting human health	Causing worry of damage	Affecting environmental health	Other impacts
Mean	4.90	4.27	4.95	4.07	5.23	2.64	3.38	4.60	3.98	4.13
Median	5.00	5.00	6.00	4.00	6.00	1.00	4.00	5.00	4.00	4.00
Mode	7	1	7	1	7	1	1	7	1	4
Std. Deviation	2.180	2.152	2.101	2.216	2.104	2.069	2.102	2.198	2.097	1.586

The question on the cause of salinity intrusion was asked with the answer ranging from 1 = extremely disagree to 7 = extremely agree. The survey shows that sea level rise is considered the main reason for salinity intrusion with the mean value of 6.03. Drought rank the second important cause as assessed by the respondents with 93 chose the level 7 for their answer. Sea level rise and drought are among the signs of climate change, thus it can be seen that the farmers in the survey area are clearly aware of the change in the climate in recent years.

Table 3. Perception of the cause of salinity intrusion

	N	Minimum	Maximum	Mean	Std. Deviation
Sea level rise	213	1	7	6.03	1.405
Lack of fresh water from upstream	212	1	7	5.21	2.009
Drought	212	1	7	5.64	1.748
Reduced water reserved	210	1	7	4.61	1.889
Increasing demand for water	209	1	7	4.24	2.046

81 people (38%) of the respondents forecast that in the next 3 years, salinity intrusion in the area would increase. They explained that the trend of salinity intrusion had been increasing over time. 21.6% had the opposite answer because they assessed that the salinity intrusion was of the most severe in the year 2019-2020, thus in the future it would decrease. 38 respondents thought the level of salinity intrusion would unchange and 31 said that they did not know. 17 people (8%) had no answer.

Table 4. Forecast of salinity intrusion in the next 3 years

	Frequency	Percent
I don't know	31	14.6
Unchanged	38	17.8
Decrease	46	21.6
Increase	81	38.0
Total	196	92.0
Missing	17	8.0
Total		100.0

4.3. Perceived efficacy of the sluice gates

The perceived efficacy of the sluice gate system in Kien Giang is assessed by 5 questions: (1) The sluice gate system supplies sufficient water to meet the demands of agricultural production; (2) The sluice gate system supplies water at the right time for each crop; (3) The sluice gate system supplies water of good quality for each crop; (4) The sluice gate system is operated strictly as scheduled before; and (5) The sluice gate system is operated in the way that ensures the balance between different water users (i.e., rice farmers and shrimp farmers). The answer ranges from 1 = extremely disagree to 7 = extremely agree. Table 4 shows that the mean of the answer between two districts are relatively equal except the statement (4). The independent sample T-test also confirms that there is a significantly difference between the answers of the Chau Thanh and Hon Dat farmers in statement (4).

Table 5. Perceived efficacy of the sluice gate system in Kien Giang

	Location	Mean	Std. Deviation
The sluice gate system supplies sufficient water to meet the demands of agricultural production	Hon Dat	5.61	1.528
	Chau Thanh & An Bien	5.89	1.539
The sluice gate system supplies water at the right time for each crop.	Hon Dat	5.64	1.557
	Chau Thanh & An Bien	5.81	1.631
The sluice gate system supplies water of good quality for each crop	Hon Dat	5.64	1.633
	Chau Thanh & An Bien	5.90	1.536
The sluice gate system is operated strictly as scheduled before.	Hon Dat	6.01	1.370
	Chau Thanh & An Bien	5.52	1.712
The sluice gate system is operated in the way that ensures the balance between different water users (i.e., rice farmers and shrimp farmers).	Hon Dat	5.67	1.626
	Chau Thanh & An Bien	5.58	1.606

4.4. Trust in state's measures in response to salinity intrusion

In response to salinity intrusion, the state has a variety of measures. They include forecasting and warning the salinity level, land use planning; restructuring crop and cultivation models, in particular selecting of plants and crops which can be tolerant to various salt limits; applying advanced cultivation techniques such as less water irrigation practices; and salinity intrusion control structures measures including dykes, dams and sluice gates. To investigate the farmers' trust in public measures, three statements were used which are (1) State and local authorities know what they have to do to response to salinity intrusion; (2) The government salinity warning system is reliable; and (3) Public adaptation measures are

very effective. The survey shows that the local farmers' trust in public measures are of very high level with approximately 90% of the respondents agreed (choosing the answer 5 to 7 in a 7-point scale) with each statement. The means are 6.3, 6.39 and 6.31 for statement (1), (2), (3) respectively.

Table 6. Trust in state's measures

	Minimum	Maximum	Mean	Std. Deviation
State and local authorities know what they have to do to response to salinity intrusion	2	7	6.30	1.086
The government salinity warning system is reliable	1	7	6.39	1.078
Public adaptation measures are very effective	1	7	6.31	1.199

Chronbach's Alpha coefficient of these three variables is 0.709. KMO is 0.635 and the total variance extracted was 63.87%. The factor loading coefficient of each observed variable showing all the factors is greater than 0.5. Thus, these three variables can be extracted as one components by factor scores.

4.5. Factors of influence perceived efficacy of the sluice gates

The Reliability Analysis show that Chronbach's Alpha coefficient of the five variables expressing the perceived efficacy is 0.872, thus, the these measurement variables have reliability and are used in factor analysis. In the Exploratory factor analysis, KMO reached 0.822. The KMO index of the research model is greater than 0.5, showing that the application of exploratory factor analysis here is completely appropriate. The total variance extracted was 66.196%. The factor loading coefficient of each observed variable showing all the factors is greater than 0.5, showing that the observed variables all show the influence with the factors that these variables represent. The dependent variable is calculated as the factor scores.

Table 7 provides the final results of the linear regression analysis which were conducted for factors affecting the public perceived efficacy. The table shows the variables that are significant (p -value < 0.1) in explaining the variations in the perceived efficacy of the sluice gates. The variables explain the variance in perceived efficacy of the sluice gates by 28.4%, which indicates a good fit for these types of models. The results show that the variables of location (Hon Dat vs. Chau Thanh & An Bien), impact of reducing income, impact of affecting water for production and trust in state's measure have a statistically significant influence on the perceived efficacy of sluice gates. A VIF less than 5 indicates a low correlation of that predictor with other predictors, thus collinearity is not an issue in this model.

Table 7. Regression of factors affecting perceived efficacy of the sluice gates

Model	Standardized Coefficients	t	Sig.	Collinearity Statistics	
				Tolerance	VIF
1 (Constant)		-.293	.770		
Age	-.092	-1.043	.300	.773	1.294
Gender	-.073	-.839	.404	.795	1.258
Education level	.054	.610	.543	.778	1.286
Household size	.081	.935	.352	.793	1.260
Annual household's income	.009	.101	.920	.736	1.358
Location	-.207**	-2.285	.024	.731	1.368
Reducing the income	.380**	2.199	.030	.202	4.957
Affecting the water for production	-.301*	-1.767	.080	.208	4.818
Affecting the domestic water	.222	1.555	.123	.294	3.396
Reducing crop production	-.041	-.271	.787	.257	3.889
Reducing aquaculture production	-.078	-.884	.379	.778	1.285
Affecting human health	.030	.238	.812	.370	2.699
Affecting environmental health	.199	1.347	.181	.275	3.631
Reducing value of assets	-.006	-.039	.969	.222	4.497
Causing worry of damage	-.193	-1.230	.221	.245	4.086
WTP per hectare per year	.049	.583	.561	.859	1.164
Trust in state's measures	.424***	4.983	.000	.831	1.203

The positive and significant coefficient of Location in the model implies that farmers in Chau Thanh has higher perceived efficacy of the sluice gates. Chau Thanh and An Bien's agricultural area is mostly protected by Cai Lon - Cai Be sluice gate. When the survey was conducted, the Cai Be sluice gate was finished and put into operation, which helped the local farmers in Chau Thanh and An Bien avoid the impact of salinity intrusion in 2021. Thus, the community in the protected area of Cai Lon - Cai Be have the higher perceived efficacy of the sluice gates. Among the perceived impacts of salinity intrusion, there are two variables that significantly influence the perceived efficacy of the sluice gates: reducing the income and affecting water for production. The coefficient of "reducing the income" is positive implies the higher concern of local farmers on reducing the income, the higher perceived efficacy of the sluice gates. However, the coefficient of variable "affecting the water for production" is negative with statistical significance show that the higher concern on impacts of salinity intrusion on water, the less perceived efficacy of the sluice gates. The shrimp farming households need saline water for production. In some parts in Hon Dat district where there are large industrial shrimp farms, the sluice gates are close all around the year or open in only few days, leading to lack of saline water for shrimp farming. These farmers have the low expectations of the sluice gates, which can explain the negative influence of the variable "affecting the water for production" on the perceived efficacy. The variable "trust in state's measures" have positive

coefficient, which is consistent with the result of Jou and Mariñas (2022) that perceived government response had significant effects on perceived effectiveness.

5. Policy implications and conclusion

Saline intrusion is a natural disaster that greatly affects the lives and livelihoods of people in the Mekong Delta. In the context of increasing climate change, saline intrusion tends to become severe. In addition to "soft" adaptation measures, hard-structured measures solutions such as sluice gates are built widely in the Mekong Delta. However, the operation of these works has not yet met the needs of the people in ensuring fresh and salt-water sources for rice cultivation and aquaculture. Therefore, in order for people to support the construction of sluice gates, it is necessary to raise farmers' perceived efficacy of sluice gates.

The study was conducted on 213 households in Kien Giang province with two groups, one group of households protected by the largest irrigation works in Vietnam - Cai Lon - Cai Be sluice gates and the other group protected by small sluice gates. The determinants of perceived efficacy of the sluice gates are the location, the perceived impacts of salinity intrusion on reducing the income and affecting the water for production, and the trust in states' measures in response to salinity intrusion. Thus, in order to improve the perceived effectiveness of households for sluice gates, it is necessary to pay attention to the following issues: (1) improving the operating procedures of sluice gates, ensure water sources for both rice cultivation and aquaculture production; (2) enhancing the value of local agricultural products to increase the income for farmers and (3) increasing people's trust in the government's measures in response to salinity intrusion including forecasting and warning the salinity intrusion, updating the information on salinity level for farmers in the dry season and supporting the farmers in "soft" measures such as crop diversification and providing training on salt tolerance production.

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OPPORTUNITIES FOR CIRCULAR ECONOMY IN NATURAL ESSENTIAL OIL PRODUCTION IN VIETNAM

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Abstract

Natural essential oil production is an industry with a lot of potential in both the global and Vietnamese markets. In the general trend of global and Vietnam, the transition from traditional linear economic models to circular economic models aims at connecting economic processes, ensuring materials to be recovered, restored and regenerated, and keeping the materials in use as long as possible, Vietnamese essential oil producing enterprises should be aware of their responsibilities and seize this opportunity.

*Based on the identification of resources and environmental challenges in natural oil production, combined with expert consultation and international experiences learning, this paper proposes a number of opportunities to implement circular economy in natural essential oil production in Vietnam. Opportunities are proposed following the approach of the ReSOLVE framework (**R**egenerate; **S**hare; **O**ptimize; **L**oop; **V**irtualize; and **E**xchange) along the production value chain. The paper also makes recommendations for businesses and the Government to promote the application of circular economies in the production of natural essential oils in Vietnam.*

Keywords: *Circular Economy, Natural Essential Oil Production, Circular Economy Opportunities, ReSOLVE framework.*

1. Introduction

The traditional linear economy approach, based on the principle of *Resource Extraction* from the environment, through the process of *Production, Distribution, Consumption* and finally *Disposal* to the environment has been leading to the depletion of natural resources, increased waste and pollution, and environmental degradation.

The Global Financial Integrity Organization (GFI) estimated the demand for natural resources for human economic activity is now 1.7 times greater than the Earth's capacity. Therefore, without changing the way of development, the depletion of natural resources is inevitable. Regarding waste, it is predicted that by 2050, the total amount of plastic waste would be even more than the total volume of fish in the oceans. (Ellen MacArthur Foundation, 2016). Facing with this fact, many countries are transitioning to the Circular Economy, with the core approach is connecting endpoints to the starting points of economic processes, enabling recovered materials to be returned as inputs for activities; even restore and regenerate matter at the end of each round of extraction, production, distribution, and consumption, keeping the material in use as long as possible in the economic system.

In Vietnam, Article 142 of the Law on Environmental Protection (2020) defines the circular economy as an economic model in which the activities of design, production, consumption and service activities aim at reducing the extraction of raw materials, prolonging the product life cycle, minimizing waste generation and minimizing adverse impacts on the environment. Subsequently, the Scheme for Circular Economic Development in Vietnam (Decision 687/QĐ-TTg dated June 7, 2022) assigned the Ministry of Natural Resources and Environment to develop and issue a guiding framework for application and evaluate the implementation of the circular economy; Ministries and ministerial-level agencies are responsible for organizing the pilot application of the circular economy model to a number of industries and sectors.

In recent years, the production of natural essential oils has been introduced into Vietnam and developed rapidly, meeting the needs of domestic consumption, especially for export. By 2021, Vietnam's natural essential oil production accounted for 1.16% in quantity and 0.6% in value of the global essential oil market share (Vietnam of Essential Oils Aromas and Cosmetics Association, VOCA). In the context of global market's increasing use of natural compounds, as well as the significant advantages of tropical crops such as mint, melaleuca, lemongrass, cinnamon, anise, coriander, garlic, perilla, holy basil, eucalyptus, basil, orange, lemon, grapefruit..., the production of natural essential oil is truly a potential industry which attracting the interest of many domestic and foreign investors.

However, the production of natural essential oil in Vietnam today mainly follows the traditional linear economic model, consuming a lot of fuel and causing waste of resources and negative impacts on the environment. Some essential oil production stages in various enterprises have begun to shift toward a circular economy, but they are spontaneous, less efficient both in terms of environment and economy.

This paper aims to clarify the contents and opportunities of applying circular economy in the manufacturing of natural essential oil in Vietnam. The application of the circular economy is an essential requirement as well as opportunities to assist firms in achieving sustainable production and consumption goals, effective response to climate change, and contribute to national and global sustainable development goals.

2. Method

Desk review: study reports/ papers published in Vietnam and abroad to clarify the contents of circular economy and the practical experience in applying circular economy in the production of natural essential oils.

Collecting primary data: interviews, discussions (offline and online) with representatives of a number of natural essential oil producers in Vietnam to find out the production and business situation, current status and potential of circular economic application, the enterprise's advantages and difficulties.

Meta-analysis: to identify resource and environmental problems of current linear economic model as well as potential opportunities to apply circular economy in natural essential oil production in Vietnam, following the elements of the ReSOLVE framework.

Expert method: consult experts who are managers and/or professionals with knowledge and practical experience related to circular economy, environment and sustainable development to assist in identifying potential opportunities to apply circular economy in natural essential oil production in Vietnam.

3. Results

3.1. The concepts and contents of Circular Economy

According to Pearce and Turner, circular economy aims to overcome the limitations of the traditional linear economy by pursuing the recycling and reuse of material flows, energy, and waste in the production, consumption and disposal processes, maintaining the functions of the environmental system with respect to the economic system (David W. Pearce and R. Kerry Turner, 1990).

According to the Ellen Mac Arthur organization: "*The circular economy replaces the concept of "end of life" of materials with the concept of recovery, shifting towards the use of renewable energy, stop using of harmful chemicals that can limit reuse; shifting towards reducing waste through the design of materials, products, engineering systems and business models within the boundary of that system*". The concept of Ellen Mac Arthur is most widely recognized, referenced and used by many countries and international organizations.

Circular systems apply processes of reuse, repair, refurbishment, remanufacturing and recycling to create closed-loops for resource use in the economic system, to minimize the amount of resources used and waste generated, as well as levels of environmental pollution and emissions (P.T.T.Ha, 2020). All "waste" of one production and consumption process should be considered as raw materials/ inputs of other production and consumption processes or the production and consumption process itself, with the goal of elimination of negative impacts on the environment and regeneration of natural systems.

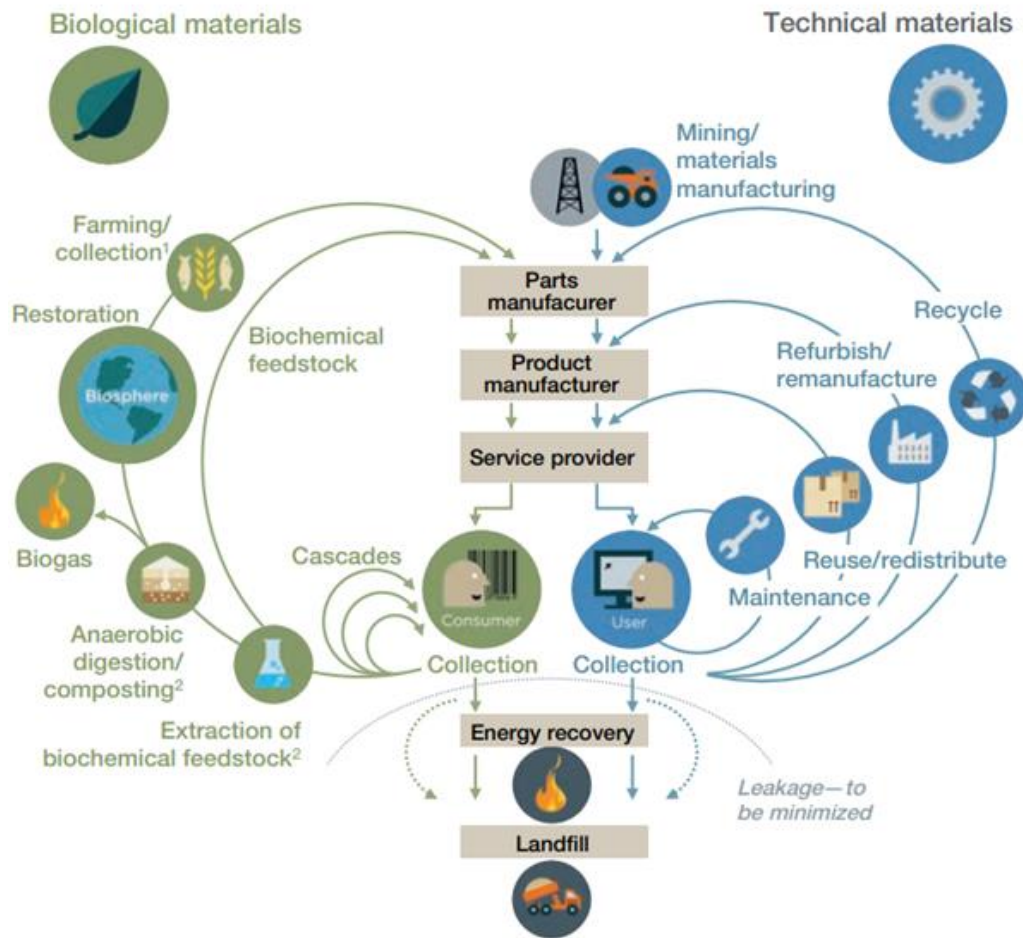


Figure 1. Closed-loops in the circular economy

Source: Ellen MacArthur (2015)

According to Ellen MacArthur Fund (EMF, 2015), the circular economy is based on 3 basic principles, including:

1, *Conservation and development of natural capital* through control with a view to the resource efficiency and the regeneration of natural systems; especially, promote the use of renewable energy.

2, *Optimizing resource returns* by circulating products and materials as much as possible in engineering and biological cycles.

3, *Improve the overall efficiency of the whole system* by minimizing negative externalities, through waste and pollution design from the very beginning of the production process.

These contents/ principles help to break the usual link between economic development and negative environmental impacts. The circular economy is not about waste treatment, on the contrary, considering waste as a resource that is misplaced, or undervalued.

According to the United Nations Industrial Development Organization (UNIDO), the implementation of a circular economy is "implementation in production and business", following the value chain approach, including activities such as: Product design towards

reducing the amount of materials used, reducing/ replacing hazardous chemicals, improving durability/ reusability /upgradability /reparability/ recyclability; Increase the recycled content in the product; Efficient use of energy and other resources; Maximize resource efficiency in production; Optimize the use of products; Allow reproduction; Regenerate biomass and recycle materials. After maximizing the material cycle, energy will be recovered from the waste so that it is not released into the environment. (Le Thanh Thao, UNIDO Vietnam 2020).

The aforementioned principles and contents of the circular economy can be presented as a framework with 6 business operations (called the ReSOLVE framework), including: (1) **R**egenerate; (2) **S**hare; (3) **O**ptimize; (4) **L**oop; (5) **V**irtualise; (6) **E**xchange.

The circular economy is a general global trend that has proven to be successful in many countries over the world, such as Sweden, Denmark, Finland, Canada, Japan, China, and Singapore...

In Vietnam, the Law on Environmental Protection 2020 (Law No. 72/2020/QH14 dated November 17, 2020) has officially mentioned “*Circular economy is an economic model in which the activities of design, production, consumption and services are aimed at reducing the exploitation of raw materials, prolonging the life cycle of products, limiting waste generated and minimizing the adverse impact on the environment*”.

Decree No. 08/2022/ND-CP of the Government dated January 10, 2022, detailing a number of articles of the Environmental Protection Law that specified the General Criteria for the Circular Economy in Vietnam (Article 138), including:

a) Reducing exploitation and use of non-renewable resources and water resources; increase efficiency in the use of resources, raw materials and materials; saving energy;

b) Extend the duration of use of materials, equipment, products, goods, and components;

c) Reducing waste generation and minimizing adverse impacts on the environment, including reducing solid waste, wastewater, and emissions; reducing the use of harmful chemicals; waste recycling, energy recovery; reducing single-use products; and green procurement.

In sum, it can be stated that Vietnam has a fairly sufficient policy and legislative framework to encourage and facilitate the implementation of the circular economy by industries, enterprises, communities, organizations, and individuals.

3.2. Natural Essential Oil Production in Vietnam and the Environmental Issues

Vietnam is located in the tropical monsoon climate zone, with rich and diverse plant resources, especially the group of essential oil plants. The number of species containing essential oils in the flora of Vietnam includes about 657 species belonging to 357 genera and 114 families (about 6.3% of the total species, 15.8% of the total genera and 37.8% of the total families). Rich families of genera and species containing essential oils are Asteraceae,

Oranges (Rutaceae), Ginger (Zingiberaceae), Mint (Lamiaceae), Camphor (Lauraceae)... Vietnam is considered one of the countries with an enormous source of essential oil plants in the world. The diversity of natural herbal raw materials in Vietnam is compared to the 'green gold mine' of the natural essential oil extraction industry.

According to statistics from the Vietnam of Essential Oils Aromas and Cosmetics Association (VOCA), there are about 300 types of plants used to extract essential oils in Vietnam, of those there are about 50 most used types namely lemongrass, incense, eucalyptus, melaleuca, mint, anise, cinnamon. Some types have recently been used for essential oil extraction but rapidly developed such as coriander, garlic, patchouli, basil, and perilla. These plants are quite easy to grow, do not take too much time to care for, and are less susceptible to pests and diseases than other plants. Therefore, the production and extraction of natural essential oils is gradually being interested in development.

Another potential source of raw materials for the natural essential oil industry is agricultural by-products from the citrus peels. According to the Department of Crop Production (Ministry of Agriculture and Rural Development), citrus trees throughout the country have continuously increased in recent years, with a high growth rate. Citrus trees are currently the group of fruit trees with the largest area and output; in which mainly oranges (about 100,000 hectares, output over 840,000 tons) and grapefruit (over 105,400 hectares, output nearly 950,000 tons). Therefore, the source of orange and grapefruit peels is discharged at citrus extraction/ juices production facilities is a lot. In addition, it is necessary to mention the source of pruned young grapefruit from gardeners or cooperatives. The pruned young fruit is also a source of raw materials for extracting essential oils.

Although the natural oil production industry has just been introduced to Vietnam in recent years, it has rapidly developed, accounting for a significant proportion of our country's export turnover. As of 2021, Vietnam has successfully exported essential oils, accounting for 1.16% in volume and 0.6% in value of the global natural essential oil market share. It can be clearly seen that Vietnam's natural essential oil production and extraction industry has been making positive changes and is an extremely potential industry.

A typical process of the traditional value chain in the production of natural essential oils from oil plants is presented in the diagram in Figure 2. The process starts with the raw materials in the oil plant growing area, then harvested and becomes raw materials for extracting essential oils in factories. The obtained essential oil will be packaged and distributed to consumers (directly used or used as raw materials for the production of food, pharmaceuticals, cosmetics, etc.). After being consumed, bottles/ containers of essential oil are often discarded along with other types of household waste.

Resource and environmental issues arise in all stages of the traditional value chain, involving both inputs and outputs of each stage.

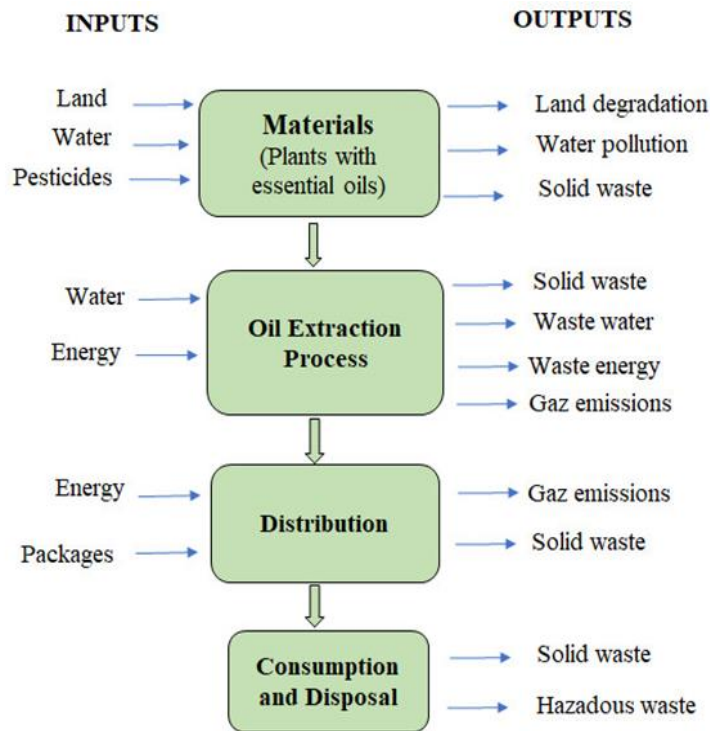


Figure 2. Major natural resource and environmental issues in traditional essential oil product value chain

Source: Compilation by the research team

In raw material growing areas: Growing raw material plants often requires quite large areas of land, using a lot of water for irrigation and fertilizers, pesticides... The improper use of pesticides, the non-guarantee of type, dose and isolation period, and sometimes the abuse of pesticides causes great harm to the environment such as: unbalance the ecosystem due to killing many beneficial natural enemies like parasitic wasps or predatory insects; cause soil pollution and land degradation if intensive farming and long-term and continuous use of pesticides causes toxic substances to accumulate gradually in the soil. The amount of chemical residue left in the soil for too long will produce a new compound, which is often more toxic than the original chemical itself. Many growing areas are currently facing poor soil conditions due to unsustainable farming.

The pesticides that have not yet penetrated into the soil will overflow in the field, canals, or through the soil and seep into groundwater; the pesticides packaging or bottles that farmers throw away in the fields, or when cleaning the pesticides containers and then pouring them into nearby water sources - causing severely water pollution, directly affecting the health of the animals that live in the water. At the same time, it seriously affects human life and health.

Solid waste - generated due to many types of materials using only one or a few parts of the plant, so the remaining parts such as stems, branches, leaves, flowers, etc. or damaged and redundant materials - are often thrown indiscriminately or burned, continue to pollute water, soil and air, emit CO₂ causing climate change impacts.

In extracting essential oil process: Raw materials are preliminarily processed, cleaned, minced and put in a pot with a lot of water. Given the fact that many production facilities still use outdated technology, simple equipment, and inefficient boilers, the consumption of water and energy inputs (electricity, wood, coal, oil, etc.) as well as the output emissions are quite large, including CO₂ emissions which cause the greenhouse effect.

It takes tens or even hundreds of a cubic meter of water and hundreds of kilograms of raw materials to produce 1 liter of lemongrass or cinnamon essential oil. Due to the low percentage of essential oil in the plant, even only 0.03 to less than 1%, the amount of waste residue from the distillation process is quite large. According to the estimates of Thuy Moc Viet Company, 1 ton of lemongrass leaves can extract 3 kg of essential oil, and 1 ton of grapefruit peel can extract 4-5 kg of grapefruit essential oil. According to Hanoi Natural Essential Oils Joint Stock Company, for every 1 ton of lemongrass, it can extract about 2 to 3 liters of pure lemongrass essential oil. Regarding red lemongrass, it takes about 100-120 kg of raw materials to extract 1 liter of essential oil. Looking at the number of input materials, it is clear that the extraction of essential oils will generate a large amount of waste residue. This amount of waste is essentially organic compounds rich in carbon and multi-trace mineral elements, but there is no effective treatment solution. Many businesses do not consider the opportunity to take advantage of this waste source at all, so this amount of solid waste is often disposed of or burned directly, which continues to cause air and water pollution.

In the packaging and distributing process: Essential oils are usually packed into small dark glass bottles (brown, blue colors), with a capacity of only 5 - 10 or 15 ml, and a storage time (expiry date) is two years on average, so the number and volume of bottles to use is a large amount. On average, 1 hectare of lemongrass can extract 13 - 15 liters of essential oil, so it is possible to calculate that average of one ha of lemongrass requires 1,300 - 1,800 bottles/year. For example, in Tan Phu Dong district, Tien Giang province, there are about 1,600 hectares of lemongrass planting for essential oils production, we can calculate the number of bottles used annually from 2 to 3 million.

Essential oils as production materials can be stored in plastic containers/ cans with a capacity of 10 - 20 - 50 liters. Containers/ cans storing raw essential oils are usually made of organic polymers of chemical origin which are created during the process of extraction, distillation, refining and petrochemicals. Notably, essential oils stored in plastic containers usually have a short shelf life, only 3 to 6 months.

In addition, to deliver products to consumers, distributors and e-commerce platforms (for example: Shopee, Lazada or Amazon ...) use a lot of "extra" packaging made of paper, foam or plastic boxes which are not biodegradable, and they can persist in the environment for hundreds of years and decay into extremely toxic microplastics, causing water pollution, ocean pollution and adverse effects on human health and creatures.

In the process of circulation and distribution, the operation of transportation vehicles also consumes petroleum and generates large amounts of emissions, which are the main risks of air pollution, fine dust and greenhouse gasses.

Post-consumption disposal: The amount of glass bottles, plastic containers/ cans and other types of plastic paper packaging ... after use is quite huge. If not properly managed, it will be a source of extremely polluting solid waste. It is the fact that most of the after use glass bottles and packaging materials are usually thrown directly into the household trash along with other types of solid waste. Glass bottles which are used for store oil still have a concentrated amount of essential oil remaining. When they are thrown together with household waste, there is a potential risk of catching fire or causing burns, blistering of hands and mucous membranes if people accidentally touch them.

Thus, the production of natural essential oils according to the traditional linear model has been causing loss, wasting resources and putting negative impacts on the water, soil, air environment, and causing the problem of climate change as well. The transition from the traditional model of natural essential oil production to circular economy model is urgently needed to overcome all the challenges that businesses are facing in terms of economy as well as environmental and social responsibility towards sustainable development.

3.3. Opportunities for Circular Economy application in natural essential oil production in Vietnam

Based on the principles and contents of circular economy, lessons learnt from practical experience in the world, combined with consultation with economic and natural resources- environment managers, technical experts in essential oil production as well as experts on cleaner production, our research team proposed opportunities to apply circular economy in the natural essential oil industry according to the approach of the ReSOLVE framework, summary as shown in Table 1.




(1) Regenerate

It is applicable to use renewable energy sources in some activities such as in irrigation, drying of raw materials and distillation of essential oils or the operation of corporate offices. The source of biomass waste from processing and from popular agricultural by-products such as rice husks, sawdust, and solar energy (using solar panels) are the most available and accessible energy input sources from the perspective of natural essential oil producing enterprises.

Secondly, it is necessary to ensure the requirements of soil protection throughout the process of planting in material growing areas: do not use chemical fertilizers or chemical pesticides. Using chemicals can only improve yields in the first few years but not guarantee future sustainability because of the potential adverse impacts over time (degraded land, dead plants, and reduced yields). After the exploitation, it is necessary to preserve and spend time for restoring soil in the material growing area.

Using organic fertilizer (compost) made from the waste of the essential oil extraction process for the material growing area is a safe solution for the environment and helps enterprises to lower the cost buying chemical fertilizer.

Table 1. ReSOLVE framework on opportunities to apply circular economy in the production of natural essential oils

Approaches	Opportunities
	<ul style="list-style-type: none"> • Use renewable energy sources (biomass, solar energy...) in irrigation, drying of raw materials and distillation of essential oils • Organic and safety farming, pay attention to time for soil regeneration; use organic (compost) fertilizer from waste for material growing areas
	<ul style="list-style-type: none"> • Use agricultural by-products (containing oil) from other manufacturing industries for essential oil distillation • Supply used packaging and bottles to recycling companies in order to extend the life cycle of bottles to serve other manufacturing industries
	<ul style="list-style-type: none"> • Research, grow plants for high oil extraction efficiency, • Transform production technology towards optimizing input materials, energy and water • Optimize processes, reduce post-harvest material loss, • Optimize the transportation of raw materials and products, localize suppliers
	<ul style="list-style-type: none"> • Recall and recycle packaging • Recycle post-distillation residual for fertilizer and fuel (bio-pellets) • Reuse water, use post-distillation water to produce lotions and other products
	<ul style="list-style-type: none"> • Promote E-commerce • Promote online customer experience
	<ul style="list-style-type: none"> • Design packaging and bottles • Apply the Refill models • Use low-emission fridge in essential oil storage • Switch to high-efficient trucks, use lithium batteries instead of lead-acid batteries

Source: Compilation and recommendation by the research team

(2) Share

Share involves the activity to optimize resource use by sharing them among users and reusing them throughout the life cycle, extending the life of the product through maintenance, repair, or upgrading.

Natural essential oil producers can use agricultural by-products from other industries as a share of raw materials. For example: make use of by-products from the production processes of juice, dried fruit... which discharge a lot of fruit peels with high essential oil properties or after harvesting, pruning trees and young fruits... create excess by-products (branches, rotten roots, leaves, young fruits ...).

Second, manufacturers can recall used bottles and packaging and transfer them to glass recycling plants for alternative uses. By doing this, used bottles/ packaging have extended their life cycle in other production processes instead of being destroyed.

(3) Optimise

Optimization is about finding the solution with the cost - effective performance or highest operational efficiency according to the given constraints, by maximizing the desired elements and minimizing the undesirable elements. Optimization opportunities in natural essential oil production may include:

First, research to establish the regions for material growing or material procurement with better raw materials quality - that are plants with higher essential oil content, higher ability to extract essential oils than existing conventional plants.

Second, optimize the extraction/ distillation process of essential oils (heat, water, boiler...) to increase the efficiency of using input materials, water and energy, both saving energy and water costs and reducing waste.

Third, optimize the process of raw materials harvesting and transporting to the production (extraction) site to minimize the rate of loss and damage of input materials.

(4) Loop

Opportunities for material reuse and recycling are more evident in packaging recall and waste management.

It is necessary to establish packaging/ bottles collecting systems at dealers and product distribution places for reuse and recycle. In addition, it is needed to introduce policy to encourage consumers (for example, apply deposit - refund schemes), encourage dealers and distributors to aim for 100% of used product packaging/ bottles to be recycled and reused.

Waste residues from extraction/ distillation process should be recycled and reused, for example in the form of animal feed or organic (compost) fertilizer. Organic (compost)

fertilizers can be applied directly at the raw material growing area or supplied to the market. Waste residue also be processed to line livestock barns, used as a substrate for plant growth (typically as mushrooms) or as fuel pellets.

The water used for the extraction/ distillation process can be recovered to be used for the distillation of the same essential oil to take advantage of the heat as well as the essential oil properties left over from the previous distillation. This water source can also be used to wash raw materials or water the trees in the material growing areas.

The water obtained after distillation will be separated into essential oils and scented water. This liquid has gentle properties, should not be discarded but used to make products such as mouthwash, toner.

(5) Virtualise

Digital transformation in production and business aims at changing the way business models operate and bringing higher efficiency, and newer production values. The opportunity of using e-commerce platforms to bring products to consumers is increasing, both helping enterprises affirm their position in the market with trade recorded by the system while also helping to more easily control revenue and costs. Digital transformation also brings convenience in terms of conveying messages to consumers and to enterprises themselves. Digital transformation also helps reduce costs for businesses through easy management of inventory and monitoring of important production processes.

(6) Exchange

In order for packages and bottles containing essential oils to be recycled more easily after being collected, enterprises need to innovate the process of designing packages and bottles; switch to environmentally friendly packaging and bottles that are easy and multiple recycle and reuse.

Second, enterprises can use the type of refrigerators which eliminate greenhouse gas emissions and low ozone depletion in products store.

Third, in the process of transportation and distribution, it is necessary to switch from gasoline/ petrol trucks and forklifts to environmentally friendly electric energy vehicles and vehicles using lithium batteries instead of lead-acid batteries. Using such types of vehicles may help significantly reduce greenhouse gas emissions and harmful substances (lead, acid) discharged into the environment.

The diagram in Figure 3 clearly presents the flows of materials and goods in the direction of circular economy in the natural essential oil production: Blue arrows indicate goods that are in normal circulation; red is the waste/ residual flows; green is the material circulation flows.

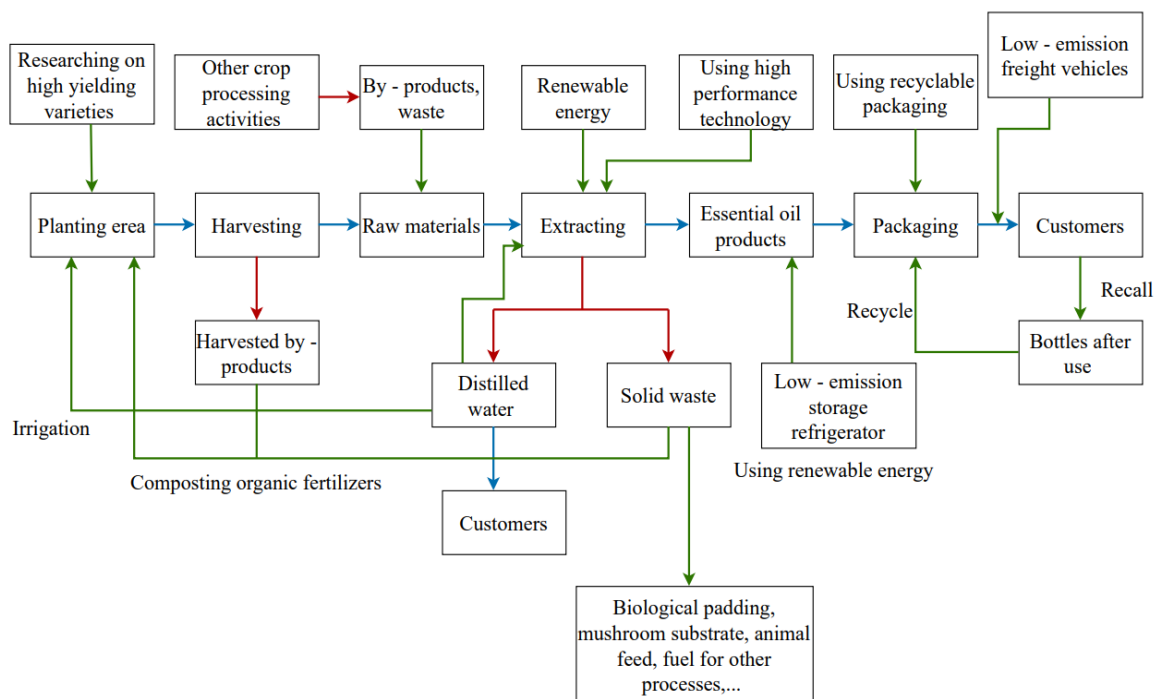


Figure 3. Proposed circular economy in the production of natural essential oils

Source: Compilation and recommendations by the research team

4. Conclusion and Recommendations

Natural essential oil production is an industry with a lot of potential in both the global and Vietnamese markets. In the general trend of global and Vietnam to transform from traditional linear economic models to circular economic models, aims at connecting economic processes, ensuring materials to be recovered, restored and regenerated, and keeping the materials in use as long as possible, Vietnamese essential oil producing enterprises should be aware of their responsibilities and seize this opportunity. The transition to the circular economy not only helps enterprises in sustainable business, extending the ability to penetrate the global market but also contributes to practicing corporate social and environmental responsibilities.

Enterprises producing natural essential oils in Vietnam should take the following things into account:

- Implementing the transformation to circular economy model in a proactive way, seeking out advanced technology and potential financial sources, carrying out product marketing, improve production and sales skills towards friendly products and efficient business;
- Be aware of the Extended Producer Responsibility (EPR) in the concern of the recall for recycling or treating of all types of packaging, bottles and jars; proactively innovating product and packaging design to make it easier, more convenient, and cost-effective to collect, simultaneously creating a more friendly image for customers;
- Based on the circular economy model to build a Circular Economy Business Model (CEBM) which is suitable to the conditions, circumstances, needs and corporate culture.

In order to orient and promote enterprises to apply the circular economy, the government needs to focus on a number of solutions as follows:

- Quickly complete and promulgate mechanisms and policies to promote the circular economy, complete the guiding policy framework and criteria for the circular economy for production and business sectors and fields; introduce incentive mechanisms related to corporate income tax, value added tax, soft loan and land incentives, increase incentives for businesses to use renewable energy;

- Promoting communication to raise awareness of businesses and stakeholders in the value chain of natural essential oil production as well as public awareness about the need, requirements, models and benefits of natural oil production circular economy; diversifying communication channels, reaping benefit of internet and 4.0 industry;

- Planning and publicizing the planning of raw material growing areas/ regions in order to contribute to strengthening linkages in the production value chain, facilitating enterprises to be proactive in production; localization of supply to reduce transportation distance in order to save costs, reduce fuel consumption, reduce the rate of material loss and damage;

- Promote the development of the recycling industry and the market for recycled products, specially emphasis on recyclable packaging and products in order to promote packaging collecting and recycling activities;

- Boost R&D of high-yield oil harvesting plant varieties as well as technical solutions in a circular economy model to reduce amount of waste/ residues in manufacturing process, reduce negative impacts to resources and the environment;

- Design, build and operate social infrastructure systems in accordance with the requirements of the circular economy;

- Implement effectively the roadmap of greening in the field of transportation, improve emission standards for vehicles, and convert means of transportation in the natural essential oil production industry - an industry of the “material-intensive”, which has a huge demand for transportation.

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MEASURING CARBON FOOTPRINT BASED ON LIFE-CYCLE ASSESSMENT OF SUSTAINABLE FOOD VALUE CHAINS: PRELIMINARY RESULTS OF THE PIZZA 4P'S CASE STUDY

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Abstract

The food and beverage (F&B) industry in most countries is under increasing pressure from consumers, nongovernmental organizations, governments, and other stakeholders to improve sustainable practices across their operations and supply chains. Applying the life-cycle assessment provided in the OpenLCA software package, this paper provides a showcase of greenhouse gas (GHGs) reduction within the sustainable food value chains of the Pizza 4Ps company. Our preliminary analysis of carbon footprint reveals that Pizza 4Ps' 1kg pizza emits 0.0411 kg of CO₂ eq into the atmosphere. Thanks to the use of organic materials in food processing activities, Pizza 4Ps is significantly more eco-friendly than the standard pizza value chain, which emits 2.08 kg of CO₂ eq.

Keywords: *carbon footprint, life-cycle assessment, sustainable food value chains*

1. Introduction

Food system activities are inextricably linked with climate and weather, environmental resources, and human behavior. GHG emissions from food systems are a major contributor to climate change. Globally, food system activities contribute 21-37 percent of total anthropogenic GHG emissions, compared with about 10 percent from food production alone and 18-29 percent from food production and land use change (Rosenzweig et al., 2020). Land use change, especially deforestation, forest degradation, and peatland conversion, contributes to substantial GHG emissions. Total GHG emissions from the food system were about 16 CO₂ eq per year in 2018, or one-third of the total global anthropogenic GHG emissions. Three-quarters of these emissions, 13 Gt CO₂ eq per year, were generated either during on-farm production or in pre- and post-production activities, such as manufacturing, transport, processing, and waste disposal (Rosenzweig et al., 2021). The remainder was generated through land use change of natural ecosystems to agricultural land. Substantial CH₄ emissions are best attributed to the specialized production of beef in large production systems. During 1990-2018, land use change emissions decreased while pre- and

post-production emissions increased (Tubiello et al., 2021). Post-production food system activities contribute to GHG emissions, albeit to a lesser extent compared with production-related and land-use activities. Post-production food system activities account for 18 percent of total GHG emissions from the global food system compared with 58 percent from food production and 24 percent from land use change (Poore and Nemecek, 2018).

Approximately 15 percent of food-related carbon emissions pass through restaurants (Kling and Hough, 2010). Food loss and waste exacerbate the climate change crisis with its significant GHG footprint. When food ends up in landfills, it generates CH₄. Food loss and waste account for between a quarter and a third of total global primary production (Guo et al., 2020; Gustavsson et al., 2011), and a 75 percent reduction is likely to result in a 10 percent decrease in GHG emissions (Springmann et al., 2018a). There are considerable differences between food types in terms of GHG emission levels measured in kilograms of carbon dioxide equivalents per kilogram (kg CO₂e). For example, vegetables such as zucchinis (0.25 kg CO₂e) yield approximately 50 times less GHG emissions than beef (12.29 kg CO₂e) (Reinhardt, 2016). As a part of ecologically sustainable practices, restaurants can help diners reduce their carbon footprint via dish choices. The utilization of local foodstuff and the decrease of animal protein in the menus can be a good strategy to encourage sustainable actions in food service meal production.

With its significant carbon footprint, the food and beverage (F&B) industry which is a major employer in most countries is under increasing pressure from consumers, nongovernmental organizations, governments, and other stakeholders to improve sustainable practices across their operations and supply chains. Sustainability is an approach to integrate social, economic, and ecological impacts within a robust business strategy. It is an enduring movement and increasingly impacts how business is undertaken and how consumers buy products.

In 2015, 196 countries, including Vietnam, adopted the Paris Agreement with the core objective of keeping the global average temperature rise to below 2°C above pre-industrial levels while pursuing efforts to keep it below 1.5°C for the survival and thriving of human beings and all creatures on the Earth. To be able to meet those climate targets, countries need to join hands and focus on GHG reduction across all sectors. Vietnam has released a new updated Nationally Determined Contribution under the Paris Agreement, in which the country increases its unconditional greenhouse gas (GHG) emissions reduction target to 15.8% by 2030 relative to a business-as-usual scenario from the reference year 2010 and including land use, land-use change, and forestry (LULUCF). Conditionally to international support and financing, through bilateral and multilateral cooperation, Vietnam has set an emissions reduction target of 43.5% by 2030. Under its previous NDC, released in 2020, Vietnam set GHG emissions reduction targets of 9% (unconditional) and 27% (conditional). In Vietnam, according to the updated NDC, the source of GHG emission from agriculture is identified to contribute around 20% of the total amount of GHG emission in 2020.

In response to recent government measures, an increasing number of F&B retail players and restaurants in Vietnam are adopting more sustainable and eco-conscious efforts. Several restaurants, hotels, and the F&B sectors have taken the opportunities to switch into

and become pioneers in sustainable development in the food production industry, such as Pizza 4P's, Laguna, Les vergers du Mekong, Sodexo, KOTO, etc. They have switched to a sustainable value chain with activities to reduce GHG emissions, reduce social and environmental impacts in each stage of the process of producing goods/ providing services, and change the consumer's behavior consumption. Changing our food systems to become sustainable and resilient is a powerful and smart way to realize progress toward achieving many SDGs. Shifting our diets can indeed unlock a multitude of environmental and health benefits and push us towards a virtuous uplifting spiral towards nourishing ourselves within planetary boundaries. Recently, citizens have paid more attention to their health and food consumption. Thus, by having a sustainable value chain, companies can add value to the final products or services, hence, realize some competitive advantages, such as cost reduction or product differentiation, and environmental contribution.

In recent decades, several environmental systems analysis tools have been introduced to estimate the environmental burdens related to agricultural production. The main methods adopted in scientific literature are the following: Product Environmental Footprint, Environmental Impact Assessment (EIA), Environmental Auditing (EA), System of Economic and Environmental Accounting (SEEA), Material Flow Analysis (MFA), and Life-cycle Assessment (LCA) (Boenzi et al., 2022).

Life-cycle Assessment (LCA) is an appropriate methodology to assess the environmental impact of a product/service or process by adopting a quantitative approach. It is based on Life Cycle Thinking, a paradigm that considers the environmental impact at all stages of the life cycle. Therefore, at the global level, LCA is considered one of the most reliable methodologies to assess the environmental impacts of products/services or processes and to identify effective solutions to address sustainability issues (Notarnicola et al., 2017). The LCA technique can be applied with defined boundaries by adopting two strategies. The first strategy considers a complete life cycle analysis, so called “cradle-to-grave”; on the contrary, in the second strategy, only a part of the life cycle is investigated; it is called “cradle-to-gate”, “gate-to-gate”, or “gate-to-grave” depending on the boundaries considered (Boenzi et al., 2022).

This paper is presenting preliminary results of a study measuring carbon footprint based on life-cycle assessment of sustainable food value chains in a case study of the Pizza 4P's. The findings on the case study can be a showcase of GHGs reduction within sustainable food value chains.

2. Method

2.1. Scope of Study

As mentioned, F&B companies are the subjects of this study. Accordingly, the Pizza 4P's company is chosen as a case study for a few reasons:

(i) It is considered as a typical pioneer in promoting sustainable food value chain in Vietnam (SustainableVN, 2021). 4P's has a strong reputation for their commitment to

sustainability, and their efforts have been recognized both nationally and internationally. This makes them an excellent example of a business that has successfully integrated sustainability into their operations, while also maintaining profitability

(ii) 4P’s have been actively working towards reducing their carbon footprint, sourcing local and organic ingredients, and implementing a circular economy approach in many phases of their value chain. Therefore, it is expected that there are a few good examples for other F&B companies to follow.

(iii) 4P’s is not just focused on its own business and profits, the company has gathered like-minded sustainable thinking companies in its value chain, supporting them to develop and encouraging them to adopt a sustainable and green approach. By doing so, 4P’s is contributing to a larger movement towards sustainability and promoting a culture of sustainability in the industry. This study also aims at recording the approach.

(iv) Finally, 4P’s has already published sustainability reports in 2020 and 2021, indicating that there is sufficient data available for our study. This enables us to analyze their sustainability efforts, understand their approach, and assess the impact of their sustainable practices.

2.2. Life-cycle assessment for measuring carbon footprint

In order to measure the carbon footprint (blueprint) of 4P’s, the LCA methodology is employed in this study. As discussed in the literature review, LCA is a widely accepted methodology for measuring the carbon footprint of products and services, especially in food and beverage industry. It provides a comprehensive and systematic approach to identify and quantify the environmental impacts associated with the entire life cycle of a product, from raw material extraction, manufacture, transportation, use, and end-of-life disposal (Figure 1).

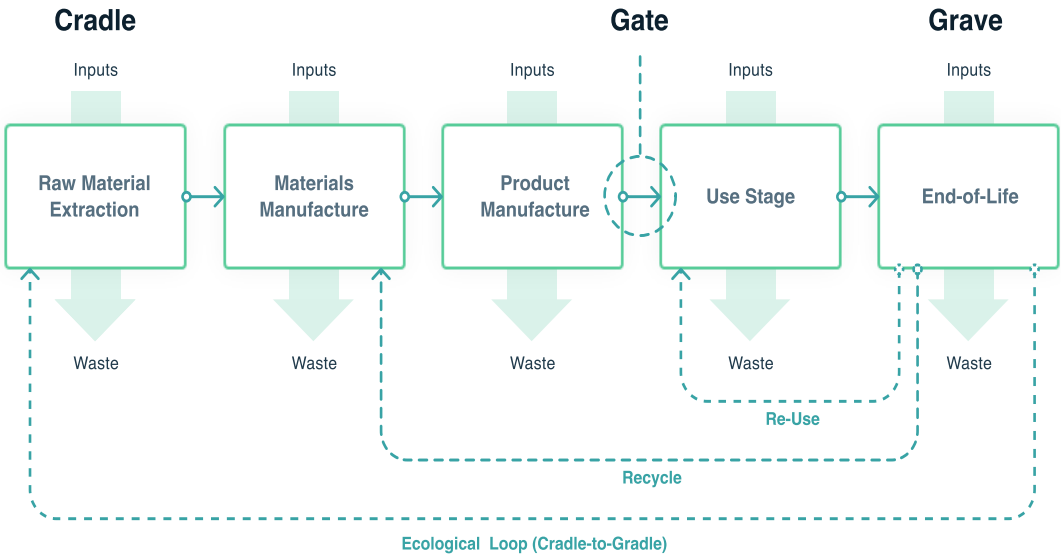


Figure 1. Boundaries of a LCA analysis

However, this study will focus on the Cradle to Gate instead of the entire Cradle to Grave to highlight the innovative approaches of 4P’s in the upstream of the value chain. This

will allow us to identify opportunities for reducing carbon emissions in the production and supply of raw materials, production processes, and transportation. By focusing on the Cradle to Gate, we can provide insights into the carbon footprint of 4P’s value chain and identify areas for improvement that can result in significant environmental benefits.

The use of LCA in measuring carbon footprint provides a comprehensive and systematic approach to identify and quantify the environmental impacts associated with the entire life cycle of a product. By focusing on the Cradle to Gate, we can identify areas for improvement that can result in significant environmental benefits, and the use of Open LCA provides a robust and flexible tool for conducting the analysis. Additionally, this study can support the development of a scope 3 inventory for 4P’s, further demonstrating the company's commitment to sustainability and environmental responsibility.

In addition, we employ Open LCA software to support our LCA calculation and analysis. Open LCA is an open-source software tool that allows for the creation and analysis of life cycle assessments. One of the key advantages of Open LCA is its flexibility in data entry and the ability to customize the analysis to suit specific requirements. Open LCA also provides access to a range of databases, including the ecoinvent database, which contains data on environmental impacts associated with various products and services. The use of Open LCA in this study allows for a comprehensive and robust assessment of the environmental impacts associated with 4P’s value chain, providing valuable insights for decision-making and sustainability performance improvement. Some sample results of the Open LCA are illustrated in Figure 2 below.

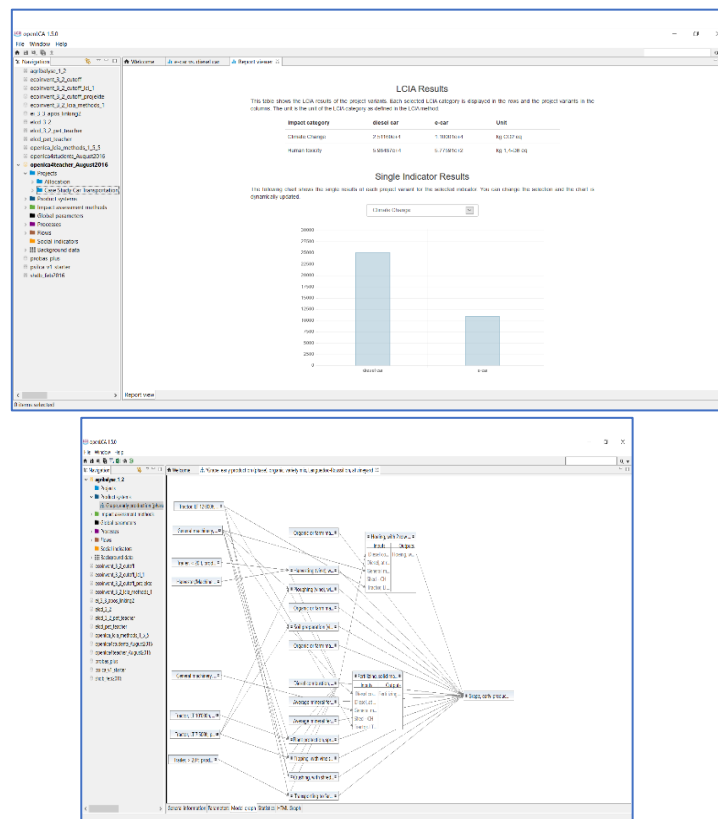


Figure 2. Example results of the Open LCA analysis on GHG emission

The result of our LCA analysis is also expected to support 4P's Scope 3. As scope 3 emissions refer to the indirect emissions that occur in the value chain upstream or downstream of the organization's activities (WRI and WBCSD, 2011). By conducting a comprehensive LCA analysis of 4P's value chain, we can identify the sources and magnitude of scope 3 emissions associated with the production and supply of raw materials, transportation, and other upstream activities. This information can be used to develop strategies for reducing scope 3 emissions and support the development of a scope 3 inventory for 4P's.

3. Preliminary results of the study

3.1. Value chain mapping for the 4P's company

This study will focus on the Cradle to Gate or the upstream of the 4P's' value chain, therefore the suppliers of the company is the focal point in this analysis. The suppliers included in this report are those have the remarkable practices relating to sustainability and GHG reductions.

• 4P's Cheese Factory

4P's Don Duong Cheese Factory, Lam Dong went into operation in 2011. A large amount of Vietnamese cheese is produced here and sold to hotels, restaurants and dairy shops throughout the region. Initially, the Don Duong cheese factory used less than 50 liters of milk per day. But now, with 30 workers, they use 4,000 liters a day to make 13 different types of cheese, from ricotta to bocconcini. All cheese produced here is 100% natural with no additives.

Circular economy

The liquid remaining after milk had been curdle and strained is whey. Whey is a byproduct of cheese making and has some commercial uses. It is an additive in many processed foods, including breads, crackers and in animal feed. In 4P's cheese factory, 20% of whey is used in the 4P's restaurants for making sauce, beer and pizza base. The other 80% is transported to Thien Sinh Farm which is a supplier of 4P's to grow grass, corn, and vegetables as well as to use as a drink for the cows.

Challenges and future actions

Water use and wastewater: The plant uses underground water and has its own water purification system. Water for cheese production is filtered by RO technology. Currently, due to the relatively small scale of the plant, there is no monitoring system for water used and wastewater. 4P's plans to build a new larger cheese factory in the near future in the same area. The water source will be tap water. With a larger area and operating capacity, the plant will have a monitoring system to measure the clean water used and wastewater for management information.

At the moment, the equipments are cleaned by hand after being used, which uses a large amount of water, and this water are not recoved. The new plant will have a separate section for cleaning the equipments, which would help save the water.

Solid waste: Milk cartons or the paper packages of heavy cream - an input for producing burrata - are usually made of aluminum and paper, which can be recycled into roofing sheets, flooring and pulp. After the milk cartons are put into the recycling line, the pulp will be separated and recycled into cartons. The rest is aluminum and plastic, which will be made into roofing sheets. The recycled product is 100% aluminum and plastic and has many advantages: Durability, no rust, heat and sound insulation, and environmental friendliness. They are suitable for houses in the coastal areas where there is high humidity. However, the milk cartons used in 4P's are put away and collected as other garbage by the local solid waste treatment company because 4P's cannot find a partner for recycling. This is an issue that needs to be solved with the new cheese plant.

• **Thien Sinh farm**

4P's uses the three indicators (including locally sourced, sustainably sourced, sustainably sourced with certification) to assess the sustainability of sourcing. From these points, it can be said that Thien Sinh farm is an important supplier in the value chain of 4P's as they adopt the organic farming techniques. 40% of the output in Thien Sinh is provided for 4P's.

Thien Sinh farm is located in Ka Don, Don Duong district, Lam Dong Province. Its products include vegetables like tomatoe, bean, kale, rocket, leek... and meat (pork and beef). The farmers in Thien Sinh started agricultural production 10 years ago. Before adopting organic farming, they planted corns in 4 years to recover and enrich the soil. Their total area is 14 hectares, in which 5 hectares are for vegetation. All the vegetables are grown in the greenhouse.

Reducing environmental footprint

As mentioned above, Thien Sinh farm use the whey, a by-product from the 4P's cheese factory, with agricultural techniques to turn it into a raw material for use. Whey is used as drinking water for cows, mixed with straw and grass for cows' food, and used to irrigate the soil. The farm's vegetables that do not meet the standards to be sold and a broken pizza dough from the kitchens of 4P's is also sent to Thien Sinh to be fed to the cows. Cow manure is composted to fertilize the soil. In addition to composting, the ingredients used at the farm are local, and the bacteria are also collected in the wild nearby. Thus, the farm produces almost no waste, but most of the waste is reused.

Thien Sinh's farming process is organic without the use of chemicals that can affect the environment and human health. The soil is improved by natural methods including resting the soil, intercropping, and using microbial fertilizers. One example of intercropping is that tomatoes and beans are planted on the land that will be used for producing rocket. The farm does not use pesticides. Pests are prevented by neem oil which is produced by the farm itself. Grass is cut by machine instead of using herbicides. As a result, the farm's agricultural products do not have residues of chemicals. At the same time, Thien Sinh does not discharge excess chemicals into the environment.

Challenges and future actions

Thien Sinh uses the spray irrigation method to water the plants. This method uses a sprinkler from below the water surface to the canopy through a system of pumps and pipes

with fixed nozzles. The spray system automatically rotates at an angle of 360 degrees, usually about 0.5-1m higher than the ground. The water used in Thien Sinh is pumped from the wells to a reservoir, then it runs to the piping system. A timer is set to water the farm several times a day, depending on the weather and temperature. In the dry season, the pump operates throughout the day while in the rainy season, it runs 12 hours a day. The water used have not been measured yet. Thus, it is recommended that a meter should be installed to estimate the water and drip irrigation should be used.

• **Zanya Coffee**

Zanya Coffee is a family cooperative in Lac Duong district, Lam Dong, under Langbiang mountain. Zanya coffee defines themselves as focusing on quality over quantity and developing personal relationships in Vietnam specialty coffee community. Langbiang mountain area provides the arabica coffee with unique aromas and flavours. Zanya would like to bring arabica specialty coffee from farm to cup to customers.

Benefits to the community

In Vietnam, a small but passionate group of customers of specialty coffee is slowly developing, especially in the big cities, thus the case that can also be observed in many other coffee-producing countries: when consumption increases in the country, the appreciation of the original product also increases. Producers learn to better assess the value and quality of their work and what Zanya Coffee has been doing opens to new techniques that keep one step of the value chain in the hands of the producers. This development is still in its infancy in Vietnam, but it has been initiated with the presence of companies like Zanya Coffee. In order to take control of the whole process of producing coffee as well as to encourage the farmers keep planting Arabica (rather than selling the land to real estate developers), Zanya Coffee buys the coffee cherries of surrounding family members and uses their own method to process. They rely heavily on multiple hand selections during the coffee processing, fermentation monitoring, drying on african raised beds and proper storage in Grainpro bags. Thus, they can pass on portions of the value the company generates to the community.

Challenges

Global climate change is increasingly leading to unpredictable weather conditions, making coffee plantation much more difficult in practice. Until well into the harvest season, the region was affected by heavy rainfall, making it much more difficult for a long time to reach the fields located on the mountain via the unpaved roads leading to them. Another issue is the price and quality. When coffee reaches a certain quality, it escapes the highly speculative environment of world market trade and becomes available to the specialty trade. It means that pricing primarily depends on quality. If coffee farmers commit to the effort required to grow high quality coffee, they will be rewarded with better price control and better income, which may be more sustainable than abandoning or selling the land.

• **Dalat Ecology**

Locating in Da Nhim commune, Lac Duong district, Dalat Ecology provide shiitake mushroom to 4P's. Five households including some K'Ho minority ethnic families participates

in shiitake production. They establish 10 mushroom houses, and the output of one mushroom house is 7-10 kilograms per day, which meets 20% - 30% of the demand of 4P's.

Shiitake mushrooms are a bit more picky about what they will eat when compared to oyster mushrooms, which will grow on coffee grounds, cardboard, or pretty much anything. Shiitake really need a wood-based growing medium to thrive and get the nutrients they need. Dalat Ecology uses the sawdust mixed with rice and corn bran as the beds for shiitake. One bed can provide mushrooms after 10 days after incubation and put into production again for seven to eight times (in 5-6 months) if it is mixed with good quality.

Circular economy

In mushroom production, water is an important input because mushroom prefer moist environments. Water is used to irrigate the roof to cool the mushroom house. A system of pipe is installed in every mushroom house to and spray water to keep the moist environment. Water is also necessary to soak the mushroom bed before planting. At Dalat Ecology, wastewater from soaking the mushroom beds is used to irrigate coffee plants. The mushroom bed, after reaching the end of its growth potential, still has a high nutritional content, so it is collected as compost to provide for coffee farmers.

Community development

Dalat Ecology was initiated by Mr. Quan after learning about sustainable development and environmentally friendly agriculture. He succeeded in convincing some K'Ho ethnic households in the area to participate in a project to produce shiitake mushrooms, which are a high-value agricultural product that does not affect the environment. Mushroom production requires a clean environment, so mushroom cultivation helps keep the soil, water and air environment free from dust and chemicals. As a result, the local ecosystem - where Bidoup Nui Ba National Park is located - is protected and people's health is ensured.

In this area, the main livelihood is growing coffee and vegetables. People do not want to make high-value specialty coffee because they usually receive money from traders first and then sell it back to those people during the harvest season at a relatively cheap price. Therefore, when compared to coffee farming, high-value shiitake production provides stable and higher income for ethnic minority households.

Future actions

The production model will be more effective if precise information is collected, including data on resources and fuel consumption. Currently, the main source of water used is groundwater and a small part is from the commune's reservoir. In the dry season, to cool the mushroom house, water is spray on the roof every half an hour for 10 minutes. In the rainy months (from July to October), it is unnecessary to cool the house. Electricity costs are about 1-2 million VND a month for one mushroom house. In the future, shiitake production households will need to install water meters to know the exact amount of water consumed for each production crop at different times of the year, thereby having a plan to save water and electricity and improve production efficiency.

• Orlar Vietnam Joint Stock Company

Orlar Vietnam Joint Stock Company is a company in the field of high-tech agriculture. Their goal is to meet the growing demand for fresh, safe and local products. The first technology is hydroponics. Plants are grown in pots with a substrate made from coir mixed with zeolite imported from Australia and added with microorganisms. The second is vertical gardening. This is a growing method that usually does not use soil or natural light. Plants are grown on posts or trays arranged vertically. The pots and trays are located in a greenhouse with a controlled environment. There are over 26 major products including lettuce, edible flowers, herbs, tomatoes, kale and strawberries. 4P's mainly uses edible flowers and strawberries from Orlar's farms.

Resource and energy efficiency

Orlar's technology does not use land, so it does not affect the natural soil. Plants are watered by drip irrigation technology. Drip irrigation involves placing tubing with emitters on the ground along side the plants. The emitters slowly drip water into the soil at the root zone. Because moisture levels are kept at an optimal range, plant productivity and quality improve. Drip irrigation also helps prevent disease by minimizing water contact with the leaves, stems, and fruit of plants. It allows the rows between plants to remain dry, improving access and reducing weed growth and reduces leaching of water and nutrients below the root zone. Time, money, and water are saved because the system is efficient. The number of labours needed decreased. In addition, the use of zeolite helps to retain water in the substrate, thereby saving more water than conventional hydroponic and normal drip irrigation. In terms of energy, since the water is used with the optimal amount, less electricity is needed to run the pump. Another advantage of the technology system is that the environment quality inside the substrate is ensured. The diseases can be controlled easily and there is no root disease. Once again, zeolite retains nutrients better, produces more nutritious products, and retains resources after harvest longer.

Saving the environment

Orlar uses systems designed to eliminate or significantly reduce the use of various inputs such as substrates, synthetic chemicals, and artificial light. The company uses no disposable input, captures 100% of nutrients, uses water nearly 100% efficiently, and uses 0.05% of the energy of other vertical farming operations. The technology helps control chemical residues and uses less land than traditional methods.

Challenges

Creating a controlled environment on a large scale will require more energy. For example, the company is experimenting with creating a stable low-temperature environment around the year for growing strawberries by installing a cooling system in vertical planting poles. Then the amount of energy consumed will increase, not only increasing costs for businesses but also making a relatively significant contribution to global GHG emissions.

Importing most of the important inputs including zeolite and fertilizer also increase the GHG emissions, which causes global climate change.

In addition, the application of high technology in agriculture, which brings high output and great value, also leads to the problem that local farmers who are lacking capital and knowledge may be excluded from the value chain of agricultural products. They will lose their livelihoods and have no opportunities to learn and improve their capacity to participate in this value chain.

- **Hasfarm Greens+**

Hasfarm Greens+, formerly known as The Fruit Republic, is a joint venture invested by Dalat Hasfarm in 2017. They have a separate farm and garden in Da Ron, Lam Dong. In 2021, the Hasfarm Greens+ brand is officially launched. Products supplied by Hasfarm Greens+ meet the food safety and quality standards with certifications issued by prestigious organizations in Vietnam and abroad, including FSSC 22000: 2018, GlobalGAP and VietGAP. Now they have 252 hectares in which 12 hectares are for vegetable production with the annual output of 9,000 tons. Hasfarm Greens provides 4P's with lettuces, bell peppers, tomatoes, etc.

Sustainable development has become one of Dalat Hasfarm's four distinguishing points, along with Innovation, High Technology, Sustainable Development, and Consumer Orientation. Many sustainable development solutions, such as organic waste recycling, energy-saving LED lighting systems, water treatment and reuse processes to save water resources in flower production, and Bio Pro technology, which uses beneficial insects, natural enemies, and biological fungi instead of chemical pesticides to protect human health and the environment, have been successfully implemented in the company.

Water saving

The company applies drip irrigation technology to save water and optimize water efficiency. In addition, irrigation water is also recovered through a system of pipes placed under the plant trays and pots, therefore it has a certain level of nutrients. It is estimated that the amount of water recovered and recirculated reaches 80% of the input water. The recovered water is used to irrigate the plants that are not too sensitive to nutrients in the water, for example ferns. In the future, the company will research to treat the reused water so that it is suitable for irrigating the vegetables.

Composting

The substrate is mainly coconut fiber, which is reused many times for different types of vegetables. After use, the substrate is collected and composted. Hasfarm Greens+ has a separate composting area. The company's composting process produces no odor pollution. As a result, the company can handle most of the waste from production.

Elimination of pesticides

Innovation can be seen as a winning tool for sustainable development. Doted with a professional laboratory, Dalat Hasfarm has started developing its own predator insects and micro-organisms since 2014. Using Bio-Pro helps reduce the presence of chemical residue on our different crops. safer for customers, protective for the workers and the environment. Their products include beneficial fungi, beneficial insects and potted soil.

The abuse of pesticides has directly eradicated natural enemies, causing insects and diseases to crop up, creating resistance and becoming stronger, so humans have to constantly invent new drugs to destroy them. Compared with the use of chemical pesticides to control pests quickly and effectively immediately, the use of natural enemies requires an initial time, because the impact time of natural enemies is longer. However, once the natural enemies have developed in sufficient numbers and suppressed harmful pests and insects, farmers almost do not have to use pesticides to prevent during the growing season.

Renewable energy development in the future

It is reported that utilizing clean solar energy will be a new milestone in Dalat Hasfarm's journey toward sustainable development. Dalat Hasfarm is taking a new step toward sustainable development by using clean energy from solar power - the BLT (Build - Lease - Transfer) model invested in by ecoligo Fund (Germany), developed and provided EPC contracting services by Vu Phong Energy Group. The project's kick-off ceremony was held on March 15, 2023. The parties' cooperation will not only aim for Goal 7 - Affordable and clean energy but will also contribute to the achievement of many other United Nations Sustainable Development Goals (SDGs), particularly Goal 8 - Decent work and economic growth and Goal 17 - Partnerships for the goals. The development of solar power should be expanded to Hasfarm Greens+ soon as the company also have a large area of greenhouse. Lam Dong has a high potential of wind and solar power with the total expected capacity is about 2250.06 MW.

Challenges

Similar to the case of Orlar, Hasfarm Greens+ have to import the seeds and fertilizers, which contributes to the GHG emissions. It is difficult for Hasfarm Greens+ to use the domestic seeds because the plants from domestic seeds are easily broken when growing and harvesting, resulting in high proportion of waste and increase in the cost. It is recommended that the company should invest in R&D to produce the seeds themselves.

• Yoshimoto Mushroom Vietnam Co., Ltd.

Yoshi mushroom is the main product of Yoshimoto Mushroom Vietnam Co., Ltd, which is located in Loc Son Industrial Park, Bao Loc City, Lam Dong province. The company adopts the Japanese-style organic and natural production process and the inputs are imported from the Netherlands. Healthy yoshi mushroom subject to Japanese standard is an important ingredient in the 4P's' menu.

Circular economy

Substrate from mushroom production has high nutritional content, which is preferred by the farmers. After 2-3 mushroom crops, the substrate is disinfected by heat and sold to local households and agricultural farms. The disadvantage is that the quantity is too large, leading to such high shipping cost that the local people can hardly pay.

Challenges

Yoshimoto's mushroom production process is based on technology and imported inputs. Each mushroom house needs relevant temperature and humidity level depending to each stage of mushroom growth, which consumes a lot of electricity. The imported mycelium from the Netherlands is stored in refrigerated containers at the temperature of -1°C. This is another significant energy consumption item that can contribute to greenhouse gas emissions. It is remarkable that all production materials are imported, from soil, nutrients to mycelium. The transportation of these materials leads to GHG emissions, which is a cause of climate change.

3.2. Measuring carbon footprint based on life-cycle assessment

Open LCA software was employed to calculate the environmental footprints of Pizza 4Ps. Table 1 below shows the environmental footprints of 1 kg pizza. Each selected indicator is displayed in the rows and the project variants in the columns.

Table 1: Environmental footprints of 1 kg pizza

#	Indicator	Pizza 4Ps (BAU)	Baseline	Unit
1	Climate change	4.11E-02	2.08E+00	kg CO2 eq
2	Climate change - biogenic	1.02E-03	5.97E-01	kg CO2 eq
3	Climate change - fossil	4.55E-02	1.41E+00	kg CO2 eq
4	Climate change - land use and transform.	-5.42E-03	7.34E-02	kg CO2 eq
5	Ecotoxicity freshwater	1.16E+00	2.20E+01	CTUe
6	Land use	6.93E+00	7.38E+02	Pt
7	Non-cancer human health effects	8.76E-07	8.84E-06	CTUh
8	Ozone depletion	4.02E-09	1.90E-07	kg CFC11 eq
9	Photochemical ozone formation, HH	2.02E-04	6.86E-03	kg NMVOC eq
10	Resource use, energy carriers	5.69E-01	2.52E+01	MJ
11	Resource use, mineral and metals	4.10E-07	4.95E-06	kg Sb eq
12	Respiratory inorganics	3.68E-09	1.88E-07	disease inc.
13	Water scarcity	9.75E-01	3.57E+00	m3 depriv.

As can be seen, the carbon footprint analysis reveals that Pizza 4Ps' 1kg pizza emits 0.0411 kg of CO2 eq directly into the atmosphere and has a total carbon footprint of 0.0822 kg of CO2 eq. This data clearly shows that Pizza 4Ps is significantly more eco-friendly than the standard pizza value chain (baseline), which emits 2.08 kg of CO2 eq directly and 4.8804 kg of CO2 eq in total.

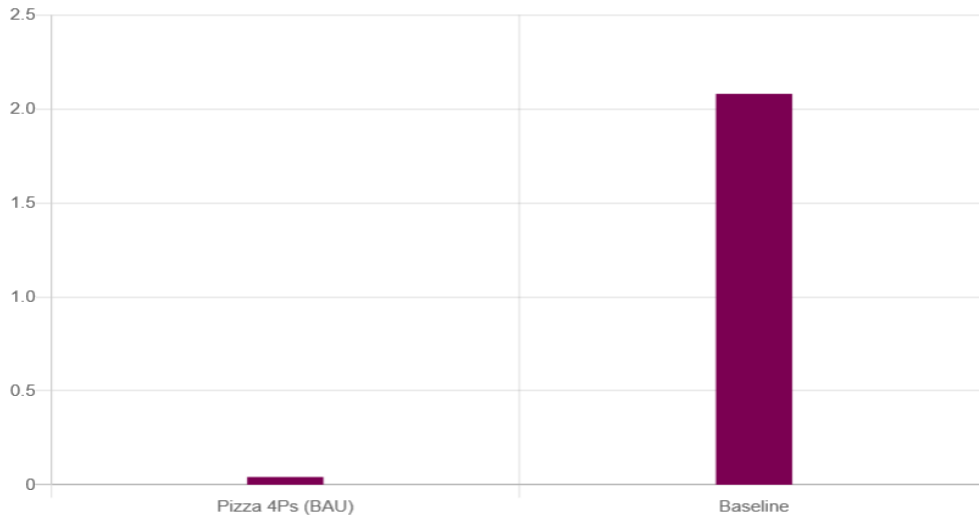


Figure 3. Pizza 4Ps’ Carbon footprint vs the baseline

The following Figure 4 shows the relative indicator results of the respective project variants. For each indicator, the maximum result is set to 100% and the results of the other variants are displayed in relation to this result.

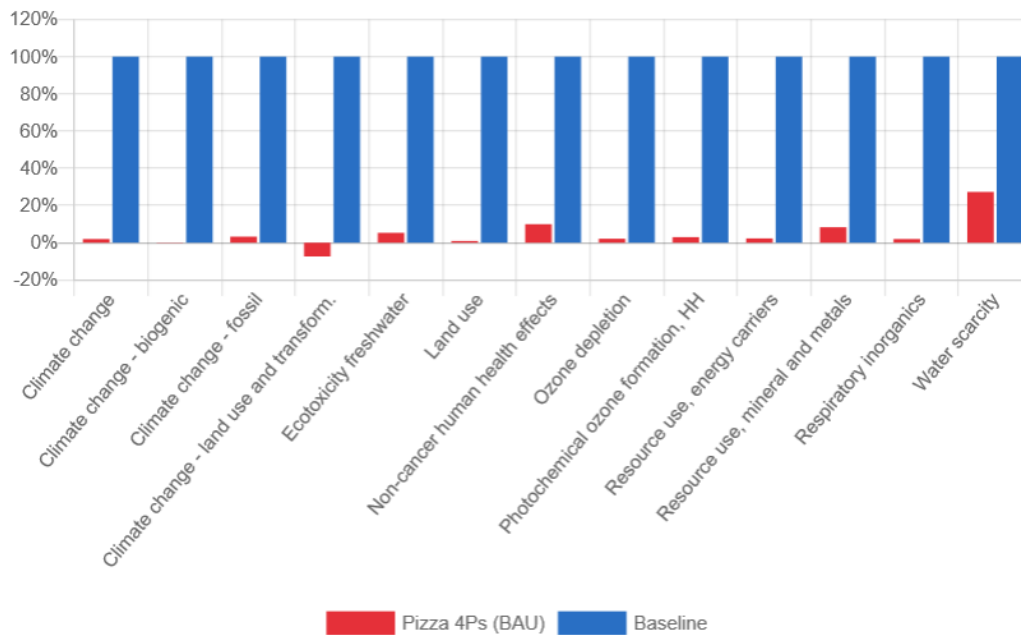


Figure 4. Pizza 4Ps’ environmental footprints vs the baseline

4. Conclusion

Food and beverage companies have a very significant environmental and social impact, and this has become a global issue. Food system activities, including producing food, transporting it, and storing wasted food in landfills, produce greenhouse gas (GHG) emissions that contribute to climate change, which account for 26% of global GHG, showing the huge impact that our diets have on climate change. Food systems cause the loss of 70% of biodiversity, restrict 3 billion people from a healthy diet, consume an enormous amount

of fresh water, equivalent to 304 million swimming pools, and one-third of our food goes to waste, etc. Food is also the largest consumption emission sector within cities, and it is foreseen that 80% of the world's food will be consumed by 2050. As the fact that, we depend on healthy ecosystems and healthy people to produce our food, yet at present, our food systems make us and our planet sick.

The food and beverage (F&B) industry in most countries is under increasing pressure from consumers, nongovernmental organisations, governments, and other stakeholders to improve sustainable practices across their operations and supply chains. The improvement is an enduring movement and increasingly impacts how business is undertaken and how consumers buy products. This paper provides a showcase of GHGs reduction within sustainable food value chains of the Pizza 4Ps company.

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COMMUNITY-BASED FOREST MANAGEMENT IN XUAN LIEN NATURE RESERVE

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Abstract

This research article investigates community-based forest management through contractual arrangements in 12 villages/hamlets across five buffer zone communes in the Xuan Lien Nature Reserve, Thuong Xuan district, Thanh Hoa province. By utilizing methods such as data analysis, descriptive statistics, the article assesses the current situation and outcomes of forest management. It evaluates the factors influencing community-based forest management, identifies strengths, weaknesses, opportunities, and challenges, and proposes solutions to improve community-based forest management in the Xuan Lien Nature Reserve.

Keywords: *Forest management, community, Xuan Lien Nature Reserve*

1. Introduction

Mountainous regions cover two-thirds of Vietnam's territory and are home to over 24 million people belonging to 54 ethnic groups, particularly communities of ethnic minorities whose lives are intimately connected to land and forests. These areas are also the primary focus of forestry activities. Therefore, the socialization of the forestry sector is not only a practical requirement in Vietnam but also aligns with global development trends.

The Land Law of 2003 and 2013, the Forest Protection and Development Law of 2004, and the Forestry Law of 2017 have provided legal frameworks for forest management through land allocation and forest allocation to communities. Local communities are now considered genuine stakeholders with established rights to land and forest use, as well as entitlements, obligations, and benefit-sharing mechanisms from forests. In some areas, land and forest have been allocated to communities as stable, long-term management entities. Practical experiences have shown that community-based forest management is a feasible model economically and socially, suitable for the traditional production practices of many ethnic groups in Vietnam. However, communities have only been granted limited rights and control over the allocated areas.

Thanh Hoa province's Thuong Xuan district is a mountainous area located in the western part of the province. The region's diverse terrain consists mainly of hills and mountains, with a large forested area covering 80% of the natural land. These forests play a crucial role in environmental protection and improvement, serving as protective forests at the headwaters of the Chu River basin, regulating water resources during both dry and rainy

seasons. Due to the coexistence of multiple ethnic groups (Muong, Kinh, Thai, etc.) in Thuong Xuan district, forest management predominantly relies on local communities, particularly in the Xuan Lien Nature Reserve. This reserve is situated at the transition zone between the Northwest and North Central regions, boasting high biological diversity and a rich ecosystem composition. In recent years, the Xuan Lien Nature Reserve has implemented forest contractual arrangements with surrounding villages and communes.

However, practical implementation has revealed various existing issues in community-based forest management in the Xuan Lien Nature Reserve. Therefore, this study aims to investigate the current situation of community-based forest management in the Xuan Lien Nature Reserve, Thuong Xuan district, and propose effective solutions to contribute to community benefits.

2. Literature review

2.1. The formation process of community-based forest management

According to the report by Do Anh Tuan and colleagues, community-based forest management in Vietnam has been implemented since the 1980s. Initially, the form of community-based forest management was carried out by assigning forest management responsibilities to households. Later, this model was expanded and developed with two community-based forest management approaches applied in Vietnam, including forests assigned to communities for self-management and forests assigned to households, which can form associations to manage the forests.

2.2. Community-based forest management in areas near conservation and other areas

a. Similarities

- Focus on enhancing the role of local communities in natural resource management.
- Aim to ensure sustainability in forest resource exploitation and use.
- Require attentiveness and flexibility to ensure the effectiveness and sustainability of forest resource management.

b. Differences

- Community-based forest management in areas near conservation sites is usually stricter and more closely monitored than in other areas, as these areas are particularly sensitive and require sustainable forest resource protection. In contrast, forest management in other areas may be more flexible, depending on the specific needs and conditions of the community and forest resources.

- Areas near conservation sites often face more risks in forest management, such as violations of forestry and criminal laws, encroachment on conservation-planned areas, illegal logging, and the use of harmful chemicals. Therefore, close contracts need to be established between the parties to ensure the rights and obligations of each party in forest management. These contracts should ensure transparency, openness, adherence to deadlines, and strict enforcement. In contrast, in other areas, community-based forest management also requires transparency and openness but may not have strict legal regulations like in Nature Reserve.

- Areas near conservation sites have higher political and social influences due to their location and the level of government and international organization interest in forest conservation. Therefore, implementing community-based forest management in these areas may require closer collaboration with conservation support organizations and groups. In contrast, other areas may not face such political and social challenges.

2.3. Forests assigned to communities in nature reserve in Vietnam

a. Pu Hu Nature Reserve

Pu Hu Nature Reserve is located in Quan Hoa and Muong Lat districts, in the northwest of Thanh Hoa province, Vietnam, about 134km northwest of Thanh Hoa city.

In Pu Hu, community-based forest management is carried out through the establishment of groups and the formation of a forest management council, with members representing households and working together with the Management Board of Pu Hu Nature Reserve. These groups hold regular meetings to discuss forest management-related issues, make decisions, and propose appropriate solutions. Some activities carried out by the local communities in Pu Hu include forest monitoring, afforestation, timber harvesting, and selling forest products. However, all these activities are conducted under the supervision and guidance of the Pu Hu Nature Reserve Management Board to ensure that they do not harm the environment and ecology of the reserve.

The community-based forest management approach in Pu Hu has brought many benefits to both the local community and the environment. Through active participation in forest management, this model helps improve incomes for households while maintaining and protecting forest resources for future generations. However, to date, no community in the area has been granted a certificate of land use rights for forests. The Pu Hu Nature Reserve Management Board only provides forest protection contracts on an annual basis according to Government Decree No. 168/2016/ND-CP dated December 27, 2016.

b. Nam Kar Nature Reserve

Nam Kar Nature Reserve covers a total area of 24,555 hectares, with the core area located in Lak district, Dak Lak province, Vietnam. The reserve plays a significant role in protecting forest ecosystems, conserving endangered animal and plant species, and also serves as a watershed for the Mekong River.

The management board of Nam Kar Nature Reserve has collaborated with authorities at all levels and local communities to establish agreements and commitments to protect the forest. These agreements include not practicing slash-and-burn cultivation, hunting, trapping wild animals, and harvesting forest products that could negatively impact forest resources. Additionally, the activities of forest protection management stations throughout the region have achieved positive results. However, external support has been ineffective, and there is no common understanding of the purpose of forest resource conservation between Nam Kar Nature Reserve and local communities in the buffer zone. These communities still exert various adverse impacts on forest resources due to their unmet daily needs.

2.3. Lessons learned

Based on a comprehensive study of community-based forest management in several Nature Reserve in Vietnam, the following conclusions can be drawn:

- Community-based forest management has become one of the popular approaches worldwide and in Vietnam to manage forest land, contributing to the livelihood stability of ethnic minority communities who rely on forests.

- Village communities have established regulations for forest management and use. However, there is a need for more organized and equitable mechanisms for sharing the benefits derived from forests among community members.

- Forest management in many communities has shown clear environmental effectiveness, but economic effectiveness is still limited. Therefore, community-based forest management needs to balance economic feasibility, social equity, and environmental sustainability.

- Community-based forest management in Vietnam takes various organizational forms, including village-level, ethnic minority-based, and household group-based management. In practice, there is no single optimal form of management that applies universally but rather depends on specific community

3. Method

3.1. Data collection methods

a. Secondary data collection method

Relevant legal documents related to community-based forest management, as well as documents and materials related to land and forest allocation, leasing, and transfer to communities, were collected from the People's Committee of Thanh Hoa Province and various levels of state management agencies responsible for land and forest resources (such as the Department of Statistics, the Department of Natural Resources and Environment, and the People's Committees at the district and commune levels in Thanh Hoa Province).

b. Primary data collection method

Direct interviews were conducted with one leader and one forest management officer responsible for community-based forest management. Additionally, 60 households from five buffer zone communes participating in community-based forest management in the Xuan Lien Nature Reserve were interviewed.

These interviews provided information on the management process, policies, and methods of community-based forest management, as well as the challenges and limitations encountered during implementation. Furthermore, interviews with households in the buffer zone helped gain a deeper understanding of the motivations, needs, perspectives, and awareness of local communities regarding community-based forest management. Based on these findings, appropriate solutions can be proposed to enhance the effectiveness of community-based forest management and meet the communities' needs.

3.2. SWOT analysis method

The Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis framework was used to analyze community-based forest management in the Xuan Lien Nature Reserve, Thuong Xuan District, Thanh Hoa Province. The results of the analysis serve as an important basis for proposing solutions to strengthen community-based forest management in the Xuan Lien Nature Reserve.

3.3. Analysis and Synthesis method

Analyzing the results and evidence obtained during the study on community-based forest management in Xuan Lien Nature Reserve, Thuong Xuan District, Thanh Hoa Province, and then synthesizing them to propose more effective solutions for community-based forest management.

3.4. Descriptive Statistics and Data Analysis using SPSS Software

Summarizing, describing, quantifying, and analyzing data systematically and simply, evaluating important characteristics of the dataset quickly and efficiently.

4. Results and Discussion

4.1. Description of the Study Area

Thuong Xuan is a mountainous district located in the western part of Thanh Hoa province. It is situated 54 km west of Thanh Hoa city. Thuong Xuan shares borders with administrative units such as Bac Quang (Ha Giang province) to the north, Mai Son and Quan Hoa to the east, Thach Thanh and Bim Son to the south, Muong Lat and Tua Thanh (Dien Bien province) to the northwest, Song Ma and Ham Tan (Son La province) to the west. In terms of topography, the entire district gradually slopes from the northwest and west to the east and south. There are many mountain ranges, such as Chom Vin in Bat Mot commune, which reaches an elevation of 1,442 meters above sea level. The terrain is divided by rivers, including Khao River, Chu River, Dat River, and Dan River. There are numerous terraced hills and small-scale agricultural lands. The highland communes mainly consist of terraced rice fields that rely on passive irrigation and are prone to erosion. Thuong Xuan has a temperate climate, with cold winters and cool summers.

Xuan Lien Nature Reserve is located in the upper watershed of Chu River, within the administrative boundaries of five communes: Bat Mot, Yen Nhan, Luong Son, Van Xuan, and Thuong Xuan town, Thuong Xuan district (Thanh Hoa province). Xuan Lien Nature Reserve is evaluated as a biodiversity center representing the Northwest and North Central regions. The total area of Xuan Lien Nature Reserve is 27,668 hectares, including 19,800 hectares of strictly protected area, 7,848 hectares of ecological restoration area, and 20 hectares of service and administrative area. Xuan Lien Nature Reserve is renowned for its diverse and abundant forest flora and fauna, with characteristic evergreen tropical forests typical of northern Vietnam. The ethnic communities living around the Nature Reserve, mainly the Muong and Thai people, have preserved many unique cultural customs, lifestyles, and traditional practices. All the valuable natural and human resources provide a basis for the development of ecotourism and community-based ecotourism activities.

4.2. Forest Land Management Model in Xuan Lien Nature Reserve Changes Community Awareness of Forest Protection

Community participation in forest management and use has been established for a long time. With land and forest allocation policies and the implementation of various other policies, people's perception of the role of community-based forest management and land use has significantly changed. Survey data shows that the majority of residents believe that community-based forest management and land use play a significant role in protecting water resources (78.3%). Over 60% of respondents consider it very important for increasing income, but most people believe it is less important in terms of firewood and forest product exploitation.

Table 1. Community interview responses on benefits of participating in Community-Based Forest Management

Benefits of Participating in Community-Based Forest Management	Households (count)	Percentage (%)
Income generation	40	66,7
Water resource protection	47	78,3
Timber and firewood exploitation	3	5
Non-timber forest product exploitation	3	5

Source: Compiled by the author based on survey results

The research results indicate that community-based forest management and land use play a crucial role in water resource protection, ensuring water sources for production and livelihoods. Additionally, it contributes to income generation for community members. However, the revenue from firewood and timber exploitation in community forests is not significant and does not contribute much to household economies. Nevertheless, the benefits derived from community forests still hold importance for the local households.

4.3. Community-based forest management contributes to improving environmental quality Changes in forest quality

The allocation of land and forests to community management, along with community-based regulations, has significantly influenced forest quality. Since being handed over to community management, forest areas have witnessed thriving vegetation with dense canopies and vibrant undergrowth. This is an important factor in reducing the impact of rainfall on the forest floor, mitigating the flow rate, limiting soil erosion, and enhancing the forest's water retention capacity. These visible changes can be observed through naked-eye observations and are reflected in the results of interviews with local residents, as shown in Table 2.

Table 2. Community assessment of forest quality

Forest Quality	Households (count)	Percentage (%)
Improved	58	96,7
Unchanged	2	3,3
Declined	0	0
Total	60	100

Source: Compiled by the author based on survey results

The survey results indicate that the majority of respondents from the village communities (96.7%) believe that forest quality has improved, with no one perceiving a decline in forest quality. This demonstrates that the allocation of land and forests to community management has contributed to enhancing forest quality.

Soil erosion reduction

Soil erosion is a process influenced by various factors such as climate (rainfall, wind, floods), and sometimes human activities (deforestation for agriculture, infrastructure development, etc.) that impact the land surface, resulting in the loss or displacement of topsoil, humus, layers of weathered rock, and sediment along slopes. Through interviews with local residents, indirect assessments of soil erosion can be made (Table 3).

Table 3. Community responses on the degree of soil erosion

Degree of Soil Erosion	Households (count)	Percentage (%)
Reduced	47	78,3
Unchanged	7	11,7
Increased	6	10
Total	60	100

Source: Compiled by the author based on survey results

Through naked-eye observations made by local residents, it can be observed that soil erosion has significantly decreased, especially in areas previously affected. Now, instead of barren land, the landscape is covered by regenerated forests, grass carpets, shrubs, and a thicker layer of organic matter (darker-colored topsoil).

The survey data reveals that 78.3% of respondents believe that community forests contribute to reducing soil erosion. This is evident in the absence or minimal presence of erosion channels in cultivated land and undisturbed topsoil. Only 10% of respondents consider that erosion has increased, attributing it to soil washouts in flower fields and strong soil erosion during heavy rainfall.

Improvement in water quality

Water sources for production and domestic use in the buffer zone of the Xuan Lien Nature Reserve largely depend on natural sources, mainly rivers and streams. These water sources have been subject to declining water quality due to chemical use in agricultural practices by local communities. The use of chemicals, especially herbicides, in agriculture at the upstream areas has resulted in pollution. However, after the handover of forest tenure to the community, their increased responsibility for forest management and protection has led to greater concern for forest conditions and associated ecosystems, including water resources. This has led to the implementation of forest protection measures such as afforestation, reforestation, fire prevention, and more sustainable forest exploitation. These

actions help retain water within the forest and facilitate its supply to the community. Protected forests ensure the conservation and development of plant and animal species within them, which, in turn, helps maintain ecological balance and preserve water in both the soil and the forest. Consequently, it can improve the quality and the potential for the community to reuse water for production and daily activities.

Survey results show that over 80% of the population believes that the water source for production and daily activities has shown improvement compared to before. A small portion, less than 20% of the respondents, reported no change in the water quality, and there were no evaluations indicating a decline in water quality. This indicates that community-based management practices have indeed brought significant effectiveness in improving water quality for the local population. It is essential to continue and enhance these management efforts to ensure a sustainable water supply for the community's production and daily needs.

Table 4. Community responses on water quality

Water Quality	Water for production		Water for daily activities	
	Households (count)	Percentage (%)	Households (count)	Percentage (%)
Improved	50	83,3	51	85
Unchanged	10	16,7	9	15
Declined	0	0	0	0
Total	60	100	60	100

Source: Compiled by the author based on survey results

4.4. Factors influencing Community-based Forest Management at Xuan Lien Nature Reserve

Theoretical studies and direct surveys and interviews with two relevant local officials involved in community-based forest land management in Xuan Lien Nature Reserve revealed that factors related to legal regulations have a significant impact on the management and utilization of community-based forest land. These factors include regulations on forest land management, regulations on land and forest allocation to the community, regulations on benefits and financial support, rights and obligations of the community, and regulations and rules for community-based forest management.

The officials also highlighted the importance of natural and infrastructure conditions related to the allocated forest land. These factors, such as the scale of forest land area, distance from the community's residence to the allocated forest land, infrastructure, and particularly the quality and availability of forest resources, have a significant influence. Economic factors, such as household economic conditions, market for forest products, borrowing and utilization of loans by communities, are also of interest.

Table 5. Factors influencing Community-based Forest Management at Xuan Lien Nature Reserve

No	Code	Factors
Group 1		Legal Regulations (LR)
1	PL01	Enactment of legal documents
2	PL02	Implementation of legal documents
3	PL03	LR on land and forest allocation to the community
4	PL04	LR on types of forest land allocated to the community
5	PL05	LR on benefit issues
6	PL06	LR on support policies
7	PL07	LR on law violations
8	PL08	Conventions and agreements of villages/communities
Group 2		Natural and Infrastructure Factors
9	TN01	Scale of forest land area allocated to communities
10	TN02	Distance from the community's residence to the allocated forest land
11	TN03	Topography of allocated forest land
12	TN04	Social infrastructure (service system, market)
13	TN05	Technical infrastructure (transportation, irrigation)
14	TN06	Availability of forest resources
Group 3		Economic Factors
15	KT01	Dependence on forests by local residents
16	KT02	Market for forest products
17	KT03	Borrowing from banks and credit institutions
18	KT04	Utilization of community forest management funds
19	KT05	Sources of community forest management funds
Group 4		Social Factors
20	XH01	Indigenous knowledge of the community
21	XH02	Customs, traditions, beliefs
22	XH03	Role of forest rangers, agricultural officers
23	XH04	Role of other organizations (Farmers' Association, Women's Union, Youth Union)

Source: Compiled by the author based on survey results

One of the factors that receives special attention directly related to the communities is their indigenous knowledge, customs, traditions, and beliefs, as well as the role of other organizations in the community. These factors have a significant influence on community-based forest land management. Other factors, such as the level of education and age of laborers, receive less attention, which is consistent with previous studies. Since this is a form

of community-based forest land management, these factors have less impact compared to other management approaches.

Exploratory Factor Analysis (EFA) Results

Specifically, the research team used Principal Components Analysis with Varimax rotation to analyze 4 independent factors comprising 23 observed variables. The first EFA analysis resulted in all observed variables being suitable and grouped into 4 factor groups: PL, TN, KT, and XH.

Table 6. Related Component Matrix

	Component			
	1	2	3	4
TN03	.848			
TN02	.840			
TN04	.820			
TN05	.723			
TN01	.674			
PL08	.625			
PL06	.549			
PL05	.525			
KT03	.525			
PL02		.870		
PL03		.862		
PL01		.805		
PL04		.737		
XH03		.722		
KT04			.767	
KT05			.759	
XH01			.740	
XH02			.739	
XH04			.693	
TN06			.601	
PL07				.784
KT02	.503			.686
KT01				.684

The results indicate that the Bartlett's test yielded a P-value (sig. = 0.000) < 0.05, indicating that the observed variables in the factor analysis are statistically significant. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.880, satisfying the condition (within the range of 0.5-1), indicating the suitability of factor analysis. The Total

Variance Explained is 80.171%, which is greater than the required threshold of 50%, indicating that the four factors explain 80.171% of the data variation. The Eigenvalues of all factors are greater than 1, meeting the requirement.

4.5. SWOT Analysis in Forest Management Based on Community Participation in Xuan Lien Nature Reserve

In order to achieve sustainable forest management and conservation in Xuan Lien Nature Reserve, involving the local community in the forest management and protection process is an effective approach. SWOT analysis is an important tool for evaluating internal and external factors in Xuan Lien Nature Reserve, helping managers develop appropriate strategies to enhance strengths, address weaknesses, seize opportunities, and cope with challenges.

Below is the SWOT analysis of forest management based on community participation in Xuan Lien Nature Reserve.

Table 7. SWOT Analysis of Forest Land Management Based on Community Participation in Xuan Lien Nature Reserve

<p>Strengths (S)</p> <ul style="list-style-type: none"> • Favorable land and climate conditions for forest land utilization. • Potential for community-based forest management and utilization. • Potential land resources for community-based management and utilization. • Communities with longstanding traditions of land management and utilization. • Forest land management and utilization based on community participation have contributed to improving income, especially for the poor, and have changed people's perception of the forest's role. 	<p>Weaknesses (W)</p> <ul style="list-style-type: none"> • Policies and laws related to forest land management and utilization lack specific regulations for the community. • Limited issuance of land use certificates for forest land, restricting community land use rights. • Low income from the forest, accounting for a small proportion of household income, leading to a lack of motivation and attention. • Market for forest products is unstable.
<p>Opportunities (O)</p> <ul style="list-style-type: none"> • Formation of linkages in the process of forest land management and utilization (co-management; linkages in the consumption of goods and services). • Community-based forest land management and utilization is receiving more attention as it has proven effective in many localities. 	<p>Threats (T)</p> <ul style="list-style-type: none"> • Difficulty in expanding forest land areas assigned to communities. • Future revenue from forest land is difficult to increase due to the increasingly scarce forest resources. • Expanding the market for product consumption is challenging.

Source: Compiled by the author based on survey results.

5. Conclusion

Community-based forest management in Xuan Lien Nature Reserve is a long-standing land use method influenced by natural and socio-economic conditions in the communities residing in and participating in forest land management. Community-based forest management has been implemented in Xuan Lien Nature Reserve for a long time, with various communities involved, mainly the Thai and Kinh ethnic communities living in Thuong Xuan province.

In Xuan Lien Nature Reserve, forest land allocation has been carried out for 12 villages in five buffer zone communes, covering an area of 14,285 hectares (51.63% of the total forest area in the reserve). All communities participating in forest land management have established forest land management regulations, and local authorities annually disseminate information to the residents in these communities. The benefits derived from community forest land, mainly non-timber forest products, are distributed according to these regulations.

Community-based forest management in Xuan Lien Nature Reserve contributes to increasing the income of local residents and stabilizing their livelihoods. Although the average income from forest land is not high for households, it is still a significant source of income for those who heavily rely on the forest. The main reasons for the relatively low income include the decreasing direct forest resources, inadequate land management and utilization mechanisms, and limited development of alternative forest resources such as tourism and related services. However, community-based forest management has helped change the perception of local residents regarding forest land management.

In the process of community-based forest management in Xuan Lien Nature Reserve, there are favorable conditions such as climate, land availability, community traditions, local knowledge, and cultural practices. However, there are also limitations and challenges, including inappropriate policies and laws specifically targeting the community, as well as limited rights of the community. Additionally, there are challenges in addressing regulatory changes, revenue generation from community forests, and product market consumption. On the other hand, there are opportunities for community-based forest management, such as the attention from the Party, the State, political and social organizations, and the community, the awareness of the residents in the community, the linkages between communities, and market opportunities. These strengths, opportunities need to be leveraged and limitations, challenges need to be addressed for further development.

To enhance the effectiveness of community-based forest management, several integrated solutions should be implemented, including increasing income from community-based forest management, enhancing activities that change the economic conditions of the participating communities, improving policies and laws related to community-based forest management, utilizing local knowledge, and further strengthening the role of local authorities and other organizations within the community.

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FACTORS INFLUENCING THE DESIGN AND IMPLEMENTATION OF A CARBON PRICING POLICY: A SYSTEMATIC LITERATURE REVIEW

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Abstract

Carbon pricing has now been implemented as a key policy instrument for climate change mitigation in many countries globally. Through a literature review, we identify and assess the impact of factors influencing the design and implementation of a carbon pricing policy. Factors include the actual institutional system, business influence, public opposition, external factors and policy dissemination. From this, we see that obstacles to implementation need to be overcome by adapting the design of systems to meet different social interests. Preferential treatment and tax exemptions are thus common, which makes the incentives for emission mitigation less coherent across sectors. The results are of practical relevance for policy makers when designing and implementing carbon policies and indicate that carbon pricing needs to be part of a policy package in order to secure both rapid mitigation and a long-term decarbonisation. At the same time, carbon pricing for the steel industry has also been considered, the transition to green technologies is essential.

Keywords: *carbon pricing, climate change, policy instrument, steel industry.*

1. Introduction

The Paris Agreement (2015) on Climate Change sets an international goal to keep the average global surface temperature increase (compared to the end of the 19th century) below 2°C. Temperature stability requires that long-lived greenhouse gas emissions be net zero (UNFCCC, 2015). The IPCC report (2018) clarified that non-existence around or before 2050 is needed to limit the average temperature increase to 1.5°C and around 2070 to 2°C. The report makes a strong argument that temperatures above 1.5°C should be considered dangerous.

There is a growing consensus that carbon pricing - measured by the carbon content of fossil fuels or their emissions - is the most effective mitigation tool. Following the trend of liberalization and prioritization of market solutions, carbon pricing is becoming

increasingly important worldwide. Such carbon pricing is accomplished through the taxation or trading of GHG emission allowances in an emissions trading system. The emission trading system is often referred to as a “cap and trade” or a “carbon market”. The system also includes a voluntary carbon market and a carbon credit trading system (under the “carbon credits exchange mechanism”). The mechanism for exchanging and clearing carbon credits is the mechanism for registering and implementing programs and projects to reduce greenhouse gas emissions and generate carbon credits according to internationally recognized methods. internationally or nationally recognized, e.g. Clean Development Mechanism (CDM) under the Kyoto Protocol (Paterson et al., 2014). Carbon credits from programs and projects are exchanged on the carbon market or offset GHG emissions in excess of the allocated quota.

There have been a number of books examining the effectiveness of carbon pricing policies. Rabe has an excellent analysis of how politics is far from economic theory, regarding the pricing of carbon in “Can We Price Carbon”. He observes that policy adoption is just the beginning: “carbon pricing policies are not necessarily self-actualizing and evolving” (Rabe, 2018). Without concrete recognition, these efforts can be difficult to achieve. Wettestad and Gulbrandsen (2018) surveyed carbon markets in a range of specific jurisdictions from the EU to Tokyo to Kazakhstan.

The widespread and growing use of carbon pricing reflects confidence in its effectiveness. According to the World Bank's "Status and Trends in Carbon Pricing 2022" report (2022), as of April 2022, 68 carbon pricing instruments are in operation globally with Three other instruments are planned for implementation, including 37 carbon taxes and 34 ETS, covering about 23% of global greenhouse gas emissions. Also, according to this report, in just one year (from May 2021 to May 2022), a tax on carbon -bon was formed in Uruguay and three new ETSs went live in Oregon, New Brunswick and Ontario. Besides, carbon pricing tools are also planned to be implemented in Indonesia, Austria and Washington state (USA). Several other countries and regions such as Israel, Malaysia, and Botswana have announced their intention to develop carbon pricing while Vietnam has outlined a roadmap to establish an ETS. Several other jurisdictions in Africa, Central Europe and Asia are also in the process of continuing to assess the potential for implementing carbon pricing.

In 2005, the European Union launched the Emissions Trading System (ETS) as part of its climate action plan, which was the first international carbon market and one of a kind largest international carbon markets in the world. Several new factors need to be taken into account in the number of EU-wide subsidies phase 4 (2021-2030) of the EU ETS to be issued from 2021. Phase 4 allowances will be auctioned from 2021. Under the new regulations for phase 4, allowances are issued from January 2021 onwards (both auction and free distribution). Unlike during the transition between phase 2 (2008-2012) and phase 3 (2013-2020) of the EU ETS, the phase 3 allowance already on the market will not be replaced by the phase 3 allowance. 4 which will continue to exist in parallel. In the EU, some member states expressed dissatisfaction or requested a halt to the EU ETS extension and reform plans due to concerns about the impact of this policy on the low-energy country. In the short term,

high prices may lead to reduced energy use but will not provide investors in low-carbon projects with long-term certainty that carbon prices are stable.

According to the roadmap, Vietnam will pilot a carbon exchange in 2025 and officially operate it in 2028, so it is urgent to design a carbon market suitable for the current climate, regime and political situation of Vietnam. As committed at COP26, in order to achieve the goal of net-zero emissions by 2050, Vietnam faces the challenge of developing towards a low-carbon economy with outstanding growth rates, and will need to mobilize all resources, apply creative solutions. Currently, Vietnam has indirectly taxed carbon through the Environmental Protection Tax for fossil fuel producers and importers. However, this tax rate does not really reflect the nature of carbon pricing.

A well-designed carbon pricing mechanism can spur innovation and investment in low-carbon technologies that provide a competitive advantage. However, there are also notable challenges to achieving proper design. The first is carbon leakage - the phenomenon in which carbon-intensive industries or companies move operations to lower-cost jurisdictions. The second is overlapping or inconsistent policies. Policy makers must work carefully and thoughtfully to avoid potential overlaps and interactions between policy instruments, which can reduce effectiveness of the carbon pricing mechanism. The third is inefficient use of revenue. Carbon pricing tools can raise revenues significantly, but the effectiveness of many carbon pricing initiatives depends on how these revenues are spent. Revenues can be recycled to reduce other common taxes, protect lower income households, support cleaner technology, address equity and competitiveness concerns, or divert public funds to other public policy goals.

This led us to develop our main hypothesis: different sets of variables are playing a role in determining the adoption of carbon pricing in Vietnam. This study can provide a more comprehensive and in-depth look at the current and future application of carbon pricing to Vietnam.

2. Method

Our research focuses on the scientific literature related to the practical experience of carbon pricing policy, in particular the application, implementation and design of real carbon pricing policy tools. economy in countries. We use search terms including carbon tax, energy tax, environmental tax, emissions trading and carbon pricing in conjunction with implementation, adoption, and trade-off terms. We then proceed to the next round of review, where we read the reference lists of the selected articles to find additional articles that may be of interest and have not yet appeared in a more formal search ours. The articles were checked in the same way as previous articles and selected or eliminated. This resulted in a final list of articles that were relevant to our research questions and thus formed the basis for the qualitative review. The study should be seen as a literature review and review in which we have found a large body of research on this topic with enough content to draw relevant conclusions in our area of research. rescue.

Each study was analyzed based on three major questions: (i) According to the study, what are the main factors influencing the design and implementation of a carbon pricing

policy?; (ii) What are the specific aspects of the policy instrument (e.g. scope, rigor, immunity); (iii) why were these aspects chosen? After analyzing each of the pre-selected studies, the results were compiled by summarizing key implementation and application factors, as well as highlighting key design aspects found in the literature.

3. Results

3.1. Factors affecting the application of carbon pricing policy

Selected articles cover two main types of carbon pricing instruments, carbon taxes and emissions trading. The majority of countries are covered in the study when compared to an overview of existing systems provided by the World Bank (2022). Most of the policy instruments studied were in individual countries, with the exception of the EU ETS which is a regional policy and a few local policy instruments in the United States and Canada.

3.1.1. Political system and institutional factors

Carbon pricing, including carbon taxes and emissions trading, has been adopted by different types of governments around the world. According to some studies, some political systems are more favorable in introducing economic policy tools than others. Typically in the study of Harrison (2010), Andersen (2019) and Criqui et al. (2019) find that Proportional electoral systems tend to facilitate the application of a carbon tax, while international institutions have a mixed effect, in some cases promoting harmonization and in other cases weakening resolve to tax unilaterally, the study also finds that small or green double when close an important role in closing policy proposals. However, in contrast to the above conclusions, Skovgaard et al. (2019), Levi et al. (2020) argue that the composition of government in countries where carbon pricing systems exist today reflects the entire political spectrum, including left and right government, presidential and parliamentary democracy, as well as dictatorships. Through the research of Skovgaard (2019), a number of key observations have been synthesized: Carbon pricing has become a major global policy tool; Economic and financial crises create opportunities to promote carbon pricing; The international climate regime can support the adoption of carbon pricing through mitigation commitments and international financial and technical support; Inter-governmental learning in the same region is a useful tool to promote carbon pricing; Carbon-intensive economies tend to prefer emissions trading over carbon taxes.

3.1.2. Business influence

The influence of business and industry is emphasized in practically all studies. It has contributed to policy impediment (e.g. France, USA,...) and design influence to the extent that it reduces costs for industry and other businesses. Today, the remaining exemptions are sectors participating in the EU ETS. The Swedish experience shows that emissions reductions can be combined with economic growth. In addition to the above, another important advantage of taxation (compared to cap and trade schemes) is that it works well in conjunction with other tools of climate and energy policy, such as green certificates. , subsidies for renewable energy and regulations were introduced after (or in some cases before) the tax.

According to Haites (2018) review of business exemptions that occurred in all cases of carbon pricing, Speck (2013), Speck and Jilkova (2009) also noted that in this context In Europe, political constraints have made tax exemptions for manufacturing industries necessary as a prerequisite for implementation. According to studies such as Vehmas (1999), Harrison (2010), Andersen (2019), Criqui et al. (2019), business influence is also recorded in all Nordic countries, which claim to have the most ambitious carbon tax. Here, energy-intensive industries in particular were exempted, which can be explained by the neo-cooperative nature of these countries (Andersen, 2019) and the tight policy web between industry and government.

According to Oh et al. (2017), in Korea, strong market stabilization measures have been introduced with a focus on maintaining subsidy prices below a certain level, which should address some concerns of industries. In addition, free allocations have been used as a measure to compensate for potential damages caused by the emissions trading mechanism.

3.1.3. Public outcry

Numerous studies have shown that public opposition to increased costs and negative allocation effects are significant obstacles to the introduction of carbon pricing policies. In a study of 262 jurisdictions with carbon pricing, Levi et al. (2020) found that public perception of climate change is a strong driver of carbon pricing becoming higher.

Public outcry seems to have prevented the carbon policies being implemented in Australia, Canada and France as mentioned in the studies of Copland (2020), Harrison (2010), Criqui et al. (2019), Deroubaix and Leveque (2006). However, public outcry is not the only or even primary cause of policy abandonment, but often corporate opposition or political struggles play a more important role. Contrary to the experiences presented above, studies from typical Nordic countries by Kasa (2007), Harrison (2010), Criqui et al. (2019) show that public opposition should not be a major concern in the application of a carbon tax. Instead, people's awareness of environmental issues has prompted politicians to come up with policies.

In reviewing previous survey studies, Haring et al. (2018) note that public support for a carbon tax can be influenced by individuals and by the perceived consequences of introducing a particular policy instrument. Maestre-Andrés et al. (2019) make similar observations, namely that perceived fairness of carbon pricing is significantly associated with public acceptability.

Five common reasons leading to differences in attitudes and perceptions among individuals, causing public opposition to a carbon tax are often highlighted in the document, specifically as follows: First, the personal cost of taxes is thought to be too high; Second, the carbon tax can be regressive; Third, a carbon tax can be damaging to the economy as a whole; Fourth, a carbon tax is not expected to discourage high-carbon behavior; Fifth, governments may want to tax carbon to increase their revenues.

3.1.4. Outside influence

Although relevant to events or factors outside the field of climate policy, this could still influence the design or adoption of a carbon pricing instrument. In many countries, heavy reliance on fossil fuels also has a negative impact on carbon pricing policies.



Figure 1. EU ETS spot carbon price for 15 months

Source: refinitiv.com

The war between Russia and Ukraine has led European leaders to declare energy security and Russian fossil fuel independence a top priority. According to EU ETS transaction data from Refinitiv, While the cost of energy commodities - gas, electricity, coal - spiked due to the invasion. With such rising carbon prices, the EU ETS promotes significant public revenues to shift towards financing the green transition and can help break dependence on Russian gas.

In research related to the Covid-19 pandemic, Steffen et al. (2020) note that policies to adapt to shocks and crises should be introduced through designs and mechanisms that help mitigate risks. Steffen et al. argue that due to highly transparent price signals and political economy issues, carbon pricing policies are also more reactive than other policies.

3.1.5. Policy dissemination

There are many notable types of linkages in the form of sharing experiences and lessons and building capacity. For example, Biedenkopf et al. (2017) found that the EU, Norway and California all support China in various aspects of subnational ETS pilot projects and in developing a national system, processes appear to be driven by a clear need from the jurisdiction to design ETS.

For each ETS studied, the authors needed to consider the key external reference points that played a role in their development. An even greater challenge to achieve homogeneity of emissions trading policies across jurisdictions is the fact that international processes substantively interact with political and economic systems. domestic economy in the receiving jurisdictions.

Local political concerns are important mediators in the diffusion process. Similarly, understanding the ways in which NGOs facilitate or inhibit the establishment and operation of domestic ETSs is a recent but important area of research. Several international factors may also be important for carbon pricing. Skovgaard et al. (2019) used a clustering approach and found that political globalization, including participation in climate commitments, is an important driver of the adoption of the definition of carbon price (instead of range).

3.1.6. Strategies to support adoption and implementation

(i) Take it step by step and build alliances: Step-by-step implementation is an execution strategy where the idea is that the policy is initially launched with a fairly modest price of carbon and/or coverage and then increased in a stepwise manner as the policy progresses. widely accepted.

(ii) Design modification: Modifications to the design of the carbon pricing system take place regularly to overcome objections from households as well as the business sector.

(iii) Pricing carbon as part of the policy mix: Systematic evidence regarding the implementation of carbon pricing - a carbon tax and a greenhouse gas (GHG) emissions trading system (ETS) - is sparse. Implementation of existing carbon taxes and greenhouse gas ETS can help policymakers make informed choices about whether to introduce these tools and improve their design.

3.2. Carbon pricing: the case of the steel industry

The global climate goals have highlighted the need for a system-wide approach to decarbonisation, one that includes targeted national policy and industry-specific change. In this context, synthesizing from other studies, we examine the policy and price barriers to the decarbonization of the steel industry, taking the UK as a prime example.

Steel production is a carbon and energy intensive process. Globally, for every ton of steel produced an average of 1.85 tons of CO₂ is emitted. In 2019, the UK steel industry emitted around 12 million tonnes of CO_{2e} (including indirect emissions from electricity generation), accounting for 11.5% of UK industrial emissions and 2.7% of the UK's total greenhouse gas emissions in 2019. Steel production therefore has an important role to play in meeting the UK's Net-zero target and any future carbon pricing scheme will have a significant impact on the industry.

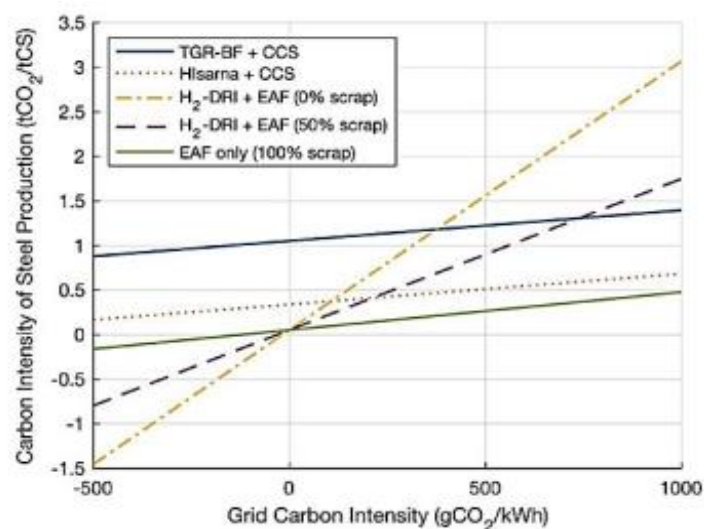


Figure 2. Greenhouse gas emissions from the most promising options for green steel production compared to the carbon intensity of the grid

Source: Data from BEIS annual report and accounts 2019 to 2020

The decarbonization industry is a key focus of the UK's approach to net zero (Busch et al., 2018). A number of national policy measures are contributing to this goal: For example, the UK government's "Ten Point Plan for a Green Industrial Revolution" sets out the government's approach to 'building a better' while bringing the country closer to industrial decarbonisation through a focus on green energy development amid domestic covid recovery measures (HM Government, 2020).

Steel is highly trade-intensive, the added cost reduces the ability of domestic firms to compete with international competitors and may instead lead to increased steel imports. The steel industry cannot pass unilateral costs on to their customers without losing market share due to the intensity of trade. Some steel products are commodities, which means they are priced globally and the suppliers are price takers. This can mean that steel suppliers often operate on low margins, making it difficult to pass on costs to end users. As a result, the UK steel industry is affected by different global carbon costs. Although carbon pricing is seen as the preferred policy to reduce greenhouse gas emissions, a high carbon price by itself will not stimulate a shift towards decarbonizing steel production. Without a unified global carbon price, additional policies need to be put in place alongside carbon pricing policies to ensure the steel industry will not be competitive by lower-priced, high-emissions imports. . As there are currently no safeguards (such as carbon border adjustments or carbon product standards) from foreign steelmakers exporting low-cost, high-carbon steel to the UK and European markets. The cost of carbon reduces the competitiveness of the industry.

Summary for BEIS Selection Committee Carbon Pricing Options The Government is considering three carbon pricing options at the end of the transition period: the UK's linked Emissions Trading Scheme (ETS), ETS UK independence and the Carbon Emissions Tax (CET). Since the average global carbon intensity for steel production is 1.85 tCO₂/tonne crude steel, compared with 1.6 tCO₂/tCS for the UK, an increase in imports is likely to lead to an increase in global greenhouse gas emissions. Thus, a higher carbon pricing in itself would only lead to a shift in emissions from the UK abroad, from direct UK emissions to imported emissions.

Steel is a global commodity and the pricing of carbon in the steel industry is influenced by global market dynamics, including supply and demand, exchange rates, trade policy and market competition. Environmental activism can influence carbon pricing in the steel industry by pressuring companies to adopt more sustainable methods. Technological advancements such as carbon capture, use and storage (CCUS) in low-carbon steel production methods can impact carbon pricing in the industry. In research related to the Covid-19 pandemic, Steffen et al. (2020) note that policies to adapt to shocks and crises should be introduced through designs and mechanisms that help mitigate risks. ro. They point out that carbon pricing policies are an example of policies that should be adapted in that sense.

The studies of Skovgaard et al. (2019), Sturner (1994), Speck (2014) indicate that the economic and financial crises, the need to reform the tax system and the need to mobilize financial resources have promoted the expansion of environmental taxation. The UK

government implements regulations and incentives that incentivize companies to reduce their carbon footprint resulting in lower carbon emissions in the steel industry and potentially driving down the prices of steel products. If policy diffusion does not support carbon emissions reductions but focuses on economic growth above all else, there could be fewer regulations and taxes resulting in higher carbon emissions from the steel industry, and higher prices of products. higher steel products due to lack of incentives or pressure to reduce emissions.

4. Discussion and Conclusion

First, Vietnam should establish a strategic governance structure to support the Ministry of Natural Resources and Environment, put in place measures to stabilize the market and provide support packages to help with a low-carbon transition. faster.

Second, policymakers need to consider the impact of large exemptions on important emissions sources, such as lowering the price of carbon or limiting coverage, which are closely related to strict policy and affect the effectiveness of climate change.

Third, tax authorities should make commitments and use communication devices that increase the visibility of carbon tax changes. Compensation may show up as withholding earnings on payslips, tax slips, or contributions to social insurance.

Fourth, Vietnam can devise policies to respond to shocks and crises through designs and mechanisms that help mitigate risks, typically combined tools, which can be of various types. taxes with an environmental integrity mechanism, such as recently proposed for the United States (Brooks and Keohane, 2020) or price-capped trading schemes, as recently proposed for Germany (Edenhofer et al., 2019).

Fifth, carbon pricing policies should be part of a policy mix in which different policy instruments help overcome specific barriers, possibly piloting in high-emissions sectors. , typically the steel industry.

Finally, the impact of carbon pricing on efforts towards net-zero emissions will require more research. Especially in terms of distributive and equitable consequences when groups of developing countries (such as Vietnam) with fewer resources to adopt decarbonization technologies, may face the risk of economic stress increasing.

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APPROPRIATE WASTE-TO-ENERGY TECHNOLOGY FOR VIETNAM TOWARDS A CIRCULAR ECONOMY IN WASTE MANAGEMENT

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Abstract

Municipal solid waste treatment (MSW) in Vietnam is facing notable challenges. Most of the MSW in Vietnam is being treated by landfill, causing many negative impacts on the environment. In order to improve solid waste management capacity, the Government of Vietnam has been offering many solutions including supplementing regulations and policies and finding suitable technological solutions. Waste-to-energy technology (WTE) is a type of technology widely applied worldwide when it contributes to the thorough treatment of non-recyclable solid wastes and creates an energy source for daily life and production. WTE incineration technology has become the key choice of developing countries with limited land and energy resources, including Vietnam. However, constructing a WTE plant with modern technology requires huge investment capital. On the other hand, investors still face many barriers, such as mechanisms, policies, and feasible conditions in deploying with specific conditions in Vietnam. Through the assessment of the current state of national policies and the analysis of challenges and opportunities in the process of practical application, this study has proposed appropriate solutions to promote appropriate WTE technology towards achieving the CE criteria in waste management.

Keywords: *Circular economy, waste management, waste-to-energy, municipal solid waste*

1. Introduction

Municipal solid waste originates mainly from human activities and business operations in urban and rural areas, is commonly found in communities, and occupies a large volume. In many developed countries, waste is converted into energy, such as electricity and heat for human use through advanced waste-to-energy technologies (WTE). According to the circular economy approach, waste can be treated as a valuable input material to generate energy for other business activities. In Vietnam, the prevalent method for disposing of waste is through landfill, and the utilization of incineration technology to convert waste into energy is not widely practiced. This not only results in the loss of waste resources, but also contributes to environmental pollution and the depletion of land resources for landfill purposes. Since 2020, the Vietnamese Communist Party and the State have been advocating for the adoption of a circular economy model to enhance production and business activities in various sectors, fields, and localities. In Vietnam, one of the most practical and feasible applications of the circular economy model is in the waste management industry, specifically

through utilizing WTE incineration technology. WTE incineration technology has become the key choice of developing countries with limited land and energy resources, including Vietnam. However, constructing a WTE plant with modern technology requires huge investment capital. On the other hand, investors still face many barriers, such as mechanisms, policies, and feasible conditions in deploying with specific conditions in Vietnam. One question that arises is whether this technology is an effective and timely solution for waste management towards a circular economy in the coming time. On that basis, the study of applicability towards finding solutions to promote the application of WTE incineration technology with recover electricity in Vietnamese conditions is extremely useful and necessary in the context of encouraging the application of a circular economy model.

2. Method

This study was carried out based on a combination of the following main methods:

(1) Desk research: The process of researching and developing policy documents related to waste management and circular economy to assess the suitability of WTE technology for conditions and situations in Vietnam

(2) Field survey: This study conducted a survey discussed directly with representatives of the WTE incineration plant in Can Tho, Vietnam, to assess the actual application status, difficulties and challenges has been faced to identify and propose necessary solutions to promote alternative technologies for landfill in Vietnam.

(3) SWOT method: The SWOT analysis method is a strategic tool to assess strengths, weaknesses, opportunities, and threats for programs and projects to assist decision-makers in the process. management policy promulgation. This method is widely used by researchers in the energy field and is particularly relevant to studying energy recovery from solid waste. This study also analyses the direction of strengths and weaknesses, opportunities and challenges in the application of WTE technology in Vietnam to determine the appropriateness of this type of technology in the context, conditions and current policy situation in Vietnam.

3. Results

3.1. Background

Different types of WTE technologies exist, such as incineration with energy recovery, gasification, composting, pyrolysis and anaerobic digestion, in fact, due to the diverse treatment characteristics of different types of waste and the ability to process large volumes of waste at the same time, incineration with energy recovery is considered to be the most widely applied technology in the world.

Around the world

According to statistics of the United Nations, in developing countries, more than 90% of waste collected goes to landfills, while more than 80% of plants using thermal WTE technology are located in developed countries, led by Japan, the US, France and Germany (UNEP, 2019). Besides, 15% of domestic waste generated worldwide is treated with WTE

technology. Energy recovery incineration technology is receiving much attention in developing countries due to its potential for energy recovery and waste reduction. WTE incineration technology to recover energy is appearing more in Asian countries such as China, Thailand, Philippines, Indonesia and Myanmar. It is forecasted that more than 200 waste incineration plants to recover energy are under construction and will come into operation in the period 2020 and 2030. Due to the development trend of countries, countries are gradually shifting to a circular economy model, these countries are tending to shift from the traditional incineration model to incineration with recover energy and other types of waste incineration.

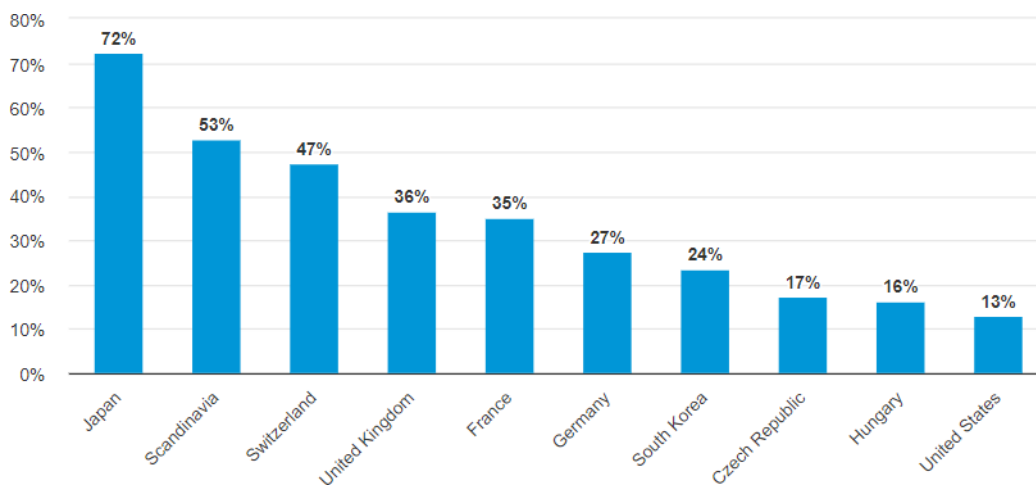


Figure 1. Percentage of MSW incinerated to recover energy in countries around the world

Source: EPA (2019)

As of 2019, in Europe, WTE plants in Europe produce enough electricity to power 19 million people and heat 15 million people a year. In addition, about 10% of the energy produced from WTE plants is supplied to heating systems throughout Europe (CEWEP, 2022)

According to EIA statistics, WTE plants in USA generate about 14,000 GWh of electricity per year in the US. Although this amount of electricity accounts for less than 1% of all electricity produced in the United States, these facilities provide a stable and continuous electricity load to the national electricity system. At the beginning of 2022, 60 WTE plants in the US were put into operation, with a total electricity production of 2,051 MW. (EIA, 2023)

In Vietnam

The WTE incineration technology has been known in Vietnam for over 10 years. This is seen as the direction for sustainable development to reduce waste and environmental pollution. On that basis, developing WTE incineration technology to recover electricity is a main goal in some localities when attracting the private sector to participate in waste treatment. Initially, first and second WTE incineration plants which were put into operation

were recorded in Can Tho (2018) and Hanoi (2022). While many localities also organize the implementation of investment procedures for the construction of waste incineration plants for power generation such as: Vinh Tan WTE plant in Dong Nai province (treatment capacity of 600 tons/day with 30 MW electricity generation); WTE plant in Tram Than, Phu Ninh, Phu Tho province (capacity 500 tons/day); two WTE incineration plants in Cu Chi, Ho Chi Minh City (of Vietstar and Tam Sinh Nghia, each with a capacity of 1,000 tons/day). However, the WTE incineration technologies that have been deployed in Vietnam still face many difficulties in implementation and replication due to various reasons such as: not meeting legal procedures, limited resources, limited treatment costs, waste segregation at source or the amount of insufficient volume of waste.

Can Tho waste incineration plant for power generation EB Can Tho Environmental Energy Co., Ltd. invests in an area of 5.3ha with a design capacity of 400 tons of waste/day. The plant has been in operation since September 2018 and was connected to the national grid with a capacity of 7.5 MWh.

Soc Son power plant, Hanoi (about 17.51 hectares on the area of Nam Son landfill). It is owned, invested, managed and operated by Thien Y Hanoi Environmental Energy Joint Stock Company to treat waste by incineration with energy recovery with a maximum capacity of 4,000 tons per day. On July 25, 2022, the plant officially connected to the national power grid with a generating capacity of 15MW from waste incineration in phase 1 and a total capacity of 75MW. Currently, the plant is operating stably in phase 1 with a waste treatment capacity of 800-1,000 tons/day.

Since the Law on Environmental Protection 2020 was promulgated, Vietnam has officially issue definition of circular economy into the legal document system. Following that, policies on the CE were issued by Decree No. 08/2022/ND-CP dated January 10, 2023, which stipulates the criteria, roadmap and mechanism to encourage the implementation of the CE in Vietnam. Additionally, due to more than 70% of domestic waste in Vietnam is treated by landfill method (MONRE, 2019), the Government of Vietnam has added policies such as waste segregation at source¹, collect waste treatment fee by volume² starting from 2025. The regulations aim to promote waste management capacity towards the application of CE.

3.2. The impact of WTE technology in the process of sustainable development

The WTE incineration technology is assessed as the most feasible and is supported by the Government of Vietnam. In the implementation and application in the context of sustainable development, the positive and negative impacts of this technology in practical application are assessed according to Table 1:

¹ Clause 1, Article 75 of the Law on Environmental Protection 2020

² Clause 1, Article 79 of the Law on Environmental Protection 2020

Table 1. Positive and negative impacts, and main requirements for waste incineration technology for power generation

Aspects	Positive impacts	Negative impact
Technological	Effective in reducing landfill waste, disease control and restoring energy (electricity and heat)	Use complex technology (in both construction and operation)
Environmental	Save land resources for burial purposes.	Ash and fly ash must be handled appropriately due to the risk of negative health effects
GHG emissions	Contribute to GHG mitigation in 2 ways: (1) remove methane from landfill when using alternatives (2) use energy generated from waste as alternative energy	- Compared to recycling and reuse sources, waste incinerators generate more GHG emissions
Economic	The generated energy can be sold or used	Operation and construction costs are very expensive. Profits from the sale of electricity and other types of recycled products are not enough to cover the operating costs of the waste treatment facility.
Resource aspect	- Electricity, steam and heat can be recovered.	- Incinerators that generate electricity require a steady stream of waste, which is a major obstacle in preventing waste generation. - Power production efficiency is limited due to acid emissions - There are fewer ways to utilize steam and heat than electricity
Social aspects and other aspects	WtE burning is effective in preventing infections from viruses and bacteria and controlling the spread of waste-related infections. WtE incineration facilities can act as an alternative to backup power, especially in the event of a catastrophic outage. Burning waste to generate electricity plays an important role in the circular economy model.	Local residents often express their opposition to the establishment of incinerators due to concerns regarding potential health risks, environmental contamination, unpleasant odors, diminished land values, and dissatisfaction stemming from a lack of clear and thorough explanation regarding the rationale behind the chosen location of the treatment plant and other reasons (Chen Liu et al., 2020)

3.3. Aspects of WTE technology that meet circular economy criteria

According to the "9R" framework of the Circular Economy (Figure 3), it can be seen that WTE technology applied in waste treatment ranks the last position "R9", which stands for "Recover". However, in fact, relatively low source separation capacity relatively low co-exists with a significant amount of waste generated on a daily basis, while the capacity to recycle and reuse waste only accounts for a minor portion of the total amount of waste generated, especially in developing countries such as Vietnam, Thailand, or India. Therefore, in order to thoroughly treat the entire amount of solid waste generated, the Recovery option is still more optimal than disposing directly to the landfill.

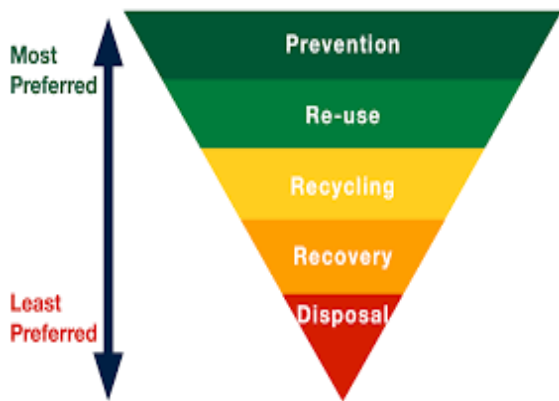


Figure 2. Waste management hierarchy
 Source: Article 4 of the revised Waste Framework (Directive 2008/98/EC)

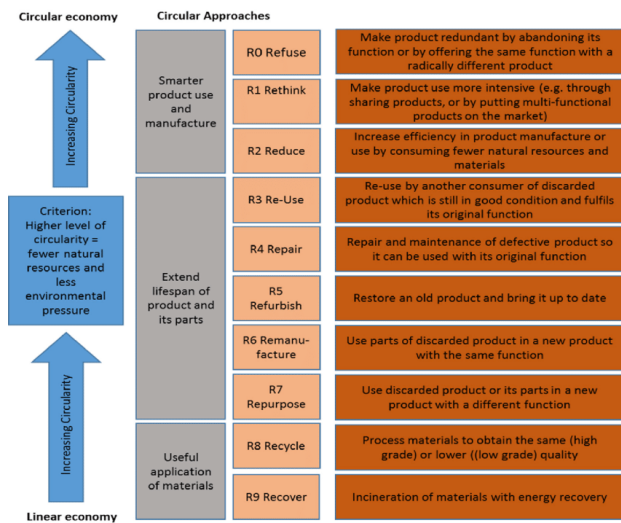


Figure 3. "9R" framework of circular economy
 Source: Potting et al. (2017, p.5)

Specific contributions of WTE technology to the implementation of the Circular Economy in Vietnam:

- Landfill waste reduction: Using WTE incineration technology, the majority of combustible waste and non-recyclable pollutants are handled rather than transferred to landfills. WTE plants burn two types of MSW. One is composed of biological elements, biogenic substances including paper, packaging, plastic, and food waste. The other is constructed of synthetic materials like plastic and rubber. The percentage of non-biological materials burnt has grown over the previous few years as more plastic, less paper, and paper products are discarded.

- Secondary Materials Recovery: After the combustion process is completed, the output waste including ashes and furnace bottom slags, after being verified to be unarmful and compliant with environmental standards, is typically transferred to landfills or optimized through recycling and reuse for cement binder (CBM), production of building materials (brick, cement or concrete beams) or even mine leveling exploited soil and rock mines to improve economic efficiency and address environmental problems.

- Energy Recovery: After combustion, energy is produced in the form of heat, electricity, or both. WTE plants offer a constant supply of renewable energy in addition to intermittent renewable energy sources like solar or wind and also assist with the handling of non-recyclable trash. Thermal energy is used for heating, particularly in places like Switzerland, while the generated electricity is directly used as a renewable energy source.

- Carbon emission recovery: WTE technology can be combined with GCUS technology to capture and store carbon in the waste treatment process to create materials and goods. In many nations throughout the world, carbon pricing is regarded as one of the efficient policies for achieving GHG emission reduction goals. In particular, the European Union Emissions Trading Market (EU ETS) is the largest multination market; in Korea, the use of carbon offset credits may be used to meet up to 10% of participant obligations; in China, a pilot program for seven carbon markets has been established³; and some nations, including Taiwan, Thailand, and Vietnam, are planning to implement carbon pricing policies. WTE plants can therefore benefit from carbon policies and be considered a source of carbon credits under the Clean Development Mechanism or other carbon offset credits schemes (ADB, 2020).

The suitabilities for Vietnam's orientation of implementing the Circular Economy model:

- The use of WTE technology complies with the "energy recovery" requirement, one of the CE criteria listed in Article 138 of Decree No. 08/2022/ND-CP. The regulation specifically lists "energy recovery through waste incineration" as one of the measures that investment project owners have to take for meeting the CE criterias.

- Article 140 of Decree No. 08/2022/ND-CP, which outlines a mechanism to promote the implementation of the CE, states that the Government prioritizes investments in scientific research, application development, technology transfer, and equipment production that supports the implementation of the CE.

- In Decision No. 31/2014/QĐ-TTg dated 5/5/2014, the Vietnamese government also established mechanisms to encourage the development of power production projects using solid waste in Vietnam. According to this, the price for power production projects that directly burn solid waste is VND 2,114/kWh, higher than the retail electricity price applied from 2023 at VND 1,728/kWh.

- In accordance with the Government's pledge at the United Nations Climate Change Conference (COP26) to achieve net zero emissions by the year 2050, Vietnam also has regulations on the development of a carbon market (based on Clause 35, Article 3, and Clause 1, Article 139 of the Law on Environmental Protection 2020). In addition to energy recovery, the use of WTE technology can support national carbon credits.

³ In 2013 and 2014, 7 carbon markets were tested in 5 cities and 2 provinces with 57 million tons of carbon traded.

3.4. Appropriate waste-to-energy technology for Vietnam towards a circular economy in waste management

3.4.1. Challenges

From the above analysis results, the challenges identified in the implementation and application of WTE incineration technology in Vietnam are as follows:

- ***Complicated and lengthy investment procedure:*** The success or failure of WTE technology depends a lot on cooperation. stakeholders and the current status of the local institutional, policy and legal framework. Stakeholders in waste incineration projects often have conflicting interests based on environmental and economic issues (World Bank, 2000). Due to WTE technology is transferred from abroad, investors need to carefully study the necessary procedures for appraisal and evaluation of the project according to the provisions of the Law on Technology Transfer 2017. In addition, WTE is also considered a type of technology that impacts the environment, as a result, this technology also needs to carry out procedures related to the environment such as Environmental Impact Assessment (EIA) and other related procedures. In fact, the investment procedure for WTE plant in Vietnam is relatively complicated and lengthy, requiring the approval of various ministries and branches, including EIA, electricity source development planning; lacking and inconsistent regulations on incentives for WTE technology; technology appraisal procedures.

- ***High moisture content of waste:*** Obviously, the characteristics of MSW is an extremely important criterion for all types of treatment technologies in general and WTE technology in particular. As recommended by the United Nations Environment Program, for efficient operation of WTE incineration technology. The calorific value of waste should be at least 7 MJ/kg (equivalent to 1673 Kcal/kg) on average, and never fall below 6 MJ/kg (equivalent to 1433 Kcal/kg). A very important issue when operating a waste incinerator is the calorific value of the waste. The higher the calorific value of the waste, the higher the combustion temperature. That reduces the pressure on the operating process of raw materials and fuel, helps the combustion process to occur thoroughly and reduces the load on the gas treatment process. Vietnam's solid waste is characterized by high moisture content (ranging between 65 - 95%) and low calorific value (ranging from 900 - 1,100 Kcal/kg) (MONRE, 2019).

- ***Unsorted waste at source:*** The MSW in Vietnam has a high organic content and is not sorted at source. The unsorted waste leads to difficult and costly treatment, high humidity conditions in Vietnam will consume a lot of fuel (oil) for the incinerator. There have been many projects and researches aimed at improving the waste sorting capacity in urban as well as rural areas in Vietnam, but the results have not been as expected.

- ***Risk of dioxin and furan emission:*** The operation process of WTE plants needs to strictly comply with technical regulations and periodically monitor from the environmental management agency. Although with the current state of air pollution control technologies, it is possible to treat and reduce emission concentrations below the allowable standard, the risk of dioxin and furan emissions exceeding the allowable standard has been recognized in many countries such as China, India and the Netherlands. Therefore, the operation and maintenance

activities at WTE plants are not guaranteed in terms of quality and quantity can lead to high levels of dioxin emissions that negatively affect the human health and the environment.

3.4.2. Opportunities

- ***Contribution to Sustainable Development Goals (SDGs):*** developing WTE technology not only reduces landfill waste but also creates a continuous renewable energy, which directly contributes to progress of SDG implementation such as SDG 11 “sustainable cities” and SDG 7 “sustainable energy”. Currently, the Government of Vietnam has also issued a National Plan to implement 17 SDGs in Decision No. 622/QĐ-TTg dated May 10th, 2017.

- ***Enhance waste management capacity:*** Promoting MSW treatment by WTE technology can directly support a list of goals outlined in the Integrated Solid Waste Management Strategy until 2025, vision to 2050 of the Government was approved in Decision No. 491/QĐ-TTg dated May 7th, 2018 such as “enhanced processing combined with energy recovery” or “the rate of MSW treated by landfilling is less than 30% of the collected waste until 2025”. In addition, the application of WTE technology is also completely consistent with the viewpoint that “The generated solid waste must be managed in the direction of being considered a natural resource”.

- ***Contribution to the national energy load:*** According to the revised Power Plan VII to 2025, Vietnam needs to add about 6,000MW annually from now to 2025. Meanwhile, MSW are an abundant and readily available source of raw materials involved in this field. As a result, it can be clearly seen that WTE technology in Vietnam has a potential market and few competitors.

- ***Profits for investment enterprises:*** In the process of waste treatment, enterprises investing in WTE incineration technology in Vietnam receive treatment costs through local waste treatment service prices and gain profits through electricity price incentives according to the Government's regulations. Furthermore, along with regulations on the responsibility to buy electricity from WTE projects, there are also regulations on incentives for investment capital and tax; land incentives. In addition, the investor can also increase profits from the sale of recyclable by-products such as ash, slag and other recycled products from the input waste sorting process.

3.5. Recommendations on applying WTE incineration technology to implement the circular economy model in Vietnam

Based on global experience and the practical conditions of Vietnam, the following suggestions should be considered to ensure effective implementation of waste incineration technology to recover energy:

First, the circular economy implementation plan for energy recovery waste incineration should be integrated into various planning documents, including the national master plan, regional plan, industrial and sectoral plans, as well as provincial plans. This is because the national master plan has already been issued, while regional, industrial, and sectoral planning have been implemented, and provincial planning is currently in the process

of being implemented, appraised, and approved. Therefore, integrating the circular economy model for converting waste into energy based on incineration technology is an essential foundation for future implementation during the 2021-2030 period, with a vision towards 2050.

Second, based on the existing plan, designing a circular economy model for waste-to-energy incineration is of great significance. This involves careful consideration of factors such as the necessary scale of waste, appropriate technology, optimal location and area, and economic and technical viability in each region and locality. By analyzing the advantages and limitations of waste-to-energy incineration technology for each area, a suitable model can be developed. For instance, in Shenzhen, China, waste-to-energy incineration plants are typically located at landfill sites. Similarly, the first waste incinerator in Hanoi, which generates electricity, is situated at the Nam Son landfill and waste treatment area in the Soc Son district.

Third, call for investment capital and open bids to implement the circular economy model of waste incineration and energy conversion. This bidding process will ensure the selection of the most effective investors. Although the private sector has proven to be highly effective in investment and implementation, in the case of waste-to-energy incineration, the profit margins may not be high, as discussed earlier. Therefore, appropriate policies are necessary to encourage private-sector investment. Public-private partnerships (PPP) are also a feasible option for waste treatment and circular economy model in waste-to-energy incineration, which have been implemented by many countries. Vietnam should also consider and implement the PPP model in the circular economy plan for waste-to-energy technology.

Fourth, unlike the previous model of burning waste to produce energy, waste-to-energy incineration in the circular economy model must ensure the full recovery of energy, solid waste and exhaust gases after combustion. These recovered materials can then be used as input sources for other business activities. Many countries that have implemented this model have learned this valuable lesson.

Fifth, remove any obstacles in the mechanisms, policies, and management of implementing the circular economy model that uses waste incineration technology for energy conversion. Since this model involves various policies related to the environment, energy, business, land,...., it is essential to review and address relevant policies and difficulties to ensure effective implementation. The resolution of policy and implementation stages should align with the laws and chief policies of the Communist Party regarding the circular economy.

4. Discussion and Conclusion

In a developing country like Vietnam, an appropriate technology is when it meets a list of criteria, including the lowest cost, technical and legal feasibility, effective pollution treatment, and community acceptability. Energy recovery from MSW from the point of view of the CE is in line with the development trend of the world in the context of current globalisation. Therefore, in the long run, this investment direction will continue to receive the attention of the Vietnam Government and appropriate development policies. To achieve

a circular economy model in waste management, waste incineration technology can be utilized to convert waste into energy, thereby addressing the current issue of mainly landfilling waste. Based on the experiences of other countries, several waste incineration projects that generate electricity have been implemented in Vietnam. Therefore, applying a circular economy model that utilizes waste incineration technology to produce energy is feasible in Vietnam in the near future. However, despite the advantages, the implementation process may face certain difficulties, and the recommendations mentioned above need to be carefully considered and tailored to the reality in Vietnam.

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ENERGY TRANSITION FOR 2050 NET ZERO IN VIETNAM: OPPORTUNITIES, CHALLENGES AND POLICY IMPLICATIONS

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Abstract

Reaching net zero emissions target by 2050 established in COP 26 is the inevitable development pathway of the world in the future. Putting the energy sector on a pathway to 1.5°C to achieve net zero emission target is critical and energy transition plays a vital role. Viet Nam demonstrated a strong commitment to reduce greenhouse gas emissions to net zero by 2050 which places the energy sector a key role to play. In addition to opportunities to restructure its economy and align climate finance flows for energy transition, the energy sector in Viet Nam have encountered many challenges, including heavy dependence on fossil fuels in the total primary energy supply, underdeveloped renewable energy, inefficient energy consumption and increased energy imports. To achieve a just and sustainable energy transition in Viet Nam in the coming time, it is necessary for Vietnam to facilitate rapid renewable energy deployment by improving the regulatory framework, build an attractive investment landscape for private capital to finance energy transition projects, improve energy system resilience by investing in the power grid's capacity and expanding energy-storage facilities for renewable energy, accelerate implementation of energy efficiency plans including effective pricing policies, reform of electricity tariffs, develop natural gas to power as a transition fuel and promote consumer participation and build the local workforce required for the energy transition, paying particular attention to the livelihoods of vulnerable populations.

Key words: *Climate change, energy transition, net zero emission, sustainable development.*

1. Introduction

There is now strong scientific evidence that climate change is happening and being accelerated by human activity. The world is getting warmer. Global surface temperature was 1.09°C higher in 2011-2020 than 1850-1900 and global mean sea level increased by 0.20m in 1901-2018 (IPCC, 2021). Climate risks and extreme events have wide-ranging impacts across multiple dimensions of the economy. Climate change is a threat to socio-economic development, thus combating its negative impacts is vitally important for all countries. In addition, climate change presents a wide range of opportunities for countries to invest in green growth and low-carbon economy.

Reaching net zero emissions by 2050 is the inevitable development pathway of the world in the future and is realized mainly through a robust low-carbon transition and a low-carbon development pathway which has been established since the 26th Conference of the

Parties to the United Nations Framework Convention on Climate Change (COP26). By transitioning to a low-carbon economy built on energy efficiency, renewable energy, and sustainable production and consumption patterns, countries can combat climate change while at the same time strengthen the economy competitiveness and bring socio-economic co-benefits.

Putting the energy sector on a pathway to 1.5°C to achieve *net zero emissions by 2050* as committed at COP26 is critical. Transition to a low-carbon energy pathway is widely acknowledged as an inevitable trend in the future through increasingly shifts away from carbon emitting fossil fuels, enhancement of energy efficiency, renewable energy, and low-carbon technologies. Converting energy from fossil fuels to clean and renewable energy sources is a great opportunity for countries to promote economic restructuring towards sustainability, seize huge opportunities to enhance the economy competitiveness as well as take advantage of trade and investment cooperation for a sustainable future.

Over the past years, the energy sector has made a positive contribution to the country's socio-economic development in Vietnam. Economic growth requires secure and affordable supply of energy to all economic sectors. Viet Nam has a variety of domestic primary energy sources such as coal, oil, natural gas and hydro power which play an important role in ensuring energy security for economic development in the past two decades. However, the energy sector in Viet Nam have encountered many challenges that needs to be addressed to secure the supply of energy sources in the long term while at the same time reducing negative environmental impacts and controlling greenhouse gas emissions.

This paper presents an overview of energy transition in the context of achieving 2050 net zero emission target, analyses opportunities and challenges of energy transition in Vietnam and proposes some policy implications for a sustainable and just energy transition in Vietnam in the near future.

2. Literature Review and Theoretical Framework

There are currently different concepts of net zero emissions used by different actors with different purposes. In some cases, specific terms (e.g. net zero greenhouse gas (GHG) emissions or carbon neutrality) are used to distinguish between different emission targets (e.g. in terms of the coverage of GHGs - all GHGs or carbon dioxide only). In other cases, terms are used interchangeably (e.g. climate neutrality vs. carbon neutrality). Differences in terminology reflect different interpretations of the concept of net zero emissions. Net zero emission is a state where the sum of all anthropogenic emissions and removals is zero (IPCC, 2021). Net zero emission targets are being defined in a variety of ways - the most important aspect from a global geophysical perspective being whether they cover all GHGs or carbon dioxide (CO₂) only (Rogelj et al. 2015, cited in UNEP, 2021).

In the past few years, "net zero" has been launched to a central pillar of efforts to support the long-term temperature goal of the Paris Agreement adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016. The Paris Agreement marked the incorporation of the net zero concept into international policy.

The idea of achieving net zero emissions was enshrined in Article 4.1 of the 2015 Paris Agreement. The inclusion of “net zero” in the Paris Agreement and the rationale for reaching net zero emissions was further supported by the 2018 Intergovernmental Panel on Climate Change (IPCC) Special Report which highlighted that to limit warming to 1.5°C above pre-industrial levels with no or limited overshoot, global CO₂ emissions should reach net zero around midcentury (IPCC, 2018). Net zero emissions are reiterated in the 2021 Working Group I contribution to the IPCC’s Sixth Assessment Report (IPCC, 2021). These could be seen to provide a common foundation for the cascade of net zero commitments put forward by countries and non-state actors in recent years. As of June 2022, at least 1,180 entities have a net zero target of some description, including 128 countries and self-governing territories, 235 cities, 115 states and regions, and 702 publicly listed companies from the Forbes Global 2000. The spotlight falls on companies (65 percent), regions (84 percent) and cities (80 percent) that are yet to pledge net zero targets. National government targets (including the European Union and Taiwan) represent 91 percent of global GDP (PPP), up from 68 percent in Taking Stock 2021, accounting for 83 percent of global GHG emissions, up from 61 percent and representing 80 percent of the global population, up from 52 percent (Net Zero Tracker, 2022).

Energy plays a critical role to a modern economy to heat and light homes, to help travel and to power businesses. Primary energy sources include fossil fuels, renewable energy, and nuclear energy. Secondary energy sources include electricity, heat and fuels (gasoline and refined oil products). Fossil fuels are known as carbon-based fuels from fossil hydrocarbon deposits, including coal, oil, and natural gas (IPCC, 2021). Renewable energy is derived from natural processes that are replenished constantly (IEA, 2002). Nuclear energy is a form of energy released from the nucleus, the core of atoms, made up of protons and neutrons (IEA, 2022).

Putting the energy sector on a pathway to 1.5°C to achieve net zero emission target by 2050 as committed at COP26 is critical and energy transition plays a vital role. Energy transition is a significant structural change in an energy system regarding supply and consumption. Energy transition generally refers to the global energy sector’s shift from fossil-based systems of energy production and consumption, including oil, natural gas and coal to renewable energy sources (e.g. wind and solar). Currently, a transition to sustainable energy (mostly renewable energy) is underway to limit climate change.

The current energy transition is driven by a recognition that global greenhouse-gas emissions must be drastically reduced. Climate watch data shows that energy production and consumption are responsible for 76% of annual human-caused greenhouse gas emissions as of 2018. A rapid energy transition to very-low or zero-carbon sources is required to mitigate the effects of climate change since coal, oil and gas combustion account for 89% of CO₂ emissions. This process of energy transition involves phasing-down fossil fuels and re-developing whole systems to operate on low-carbon energy sources.

The shift towards low-carbon energy systems is taking place in all industry sectors and across all regions around the world. The world needs to give up fossil fuels, particularly

coal, and move to a lower-carbon energy sources that embraces renewables and nuclear power. In addition, energy transition has to address the three daunting challenges of security, affordability and sustainability, known as the Energy Trilemma, which challenges governments, cities and organizations alike. It demands solutions that can tackle all three problems together. Addressing one dimension of the trilemma in isolation will make the others worse. The trilemma means that policy should never focus on one single aspect and should look at the three challenges in a balanced way. Lower-carbon energy solutions such as wind, solar, geothermal, hydro, marine and nuclear power, net zero energy schemes, micro grids, and heating all have a part to play in addressing the Energy Trilemma.

Energy transition to a low-carbon and net-zero CO₂ energy systems entail a substantial reduction in overall fossil fuel use, minimal use of unabated fossil fuels, and increased use of Carbon Capture and Storage in the remaining fossil system; enhanced electricity systems that emit no net CO₂; widespread electrification of the energy system including end uses; increased energy carriers such as sustainable biofuels, low-emissions hydrogen, and derivatives in applications less amenable to electrification; enhanced energy conservation and efficiency; and greater physical, institutional, and operational integration across the energy system (IEA, 2021; IRENA, 2022; IPCC, 2022). The most appropriate strategies depend on national and regional circumstances, including enabling conditions and technology availability.

Accelerating the energy transition is an urgent and challenging task. It will require farsighted choices, discipline, wise investments and enhanced international cooperation on technology development and finance. Aligning the energy sector on a pathway to 1.5°C can also help address other important global concerns such as energy price volatility and energy security as well as bring economic and social benefits to consumers and businesses around the world.

3. Method

The study uses secondary data and information which were collected from a variety of sources, including reports from Vietnam's Government Statistics Office, Vietnam's Ministry of Natural Resources and Environment, books, journals, papers, and research reports of individuals and organizations related to the research topic.

A desk-based approach combined with statistical, descriptive, and comparative methods are applied to address the research question.

4. Results

4.1. Energy supply and consumption in Viet Nam

Over the past years, Vietnam has achieved remarkable socio-economic achievements. The energy sector has made a positive contribution to the country's socio-economic development. Economic growth requires secure and affordable supply of energy to all economic sectors. The energy sector must be able to attract the capital required to expand energy infrastructure and to secure the supply of energy sources in the long term while at the same time reducing negative environmental impacts and controlling greenhouse gas emissions.

Table 1. Total primary energy supply in Vietnam in 2010-2019*Unit: KTOE*

	2010	2015	2016	2017	2018	2019
1. Fossil fuels	39,145	53,796	55,578	56,005	67,031	78,536
	74.6%	80.3%	80.4%	78.5%	81.7%	85.1%
Coal	14,730	26,957	26,507	26,131	35,541	45,360
	28.1%	40.3%	38.3%	36.6%	43.3%	49.1%
Crude oil and oil products	16,099	17,288	19,522	20,973	22,481	23,987
	30.7%	25.8%	28.2%	29.4%	27.4%	26.0%
Natural gas	8,316	9,551	9,549	8,901	9,009	9,189
	15.8%	14.3%	13.8%	12.5%	11.0%	10.0%
2. Renewable energy	5,763	9,832	10,873	13,202	13,412	12,796
	11.0%	14.7%	15.7%	18.5%	16.3%	13.9%
3. Non-commercial energy	7,196	3,251	2,601	2,081	1,457	891
	13.7%	4.9%	3.8%	2.9%	1.8%	1.0%
4. Export/Import of electricity	386	84	114	61	139	107
	0.7%	0.1%	0.2%	0.1%	0.2%	0.1%
Total	52,490	66,964	69,166	71,349	82,039	92,329
	100%	100%	100%	100%	100%	100%

Source: Institute of Energy (2020)

Fossil fuels are the backbone of the total primary energy supply (TPES) in Viet Nam. The share of fossil fuel supply increased from 74.6 percent of TPES in 2010 to 85 percent in 2019. This is followed by renewable energy (11 percent of TPES in 2010 to 13.9 percent in 2019). Coal plays an important role in TPES as the share of coal grew from 28 percent (in 2010) to 49 percent (in 2019) (Table 1). This trend is expected to continue in the future as the domestic supply of hydro power and biomass seems to be unable to meet the increasing demand.

Table 2. Final energy consumption in Vietnam in 2010-2019*Unit: KTOE*

	2010	2015	2016	2017	2018	2019
1. Fossil fuels	24,747	27,094	30,924	31,307	35,777	38,835
	58.6%	54.0%	59.9%	59.1%	61.0%	61.8%
Coal	9,893	11,457	9,393	9,207	12,612	15,362
	23.4%	22.8%	18.2%	17.4%	21.5%	24.4%
Oil products	14,361	15,636	20,576	21,210	22,264	22,554
	34.0%	31.2%	39.8%	40.0%	38.0%	35.9%

	2010	2015	2016	2017	2018	2019
Natural gas	493	1,458	955	890	901	919
	1.2%	0.0%	1.8%	1.7%	1.5%	1.5%
2. Non-commercial energy	7,196	4,064	2,601	2,081	1,457	891
	17.0%	8.1%	5.0%	3.9%	2.5%	1.4%
3. Renewable energy	2,990	3,823	4,304	4,572	4,787	5,013
	7.1%	7.6%	8.3%	8.6%	8.2%	8.0%
4. Electricity	7,278	10,986	13,832	15,007	16,619	18,095
	17.2%	21.9%	26.8%	28.3%	28.3%	28.8%
Total	42,211	50,169	51,661	52,967	58,639	62,833
	100%	100%	100%	100%	100%	100%

Source: Institute of Energy (2020)

In term of the structure of final energy consumption, fossil fuel consumption (coal, oil products and natural gas) accounted for 58.6 percent in 2010 and increased to 61.8 percent in 2019, followed by renewable energy (7.1 percent in 2010 to 8 percent in 2019) (Table 2). Generally, fossil fuel consumption accounts for a large proportion of the energy consumption in Viet Nam.

4.2. Greenhouse gas emissions in Viet Nam

The total amount of greenhouse gas (GHG) emissions in Viet Nam has increased over the years as a result of fast economic growth. In 2016, GHG emissions in energy sector account for 65 percent, followed by industrial processes (14.6 percent), agriculture-forestry and land use (13.9 percent) and waste sector (6.5 percent) (Table 3). It can be seen that GHG emissions from energy and industrial processes accounted for the largest shares and also increased at the fastest growth. Therefore, cutting GHGs emissions from energy and industrial processes plays a critical role. In addition, it is necessary to increase the carbon absorption through nature-based solutions.

Table 3. GHG emissions in Viet Nam in 1994-2016 (MtCO_{2e})

Sectors	1994	2000	2010	2013	2014	2016
Energy	25.6	52.8	141.1	151.4	171.6	205.8
Agriculture	52.4	65.1	88.3	89.4	89.7	83.5
Industrial processes	3.8	10.0	21.2	31.7	38.6	46.1
LULUCF	19.4	15.1	-19.2	-34.2	-37.5	-39.5
Waste	2.6	7.9	15.4	20.6	21.5	20.7
Total	103.8	150.9	246.8	259.0	284.0	316.7

Source: MONRE (2014), MONRE (2017), MONRE (2020)

The country's rapid economic growth, urbanization, and industrialization over the last 30 years have been powered by a coal-dependent energy supply that creates significant GHG emissions. MONRE data showed that emissions from energy sector went up the most rapidly, from 25.6 MtCO_{2e} (in 1994) to 151.4 MtCO_{2e} (in 2013) and reached 205.8 151.4 MtCO_{2e} (in 2016) due to the rapid increase in energy demand. Energy sector emits the largest proportion of GHG emissions in Vietnam, accounting for 65.5 percent of total GHG emissions in Vietnam in 2016.

Viet Nam is one of the most GHG-intensive economies in East Asia (measured as emissions per unit of output) in Asia, similar to Indonesia's, but much higher than China's or the Philippines'. In absolute terms, Vietnam's GHG emissions - 364 million tonnes of CO_{2e} in 2018 - amount to no more than 0.8 percent of global emissions, on par with Malaysia, Thailand, France, and the United Kingdom. GHG emissions per capita were 3.81 tonnes CO_{2e} in 2018, up from 0.79 tonnes in 2000, but still relatively low by regional and global standards (World Bank, 2022).

4.3. Climate change policies and Net Zero Emission target in Viet Nam

The Government of Viet Nam has made remarkable efforts to develop and implement national laws, strategies, and action plans to promote a low-carbon development pathway, reduce vulnerability to the impacts of natural disasters and climate change, and enhance green growth and sustainable development, notably the Environmental Tax Law (2010), Law on Efficient Use of Energy (2010), Law on Natural Disaster Prevention and Control (2013), the Law on Meteorology and Hydrology (2015), the Law on Environmental Protection (2020), the Party's Resolution 24/NQ-TW dated June 3, 2013 on climate change response, natural resource management and environmental protection, the Party's Resolution No. 08/NQ-CP dated January 23, 2014 on Action Plan to implement Resolution No. 24 -NQ/TW dated June 3, 2013 of the 11th Party Central Committee, National Green Growth Strategy (2012, 2021), National Climate Change Strategy (2011, 2022), and the National Action Plan for the implementation of the 2030 Sustainable Development Program. Climate change response efforts and initiatives in Vietnam have also been reflected in Vietnam's Agenda 21 on Sustainable Development (2004), the National Strategy and Plan on Disaster Management and Mitigation (2001-2020, 2021-2030). Response to climate change has also been included in the Socio-Economic Development Strategy (2011-2020, 2021-2030).

Viet Nam also fulfil international commitments on climate change. Vietnam signed the UNFCCC in 1992 and ratified it in 1994; signed the Kyoto Protocol in 1998 and ratified it in 2002. Vietnam submitted National Communications to UNFCCC (2003, 2010, 2019) and Biennial update reports (2014, 2017, 2020). INDC (Intended Nationally Determined Contribution) was submitted in 2015. Recently, Vietnam signed the Paris Agreement on the Climate in April, 2016; approved the Paris Agreement in November, 2016 and updated its NDC in 2020.

At the UN Climate Change Conference in Glasgow in November 2021 (COP26), the Viet Nam Prime Minister demonstrated the country's strong commitments to reforms at

COP26, including an ambitious target of reducing emissions to net zero by 2050. Also at COP26, Vietnam joined more than 100 countries in pledges to halt deforestation by 2030 and to slash methane emissions by 30 percent from 2020 levels by 2030. Vietnam has further committed to ending all investment in new coal power generation, scaling up deployment of renewable energy, and phasing out coal power by the 2040s. These commitments go beyond those included in the Nationally Determined Contribution (NDC) update submitted in 2020 under the UNFCCC.

The National Climate Change Strategy to 2050, approved at the Decision No. 896/QĐ-TTg of the Prime Minister dated July 26, 2022, sets the overall objective to proactively and effectively adapt to climate change, reduce GHG emissions to net zero emission by 2050 and deal with vulnerabilities and risks caused by climate change. The Strategy also aims to make active and responsible contributions to the international community in protecting the Earth's climate, take advantage of opportunities from climate change response to transform growth models, as well as improve the competitiveness of the economy, contributing to the realization of the developed and high-income country target by 2045. Emphasis is placed on mobilizing resources from organizations, enterprises, individuals, and international resources for climate change combat, developing financial mechanisms and carbon markets, as well as promoting investments towards a low-carbon economy. Achieving net zero emission target by 2050 is legalized in the National Climate Change Strategy to 2050.

5. Discussions and Conclusion

5.1. Policy implications

Laws, policies, and strategies for energy development have been enacted over years in Viet Nam, for example, the Electricity Law (2004, revised 2012), the Law on Petroleum (1993, 2000, 2008, 2013), Decision No. 1264/QĐ-TTg dated October 1, 2019 on National Electricity Development Plan for the period 2021-2030, Decision No. 2068/QĐ-TTg dated November 25, 2015 approving Vietnam's Renewable Energy Development Strategy to 2030 with a vision to 2050, the National Target Program on Energy Saving and Efficiency (2006-2010, 2012-2015, 2019-2030) and the Resolution No. 55-NQ/TW dated February 11, 2020 on the Orientation of the National Energy Development Strategy of Vietnam to 2030, with a vision to 2045.

In general, Viet Nam has a variety of domestic primary energy sources such as coal, oil, natural gas and hydro power which play an important role in ensuring energy security for economic development in the past two decades. Viet Nam will have great opportunities in energy transition to move forwards a low-carbon economy.

First, the Government of Viet Nam has expressed a high political commitment to the international community in achieving the net zero emissions target by 2050 through ambitious policies to reduce GHG emissions. Developing a low-carbon economy and green growth has been included in the national socio-economic development strategies and plans over the last many years. Reducing GHG emissions and increasing carbon sequestration have

become mandatory targets in socio-economic development in Vietnam. For example, Vietnam's National Energy Development Strategy to 2030, with a vision to 2045 sets a target that the proportion of renewable energy in the total primary energy supply will reach 15-20 percent by 2030; 25-30 percent by 2045. The Draft National Electricity Development Plan in the 2021-2030, with a vision to 2045 (Power Master Plan VIII) sets the orientation to gradually reduce dependence on coal-fired power and at the same time rapidly increase the share of renewable energy in electricity generation.

Second, achieving net zero emissions is an opportunity for Viet Nam to restructure its economy. Viet Nam has set a target to be a developed, high-income country by 2045. To achieve this, Viet Nam needs to accelerate its economic growth to increase per capita income and narrow down the income gap with other countries in the world. Applying advances in science, technology and innovation, implementing digital transformation, building a digital economy and digital society will be priorities of economic development in the coming period. In order to achieve net zero by 2050, Viet Nam needs to transform its economic structure towards increasing the share of industry, especially processing and manufacturing to GDP. In addition, a major recognition in the latest socio economic development strategy (2021-2030) is that the country's economic transformation will greatly depend on better management of natural capital. Like most low-income countries, Viet Nam has relied heavily on its natural resources for economic growth, using its extensive stocks of agricultural, forest, and mineral resources to drive development over the past two decades. Viet Nam will need to shift from an arguably wasteful approach to economic expansion - as producers often use more land, water, wood, energy, and other resources per unit of output than in other countries - to a development model that manages natural capital more sustainably (World Bank, 2022).

Third, aligning climate finance flows with a low-emissions and climate-resilient development roadmap is the global goal identified in the Paris Agreement. As a result, international resources (climate finance, climate-friendly technologies) to support the net zero emissions target could be increasing in the coming time. Being a country responsible for and proactive in implementing international commitments on climate change approved at COP21, Vietnam has a great opportunity to attract international support for net zero target, especially in energy transition.

However, the energy sector in Viet Nam have been facing many challenges for several reasons as follows.

First, Viet Nam is heavily dependent on fossil fuels in the total primary energy supply (TPES). Fossil fuels accounted for 74.6 percent (in 2010), 80.4 percent (in 2015) and 85 percent (in 2019) of the TPES. In terms of fossil fuel structure, coal plays an important role as the share of coal in the TPES increased from 28.1 percent (in 2010) to 40.3 percent (in 2015) and 49.1 percent (2019). Power plants consume the most coal in the country, followed by cement, fertilizer and chemical industries. The proportion of crude oil is continuously decreasing (30.7 percent in 2010 to 26 percent in 2019). The total domestic coal consumption in 2015 was about 43.8 million tons, of which power plants consumed 23.5 million tons (53.6 percent) and industry consumed 17.6 million tons (40 percent) (MOIT & DEA 2017).

The share of coal used for power generation is expected to increase from 32 percent in 2014 to 54 percent in 2030 while around 60 percent of the volume of coal used for power generation will be imported (World Bank and Ministry of Planning and Investment, 2016). In addition, the transition to fossil fuels energy is a major cause for the increase in GHG emissions in Vietnam. Over the past decade, Viet Nam recorded the highest GHG emissions in the ASEAN region. Total GHG emissions per capita in Viet Nam increased by 3 times over a 10-year period while carbon intensity per GDP increased by 48 percent (ERENA and DEA, 2019).

Second, Viet Nam witnesses a rapid growth in final energy consumption, especially oil products and electricity. The two most energy-consuming sectors in Viet Nam are industry (47 percent in 2019) and transportation (27 percent in 2019). Oil products account for the largest share of final energy consumption (34 percent in 2010 to 36 percent in 2019) (Table 2). The most notable change in the final energy consumption mix in Vietnam is the continued increase in the share of electricity consumption in the total energy consumption which reflects a shift from fossil fuel to electricity. The share of electricity consumption occupied 17 percent in 2010 and increased to 22 percent in 2015 and 29 percent in 2019 (Table 2). Vietnam's electricity system is mainly based on hydro power, accounting for 38 percent of total electricity capacity in 2019, followed by coal power (34 percent) and gas power (18 percent) (World Bank, 2018). Meanwhile, most of the hydro power potential for medium and large hydro power plants will be fully exploited and the current capacity needs to be increased further in the near future, at the same time, domestic coal is not enough to supply the coal power plants (MOIT & DEA, 2017). An important point is that the national power in the coming time will still be dependent on coal-fired thermal power, in which coal is imported which poses risks of environmental pollution and energy security.

Third, renewable energy is underdeveloped. The share of renewable energy accounts for a small proportion of the TPES in Vietnam. Renewables saw an increased share in TPES, from 11 percent in 2010 to 14.7 percent in 2015 and 16.3 percent in 2018 and fell to only 13.9 percent in 2019 despite the strong growth of solar power this year. Hydropower is the core of renewable energy in Viet Nam. The potential for hydropower development has basically been fully exploited; at the same time, small hydropower plants have caused many impacts on the environment and biodiversity. Although the development of renewable energy sources has grown tremendously in the past three years from 2018 to 2020, it also encounters problems with the transmission system and grid safety. Unsynchronized development of solar energy and power transmission system has caused waste of resources. In addition, renewable energy development has not been planned with a long-term vision and many renewable energy projects have to be supplemented and adjusted in the implementation phase, especially wind and solar energy. Some of renewable energy resources such as tidal, geothermal, biofuel, space ones have not been developed.

Fourth, Viet Nam has become an energy importer since 2015. Energy exports in Viet Nam decreased in recent years with the export volume of 12 thousand KTOE in 2015 (equivalent to 40 percent compared to 2009). Meanwhile, energy imports increased in 2015 after a few years of decline. The trend of net imports of coal, crude oil, and oil products has

turned Viet Nam into an energy import-dependent country with a net import rate of 5 percent in 2015. Viet Nam mainly imported coal and oil products. Coal imports in 2016 were of more than 10 million tons and are expected to increase in the coming years (MOIT & DEA, 2017). Although this energy import level is not high compared to other countries in the region and the rest of the world, this is a remarkable signal in the formulation of energy policy in Viet Nam in the coming time. On average, import growth was at 14.4 percent per year in 2011-2019 (Institute of Energy, 2020). The contribution of energy export is gradually decreasing which threatens energy security in the coming time.

Fifth, energy consumption is inefficiently. The national target program on efficient use of energy in the 2012-2015 set a target of saving 5-8 percent of the total energy consumption in the 2012-2015 compared to the forecasted energy demand in the National Electricity Development Plan for 2011-2020 with a vision to 2030 (equivalent to 11-17 million TOE in the period 2012-2015). MOIT & DEA (2017) showed that the actual savings was 5.65 percent, equivalent to 10,610 KTOE. The energy intensity in Viet Nam is higher than that in some countries such as Japan, Germany, Thailand, China and Korea. The energy intensity per unit of GDP in Viet Nam is twice as high as in the world.

Policy implications for a just and sustainable energy transition in Viet Nam in the coming time include: (i) facilitate rapid renewable energy deployment by improving the regulatory framework, (ii) build an attractive investment landscape for private capital, both foreign and domestic, to finance energy transition projects, (iii) improve energy system resilience by investing in the power grid's capacity and expanding energy-storage facilities for renewable energy, (iv) accelerate implementation of energy efficiency plans including effective pricing policies, (v) reform of electricity tariffs, (vi) develop natural gas to power as a transition fuel and promote consumer participation and (vii) build the local workforce required for the energy transition, paying particular attention to the livelihoods of vulnerable populations.

5.2. Conclusion

Governments around the world are currently engaged in efforts to reduce greenhouse gas emissions from fossil fuels to avert the worst effects of climate change. At the international level, countries have committed to emission reduction targets as part of the 2015 Paris Agreement on the Climate and most recently is the net zero commitment at COP 26. At national level, cities and businesses have taken up their separate commitments to reduce emissions. These efforts often focus on replacing fossil fuels with non-carbon solutions, increasing energy efficiency and using low-carbon technologies.

The energy industry is global, affecting both people and planet, and its transformation will affect all those using or producing energy - i.e. almost everybody require a just transition. Investors, insurers, energy providers and users, as well as society at large, will expect this energy transition to be conducted in a safe and sustainable way. Achieving the 2050 net zero target by accelerating the deployment of renewables and taking vigorous action to raise energy efficiency is a no-regrets strategy that meets climate objectives. It also offers the benefits of a just and inclusive energy transition, such as universal energy access, job creation, poverty reduction, and a fair sharing of adjustment benefits and burdens.

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GREEN CREDIT SOLUTIONS TO MITIGATE CLIMATE CHANGE IN VIETNAM

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Abstract

This study focuses on providing green credit solutions as a measure to mitigate the impacts of climate change in Vietnam. The study uses a qualitative approach, with a specific focus on analyzing and evaluating policies and activities related to green credit and climate change in Vietnam. Data collection methods include analysis of policy documents, expert interviews, analysis of reports and references from relevant international organizations. The results of the study are presented in the form of an in-depth analysis and assessment of the impact of green credit policies and activities on reducing the impact of climate change in Vietnam. In addition, the study uses literature review, case study analysis and statistical analysis to provide a comprehensive understanding of green credit solutions and their effectiveness in mitigating impacts. of climate change. The study aims to contribute to ongoing efforts to promote sustainable development in Vietnam and provide insight for policymakers and financial managers on the potential of green credit solutions. in mitigating the effects of climate change.

Keywords: *Green credit, CO2 emissions, greenhouse gas emissions, climate change.*

1. Introduction

Climate change is one of the greatest challenges facing the world today, with its devastating impacts affecting all aspects of human life. Vietnam, as one of the most vulnerable countries to the impacts of climate change, has been experiencing more frequent and severe natural disasters, including floods, droughts, and storms. In recent years, the concept of "green credit" has emerged as an effective tool to promote sustainable development and mitigate the impacts of climate change. Green credit refers to financial products and services that are specifically designed to support environmentally friendly and sustainable projects.

In this context, this study focuses on providing green credit solutions as a measure to mitigate the impacts of climate change in Vietnam. Several studies have been conducted on the use of green credit in mitigating the impacts of climate change in various countries. According to a study by Rahman et al. (2022), green credit can significantly contribute to the reduction of greenhouse gas emissions and enhance the adoption of renewable energy and energy-efficient technologies. Another study by Wang et al. (2021) found that green credit policies can promote the development of sustainable transportation and support the transition towards low-carbon economy. These studies suggest that green credit can play a vital role in reducing the impact of climate change.

Green credit policies enhance environmental quality by shaping the financial sources and investments of businesses (Zhang et al., 2021b). Developing green credit improves innovation capacity and economic restructuring towards a sustainable economy (Campbell, 2021a, b; Kliestik et al., 2020; Lăzăroiu et al., 2021; Taylor, 2021) and is a tool for optimizing climate change, ecological, and energy security issues (Cui et al., 2020). Environmental finance is increasingly relevant in reducing climate change (Van Veelen, 2021). The performance of green innovation is hindered when companies face increasing financial constraints. Green finance includes climate finance but is not limited to it. It also addresses a range of other environmental targets, for example, controlling industrial pollution, sanitation, or biodiversity protection. Climate-related minimized and adaptive finance refers to investment flows into projects and programs contributing to reducing or avoiding greenhouse gas (GHG) emissions (Mohsin et al., 2019a, b), while adaptive finance refers to investments contributing to reducing the vulnerability of goods and people to the impacts of climate change. In addition, it can be harnessed for low-carbon energy, sustainable economic development, and reducing climate change during the COVID-19 pandemic (Nawaz et al., 2021). A 1% increase in the green finance index improves environmental quality by 0.375% in G7 countries, while it cleanses the environment by 0.3920% in E7 countries. Pollution reduction, switching energy sources to alternatives, innovation, and green solutions are necessary. Thus, climate change and environmental pollution reduction can be effectively achieved (Wu et al., 2021). Green finance can promote green economic growth without affecting the environment and reduce CO₂ emissions (Zhang et al., 2021). Additionally, green credit funding programs, which are also part of green finance, can improve the environment and reduce CO₂ emissions to combat climate change (Taghizadeh-Hesary & Yoshino, 2019). A study by Yoshino et al. (2021) reported that sustainable environmental goals can be achieved by using green finance and energy efficiency.

2. Method

The research method used is qualitative, focusing on analyzing and evaluating policies and activities related to green credit and climate change in Vietnam. Data collection methods include policy document analysis, expert and bank officer interviews, as well as analysis of reports and reference materials from relevant international organizations. The research results are presented in the form of in-depth analysis and evaluation of the impact of green credit policies and activities on reducing climate change in Vietnam.

Literature review method: Document research is conducted to understand policies, regulations, and green credit projects that have been implemented in Vietnam and around the world. Reference materials may include books, reports, scientific studies, policies, regulations, circulars, and laws related to green credit and climate change.

Interview method: Interviews with experts, policymakers, and financial managers on green credit policies and their role in reducing climate change. This method helps to understand in more detail the perspectives and experiences of experts and managers.

Case study method: Study of some green credit projects that have been implemented to evaluate their impact on reducing climate change. This method helps to evaluate the specific impact of green credit projects in practice.

Statistical data method: Collect and analyze statistical data related to green credit and reducing climate change in Vietnam to evaluate the impact of green credit on reducing climate change.

3. Results

In January 2020, Vietnam Prosperity Bank (VPBank) signed a green credit loan contract worth USD 212.5 million with the International Finance Corporation (IFC) and prestigious international co-sponsors. A representative of VPBank said that one-third of this financial package will be dedicated to climate-friendly projects.

By the end of 2021, the outstanding loans for green projects reached over VND 441 trillion (accounting for 4.2% of the total outstanding loans of the entire economy), an increase of 32.5% compared to 2020. Notably, the outstanding credit for renewable energy projects reached more than VND 212 trillion, accounting for about 47% of the green credit balance of the entire system.

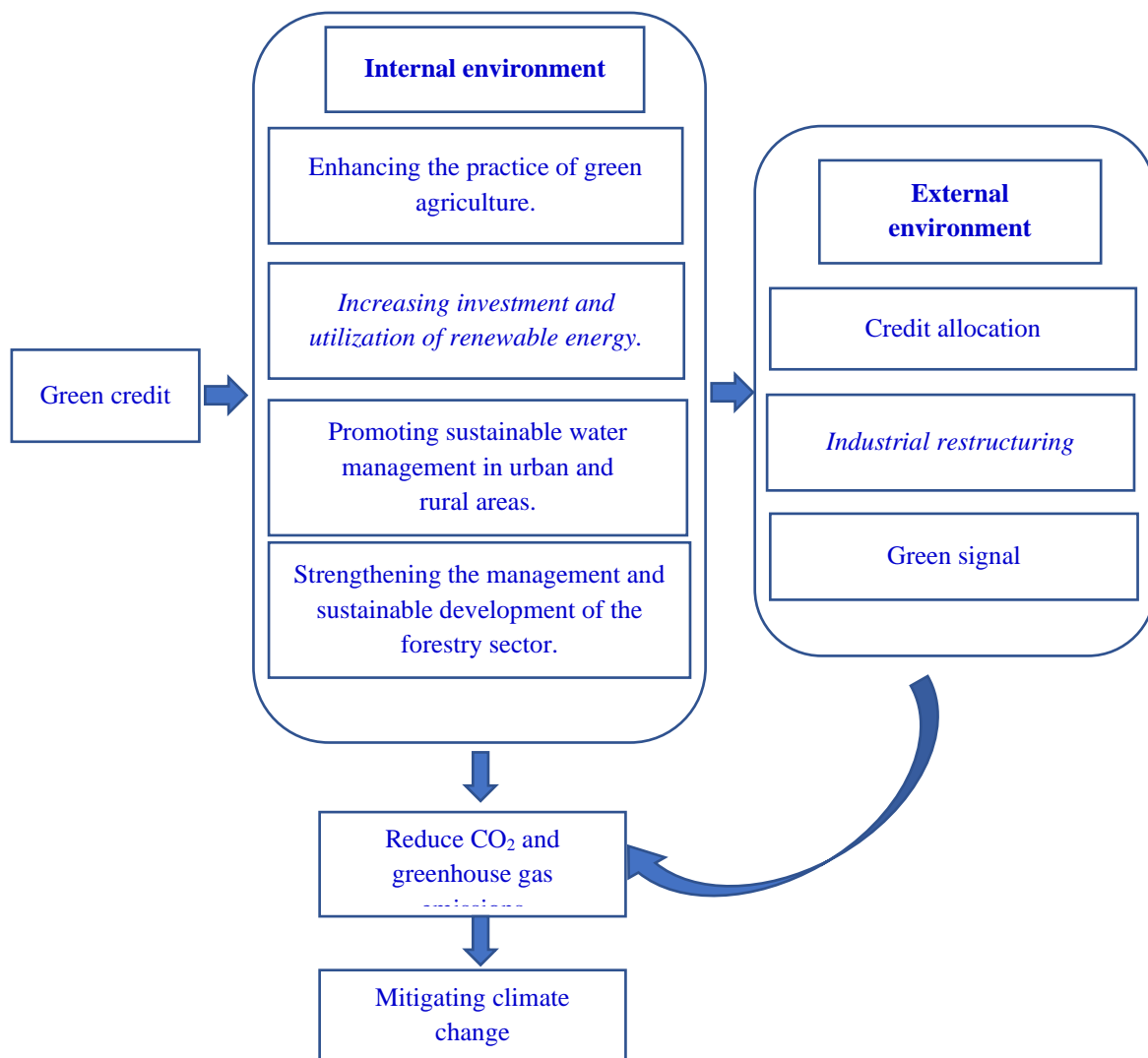


Figure 1. The mechanism of how green credit impacts the reduction of CO₂ emissions to mitigate climate change

In 2020, the agriculture sector was the second largest contributor to Vietnam's greenhouse gas emissions, accounting for approximately 19% of the total emissions. Rice production accounted for about 48% of these emissions, followed by livestock manure fermentation (15.3%), synthetic fertilizer use (12.9%), and manure management (9.5%).

To reduce greenhouse gas emissions, the implementation of green agriculture, the following measures will be taken: (i) Reduce greenhouse gas emissions in agricultural production by reducing the use of fertilizers and pesticides by 14%. (ii) Change animal feed, animal health, and breeding methods to reduce greenhouse gas emissions by 14% per animal unit. (iii) Increase forest service subsidies by 50% (compared to BAU) to encourage reforestation and increase carbon sinks. These measures will require significant new investments from both the private and public sectors, estimated at around \$15.6 billion from 2022 to 2040.

Table 1. Outstanding green credit packages of commercial banks in green agriculture

Bank	Outstanding green credit package
Agribank, Vietinbank, Vietcombank, HDBank, ACB, BacAbank, Sacombank	The State Bank of Vietnam issued Resolution 813 / QD - SBV on July 24, 2017 to direct commercial banks to implement a loan program to promote the development of high-tech agriculture. Following the State Bank's guidance, a VND 135 trillion loan package for high-tech agriculture was launched by eight established banks. In which Agribank's total investment in the loan package is VND 50 trillion, while Vietinbank, Vietcombank, and HDBank each committed to providing VND 10 trillion. Bac A, Sacombank, ACB, and others recorded a total of VND 55 trillion.
Agribank	Reduced interest rates for loans from 0.5% to 15% per annum for customers participating in the clean agricultural production chain, depending on the time when customers participate in different stages of the high-tech agricultural production process: supplying input materials, production or product consumption. Customers borrowing under the High-tech Agriculture Development Program, clean agriculture are free of charge for transfer within the Agribank system and receive a 50% reduction in transfer fees outside the Agribank system.
HDBank	Implement the program of high-tech agricultural loans with a limit of VND 10,000 billion at the request of the Government and the State Bank. Specifically, in this program HDBank applies an interest rate lower by 1% than the normal interest rate. Loan limit can reach 80% and businesses can mortgage assets formed from loan capital. The maximum loan term is 10 years. The bank has implemented a number of affiliate programs with supermarket chains and convenience stores across the country and built an export program with professional financial solutions to make it easier for businesses to providing clean agricultural products to consumers.

According to the national strategy on clean water supply and rural sanitation until 2020 approved by the Prime Minister in Decision No. 104/2000/QD-TTg on August 25, 2000, after

20 years of implementation with initiatives, efforts of the government and support of international organizations, significant and fundamental progress has been made. Regarding clean water supply, by 2020, 88.5% of the rural population had access to clean and hygienic water (nearly 51% of which met the Ministry of Health's standards). Regarding sanitation, by the end of 2019, 75% of households had hygienic latrines. Furthermore, the provision of clean water in rural areas is increasing, and the state management system is being improved.

Table 2. Outstanding green credit packages of commercial banks in the field of clean water

Bank	Outstanding green credit package
ADB	A loan of USD 45 million for Clean Water Supply and Environmental Treatment Project in Rural Central Region
Agribank	Participating in the project of rural clean water supply and sanitation in the Red River Delta sponsored by the World Bank (WB)

Sustainable forest management for the 2016-2020 period was established as a target program through Resolution No. 886/QĐ-TTg on June 16, 2017 by the Prime Minister. Agribank has been designated as a support bank for the Forest Sector Modernization and Coastal Resilience (FMCR) project. The FMCR project aims to improve coastal forest management to better withstand adverse weather conditions and sea level rise, protect the ecological environment and effectively respond to climate change. At the same time, expand and improve the value chain of forest products, improve people's livelihood, participate in the protection and development of coastal forests. In 2016, the Government approved the adjusted National Power Development Master Plan (PDP 7) for the period 2011-2020 with a vision to 2030. The main objective is to increase the share of renewable energy, not including hydropower, to more than 10% by 2030. The plan aims to further reduce the country's dependence on hydropower over the next few years, from about 40% in 2018 to 15% by 2030.

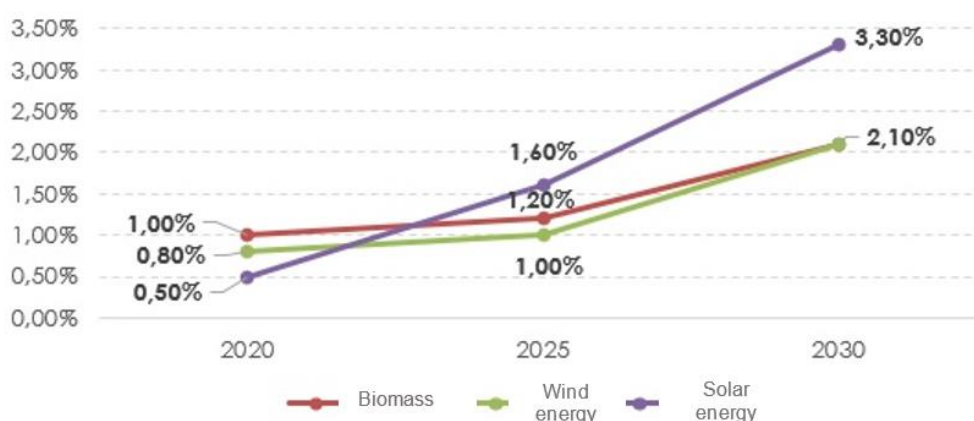


Figure 2. Target for electricity generation from renewable sources in revised PDP-7

Source: Industry and Trade Magazine, 2022

Electricity of Vietnam (EVN) estimates that about USD 150 billion will be needed by 2030 to meet the increasing demand for electricity. The financial requirement for the

renewable energy sector is about USD 24 billion by 2030. Therefore, Vietnam needs to attract about USD 10 billion in investment by 2030 to meet the growing demand of the country. For this reason, more and more investors are interested in developing renewable energy projects. Many banks have also started offering credit packages with great value to facilitate the development of this green energy industry. (Table 3)

Table 3. Some outstanding green credit packages of commercial banks in the field of renewable energy

Bank	Outstanding green credit package
BIDV	Up to 75% of the total investment capital of a rooftop solar power system with an interest rate of 10% per year for a period of 12 to 36 months, coordinated by Bach Khoa Solar Energy Development and Investment Joint Stock Company with banks to support participating households. The bank has granted credit to many large-scale wind power projects such as Huong Linh 1 and Huong Linh 2 (Quang Tri, total capacity of 60MW) and Phuong Mai 3 project (Binh Dinh) with a capacity of 20.7 MW.
Sacombank	Credit program up to 70% of investment capital in solar energy projects for corporate customers in the Southwest, Southeast, South Central and Central Highlands regions. Preferential interest rate of 8.5%/year for the first year, maximum loan term of 96 months. We offer a loan package of up to VND 500 million with an interest rate reduced by 1% compared to the current interest rate. The loan term is up to 60 months, applicable to individual customers who need to buy a solar power system every day to serve their daily living and business needs.
TPBank	The bank has financed VND 11,000 billion within 2 years for Bamboo Capital Group (BCG) with renewable energy projects with a total capacity of 1.5GW. It is used for wind power projects with a total capacity of 650 MW in Ca Mau, Vung Tau, Soc Trang and Tra Vinh provinces. Rooftop solar power projects and 330MW solar power plants in Binh Dinh.
Vietcombank	The bank provides loans for 3 projects: Srepok 1, Srepok 2, and BP Solar. Srepok 1 has a total investment of about VND 1,200 billion in Dak Lak. Srepok 2 and BP Solar 1 are two projects in Phuoc Huu, Ninh Thuan. In addition, Vietcombank has provided a loan of VND 360 billion to implement the Ban Ang hydroelectric plant project in Nghe An.
HDBank	As of 2018, the bank has spent VND 7 trillion on clean energy and renewable energy projects and VND 3 trillion on disposable power projects. Specifically, the bank has provided financing to companies investing in rooftop solar projects. The loan interest rate is up to 70%, with a loan term of 5 years.
NamABank	NamABank has signed an agreement with the Global Climate Cooperation Fund to implement the Green Credit Program in Vietnam. Accordingly, the bank will grant medium and long-term green credits for projects that reduce carbon dioxide emissions and projects that save 20% of energy demand.

Bank	Outstanding green credit package
MB	The bank has provided capital for 34 solar and wind power projects with a total value of about VND 70,000 billion, helping investors generate about 3,600 MW of renewable energy and contributing to the increase in clean energy sources. while promoting the economy to meet the needs of sustainable growth.

Vietnam is currently ranked in the top 10 countries with the largest investment in renewable energy (RE) in the world in 2022, with USD 7.4 billion, surpassing two major economies of Germany and France.

Vietnam is vulnerable to climate change, it ranks fifth in climate risk in the Global Climate Risk Index 2018 and eighth in the Long-Term Climate Risk Index (CRI), a list of 10 countries most affected by extreme weather events from 1997 to 2016 (on average per year).

(Unit: VND billion)

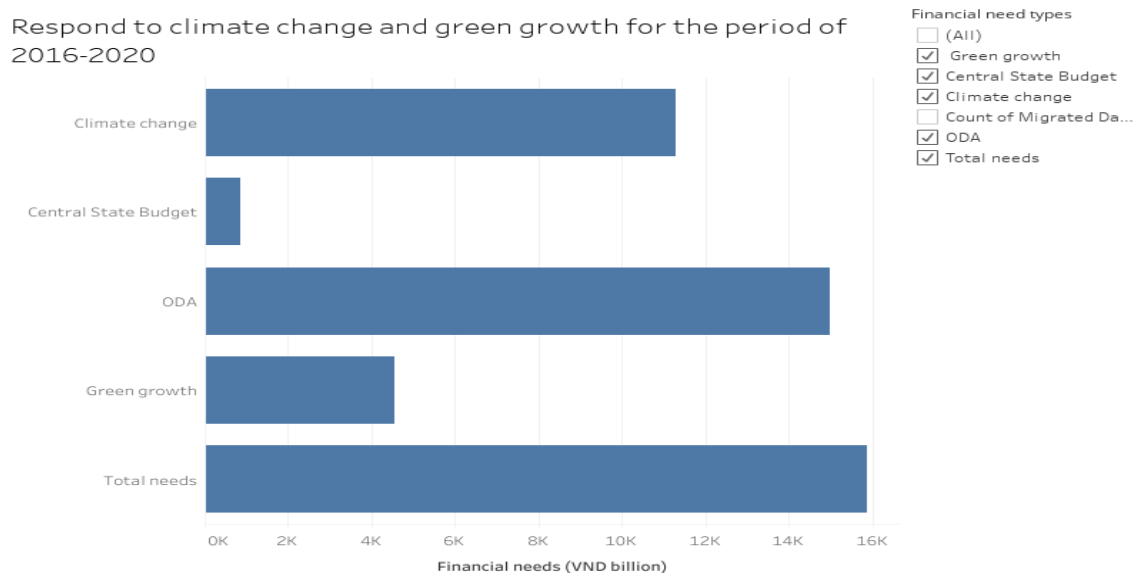


Figure 3. Financial needs for the implementation of the Target Program to Respond to CC and Green Growth for the period of 2016-2020

Source: Resolution No. 73/NQ-CP on August 26th, 2016

Intended Nationally Determined Contributions (INDCs) were approved by the Prime Minister in 2015 and submitted to the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC). Vietnam's INDC includes contributions to greenhouse gas emissions mitigation and adaptation to climate change, including both unconditional and conditional contributions (can be made if Vietnam financial and technology support and capacity building from international organizations). According to estimates in Vietnam's INDC, the total domestic financial need to achieve the targets. The 8% cost of GHG emission reduction is USD 3.2 billion and Vietnam needs an additional USD 17.9 billion. from international support to achieve 25% GHG emission reductions under the development-as-usual scenarios. The total

financial need to achieve the target of reducing greenhouse gas emissions for the period 2021-2030 is as follows:

Table 4. Total financial requirements to achieve GHG emission reduction target 2021-2030

Field	Method	Reduction target by 2030	Expense (millions of dollars)
Energy	Self-implemented	4.4	1,894.3
	Supported	9.8	5,332.8
Agriculture	Self-implemented	5.8	885.43
	Supported	41.8	12,093.54
Waste	Self-implemented	8.6	311.7
	Supported	42.1	2,596.2
Land use, land-use change and forestry (LULUCF)*	Self-implemented	50.05*	131.98
	Supported	145.7*	1,127.98
Domestic cost			3,223.41
Additional support			17,927.11
Total cost			21,150.52

Source: INDCs of Vietnam, 2015

* Note: Increase the ability to absorb greenhouse gas.

Financing for climate change adaptation and green growth in Vietnam can be mobilized from a variety of sources such as state budget capital, international funding (ODA, preferential commercial loans), incentives from major international financial institutions and capital from international climate funds) and domestic private capital (loans from credit institutions, own capital). However, state budget capital and ODA only meet about 10% of the capital demand for green growth. The rest of the capital is raised from the private sector. Currently, the capital market of Vietnam has not really developed, the financial source for businesses is still mainly based on bank loans. Therefore, Vietnam's banking system has played a particularly important role in maintaining economic growth and thereby affecting the environment and social community. As such, it will become the main source of capital for green industries.

4. Discussion and Conclusion

Green credit solutions to mitigate climate change in Vietnam:

- Firstly, the government can enhance policies to encourage and support banks and financial organizations to participate in green funding projects. This can promote green funding activities for urban projects, public transportation, renewable energy development, and sustainable agriculture to reduce carbon emissions, increase climate resilience, and protect the environment. Banks and financial organizations may receive tax incentives or financial support for investing in green funding projects, such as interest rate support, tax reductions, or increased access to capital.

- Secondly, policies should be put in place to encourage and support banks and financial organizations to apply green standards in the evaluation process of funding projects. This ensures that projects are developed and implemented according to environmental protection standards, creating quality green funding projects and reducing climate change. Applying green standards helps banks and financial organizations assess the risks and renewability potential of funding projects. This will enhance the sustainability of projects and reduce negative impacts on the environment and climate change. At the same time, applying green standards also helps increase investor and customer confidence in green funding projects, attracting new investments into green funding projects.

- Thirdly, creating new green financial products is necessary. Financial institutions and banks can encourage investors to invest in research and development of new green financial products. This will help create new financial products that meet the requirements of green funding projects and increase capital mobilization for green funding projects. One of the best ways to enhance capital mobilization for green funding projects is to create green investment funds. These funds can be invested in industries such as renewable energy, ecological agriculture, and green urban projects.

- Fourthly, green credit institutions can play a crucial role in raising awareness and knowledge among individuals, businesses, and communities about the importance of green finance and its potential in mitigating climate change. This can be achieved through educational campaigns, workshops, and training programs.

- Fifthly, green credit can support research and development efforts aimed at innovating and implementing energy-saving technologies. This includes funding projects focused on energy storage, smart grids, and sustainable transportation, which contribute to reducing greenhouse gas emissions.

- Finally, financial institutions can issue green credits specifically designated for environmentally friendly projects. These credits provide favorable terms and conditions, such as lower interest rates, longer repayment periods, and flexible collateral requirements, incentivizing businesses and individuals to undertake sustainable initiatives.

Conclusion

In the context of climate change causing significant impacts on Vietnam, green credit solutions have been proposed as an effective approach to mitigate climate change and ensure sustainable development. By generating financial products and services that support green projects and activities, green credit plays a crucial role in promoting the transition to a green economy and reducing emissions. The mentioned green credit solutions, such as financial support for renewable energy projects, energy-efficient housing construction, training and raising awareness about green finance, investment in research and development of energy-saving technologies, and the issuance of green credits, contribute significantly to reducing

climate change in Vietnam. However, for green credit to be truly effective in reducing climate change, close coordination among stakeholders is necessary, including the government, banks, businesses, and the community. Consensus and policy support are needed to encourage the development of green finance and ensure the efficient and sustainable implementation of green projects. In the future, the development of green credit in Vietnam needs to be continued and expanded. Additionally, other financial measures such as tax incentives and investment promotion should be implemented to create a favorable environment for the development of green projects and activities. Only through these efforts can Vietnam achieve its goals of minimizing climate change and protecting the environment in a sustainable manner.

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ENVIRONMENTAL COMMUNICATION THROUGH THE CASE STUDY OF PLASTIC WASTE COMMUNICATION PRODUCTS IN VIETNAM

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Abstract

This case study discusses the topic of communication products in the field of behavior change communication with plastic waste in Vietnam. The research is carried out in the direction of combining qualitative and quantitative methods, focusing on the description and analysis of selected media products in terms of their ability to reach the target audience. The research results show that the media product design has the actual following advantages: modern and relevant in terms of information, valuable impact as well as meaningful in terms of interpersonal relationships. However, the products still have limitations related to communication interference as well as information selection and organization. Based on the survey, we have tried to provide solutional discussions in community development communication practices in Vietnam.

Keywords: *communication products, behavior change, strategy, approach, target audience.*

1. Introduction

In social aspect, communication is a powerful communication tool of influence and conquest. Thanks to this powerful feature, the media is increasingly asserting its role and position in the service of sustainable development goals for the community.

The environment is one of the areas of community development that is always deeply concerned with the global scale due to its influence on human life. Environmental issues involve many levels from macro to micro and are often solved in an integrated way to achieve lasting change effect. In fact, environmental communication has played a very important role in this process due to its large capacity to mobilize social resources and its results can be covered on a large scale. This is considered a practical support solution in environmental governance, and at the same time a channel to help bring environmental policies into social life.

In the communication process, the construction of communication products is an important step. If this is done professionally, the communication will be easier to reach the audience and easier to achieve.

With that in mind, we have conducted a case study on environmental communication products related to efforts to reduce plastic waste, a current topical issue in Vietnam.

Through this study, from a social media perspective, we want to identify some practical media product design features, on that basis, try to give solutions-based discussions in community development communication in Vietnam.

2. Theoretical basis

From a media perspective

Based on some research we have done, we would like to introduce the concept of communication as the basis for this survey as follows: Communication is a continuous process of exchanging and sharing information, creating mutual links. to lead to understanding, change in perception and behavior of the target audience in a voluntary, gradual and sustainable manner.

Communication works based on the mechanism of basic principles: cooperation, orientation and art with a closed process including many factors: source, destination, message, channel, feedback and noise. These factors need to be seen in a close systematic relationship and placed in the specific communication context. (James Watson & Anne Hill, 1993)

In the process of communication, the message is both the medium and the result of the source, so it has a very important position. All information and desires oriented from the source are through the message to the destination. In fact, messages always exist as specific communication products and need to follow marketing principles in design (both in terms of content and form) in order to have the best reach with the target object. The quality of communication products should be based on the basic principles of communication.

Communication is a very broad field with many branches, one of which is related to social marketing, serving the needs of community development, which is behavior change communication (TCM) associated with the term IEC: Information (information - content), Education (education - goal), Communication (communication/communication - method). This is a combination of three aspects in a particular type of information activity aimed at influencing the object with the desire to intervene to create changes in the object. In this case, communication is considered as a purposeful, planned activity aimed at achieving a change in the knowledge, attitudes, and skills of the audience, helping the audience to accept and sustain new behaviour. (Thanh Xuan Nghien, Hoang Kim Thanh, Trinh Son, 2003)

In all communication activities, the media product is used as a strategic impact tool. Through specific communication products, the source influences the target audience during their approach, changing the direction and desire of the source.

Behavior change is a long-term process consisting of many stages, complex in the psychology of action of the target audience, so it is not easy to succeed.

This requires having a communication strategy suitable for each stage of the behavior change process as well as for each individual target group, while also paying attention to the characteristics of the society. Thus, the design of communication products for the purpose of behavior change must also fall within this strategic direction.

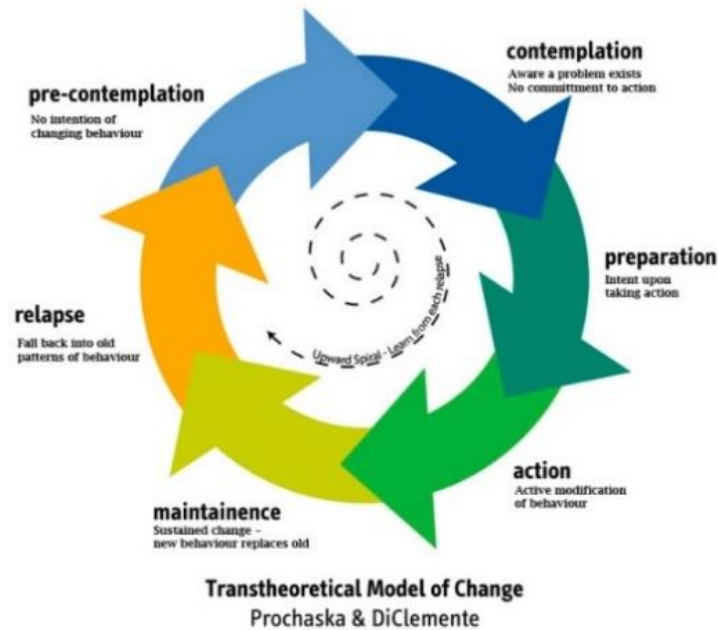


Figure 1. Transtheoretical Model of Change

Source: <https://www.masterskills.org/Training-models-Change-Phases.htm>

From a practical perspective

Plastic waste is currently an environmental hot spot in Vietnam. The article titled "Vietnam discharges 3.1 million tons of plastic waste into the environment every year" on Vnexpress (the most widely read online newspaper today) has cited figures from the report of the Bank. World Bank announced on July 25, 2022. It is on land that each year an estimated 3.1 million tons of plastic waste is generated and the amount of waste dumped into the ocean is between 0.28 and 0.73 million tons. At the same time, this report also shows that by 2030, less than 15 years from now, the amount of waste generated in Vietnam is expected to double from 27 million to 54 million tons.

According to another statistics of the Vietnam Plastics Association, the amount of plastic waste and plastic bags in Vietnam accounts for about 8% to 12% of domestic solid waste, but only about 11% to 12% of the waste. Plastic, plastic bags are treated and recycled, the rest is mainly buried, burned and discharged into the environment. Although the area of Vietnam ranks 68th in the world, it ranks 4th in the world in terms of plastic waste, with more than 1.85 million tons/year. This has made pollution in Vietnam more serious, because plastic waste affects the landscape, living environment, human health and species, causing damage to economic sectors such as: tourism, or fishing, aquaculture, seafood.

Faced with that fact, Vietnam has made many efforts towards the goal of reducing plastic waste. Behavior change communication has played an important role throughout this process. The most significant recent move is on May 2, 2021, the Prime Minister issued Decision No: 175/QĐ-TTg on promoting propaganda to prevent plastic waste in the period of 2021 - 2025 with the following objectives and very specific implementation. Up to now,

many communication products on reducing plastic waste have been created and put into practice. The sources of these products are also very diverse (Government agencies, organizations, social organizations...) with different levels (from central to local, even spontaneous small groups).

3. Method

As a basis for research, we randomly selected 70 tabular communication products (posters, banners, infographics) with content related to reducing plastic waste as research samples. This is a modern communication product, concise in terms of information, with high flexibility and applicability in many types of space, convenient in contact with Vietnamese people because there is a culture of receiving ancient paintings. previous action.

Samples are collected from a variety of use spaces (outdoors, indoor, online media), diverse in terms of creative sources and time of appearance.

The research is carried out in the direction of combining qualitative and quantitative focusing on the description and analysis of selected media products in terms of their ability to reach the target audience.

4. Results

In terms of information content of media products

Through specific surveys, we find that communication information in products is a combination of visual symbols and language and is classified into two main categories.

Intellectual information: this is the type of information that occupies a large amount and plays a dominant role in content in communication products (about 88%). This information focuses on the purpose of providing knowledge, improving understanding and calling and guiding action for the target audience (Table 1).

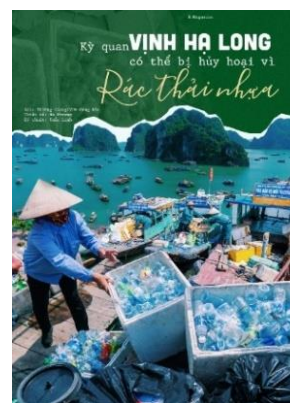
Table 1. Research results of Intellectual information

No.	Information Type	Content	Characteristics	Proportion
1	Basic Concept	- What is plastic waste? - Source of plastic waste - Lifetime of plastic waste	Explanation Presentation	8 %
2	Current Situation	Providing data: - Volume of plastic waste discharged - The scale of environmental space is affected - Efforts to reduce plastic waste have been made in the world and in Vietnam	Description	15.5%

No.	Information Type	Content	Characteristics	Proportion
3	Reasons to Change	Emphasizing the serious and long-term effects of plastic waste on people and the environment	Explanation Presentation	10%
4	Action Guide	Introducing how to choose, use alternative materials to change and replace.	Description	49%
5	Call to Action	Persuading and promoting new behavior	Encouragement	17.5%

Source: author analysis (2022)

Some examples:



Emotional information: This type of information is intended to affect the receiving psychology of the target group by seeking sympathy for the plastic waste problem based on the impact of sharing or evoking sympathy of the recipient information before a certain fact. In addition, emotional information also emphasizes the aspect of enhancing the role of the receiver or transferring the choice to the receiver through suggestions. Emotional information only accounts for about 12% of all survey products

Some examples



In terms of organizational structure of media products

Although the communication products in this study are single-media, only acting through the visual channel, there are a variety of combinations of signs and expressions: language, drawings, and photographs. The information is presented on a limited spatial scale and is not linear.

About the amount of information: because the product is a compressed form of information, many products are designed to be neat and concise such as: in terms of language, priority is given to the use of words and phrases that rarely appear in the form of sentences or linked text. Regarding images, there is a preference for images with realistic visualization, less use of image metaphors.



About product texture: We see a certain variety

* Integrated information: these are products with a combination of many types of information on one product space in which the following structures are prominent:

- a. Action Guide + Call to Action.
- b. Current Status + Action Guide
- c. Status + Call to Action
- d. Harm + Call to Action

With integrated information, the focal point of the information is related to the prominent sizes and colors of important details.



* Unique information: these are products that do not have a combination of multiple types of information on one product space. Appearing in this product category are all types of information classified above: basic concept, situation, rationale, action guide and call



With this type of organization, the type of Guide to Action and Call to Action makes up the majority

In terms of strategic approach of media products

To reach the target audience, the media products surveyed by this study followed the following strategies:

* Transparency: keywords and images related to the content to be communicated are presented directly, clearly, without ambiguity, without misleading

Key points are repeated over and over again in many different products. Here are the most frequently used words/phrases:

- Plastic waste: content to be communicated
- Mitigation: the goal to be achieved of the communication
- How: guide behavior change
- Action: promote behavior change
- Say no: advocate for behavior change

* Friendly: In the survey products, the highlight of the communication strategy is to attach importance to the position of the target, limit the imposition and abuse of the source's communication power.

The results show that there are almost no speech acts with high pressure showing controlling power such as commanding and requesting, but instead verbal acts showing power interaction such as: provide information, advice, explain, encourage, demonstrate, present, suggest, dissuade, warn...

5. Discussion and conclusion

In terms of product advantages, the survey shows that many communication products have been designed in the direction of modernization and professionalization, so it is convenient to reach the target community on a large scale. This is reflected in the following aspects:

- Rich, systematic and coherent in terms of content as well as form of information presentation
- Up-to-date and focused information content needs to be communicated
- There has been a certain link between the information conveyed and the specific goals of each stage in the entire behavior change process.

- Information is easy to understand and remember because it is presented in a concise, clear and specific way (for example, there are no terms, technical words, local words, etc.) and is repeated in meaningful content.

- Shows the orientation of the source, but limits the imposition but instead enhances the role and voluntariness of the target (ensures the basic characteristics of the communication)

In terms of access to media products in the survey, to some extent, informational relevance, impact value and interpersonal significance.

About product limitations

The most significant limitations of media products relate to some of the following:

* Communication interference

Media products are the result of an artistic creative process. However, it is easy to see that there is a boring, clichéd repetition of expressions in many products

For example, the slogan "Say no to plastic waste" appeared repeatedly in many surveyed products. Not to mention the phrase "Say no to..." has been used in many different communication programs, so in this case it can lose the creativity of the design.

On the other hand, due to the heavy emphasis on the amount of information transmitted, many products are overloaded with information in a limited space. This is most evident in the type of integrated information products, making it very difficult for the target to recognize or accurately remember key information.

* Information gaps

In the products that have shown the richness of information content, the communication strategy still has shortcomings in establishing information focus.

In fact, in order to change the target's behavior, the benefit factor of the target is very important. They only really care and change if they see the right reasons, the need for change as well as the benefits that they enjoy. According to the survey results presented in Table 1, the information on the reasons for change is very limited (only about 10%). Media products are emphasizing impact through numbers and guidance. However, information about the harmful effects of plastic waste, especially the direct harm to human health (safety needs) is the key to open the door to change before focusing on practical guidelines, persuasive actions or movements.

On the other hand, the active role of the target is not fully understood. Media products still pay little attention to interventions through improving the image of the target, especially with the group of people who use plastic products, such as promoting the target in an effort to change to have a new behavior (becoming a trendy person, a more responsible person, a more knowledgeable person...)

In addition, there is information that is not factual. For example, the campaign slogan "say no" to plastic waste. In this case, the listener finds himself or herself being put to fulfill an idealized request that is difficult to fulfill, leading to an easy psychology of giving up. Instead, emphasis should be placed on whether "restriction" or "alternative" are more viable suggestions.

* There is no clear target classification yet

Plastic waste is a topical content when communicating, but related to this content, there are many specific target groups (objects of mind) such as: producers, users, people. This requires product designs to have a categorical orientation in their approach. The work results show that the survey media product has not paid adequate attention to this issue. Messages, especially for Hazards and Action Instructions, are a must-have, but most products are designed in a generic way, without any sign (language) markings, language, images) to differentiate in reaching the target group.

* Few traces of indigenous culture

The survey shows that many products have modern designs and gradually approach internationalization. This can help quickly capture the target's attention at first. However, in

order to transform information from short-term memory to long-term memory or recall, familiar indigenous cultural factors play an important role. In fact, current designs have not focused on this content. (During the survey, we only encountered one product that used folk elements as folk songs to create slogans).

Some suggestions for behavior change communication product design

Behavior change communication is an informational process that is both educational and instructive based on deep understanding of the object of intervention, in which new behavior always occurs under certain influences. The educational structure of behavioral change intervention in mass communication communication can be visualized as the following formula:

Behavior = Perception + Attitude + Belief + Practice

(Thành Xuân Nghiê, Hoàng Kim Thanh, Trịnh Sơn, 2003)

Achieving the result that the subject changes and sustains the new behavior as desired by the source requires the media to apply many skills and methods in practice. For media products, the designs should be based on the integrated approach of Mass Communication and Social Marketing, persuading according to the principle of "long rain, gradually permeating", compatible with the target audience's level, lifestyle, culture, and ability to perform, namely:

Appropriate: Information will be accepted if it is consistent with the attitudes, beliefs, practices, values and interests of the target audience. Furthermore, this fit needs to be flexible for each stage of the entire behavior change process.

Selective exposure: the target of communication is not as active as the source, but not completely passive. They will reject information that is considered illogical, too strange or psychologically pressurized...

+ Perceiving and remembering selectively: In the information chain, listeners usually only pay attention and choose the focal points of information:

- * Relating to the needs and desires of the object.
- * Compatible with the audience's level and culture
- * Close to the interests of the object
- * Help strengthen or build the trust of the subject

+ Ability to categorize: the target audience of the communication includes many individuals, is not uniform in perception, psychology, etc., so the communication information must also be specific and oriented to the acceptance of the majority. It is necessary to take into account the personality of the recipient (thinking capacity, belief, authority, and cultural depth).

Mass media communication is generally public relations with both universality and specificity. This is a combination of "international" and "localization" characteristics associated with local thinking and culture. Thus, in order to design effectively, communicators also need to pay attention to the following skills:

- Information-seeking skills help designers understand the needs, desires, and deficiencies that need to be compensated for by each target group (target approach). This is the basis for deciding the attitude and behavior of the listener.

- Observation skills help designers understand the actual situation, determine the status, the level of need for intervention, and choose the appropriate solution in the products (access the status quo).

- Communication skills. Message designers always have to show creativity and personality in finding ways to convey the message content so that the recipient can receive it in the best and most convenient way.

- Listening skills. This belongs to the feedback in the media. When the message is broadcast, there will be a response from the public. Due to different interests, different interests, responses are also diverse. However, designers must aim for common interests, share and understand public aspirations when redesigning products.

It can be seen that TDVH communication product is a new type of product that is typical for modern community communication in Vietnam. This type of message is being socialized and developed rapidly, applying modern design theories and techniques associated with many social programs. However, this also poses new research requirements both in terms of theory and practice to improve product quality in a more professional and effective manner.

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DEVELOPING GREEN BANKS IN THE CONTEXT OF DIGITAL TRANSFORMATION IN VIETNAM COMMERCIAL BANKS TODAY

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Abstract

Digital transformation has developed strongly in the world today. For many years, our banking system has always played an important role in Vietnam economy, so the application of digital transformation in banking activities is an inevitable trend. Vietnam State Bank of Vietnam trends to promote the whole system to follow the modern trend of linking digital transformation with green development. Recognizing the importance of the issue, this paper presents some general theoretical basis of green banking and digital transformation, assessing and analyzing the current situation of green banking development in the context of digital transformation, thereby proposing some practical solutions applied to banking operations.

Key words: *digital transformation, digital transformation of Vietnam banks, green economy, green banks, Vietnam banking.*

1. Introduction

Nowadays environmental preservation and sustainable development are widely acknowledged all over the world. Organizations, including State agencies and sole proprietorship are worried about the overall effect of depletion of the surroundings and pollution on business activities. Governments, businesses and individuals have all contributed their owns to prevent global warming and creating a more sustainable world, which need long-term plans and visions. Financial institutions, especially banks, are also playing a key role in improving that process, as well as assisting in the development of a robust and successful low-carbon economics.

Green banks are mission-driven financial firms to speed the transition to sustainable energy and combat climate change. Green banks are more enduring and capable of developing organizational culture and competence. They rely on loans rather than subsidies. They would like to promote banks to invest in sustainable, low-carbon businesses that produce long-term profitability. Modern green banks trend to care more about installing renewable energy than making profits. Their investment products can be electric automobiles, smart power networks, and renewable energy systems...They stop financing damaging sectors like fossil fuels. They should make more uses of environmental data when extending credit and making investment decisions. The focus of Green Banking is to combat climate change. Generally, green banking system may help government save, invest, and contribute to protect the environment.

Some research papers have recently studied green banking practices, their methods of adoption and importance of practicing green banking, also including the role and contribution of banks in environmental sustainability. This paper examines and represents these issues in some typical Vietnam commercial banks today.

2. Theoretical Basis

The green economy

The concept of the Green Economy has been founded since the early second half of the twentieth century, first addressed in a UK government sustainability report in 1989. By 2012, it was internationally agreed upon to use at the United Nations Summit on Sustainable Development held in June 2012 in Rio de Janeiro, Brazil. Since then, the green economy has gradually become a popular global concept. In Vietnam, it first appeared in 2010.

The United Nations Environment Programme (UNEP) (2012) defined the Green Economy as "one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities." In its simplest expression, a Green Economy can be considered as one that is low in carbon, resource efficient and socially inclusive.

According to the European Union (EU (2012), the green economy is a smart, sustainable and fairly growth economy

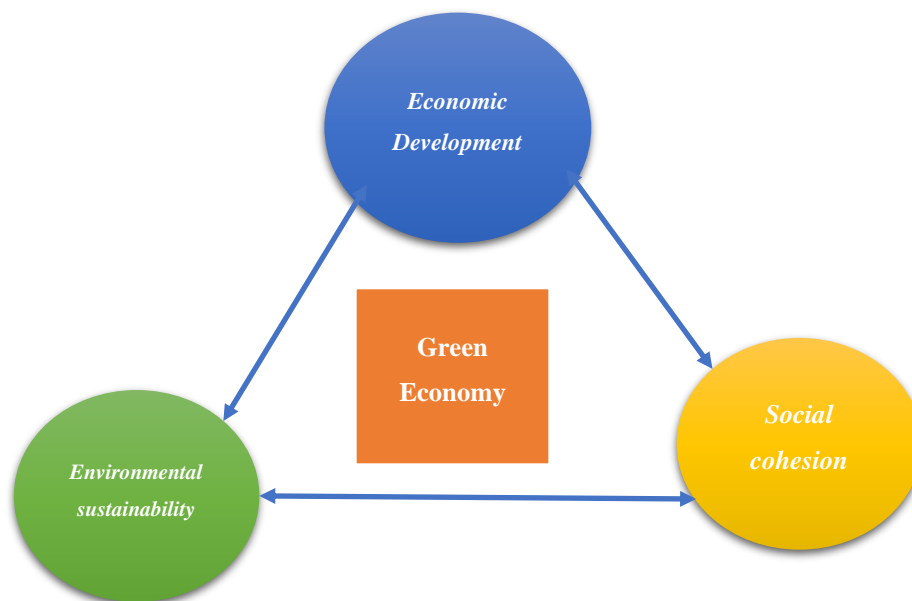


Figure 1. Three pillars of the green economy

Source: The Author collected (2023)

Green growth

The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) (2012) defined green growth as a strategy that seeks to maximize economic output and minimize ecological burden; a new approach that seeks harmony between

economic growth and environmental sustainability by promoting fundamental changes in social production and consumption.

According to UNEP statistics (2016), over the past 25 years, the world economy has grown four times higher than the past. But economic development has been largely based on resource extraction without paying attention to renewables, leading to serious ecosystem damage. As a result, 60% of the goods and services produced have negatively affected our planet’s ecosystem. To fix this situation, protecting the living environment is just to secure human life. Global countries have focused on a new growth model - *the Green Economy model (green growth)*.

Green banking

Green banking is an inevitable trend of developing the national banking system in the green growth strategy. Kaeufer (2010) and González (2008) pointed out the inevitable trend of developing a green banking model with the provision of financial services, which affected a lot on banking efficiency, environmental protection, ensuring green and sustainable growth. Green banking is divided into 5 levels of development, from low to high:



Figure 2. The green banking model with 5 levels

Source: Kaeufer (2010)

In opinions of Imeson M., and Sim A. (2010), green banks were simply sustainable banks. According to UNESCAP (2012), green banking referred to activities that encourage environmental activities and reduce carbon emissions; they promoted the use of green products and services and applied environmental standards to approve loans or provide preferential credits for CO2 reduction projects.

According to Kanak Tara and Ritesh Kumar (2015), green banking was understood as ways of providing banking services which support operations having positive impacts on the environment, reducing carbon emissions, saving natural resources, and promoting sustainable development.

In SOGESID's ideas (2012), a green bank could operate like a traditional bank, while implementing programs that benefit communities and environment; it was a combination which ensures harmony and sustainability in economy - environment - society.

Digital transformation of the banking industry

Microsoft (2017) defined digital transformation as restructuring thinking in the coordination among data, processes and people to create new values.

In Vietnam, Minister of Information and Communications, mr Nguyen Manh Hung (2021) emphasized, "Digital transformation is not a revolution of technology but an institutional revolution. Institutions need to improve in advance and flexibly adapt to accept new things: new technologies, new products, new services, new models."

According to FsiVietnam (2021), digital transformation in banking was the integration of digitalization and digital technology into all banking sectors; this integration enabled the creation or modification for existing business processes, cultures and customer experiences to meet market requirements and customer desires; digital transformation helped banks save costs and rationalize operational processes; this integration also makes the customer experience easier and more attractive.

3. Method

Based on the theoretical basis presented on green banking and digital transformation in the banking industry, this paper collect secondary data, using qualitative research methods to assess and analyze the current situation of green banking development in Vietnam commercial banking system today in the context that digital transformation is becoming a major trend in the world and Vietnam, which is strongly supported and encouraged by our Government. On the basis of recognizing the advantages and disadvantages, the author proposes some solutions to effectively solve the remaining problems in reality.

4. Results

4.1. General policy

Like many developing countries in the world, Vietnam is facing the challenge of ensuring both economic growth and development of a sustainable green economy. In recent years, despite important achievements in economic development and poverty reduction, the quality of development has not been sustainable, resources have been wasted and seriously lost, and the environment and ecosystem have been increasingly being polluted. To solve this reality, the Government of Vietnam has made efforts to change the growth model, restructuring our economy towards sustainable development, improving the impact of climate change, and linking the economy with green growth. The Green growth strategy for the period 2011-2020 and vision to 2050 issued by the Government defined these following main tasks:

- Greening production: Restructuring the economy towards shifting from broad-based to in-depth development, reducing the use of natural resources, strengthening ecological industries and environmental services, innovating technology, and using advanced and environmentally friendly technologies.

- Reducing greenhouse gas emission intensity per gross domestic product growth and increasing the use of renewable energy use.

- Greening lifestyles and sustainable consumption: Greening production cannot be done without the sustainable lifestyle and consumption in society.

In Vietnam, the issue of green banking has been mentioned since 2011. According to Decision 1393/QĐ-TTg dated 25/9/2012 of the Prime Minister approving the national strategy on green growth for the period 2011-2020 and vision to 2050, "Green Finance" and "Green Banking" were considered parts of the "Green Growth". Based on Decision 403/QĐ-TTg dated 20/03/2014 of the Prime Minister approving the National Action Plan on Green Growth for the period 2014-2020, on 06/08/2015, the Governor of the State Bank issued Decision No. 1552/QĐ-NHNN for the Action Plan of the banking sector to implement the National Green Growth Strategy to 2020. Accordingly, the objective of the Action Plan of the banking sector is to effectively implement the National Green Growth Strategy, contributing to promote the green growth process for a low-carbon economy, reducing greenhouse gas emission intensity, efficiently using energy and natural resources, developing green manufacturing, service and consumer sectors; raising awareness, role and capacity of the banking system in granting credit for green economic sectors, developing products and services to support enterprises to adopt green growth.

According to Decision 1604/QĐ-NHNN dated 7/8/2018, the State Bank approved the green bank development project in Vietnam; its main goal was to increase social awareness and responsibility of our banking system about environmental protection, climate change; gradually to make banking activities green step by step, directing credit flows into environmentally friendly project, promoting green manufacturing, services and consumption, clean and renewable energy; actively to promote green growth and sustainable development; to hit the target of 100% banks having internal regulations on environmental and social risk management in credit granting; to apply environmental standards for projects financed by banks; to set environmental risk assessment as a part of the bank's credit granting.

For digital transformation, the spirit of the Industrial Revolution 4.0 has been greatly interested and encouraged by our Party, State and Government. On September 27th, 2019, the Political Bureau issued Resolution No. 52-NQ/TW on a number of guidelines and policies to actively participate in the Fourth Industrial Revolution with the overall goal of "Utilizing effectively opportunities offered by the Fourth Industrial Revolution to promote the process of growth model innovation, economic restructuring in association with the implementation of strategic breakthroughs and national modernization; strongly develop the digital economy rapidly and sustainably based on science - technology, innovation and high-quality human resources; improve the quality of life and welfare of people; firmly ensure national defense, security and ecological environment".

Therefore, on June 3rd, 2020, the Prime Minister signed Decision No. 749/QĐ-TTg approving the National Digital Transformation Program to 2025, with orientation to 2030. That program which has a 10-year vision will completely change our country with goals such as: Developing digital government, improving operational efficiency and effectiveness; by 2030, Vietnam will be in the group of 50 leading E-government; improving competitiveness of the economy; the digital economy will contribute 30% of GDP; the proportion of the digital economy in each industry will be at least 20%; annual labor productivity will increase at least 8%...At the national level, digital transformation is the digital government, digital economy and national digital society. At the local level, digital transformation is the one toward digital local government and society. Successful local digital transformation will contribute to the overall achievement of national digital transformation. Therefore, digital transformation is a task that needs the determination of the entire political system to implement it throughout and synchronously from the central to the locals.

In the banking industry, digital transformation has been strongly promoted. On December 26th 2019, the Governor of the State Bank signed Decision 2655/QĐ-NHNN approving the Strategy for Information Technology Development of Vietnam Banking Sector to 2025, with orientation to 2030, in which the objectives are identified. The goal is to strive that by 2025, 60% of Vietnamese banks will use cloud computing services, by 2030 this rate will increase to 100%. The State Bank also said that in 2021 the State Bank would establish modern retail payment operations connecting with many different industries and fields, in which to focus on payment for public services in order to continue promoting the growth of non-cash payment.

4.2. The current situation of green banking development in the context of digital transformation

In order to catch up with the development trend of modern science and technology, Deputy Governor of Vietnam State Bank, Mr. Nguyen Kim Anh (2018), in charge of Head of the Vietnam State Bank's Steering Committee on Fintech, said that Vietnam banks had actively researched and strongly invested in some technological achievements, including production, services, operations and administration. The most prominent is the practical deployment of digital technologies, such as Cloud Computing, Big Data Analysis, Artificial Intelligence, applications and solutions...They all aim to improve operational efficiency, and to enrich customer experiences.

Mr. Nghiem Thanh Son (2019), Deputy Director of the Payment Department, the Vietnam State Bank, Deputy Head of the Steering Committee on Fintech, said that 81% of credit institutions chose the cooperation model between banks and Fintech companies for mutual development. The exploitation of available advantages of commercial banks, such as brand, larger customer database, risk management capacity ... along with technology experts and breakthrough solutions of Fintech companies... will help two sides improve product efficiency.

According to a survey by the State Bank of Vietnam in September 2020, 95% of commercial banks developed digital transformation strategies or planned to implement this plan in the near future; 39% of banks approved digital transformation strategies; 42% were

developing their own strategies. Most Vietnam commercial banks implemented digital banking at the transformation of processes and communication channels, while the transformation of new data platforms has just been implemented at some pioneering banks. Some typical services of commercial banks can be mentioned as: Digital Lab digital banking space developed by Vietcombank; LiveBank of TPBank; Timo digital banking application of VPBank; Vietinbank has developed a new generation corebank and a modern enterprise data storehouse; MBBank uses ChatBot virtual assistant application available 24/7 on social networks.

As a developing country, Vietnam has been facing the challenges of growth. The cost of hot growth over some past years is environmental pollution, serious ecosystem degradation. According to Dr. Pham Hoang Mai (2015), Director of the Department of Science- Education-Natural Resources and Environment of the Ministry of Planning and Investment, to solve this situation, a huge amount of USD 30 billion was needed for the green growth strategy to 2020. Therefore, in the national strategy of Green Growth, green banks will play a very important role in contributing huge capital. According to the plan, 30% of total capital will be allocated and supported by the budget, the rest will be mobilized from the non-state sector. The development of green credit in our commercial banks positively contributes to the balanced and harmonious development between economy, environment and society; to contribute to hunger eradication and poverty reduction; to avoid ecological risks that many countries had encountered due to too much emphasis on economic growth. On the part of enterprises, green credit development is an opportunity for them to access preferential loans in Vietnam and abroad, as well as receiving long-term support from the State; to avoid environmental risks and contribute to the sustainable development themselves. However, at present Vietnam banks lack experiences in deploying new technologies and credits for new energy; they often consider risks of these projects so high that capital support is not as much as conventional projects. The common "disease" of Vietnam banks today is that focusing too much on collaterals instead of cash flow invested in the projects; they prefer short-term projects, while not approve longer-term energy programs.

Obeying the Government's direction, the State Bank issued Directive No. 03/CT-NHNN dated March 24th, 2015 on promoting green credit growth and managing environmental and social risks in credit granting. Under the plan of the State Bank, from 2015 credit granting should focus on environmental protection, improving the efficiency of natural resources and energy use, improving environmental quality and protecting human health, and ensuring sustainable development.

Recently Decision No. 1604/QD-NHNN on the approval of the Green Bank Development Project in Vietnam aiming to increase social awareness and responsibility of the banking system on environmental protection, climate change, gradually greening banking activities; to direct credit flows into financing environmentally friendly projects; to promote green manufacturing, services and consumption, clean energy and renewable energy sectors; to actively contribute to promote green growth and sustainable development; specifically in 2015, 100% of banks will have internal regulations on environmental and

social risk management in credit granting, 100% of banks will carry out socio-environmental risk assessment; to apply environmental standards for projects funded by banks, and to do environmental risk assessment; at least 10-12 will banks have specialized units/departments in charge of environmental and social risk management; 60% of banks will be able to access green capital and deploy loans for green credit projects. In the Vietnam Banking Industry Development Strategy to 2025, orientation to 2030, issued with Decision No. 34/QD-NHNN dated 07/01/2019, the goal was to promote the development of non-cash payment, optimizing ATM and POS networks; by the end of 2020, the proportion of cash in total payment means will be below 10%, by the end of 2025 this figure will decrease to 8%.

In order to facilitate credit institutions to implement Directive 03 effectively, the State Bank will continue to cooperate with International Finance Corporation (IFC) in developing tools to assess environmental and social risks for some specific economic sectors, in order to support Vietnam banking system. The Vietnam State Bank and IFC will jointly organize training courses on the use of environmental and social risk management tools for core staff at banks.

Currently Vietnam do not have any bank that is considered a 100% green bank. We just have some banks providing green services or lending activities associated with environmental commitments. However, in recent years, under the close guidance of the Government through strategies and orientation documents, many domestic banks have started to pay attention to green credit, such as VietinBank, Techcombank, Sacombank ... They actively deploying green credit products like energy-saving, renewable energy, and clean production loans. According to the State Bank of Vietnam (2020), 19/35 banks have developed strategies to manage environmental and social risks; 19/35 banks have integrated environmental and social risk management into the green credit assessment process; 10/35 banks have built credit products and banking services for the green sector and been interested in granting medium and long-term green credit with preferential interest rates.

4.3. Some typical models of green banking development in the context of digital transformation in Vietnam

BIDV - The Green Bank strives for our community

Throughout its 47-year journey of construction and development, Bank for Investment and Development of Vietnam (BIDV) has always been a pioneer and an example in doing social responsibility, following activities which bring great benefits to the community, and cooperating with the whole society to make living environment green and clean. For its contributions to green growth and sustainable development, BIDV was awarded the Top Ten Sustainable Enterprises in 2018, 2019, 2020 in the field of Trade and Services.

On February 21st 2022, the Agency of French Development (AFD) and Eximbank co-hosted the "Asia-Pacific Sustainable Finance" Forum in Paris (France) and connected to many places around the world. This was an event on the sideline of the European and Asia-Pacific Ministerial Forum. BIDV attended the Forum as AFD's main partner in the Asia-

Pacific region, and one of the key banks arranging and financing many energy development investment projects in Vietnam. At the conference, Mr Tran Long, Deputy General Director of BIDV, on behalf of the bank to represent the topic "Accelerating the Energy Transition: Turning commitments into practical actions", thereby affirming the inevitable trend of developing renewable energy sources to limit greenhouse gas emissions, to protect the environment and to reduce the dependence on fossil fuels.

In order to effectively implement the State Bank's guidance on green bank development, BIDV has urgently studied and approached international practices and recommendations, such as the Safeguard Policy Statement and Gender and Development Policy of ADB, the environmental and social protection requirements of IFC to promulgate the Framework managing BIDV's own environmental and social risks. Since then, BIDV has promoted the framework of its green bank development. Key highlights of this framework include:

(1) BIDV aimed to ensure a strong and transparent commitment for sustainable development, environmental and social protection. Accordingly, the Bank committed to make efforts to promote effective environmental and social risk management practices in all its activities. The Bank committed to finance only projects and business plans designed and operated in accordance with environmental and social protection requirements

(2) BIDV strictly conducts the E&S risk assessment process in parallel with the credit extension process in three main steps: (i) screening business plans/projects; (ii) classify E&S risks; (iii) evaluate E&S risks in details to classify business plans/projects into appropriate groups. For this purpose, based on the Handbook of environmental and social risk assessment guided by the Vietnam State Bank, BIDV has issued its own handbook which is more detailed and easier to apply in the implementation process. All SME employees and relationship managers have been required to follow this process.

(3) BIDV requires all its branches to include environmental and social protection provisions in the Credit Agreement or the Environmental and Social Protection Agreement (which is an annex of the Credit Agreement). Accordingly, customers must commit at least these following: (i) to comply with Vietnamese laws and international social and environmental standards; (ii) to take measures or actions to overcome negative impacts which the projects/business plans has on the environment and society within the agreed period; (iii) to undertake to notify BIDV immediately whenever any incident or accident causes serious impacts on the environment and society, also to develop action plans to remedy such incidents/accidents; (iv) to undertake to provide BIDV with permits and evidences to demonstrate their compliance with socio-environmental commitments. These commitments must be consistently fulfilled during the credit term. Besides, penalty provisions should also be introduced in case customers violate environmental and social commitments. After the loans are approved, BIDV will report and monitor the customer's compliance with environmental and social terms and conditions.

BIDV has also concretized regulations on the implementation of environmental risk assessment when appraising and approving credit grants. BIDV was the first bank to issue regulations on the Environmental and Social Risk Management Framework for projects

financed by the Asian Development Bank (ADB), with which encouraging other projects to apply. In 2021-2022, BIDV coordinated with GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) and CBI (Climate Bond Initiative), along with the support of the Vietnam State Bank to develop a standard framework for green bond issuance.

Green credit activities are classified by BIDV into 12 different sectors and there are currently 8 sectors having outstanding loans, focusing mainly on renewable energy, clean energy, waste treatment and pollution prevention. Since 2018, BIDV has decided to stop considering financing coal-fired power projects having adverse impacts on the environment. Until the early 2020, BIDV's total outstanding debt for green projects is more than VND 20 trillion. As of 31/12/2021, outstanding debt of coal-fired power projects decreased to about 110 million USD, and debts has only been collected until the loan term of the projects expired. BIDV's credit scale for renewable energy reached more than \$1,7 billion, accounting for 36% of outstanding loans for renewable energy in Vietnam. BIDV has also made sustainable growth and promoting green growth important goals in the Bank's Business Development Strategy for the period of 2021 - 2025, vision to 2030.

BIDV has successfully mobilized many capital sources to develop green credit from international organizations. One of them was World Bank (WB) for the Renewable Energy Project and Energy Saving Efficiency Project. In May 2021, BIDV was funded by AFD with \$100 million of SUNREF green credit line without government guarantee. In only six months of implementation, 100% of the credit limit has been disbursed by BIDV to support enterprises investing in renewable energy.

Among credit institutions in Vietnam now, BIDV is the only financial organization that can implement the function of "Wholesale Bank" for the "green credit" funded by World Bank through a series of Rural Finance Projects I, II, III, and the Project on Sustainable Agricultural Transformation. Total amount of WB loans was over \$650 million. Under the projects, BIDV provided wholesale loans to credit institutions so that they can directly relend to final borrowers who must meet socio-environmental conditions required by the World Bank.

For more than 20 years, BIDV has maintained and promoted its role as a pioneer bank in efforts to implement, supervise and comply with environmental protection commitments, contributing to building a green ecosystem.

Vietinbank - The action plan

A typical commercial bank in the green banking movement is Vietinbank. According to Mr. Le Duc Tho (2022), General Director of Vietnam Joint Stock Commercial Bank for Industry And Trade (VietinBank), environmental issues may cause businesses to suffer losses, some projects had to suspend operations due to environmental pollution.

VietinBank built a green bank development orientation by issuing a decision to establish the project implementation committee; perfecting appropriate mechanisms and policies to achieve such goals such as: reviewing/updating contents of policies on social environment management in credit granting to suit the Bank's new model; developing annual credit orientation having content on environmental management; building guidelines for appraisal of social environment in credit granting.

In 2011, VietinBank issued environmental - social policies in credit granting activities to regulate the assessment of the impact of plans and projects on the environment - society; to provide solutions to achieve goals of sustainable development. VietinBank's appraisal process currently requires the credit granting bank to assess the impact of the project on the environment - society; to assess the environmental and social security risk of the project before granting credit; to check the loan documents if they have an approved environmental impact assessment; to restrict credit granting for projects that are likely to seriously affect environment - society.

VietinBank has issued an action plan with very specific contents:

(1) To formulate its orientation which is developing "Green Bank" by issuing the decision on establishment of the Project Implementation Committee; to complete appropriate mechanisms and policies towards the following objectives: Reviewing/updating contents of policies on socio-environmental management in credit granting in accordance with VietinBank's new activity model, developing annual credit orientations in which include environmental management, formulating guidelines on socio-environmental appraisal in credit granting.

(2) To strengthen the capacity of staff in the implementation of "Green Banking - Credit" by organizing training and propaganda in order to raise awareness on this slogan, efficient energy and natural resources use and saving and environmental protection.

(3) To find and build up solutions to promote "Green Bank - Credit" products, supporting businesses to implement green growth; to encourage the focus on bank credit capital for projects and business plans which mitigate and adapt to climate change; to develop modern banking services using high technology and being environmentally friendly.

Since 2015, VietinBank has promoted activities to seek global preferential capital to finance green sectors. The most important result VietinBank got was the signing of a cooperation agreement between the Bank and IFC. This agreement will create abundant capital for VietinBank to implement preferential policies. IFC also supports the Bank with knowledge and experience in financing and implementing Green Credit loans. Under this agreement, VietinBank determined to give priority to green credit for projects promoting CO₂ emission reduction and energy saving. In the framework of their cooperation, IFC has supported VietinBank to develop an effective energy financing strategy, coordinating with a specialized team at VietinBank to organize professional training on appraisal and lending for energy saving projects, and to build energy-saving financing products. Besides, VietinBank also actively approaches green international capital through focal points such as the World Bank, Asian Development Bank, European Investment Bank...

VietinBank has granted credit to enterprises investing in machinery and equipment, supplementing working capital for producing and trading environmentally friendly and good-health products. Programs oriented by the Government and the State Bank have been also quickly implemented by Vietinbank such as: Rural Agriculture Loan under Decree 55, High-tech Clean Agriculture Loans, Supporting Industry Loans...

Corporate customers operating in the green sectors have been actively applied preferential policies by VietinBank through appropriate credit products/programs such as:

Accompanying with Corporate customers, VietinBank SME Stronger on preferential package of interest rates and fees... Among these VietinBank's plans are optimizing capital efficiency, improving operational efficiency, expanding production and business, increasing incentives based on industry-specific.

VietinBank has also actively built up credit products, incentive programs, insurance combos for solar power projects, guidelines on granting credits for solar farm and wind power projects. Credit products have been made specifically for each specialized industry such as: Unsecured loans on the cash flow management from export contracts; import-export factoring, agricultural chains to provide financial support for individuals and organizations. For individual customers the Bank has applied lending policies for cultivating and taking care of seasonal crops and livestock.

By the end of June 2020, VietinBank's total outstanding loans in the agricultural sector reached around VND 140.000 billion, focusing mainly on financing clean agricultural projects with the proportion accounting for 70% of outstanding loans. For the implementation of green credit, the Bank achieved many positive results with more than 600.000 green credit financing contracts, the total green credit balance reached approximately VND 17.000 billion (accounting for 12% of total outstanding loans in the agricultural sector). Among them, the fields of renewable energy, clean energy, sustainable water management in urban and rural areas, waste treatment and pollution prevention accounted for 98% of total outstanding loans.

5. Discussion and Conclusion

Building up long-term development strategies

In order to widely and effectively develop the green banking model in Vietnamese society, along with the green growth of our whole economy, we need to have a comprehensive study to build up long-term green banking programs for restructuring banking sector on the basis of national macroeconomics and protecting the community ecological environment. Accordingly, specific action plans need to be implemented with particular progress and expected results. To do so, it is necessary to have the direction and support from the Government and the State Bank of Vietnam in their guidelines, policies, mechanisms... as well as the efforts of each Bank in our country.

The State Bank should develop an appropriate development roadmap and mechanism to facilitate commercial banks to deploy more products of digital transformation. In the process of building and proposing solutions to complete the Fintech ecosystem in Vietnam State management agencies in general, and the State Bank in particular, need to create favorable conditions for Fintech businesses to develop fast and sustainably. Be noticed that these conditions must be in line with the Government's policies and orientation towards a digital economy in the future.

Commercial banks should have long-term development plans to take advantage of the technological advances of the Fourth Industrial Revolution, to continue to implement new payment models in urban, rural, and remote areas. Domestic banks should actively cooperate with foreign financial groups and banks to develop green banks because large

multinational banks such as HSBC, ANZ ... can accelerate the green movement towards a sustainable future.

As a developing country, Vietnam should learn experiences of the world's leading countries in developing green banking and green credit, applying advanced technologies and solutions which are suitable to our country's circumstances and potentials. Today the model of local banking is popular in the world, which can be applied well to many regions of Vietnam, especially locals whose economy is less active than others. A local green bank will be a great source of support for local green society, education, housing..., creating great and direct benefits for the community.

Raising awareness

Currently the concepts of green finance and green banking in Vietnam are still new. Green finance solutions are very few. There are not many green banking solutions in the green growth strategy. Traditional commercial banks are not ready to provide green financial products and services. Therefore, the State Bank and our Government need to raise banks' awareness about the benefits and efficiency of providing green credit and capital.

Once green banking become a popular model in people's awareness and actual operation of commercial banks, business standards and social responsibility of banks and credit institutions will be higher and higher. Our community will benefit more from ethical business practices and protecting living environment.

Improve the legal system of Vietnam

In order to meet modernization wave of digital transformation, the Vietnam State Bank needs to continue reviewing, revising and completing its legal system in order to facilitate and support the development and operation of digital banks; supporting and promoting new products and services; building up a legal environment to promote innovation of Fintech organizations, to encourage safe and effective Fintech solutions.

The banking industry should continue to actively implement the Prime Minister's Directive No. 16/CT-TTg on enhancing capacity to approach the Fourth Industrial Revolution, in which focus on completing the legal corridor to support payment activities, payment systems, security for banking operations; increasing investment in upgrading IT infrastructure and national interbank payment system. A very important issue that the banking industry should focus on is the training for human resources to be able to adapt very high requirements of digital transformation. In the long term, it is necessary to study and complete the legal framework for securities trading, settlement and clearing when new transaction and payment models (such as payment through e-wallets, clearing in the blockchain system) are formed by the application of technology. At the same time, our legal agencies should open legal regulations relating to information security and information security.

Aligning green banking with banking culture

Applicating green banking models will contribute to create a culture in customers' use of banking services. When using banking services becomes more convenient, preferential and less expensive (through online banking, green accounts and green credit

cards...), consumers will tend to use them more and more. This will raise social awareness in the use of banking services, creating a future society where financial and banking services become an indispensable part of daily life.

Investing in technology infrastructure

Commercial banks need to be more active in modernizing information technology systems, upgrading new-generation core banking system, investing in fundamental technologies of the industrial revolution 4.0 to meet the development trend of digital banking...; constantly researching and applying new breakthrough solutions (such as innovative payment solutions, mobile payment via QR code, digitizing card information, chip payment technology...), building up connection platforms, sharing open data through application programming interface (open API), Big Data Analytics, Artificial Intelligence ... in order to provide convenient, reasonably priced banking products and services in the direction of digitalization and intelligence, bringing practical benefits to customers in the digital era.

Green banking and green accounts require a high level of technology to serve online services, and to meet diverse needs of customers. Therefore, to develop online banking system and green payment accounts, commercial banks must be equipped with modern information technologies in the world today, they must have high-quality human resources to use and operate their systems.

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IMPACT OF CLIMATE CHANGE ON SOCIO-ECONOMIC ACTIVITIES IN VIETNAM

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Abstract

In recent decades growth has been based on the exploitation of natural resources; competition, scramble for resources to serve the growth needs, causing resource depletion, environmental pollution, climate change. Climate change has negative impacts on economic and social development. The socio-economic losses due to the impacts of climate change plus the costs of repairing damage reduce the economic growth of many countries, including Vietnam. Climate change will reduce economic growth and create unsustainable growth cycles, climate change will seriously affect productivity and output of industries such as energy, industry, , transportation, agriculture - forestry,... Climate change is tending to cause a lot of damage to the economy and society of Vietnam. Therefore, in order to be able to stabilize and develop socio-economic in the current period, preventing the negative impacts of climate change as well as implementing response solutions is becoming an urgent task every day. head to Vietnam.

Keywords: *Growth, economy, society, climate change*

1. Introduction

Until now, although the quality of economic growth has been paid more attention, GDP growth rate is still an important indicator to assess the health and size of the economy. The race to achieve high GDP is approaching the limit of nature's tolerance, causing environmental pollution and climate change. In turn, climate change reduces economic growth, causes instability to social security and becomes one of the global non-traditional security problems, threatening the survival of the world. of humanity.

Experts say that climate change is tending to cause damage to a number of countries, especially coastal countries. Therefore, preventing the negative effects of climate change as well as implementing response solutions is becoming a top urgent task for many countries, including Vietnam.

According to worldbank.org 2022 After more than two decades of steady growth, Vietnam has set an ambitious goal of achieving high income by 2045. According to the Socio-Economic Development Strategy 2021-2030, The outcome of the country's economic transformation will depend heavily on effective management of natural capital - the vast

reserves of agricultural, forest and mineral resources that have helped drive development in Vietnam. However, with more than 3,200 km of coastline, many low-lying cities and river deltas, Vietnam is one of the most vulnerable countries in the world to climate change. The effects of climate change - primarily higher temperatures and sea levels and greater volatility - have been disrupting economic activity and undermining growth. Initial calculations show that Vietnam will lose \$10 billion by 2020, or 3.2% of GDP, due to the effects of climate change.

Without appropriate mitigation and adaptation measures, it is estimated that climate change will cost Vietnam between 12% and 14.5% of GDP per year by 2050 and could put up to one million people in extreme poverty by 2030. In the face of climate change, reality requires appropriate policies to adapt and mitigate the impacts of climate change and protect the environment for sustainable development. In the long term, it can help Vietnam develop a strategy to respond to climate change in the future.

2. Method

Analytical methods: Statistical methods, mathematical modeling methods, synthesis methods, inheritance are used to build the report.

Data collection method: The data used in the Report are inherited from the project "Update scenarios of climate change and sea level rise for Vietnam" under the Target Program to respond to climate change and green growth in the period 2016-2020. The data on temperature, precipitation at 150 meteorological stations and sea level data at 15 hydrographic stations were collected from the year starting with data from 1958 (for monthly data) and from 1961 (for monthly data). daily data) to 2018, some data related to extreme weather events will be updated to 2020, climate change scenarios to 2100 climate change assessment reports of the Ministry of Natural Resources and environment.

3. Impact of climate change on socio-economic activities in Vietnam

Under the impact of climate change, the frequency and intensity of natural disasters is increasing, affecting living conditions and socio-economic activities; causing a lot of loss of life, property, infrastructure, economy, culture, society, bad impact on the environment.

3.1. The impact of climate change on agriculture

The impact of climate change on agriculture is assessed for the fields of cultivation, animal husbandry, forestry and fishery in terms of the impact on productivity, production of livestock and crops.

3.1.1. Crop

The average yield of some crops (rice, maize, sweet potato, soybean, sugarcane) is the average national average in the base period and the periods 2016-2035, 2046-2065, 2080-2099 according to the scenario scenarios. Representative Concentration Pathways RCP4.5, RCP8.5 and changes in crop yield over time under climate change scenarios compared to baseline are presented in Table 1.

Table 1. Crop yield under national average scenarios

Ordinal number	Climate Zone	1986-2005	Scenario RCP4.5			Scenario RCP8.5		
			2016-2035	2046-2065	2080-2099	2016-2035	2046-2065	2080-2099
Crop yield (ton/ha)								
1	Winter-spring rice	4,83	5,50	6,18	6,71	5,51	6,45	7,55
2	Seasonal rice	3,67	4,16	4,58	4,82	4,21	4,80	5,46
3	Corn	3,73	4,26	4,77	5,01	4,29	4,97	5,86
4	Sweet potato	7,14	7,93	8,73	9,14	7,96	9,05	10,33
5	Soybean	1,48	1,68	1,88	1,98	1,69	1,96	2,32
6	Sugarcane	47,27	48,74	48,24	48,45	48,35	48,21	47,96
Change in crop yield compared to the base period (%)								
1	Winter-spring rice		13,78	27,89	38,86	14,00	33,50	56,36
2	Seasonal rice		13,48	24,90	31,45	14,82	30,71	48,79
3	Corn		14,06	27,78	34,20	14,86	33,18	57,06
4	Sweet potato		10,94	22,25	27,94	11,41	26,67	44,58
5	Soybean		13,72	26,60	33,44	14,09	32,02	56,41
6	Sugarcane		3,11	2,05	2,49	2,27	1,98	1,46

Source: Climate change assessment report of Department of Natural Resources and Environment, 2021

On average for the whole country, crop productivity in the periods under the scenarios RCP4.5 and RCP8.5 both increased compared to the baseline period and increased gradually over the periods 2016-2035, 2046-2065. and 2080-2099. Particularly for sugarcane, the yield increase is much less than that of other crops with a gradual increase over the periods 2016-2035, 2046-2065 and 2080-2099 under the RCP8.5 scenario; the rate of increase gradually decreased through the periods 2016-2035, 2046-2065 and increased sharply again in the period 2080-2099 but still smaller than the period 2016-2035 under the RCP4.5 scenario (Table 1).

Considering the average of climate zones, yield of winter-spring rice, summer rice, maize, sweet potato and soybean in the periods under the scenarios RCP4.5 and RCP8.5 all increased compared to the baseline period and the level increasing gradually over the periods 2016-2035, 2046-2065 and 2080-2099 in all 7 climate zones.

3.1.2 Animal husbandry

Climate change, storms, floods and extreme weather events such as abnormally hot sun, extreme cold, and severe cold seriously affect the health, fertility, growth and development of livestock, poultry. In addition, climate change also reduces the supply of

feed for livestock. Severe cold, harmful cold kills a series of livestock and poultry in the plains, midlands and mountainous areas. Only in the first 6 months of 2016, 44,000 poultry and 20,000 cattle died due to the effects of droughts in the Central Highlands, South Central Coast and Mekong River Delta [4]. Unusually hot weather reduces livestock productivity; increase feed costs, energy costs for cooling; reduce the resistance of cattle and poultry. Sea level rise and saline intrusion make the area of grass land shrink, affecting the source of food for livestock. Climate change impacts on livestock include changes in production and quality of animal feed and feed, increasing disease outbreaks [5]. The impact of climate change on pig production is expected to reduce the total pig herd by 1.1% due to climate change in Vietnam [11].

In the winter-spring crop of 2007-2008, the number of cattle that died from hunger and cold was over 200,000; In the 2010-2011 Winter-Spring crop, severe cold and damaging cold lasting for more than 40 days caused great damage to livestock in the provinces, with a total of over 90,000 dead cattle. In recent years, due to the proactive prevention of natural disasters, the number of victims has decreased year by year.

3.2. Forestry

Under the impact of climate change, changes in temperature and precipitation are directly related to and affect forests and forestry [14].

Millions of hectares of bare land, bare hills have lost forests for many years, the physical and mechanical characteristics of the soil such as porosity, cohesion, permeability, nutrient content and microbial content are significantly reduced, the soil becomes dry, hard, compacted, unsuitable for cultivation. Topsoil becomes susceptible to erosion, leaching, accumulation of iron and aluminum, causing caking and laterite formation, and the ability of agro-forestry production is severely reduced [14].

Climate change threatens forest biodiversity, increases the risk of deforestation, the risk of conversion of forest land use and thus increases the risk of greenhouse gas emissions. Increased temperatures and reduced rainfall will increase the risk of forest fires, increase disease outbreaks and reduce the ability of forests to withstand the effects of climate change. Climate change will change the nesting and structure of some types of forests, forcing species to migrate and find ways to adapt to new living conditions. Climate change will increase the risk of extinction of some plant and animal species, making it difficult for biodiversity conservation. Some species, if they cannot adapt to their new habitat, will forever disappear from the planet. According to forecasts, by 2070, tropical plants in the high mountains will be able to live at an altitude of 100÷550 m and move northward 100÷200km (Vietnam Initial NatCom, 2003) [14]

The area of dipterocarp forest in the Central Highlands is likely to shrink rapidly, accounting for about 1.5% of the current area and sharply reduced by 2100. Climate change may cause more severe drought in the dry season, causing loss of land. characteristics of the dipterocarp forest. Large tree species may gradually disappear and the land will become increasingly arid and deserted instead. Dipterocarp forests can easily become grasslands,

poor. The total area of suitable climate zone for dipterocarp forest is only about 300,000 ha, or about 0.9% of the national natural forest area (compared to 1.2% in 2000) [20].

3.3. Seafood

- Impact due to increased temperature

Temperature has a great influence on the growth and development of cultured aquatic animals. Temperature affects the metabolic rate, reproductive rate and development of aquatic organisms. Research results show that, if the number of hot days above 35°C in a year increases by one day, it will reduce shrimp production next year by 0.4%, two years later by 0.6% and three years later, decreased by 0.4% (Institute of Fisheries Economics and Planning, 2016).

- Impact of rainfall change

Some studies have shown that a sudden increase in rainfall causes salinity in brackish water ponds to drop rapidly, causing "sweet shock" for farmed shrimp as well as changing pH in ponds or rainwater from Surrounding water bodies pouring down will bring pollutants to the farmed animals, on the other hand, heavy rain will cause flooding, overflowing banks and washing away aquatic species.

- The impact of extreme climate events

Storms and tropical depressions will wreak havoc on the infrastructure of the farming area such as landslides, dikes, irrigation canals, tents, supplies and equipment, or cause great damage to fishing boats at sea.

- Impact of sea level rise

Sea level rise often affects fishery production in two aspects. Firstly, it causes saltwater intrusion in coastal areas, leading to changes in salinity in aquaculture and feed water bodies, leading to changes in the habitat of aquaculture species in brackish water and freshwater adjacent to the sea. At that time, the structure of cultured subjects will have to change to adapt to the change of salinity in the water source. The second is the impact of sea level rise in combination with storm surge, often causing great consequences and damage to coastal fisheries infrastructure, damage to fishing boats, damage to coastal aquaculture cages. sea, road landslides, broken dykes surrounding farming areas, overflowing banks causing loss of farmed fish and shrimp, deterioration of water quality. [3].

3.4. Impact of climate change on industry

Industries, especially the processing and manufacturing industries, will be affected by climate change due to the source of raw materials for industry, especially raw materials for the food processing, textile and garment industries. will be significantly reduced due to lack of supply from raw material areas in the Mekong Delta provinces, which are expected to suffer the heaviest flooding. This will put pressure on the restructuring of industries in terms of industrial type, proportion of processing industry and high technology.

Rising temperatures lead to increased energy consumption in industries: increasing ventilation and cooling costs for mining pits and reducing the efficiency and output of power

plants. Electricity consumption for domestic use increases and cooling costs in commercial industries also increase significantly as temperatures tend to increase.

Irregular rainstorms and sea level rise will negatively affect the operation and exploitation of power transmission and distribution systems, drilling rigs, inland oil and gas pipelines, and oil supply to oil tankers. ; increase the cost of maintenance and repair of energy facilities; affecting the supply and consumption of energy and national energy security. [10].

3.5. The impact of climate change on cities

Climate change is a major threat to urban infrastructure and quality of life. In the context of climate change, cities are predicted to be more severely impacted due to the increase in intensity, frequency and severity of natural disasters. Depending on geographical location and exposure to natural disasters, urban areas in Vietnam will be affected differently. Urban types include industrial zones, economic zones and cities in different geographical regions including from North to South; and different terrains including coastal, midland, mountainous and lowland areas.

Urban areas including industrial zones and economic zones distributed in the West and in the main river basins will be affected by floods and inundation. Cities in coastal areas are vulnerable to disasters related to storms, floods and sea level rise, increasing risks to urban assets, livelihoods and infrastructure. Urban areas, industrial zones, coastal economic zones and urban areas in the Mekong Delta will be mainly affected by sea level rise. The area from the North to the South-Central Coast is affected by tropical depressions and storms, but coastal cities are affected by storms more seriously than other urban areas. Midland and mountainous urban areas in the North and Central are often affected by circulation after storms, causing floods, flash floods and landslides [2]. In urban areas, solid waste treatment systems and systems Urban water supply and drainage systems are the key objects affected. Increased rainfall will cause flooding of storage points, routes of collection, transportation, transshipment, and disruption of solid waste treatment at some point in time. Climate change also affects water supplies (surface water, groundwater) and water supply systems including focal works and water supply networks [6].

Climate change and urban development are closely related and often interact negatively. Rapid urban development has a strong impact on nature and increases the frequency and severity of natural disasters. The strong development of urban areas, energy use and construction of infrastructure, high-density buildings... all turn cities into energy consumers and create many pollutants. When the ground is gradually "concreted", the space is occupied, the water permeability of the city in the event of heavy rain will decrease. The loss of water collection areas to save land for construction makes existing urban areas and newly planned areas increase the likelihood of flooding due to heavy rains.

3.6. Impact of climate change on transportation

Transport plays an important role in the socio-economic activities of each country, especially for a country with an emerging economy like Vietnam. In the last two decades, Vietnam's transport network, although invested and expanded, is increasingly facing the risks of

various types of natural disasters and climate change [13]. Because the road transport network has a high exposure to climate change, the analysis focuses mainly on the road transport system in the regions of mainland Vietnam, bordering China to the north, Lao PDR and Cambodia to the west, accessible by road and surrounded by coastal roads to the east and south.

Among types of natural disasters, floods, flash floods and landslides pose many potential risks to the transportation industry. The road sector was identified as the hardest hit, followed by railways and inland waterways. Under climate change scenarios, up to 14.5% of the total length of the national highway network is at high risk of flooding, mainly concentrated in the Dong Nai river basin and part of the region. Southwest region; There are 14/936 road bridges, accounting for 1.5% in the medium flood risk area and 0.7% in the high flood risk area [1].

An increase in rainfall will make 20% of the total length of the national highway network at risk of landslides, mainly concentrated in the northern mountainous areas and the Central Highlands; There are 458 out of 936 road bridges, accounting for 49% of the average landslide risk area and 4% of the high risk area. About 20% of the total length of the railway network is at risk of flooding, mainly concentrated in the central coastal area. Increased rainfall will make 8.8% of the total length of the railway network at high risk of landslides, mainly concentrated in the North - South railway line, the Central section [106].

According to a report by the Ministry of Transport in collaboration with the World Bank and the German Organization for International Cooperation in 2019, about 20% of the transport network will be vulnerable to disaster risks and climate change. resulting in losses of up to \$1.9 million per day for road incidents and \$2.6 million per day for railway incidents. Roads are the object most affected by flooding and the railway system is most affected by landslides. According to the RCP4.5 scenario, about 786÷1,180km of national highways, 97÷121km of railways will be affected by flooding, 222km of national highways in 15 northern provinces are likely to be affected by flash floods, and 320km of roads will be affected by flash floods. National highways in the northern provinces are at risk of landslide impacts. The research results show that in the future for roads, important sections of National Highway 1A are mainly exposed to risks from landslides and storms, while floods due to rising river water affect other areas. linked around Ho Chi Minh City and Thua Thien-Hue, flash floods affected several mountainous provinces. For railways, important sections of the railway network are at risk mainly from landslides and storms, while river floods affect a small section of the link near Quang Nam and Thua Thien Hue provinces. [13].

3.7. Impact of climate change on energy

The energy sector accounts for nearly two-thirds of total global greenhouse gas (GHG) emissions and is a major driver of climate change [22]. Conversely, climate change is also having significant effects on the sector. The phenomenon of abnormal weather and extreme climates occurring frequently and irregularly has strongly affected energy supply and demand, directly affecting the coal, power generation, oil and gas industries and threatened insecurity. energy security of the country. Climate change not only further

increases the level of energy dependence, especially import demand, leading to supply instability as well as geopolitical dependence, but also has a great impact on security. secure and stable energy supply, interrupting, stagnation, and even paralysis for a long time [19]. As for the power system, when the air temperature increases, the load of the power system increases, leading to the power plants, power lines and power stations having to operate with higher intensity. For coal, oil, gas, biomass and nuclear power plants, when the air temperature increases, the water temperature increases, leading to an increase in the circulating water cooling the condenser, reducing the turbine efficiency- bin, which wastes fuel.

The increase in air temperature leads to an increase in energy consumption demand due to the use of many cooling devices. The forecast results of climate change impacts show that in 2030, primary energy demand will increase by about 391.7 thousand tons of oil equivalent, accounting for 0.17% of total primary energy demand in 2030 [9]

Increased rainfall has a positive effect on hydropower plants in increasing the capacity of hydropower plants, storing water for reservoirs. The electricity output of hydropower in the period 2080-2099 increased by about 4% compared to the background period. However, abnormal rainfall and flows also affect the ability of hydroelectric plants to supply and regulate electricity production plans; causing damage, damage to the electricity supply infrastructure, increasing the cost of new investment, renovating, repairing and upgrading equipment, electricity distribution network, oil rigs built on the sea, Oil and gas transportation systems, and gas-fired power plants built along the coast are also affected.

3.8. Impact of climate change on public health

So far in the world in general and in Vietnam in particular, there have been significant improvements in the health of millions of people. Maternal and child mortality rates have decreased, global life expectancy has continued to increase, and the fight against a number of infectious diseases has made some progress [21]. However, climate change is threatening the gains already achieved in reducing the global burden of disease and vulnerability.

High air temperature, long-lasting heat waves as well as extreme weather events tend to increase, increasing negative impacts on human health, especially the elderly. age, people with diseases such as cardiovascular, high blood pressure, neurological, musculoskeletal, respiratory, allergies, asthma, sinus. According to statistics, when the average temperature increases by 1.0 °C, the hospitalization rate of children aged 0÷2 increases by 3.4% and the hospitalization rate of children aged 3÷5 increases by 4.6. %. When mean temperature increased by 1.0 °C, the rate of hospitalization in children under 5 years old due to respiratory infections increased by 3.8% [18].

Climate change affects human health indirectly through the sources of infectious diseases because vector-borne diseases are related to climate characteristics such as temperature, humidity, rainfall, wind intensity. . Climate change creates favorable conditions for disease vectors to develop, increasing the likelihood of outbreaks and spread of diseases such as influenza A (H1N1), influenza A (H5N1), influenza A (H7N9), diarrhea, and cholera. , dysentery, malaria, dengue fever, yellow fever, typhoid, viral encephalitis, Japanese encephalitis, severe acute respiratory syndrome (SARS), plague, Zika [16, 17].

3.9. Impact of climate change on tourism

Tourism is an economic sector that is sensitive to natural environmental conditions, so tourism is one of the industries most heavily affected by the impacts of climate change and sea level rise. In Vietnam, most tourism activities are related to climate change factors such as location and size of coastal tourist areas affected by sea level rise, storm surge, number of Sunshine hours, rainfall, and temperature background affect the organization of tourism activities [7]. Research by the Institute for Tourism Development shows that climate change directly affects tourism development in three aspects: tourism resources, tourism infrastructure and travel activities.

Tourism resources include tourist attractions, including natural tourism resources that have been formed and existed for millions of years such as Ha Long Bay, Phong Nha - Ke Bang National Park as well as other tourist areas. historical - cultural sites, scenic spots. Because the distribution of tourism resources is concentrated mainly in the coastal areas, on the islands - where the exposure to climate change is high, the impacts are expected to increase [23].

Climate change also adversely affects the infrastructure, technical facilities of tourism and travel activities. Tourist service works are damaged or degraded under the impact of strong storms and floods. Heavy rain accompanied by strong winds, storms or high temperatures also causes rapid deterioration of architectural materials, damage to the transportation system, accommodation facilities, and amusement parks.

Any change in climate and weather will also cause impacts on tourism activities, especially travel activities are often affected, delayed or even canceled due to bad weather conditions: storm, flood, flood, flash flood. Climate change increases extreme weather phenomena and directly affects passenger transport, especially by air (according to statistics of the World Tourism Organization, over 60% of tourist arrivals international travel between countries is by air) [15].

In addition, climate change has indirect impacts on tourism activities through other sectors such as transport, energy, water management, land use (for tourism services).

4. Discussion and Conclusion

4.1. Solutions to adapt to climate change

4.1.1. Local authorities need to monitor the climate and give early warning of natural disasters

To do that, local authorities should improve:

- Institutional system, promulgating and implementing Law on natural disaster prevention and control, Law on hydrometeorology as well as sub-law documents; while implementing investment strategies, programs and projects, climate change and sea level rise monitoring systems should also be built and operated effectively. Hydrometeorological forecasting technologies also need to be developed, gradually approaching the level of advanced countries in Southeast Asia, especially in forecasting and warning of storms, heavy rain, severe cold, and damaging cold. , floods and heat waves.

- Strengthening hydrometeorological stations and stations such as meteorological stations, automatic radiation measurement stations; agricultural meteorological station; global climate monitoring stations, etc. and these hydrometeorological stations in addition to measuring rain, hydrometeorological monitoring stations should have a high rate of automation to ensure timely provision and improve accuracy. accurate about Vietnam's storm forecast bulletins in order to contribute to reducing damage compared to the past and raising the level of Vietnam's storm forecasting compared to advanced countries in the region and the world.

- Forming an earthquake and tsunami warning system to guide people to respond to tsunamis, tropical depressions, storms and other types of natural disasters in accordance with the actual situation in the locality.

4.1.2. Responding to natural disasters, preventing flooding for big cities, strengthening river and sea dykes and reservoir safety

The Government needs to promulgate and implement development plannings and construction regulations in disaster-prone areas. Key and urgent disaster prevention works should be consolidated and built to contribute to reducing damage. damage caused by natural disasters in the near future.

The Ministry of Agriculture and Rural Development should have a plan for dyke maintenance and repair for provinces and cities with dikes from grade III to special grade; promulgate guidelines on technical requirements in dyke maintenance and repair; strengthening local capacity in dyke protection, getting ready for dike protection and flood control; applying science and technology in upgrading, repairing, inspecting and monitoring natural disaster prevention works.

4.1.3. Ensuring food security

To ensure national food security, especially in the context of climate change, local governments should:

- Restructuring crops, developing large-scale agricultural production in order to contribute to the growth of high-value industrial crops. In addition, a disease control system should be developed and promulgated for most crops and livestock that are suitable for natural and climatic conditions, in which the crop and livestock management agency (including aquaculture) should provide guidance and recommendations on prevention and control of diseases caused by changes in weather and climate.

- Construction of irrigation works in service of production restructuring to implement irrigation works to irrigate upland crops, high-value industrial plants and to serve aquaculture.

4.1.4. Building effective communities to adapt to climate change

Local authorities need to strengthen the capacity and participation of communities in climate change response activities:

- Sustainable livelihood development in the context of climate change: Localities throughout the country need to focus on developing and diversifying livelihoods through

activities such as changing the structure of crops and livestock, changing the structure of plants and animals. scope and scale of production, application of technology transfer...in order to adapt to climate change

- Improving community health and ensuring access to basic health services: strengthening the capacity of the health system, modernizing equipment, improving the capacity of health workers should be taken care of.

4.1.5. Forest protection and sustainable development and biodiversity conservation

Local governments need to develop forests, improve forest cover, improve forest quality, conserve biodiversity, and protect and conserve genetic resources and potentially extinct species.

4.2. Solutions to mitigate climate change

4.2.1. Energy

The Government of Vietnam needs to reduce greenhouse gas emissions in energy production facilities and large energy storage facilities in the direction of promoting economical and efficient use of energy, promoting the development of energy sources. the amount of available apples, associated with reducing greenhouse gas emissions, diversifying supply and reducing the need to import coal and oil for power production in order to fully exploit renewable and inexhaustible natural resources in Vietnam. South, reducing pressure on the national power system, increasing economic benefits for the locality.

- Eliminate inefficient, climate-unfriendly technology in industry, energy and transportation; a list of alternative technologies with appropriate emission criteria that can ensure environmentally sustainable development and improve air quality, especially in big cities.

4.2.2. Waste

The Ministry of Construction needs to conduct research on domestic waste management models in urban and rural areas to minimize environmental pollution and reduce greenhouse gas emissions. For the management of solid waste, hazardous waste (after-use pesticide packaging), a number of new mechanisms and policies on electricity production from waste, construction waste management, control control of waste from plastic bags, recovery of discarded products, use of ash and slag, etc... should be issued.

4.2.3. Industrial Process

To initially reduce emissions in the industrial process, the Ministry of Construction needs to conduct research and apply solutions to reduce CO₂ emissions in the industry of producing cement and other building materials such as glass, bricks, and tiles. , roofing sheet...; and research and develop green building materials and products (saving energy, reducing greenhouse gas emissions and reducing environmental pollution) and issuing an Action Plan to reduce greenhouse gas emissions in the industry. cement industry to 2020, with a vision to 2030.

4.2.4. Solutions to increase financial resources

Central and local state budgets, including ODA, for climate change adaptation and GHG emission reduction should be appropriately allocated to target programs related to climate change adaptation. climate change.

The Government should have solutions to increase scientific and technological resources, promote research, encourage technology transfer and effectively apply modern scientific and technological achievements, new fuels and materials in the field of science and technology. reducing greenhouse gas emissions and adapting to climate change, enhancing the competitiveness of key economic and manufacturing sectors towards developing a low-carbon economy and green growth.

4.2.5. Solutions to enhance international integration and cooperation

Vietnam continues to implement previously signed international treaties such as UNFCCC, Kyoto Protocol, Vienna Convention on the protection of the ozone layer, Montreal Protocol on substances that deplete the ozone layer, and the Protocol on substances that deplete the ozone layer. Montreal protocol.... Expanding cooperation relationship with many countries and regions, regional/regional frameworks and international forums on natural resources and environment. In addition, Vietnam also needs to mobilize international support from many climate change response support programs to support policy development on climate change response in Vietnam and mobilize resources to respond to climate change. resources for the state budget.

4.3. Conclusion

Climate change will cause many adverse effects on natural resources, environment and socio-economic development of Vietnam. However, the implementation of measures to respond to climate change will also have positive effects on the implementation of the country's socio-economic development goals.

The analysis shows that the impact of climate change on Vietnam's socio-economic is very large. Therefore, the implementation of climate change response and mitigation actions is important and necessary, contributing to promoting the development of renewable energy; develop agriculture, forestry and fishery highly adaptable to weather conditions; access and receive many sources of technical and modern scientific and technological support as well as financial support from international organizations; improve the quality of human resources in the country. Besides, it also helps Vietnam to fulfill its commitments on climate change with the international community. Assessing the benefits of actions to respond to climate change also provides a scientific basis to promote and attract domestic and foreign business investment activities for the field of climate change, contributing to bring the benefits of climate change and promote green and sustainable socio-economic development in Vietnam.

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THE CRITERIA FOR THE DEVELOPMENT OF A ZERO-EMISSION PORT - GREEN PORT

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Abstract

Green ports nowadays play a critical role in the development of a sustainable business plan that comprehends the ecological and financial workings of environmental incentive programs. The major goal of this study is to identify the standards and significant factors that influence the growth of green ports. The findings demonstrated that a variety of crucial factors, including the availability of technical innovation, environmental regulations, financial incentives provided by governments, and the collaboration of parties concerned, had an impact on the development of green ports in developing countries. The implications and discussion will be covered in great length in the study.

Keywords: *Green Port; Drivers; Regulations; Technical Advancement; Sustainability*

1. Introduction

Ports have a substantial impact on both domestic and foreign commerce as well as economic growth since they are crucial nodes in the global transportation network (Bjerkan et al., 2021). For instance, the Vietnamese economy relies heavily on ports, which lets the nation present itself as the "new Asian tiger". In the first four months of 2022, almost 236 million tons of goods passed through the ports, an increase of 3% over the same period in 2021 (Vietnam Maritime Administration, 2022). In 2021, goods were exported and imported for a combined sum of 668.5 billion USD.

Despite their significance, ports have negative environmental impacts. The main factors contributing to the air, water, and soil pollution around ports are port operations and marine traffic (Kwon, 2022). Evidence from Corbett et al. (2007) showed that greenhouse gases (GHGs) and other pollutants from maritime transportation were mostly to blame for the 60,000 annual mortality from lung cancer and cardiovascular illness across East Asian, South Asian, and European countries (Wang et al., 2020).

Various approaches have been developed over the past few decades to stop or minimize the emissions and associated external costs caused by shipping, particularly at ports that are adjacent to densely populated areas (Spengler and Tovar, 2021). The term "green port" was first used by the United Nations in 1992, but it has only recently gained

popularity as it has become clear that seaports must cut back on emissions from both current and future operations in the port region as well as the larger logistics area (Lam and Notteboom, 2014). In addition to focusing on pollution control and other environmental measures, ports must also continue to emphasize port growth (Fahimnia et al., 2015). A green port strategy should accomplish both economic and environmental objectives in order to achieve sustainable growth (Hossain et al., 2019). In order to comply with state and municipal environmental legislation, the port must incorporate corporate social responsibility (CSR), port strategy, and CSR.

Port sustainability studies have mostly concentrated on Asian countries including China, Vietnam, and Cambodia although European ports have garnered a lot of attention (Le et al., 2014; Tseng and Pilcher, 2019). Chen and Pak (2017) discovered a set of realistic and helpful sustainable performance evaluation indicators for Chinese ports like Shanghai, Ningbo, and Qingdao ports using the Delphi approach. Additionally, environmental issues including SO₂ emissions and the Kaohsiung Green Flag Incentive Program have been the focus of study in Taiwan (Chang and Jhang, 2016; Liu et al., 2014). Academic research has mostly focused over the past 10 years on how challenging it is to reduce emissions from ships and ports. The main issues revolve around reducing emissions from ships at sea, which between 2007 and 2012 accounted for 2.8% of global GHG emissions, or double that produced by air travel, primarily as a result of International Maritime Organization (IMO) restrictions on cleaner fuel (Cullinane and Bergqvist, 2014).

However, there aren't many studies that focus on the variables that influence or obstruct the green port strategy in different countries, especially in developing ones where the tension between protecting the environment and promoting economic growth is increasingly obvious. This study tries to pinpoint the key elements affecting ports' future decisions to adopt more environmentally friendly port models. Research on the elements that support and obstruct the development of green ports might be useful to the government and port authorities. The port authority may be aware of the advantages of a green port through drivers, but the government creates legislation to aid ports in the process of implementing sustainability requirements through obstacles. Additionally, this study is the first to apply a quantitative method to look at the factors impacting the adoption of green ports, surveying 10 main ports in Vietnam. The Vietnamese government's Green Port Development Scheme states that ports must voluntarily adopt sustainability standards by 2025 and must do so by 2030. Finding these elements will therefore advance the body of knowledge on green ports while also having theoretical merit.

2. Literature review

2.1. Green port

The negative effects of port activity on port stakeholders and a long-term and green port development plan include the production of air pollution, oil pollution, excessive noise, health problems, and ecological hazards (Xie et al., 2022). The key issue in ecological port is striking a balance between the impact on the environment and business interests. A green

port, also known as a green port, is therefore recommended in a number of studies as a viable remedy for this problem (Lam and Yap, 2019). According to Vellinga (2011), a green port (also known as a green port) is one where the port authority, working with port users, proactively designs and conducts, relying on an economically sustainable strategic plan, working with natural philosophy, and engaging stakeholders. Starting from a long-term goal on the location in which it is positioned and from its position of privilege within the supply chain, this port authority ensures development that anticipates the future. While Nikitakos (2012) backed the idea that a zero-emission green port would produce all of its renewable energy sources (RES), such wind turbines or a small solar park, to balance any energy consumed in managing the port's activities. In addition, according to Zis (2019), a green port is one that has either made an investment in new machinery with improved environmental performance or has developed a strategy to reduce emissions, energy consumption in operations, and water pollution, or is otherwise making an effort to become a "greener" port. The three bottom lines of economic development, social well-being, and environmental protection should be controlled and balanced by green ports, according to Lam and Yap (2019). Green ports actively incorporate climate change mitigation and adaptation measures into their policies and objectives.

2.2. Criteria for green port

The major objectives of sustainability at ports are to increase profitability, decrease CO2 emissions, find eco-friendly ways to deliver logistical services, save the environment, and use less natural resources for the benefit of future generations. The idea of sustainability, according to a research by Hiranandani (2014), is bringing mindfulness to the port business and pressing it to embrace new procedures and capabilities. Some requirements require ports to cut back on their production of greenhouse gases, air pollution, and other waste (Abood, 2007). For instance, some academics recommend the variables in Table 1 below.

A port's sustainable performance may be assessed using a range of metrics, but little has changed with regard to them over the previous three decades. Most academicians (Chin and Low, 2010; Yap and Lam, 2013) have concentrated on controlling air, noise, and water pollution. However, some studies (Chiu et al., 2014; Park and Yeo, 2012) have placed a high focus on the use of alternative energy sources and training for green port performance as important aspects in environmental conservation.

Table 1. Criteria of green port

	Criteria	Previous studies
1	Air pollution management	Bailey and Solomon (2004); Berechman and Tseng (2012); Chen and Pak (2017); Chin and Low (2010); Fitzgerald et al. (2011); Gupta et al. (2005); Papaefthimiou et al. (2017); da Silva Portugal et al. (2011); Tzannatos (2010); Wiegmans and Louw (2011).
2	Noise pollution management	Chen and Pak (2017); Lirn et al. (2013); da Silva Portugal et al. (2011); Wiegmans and Louw (2011).

	Criteria	Previous studies
3	Water pollution management	Chin and Low (2010); Frankel (1987); Peris-Mora et al. (2005); Wiegmans and Louw (2011); Yap and Lam (2013).
4	Solid waste pollution management	Gupta et al. (2005); Wenning et al. (2007); Zonn (2005).
5	Energy usage	Chen and Pak (2017); Gilman (2003); Lirn et al. (2013); Park and Yeo (2012); Peng et al. (2020); Zhen et al. (2022).
6	Natural ecosystem	Fernandez (2007); Rietkerk et al. (2002).
7	Training on sustainable port	Chiu et al. (2014); Gilman (2003).

In order to empower the personnel at the implementation level, port sustainability often necessitates considerable expenditures in new equipment, complex operating processes, and specialist training programs. Given the deteriorating profitability of the ports, port officials are worried that these issues would result in increased expenses (Chen and Pak, 2017). The adoption of green ports clearly needs strong motivators, especially in emerging countries where environmental preservation and economic expansion are at odds. Although these factors affect whether ports decide to invest or not, little research has been done on them. If these concepts are not grasped, the port greening process will take longer. So, the purpose of the next section is to look at the factors affecting how the green port plan is implemented.

2.3. The key factors of green port

2.3.1. Environmental regulations

In order to protect the port environment and lower the risk of pollution, environmental regulations include international treaties and national policies (Cullinane and Cullinane, 2013; Zis et al., 2014). The International Maritime Organization (IMO) was founded by the United Nations in 1948 to develop and enforce a comprehensive regulatory framework for shipping. It is now in charge of issues with security at sea, the environment, legislation, technological collaboration, shipping efficiency, and more. The majority of states, including Vietnam, have ratified the IMO accords. At the same time, a number of environmental rules have been established in the European Union, mostly concentrating on air pollution, biodiversity, water and marine ecosystems, soil, and other components that would lessen environmental threats. All EU members must abide by European directives. Each country must ratify the European regulation within a reasonable time limit and implement it into its legal system. Each nation creates its own environmental policy in accordance with its commitments and demands. The nation's environmental policy combines the tasks and goals of the nation (Puig et al., 2022). For instance, by the year 2030, the Vietnamese government wants all ports to operate in accordance with green port standards. Based on the justification given above, we predict that environmental laws will have a favorable influence on the implementation of green port policies (Tseng and Pilcher, 2019; Zis et al., 2014).

Hypothesis 1: Environmental regulations positively influence the implementation of green ports.

2.3.2. Lack of technical advancement

The application of cutting-edge technology in environmentally friendly ship and port infrastructure is referred to as technical development. A number of cutting-edge technologies, including as seawater filters, cold ironing technology, alternative energy sources, and monitoring systems, have been suggested for use at green ports in Cullinane and Cullinane's (2013) research. Seawater is pumped, for instance, in the cramped scrubber of a ship. The scrubber receives ship exhaust gas, which interacts with saltwater there. According to Andreasen and Mayer (2007), when SO₂ comes in contact with seawater, a rapid and efficient reaction takes place, changing the SO₂ and Calcium Carbonate (CaCO₃) in the saltwater to CO₂ and Calcium Sulphate (gypsum), an essential component of ordinary seawater. Additionally, cold ironing is the technique of feeding a ship with electricity from the land rather than using its auxiliary engines while it is berthed. The capacity to shut down all engines is the result of this. Only when on-shore power is generated from renewable energy sources can cold ironing minimize greenhouse gas emissions (Green et al., 2008). In truth, it has been found that cold ironing reduces overall transportation-related greenhouse gas emissions by less than 0.5% (Frey, 2008). In addition, the development of advanced monitoring systems has made it feasible to locate potential pollution sources and provide timely pollution control actions (Tseng and Pilcher, 2019). In order to reduce emissions into the environment and support environmental goals, complementary or alternative energy sources including wind, solar, and biofuels can be used (Cullinane & Cullinane, 2013).

Finally, technology may be used to rethink operational procedures in order to develop sustainable business models and manage contaminated trash more successfully in ports and on ships (Di Vaio et al., 2022a). In the cruise industry's efforts to achieve the United Nations 2030 Agenda for sustainable development through sustainable trash management, for instance, Di Vaio et al. (2022a) highlighted the importance of digital technology. Digitalization and modern technology allow for decreased atmospheric emissions, but more crucially, more efficient resource use, which encourages a shift in the business model to achieve sustainable development goals (Di Vaio et al., 2022b).

According to previous research (Chang and Wang 2012; Cullinane and Cullinane 2013; Di Vaio et al. 2022a), advanced technology is essential for the port to meet its sustainability goals. However, the technology utilized in green ports poses a big problem for ports today. Most ports in underdeveloped countries have outdated equipment, which is bad for the environment. Access to new technologies will be challenging in the short future. Equipment that requires electricity, onshore power sources, and systems for creating alternative energy all require considerable capital investments over protracted periods of time. Because of this lack of current technology, executing a green port plan in poor countries would be quite difficult. We hypothesized that:

Hypothesis 2: Lack of technical advancement negatively influences the implementation of green ports.

2.3.3. Cooperation of involved parties (shipping lines, transportation companies)

Cheon (2016), Denktas-Sakar and Karatas-Cetin (2012), and Lam et al. (2013) are only a few of the many published papers, both inside and beyond the scope of this study, that acknowledge the challenge of changing ports toward sustainability and the necessity to incorporate a wide variety of stakeholders. There are three types of green port environmental issues, according to the OECD (2011): 1) Ship emissions; 2) Port operations; and 3) Hinterland traffic. Key causes of air pollution brought on by shipping include sulfur oxides (SO_x), nitrogen oxides (NO_x), and particulate matter, all of which have an impact on local and regional air pollution. Additionally, the physical and emotional health of dockworkers as well as residents in coastal regions might be negatively impacted by noise from ship auxiliary engines during laytime. Due to the enormous number of cars that go to and from ports, pollution and traffic are the key issues from an inland perspective (Gonzalez-Aregall et al., 2018). The Association of Southeast Asian Nations highlighted one of the major barriers to the sustainable growth of ports in Asia as poor coordination with shipping companies and other supply chain partners (Roh et al., 2016; Zheng; Zheng and Luo, 2021).

Numerous earlier studies have demonstrated that the coordinated effort by multiple parties to lessen the pressure on the port authority will make it easier to implement the green port strategy (Bergqvist and Egels-Zandén, 2012; Luo et al., 2022). As one of the primary ways that ports can reduce emissions from vessels (Winnes), shipping companies can support a more environmentally friendly port strategy by implementing more environmentally friendly ships, such as propulsion upgrades and auxiliary engine retrofits (Eide et al., 2009; Geng et al., 2016), or by reducing their speed in the port area (Ahl et al., 2017). Second, some significant solutions for the inland transportation system are provided to reduce air pollution, noise, traffic accidents, and congestion by developing an intermodal rail and road infrastructure and encouraging shippers to transfer their goods by rail to and from ports (Bergqvist and Egels-Zandén, 2012). With the help of the parties concerned, the implementation of the green port will be more successful. We expect that:

Hypothesis 3: Cooperation of involved parties positively influence the implementation of green ports.

2.3.4. Reputation

A corporate reputation is a stakeholder's total assessment of a firm over time, according to Gotsi and Wilson (2001). This assessment is based on the stakeholder's first-hand interactions with the business, any other means of symbolism and communication that conveys information about the firm's behavior, and/or a comparison with those of other major competitors. According to Flanagan and O'Shaughnessy (2005), a solid corporate reputation has become an important part of many organizations' competitive strategy. Positive corporate reputation is a source of strategic competitive advantage since it increases a company's ability to join markets, broaden its market reach, and offer value to consumers (Miles and Covin, 2000). Reputation is a fundamental intangible asset, according to Feldman et al. (2014), since it offers a business a long-term competitive advantage and affects stakeholders' purchasing decisions (Rindova et al., 2005).

Container shipping is a transnational industry with fierce rivalry in the shipping industry. Businesses may become more competitive by using environmentally friendly shipping services (Yang et al., 2013). Shrivastava (1995) outlined how environmental management might increase a company's competitive advantages by reducing the negative environmental effects of its activities. Success in environmental management might improve a business's standing and create new opportunities for it to grow its capabilities (Hansmann and Kroeger, 2001).

The port's reputation might stem from its perceived environmental friendliness in this regard. As a result, in addition to improving their reputation, these ecologically friendly ports may also experience sustainable development and economic rewards. According to earlier research (Lam and Li, 2019; Notteboom, 1997), among the many essential elements influencing port choice, qualitative aspects including port reputation, security, and customs handling quality are critical considerations that should not be disregarded. The reputation of a green port is the most important component in luring and keeping clients that respect sustainability, according to Chan et al. (2012). In order to draw clients, green port managers might use their reputation as a marketing weapon, according to Lam and Li's (2019) research. We predicted that the adoption of green ports would be favourably impacted by their reputation based on the considerable benefits outlined above.

Hypothesis 4: Reputation positively influences the implementation of green ports.

2.3.5. Economic incentives

Economic incentives are the use of monetary rewards to persuade port users to adopt environmentally friendly operating procedures and reduce adverse effects on the port environment (Blinge, 2014; Tseng and Pilcher, 2019). The Port Authority of Rotterdam awarded participating ships with a certificate and a "Green award," according to study by Mellin and Rydhed (2011). The "Green Award Certificate," which has more standards, and the "Basic Certificate," which has less requirements, are the two levels of certification. Ship owners with these credentials will pay less for port and pilotage services in about 23 ports across the world. In the "carrot and stick" approach, penalties are commonly used to increase shipowner compliance. The penalty might be a fine or an increase in the cost of using port services.

In order to promote port sustainability, the government should use financial incentives to motivate the port authority to reduce emissions and environmental degradation. The interviews conducted for Blinge's (2014) study brought to light the significance of applying both positive and negative incentives (carrots and sticks) while building sustainable corridors. Some experts believe that a voluntary program with the possibility for a green label would be beneficial and provide holders an advantage over competitors. Therefore, we anticipate that:

Hypothesis 5: Economic incentives positively influence the implementation of green ports.

2.3.6. Awareness of green port

The knowledge of green ports includes both economic and environmental knowledge (Chang, 2013), as well as knowledge of new technology with improved environmental performance or of strategies to reduce emissions, energy consumption in their operations, and

water pollution (Zis, 2019). Additionally, it is important to introduce a grasp of the rules and incentives for green ports. It is believed that voluntariness in the construction of green ports would be significantly impacted by a thorough understanding of green ports. Port authorities will be more motivated to keep their social obligations if they can perceive the economic, environmental, social, and sustainable advantages of the green port. We hypothesize that:

Hypothesis 6: Awareness of green port positively influence the implementation of green ports.

3. Results

According to Pavlic et al. (2014), the primary objective of the green port is to continually minimize negative environmental consequences without compromising economic growth. In order to use resources and alternative sources of energy efficiently, green ports must spend heavily in technical innovation. But there aren't many studies that especially target emerging countries, where there are rising tensions between economic development and environmental conservation, in the academic literature. Numerous insights into the variables influencing the implementation of green ports are provided by our research. The findings of this study are particularly noteworthy since they originate from a large sample of managers who are representative of container ports, with a focus on Vietnam.

The international MARPOL 73/78/97 convention is the most pertinent and comprehensive legislative intervention on environmental issues in the port and shipping industry. Major international organizations have continuously and deeply intervened in the MARPOL 73/78/97 international convention over time by producing amendments, regulations, standards, and proposal of guidelines (Di Vaio and Varriale, 2018). Examples of these organizations include the International Maritime Organization (IMO) and the Marine Environment Protection Committee (MEPC). A number of conventions addressing environmental pollution issues have been introduced by the International Maritime Organization (IMO), a special agency of the United Nations tasked with regulating the security and safety of shipping. Recently, the IMO has placed a strong emphasis on preventing marine pollution by ships. The main treaty, known as Marpol 73, was the International treaty for the Prevention of Pollution from Ships, which superseded the International Convention for the Prevention of Marine Oil Water Pollution. In reaction to the environmental disasters caused by oil tankers in the late 1970s, the 1978 and 1997 protocols—signed at the TSPP (Tanker Safety Pollution Prevention) Conference—revised this agreement. The purpose of the MARPOL 73/78/97 convention is to stop ships from unintentionally or purposefully discharging pollutants into the ocean. The rules for draining spent oil, sewage, and trash are governed by six annexes that went into force between 1983 and 2005.

According to Lam and Notteboom (2014), environmental regulation is now the most efficient and targeted technique for the control and prevention of pollution. The government can put the demands of environmental regulation into practice by developing market-oriented incentive programs, such as the collection of pollution fines and environmental taxes, or command-and-control policies, such as the passage of local laws and regulations.

Our study's findings are consistent with those of other studies (Deng et al., 2022; Lam and Notteboom, 2014; Di Vaio and Varriale, 2018) in that environmental legislation positively affects the implementation of the green port. The reason for this is that, although not being a favorite, laws also entail consequences for non-compliance, which have evolved into a potent motivation for the adoption of sustainable standards. In the context of Europe, there are several legislations that address environmental issues pertaining to the port industry. The European Union (EU, Brussels, Belgium) has set regulations in place that can help establish environmentally conscious and green ports and supports audacious worldwide projects addressing tools to avert global warming (for example, by easing the transition to a low-carbon economy). Initiatives taken by the EU in this field (Directives 2012/33/EU, 2012/27/EU, 2014/94/EC; EU Regulation No. 2015/575) aim to ensure environmental sustainability in the seaport industry.

Innovation and technological advancements can help to lower greenhouse gas emissions (Bergqvist and Monios, 2019; Wiegmans and Geerlings, 2010). In ports, for instance, ship emissions are a growing problem, particularly for SO_x, NO_x, and PM that have an impact on the health of the surrounding population. Cold ironing methods are mostly employed in ports to cut down on ship emissions. Instead of utilizing their auxiliary generators (cold ironing, onshore power supply, or OPS) to generate power for hoteling, ships at berth connect to shore-side electricity (SSE). According to Chang and Wang (2012), employing an onshore power supply system might reduce CO₂ and PM emissions by 39.4% and 57.16 percent, respectively. If all ports in Europe switched to shore power in 2020, Winkel et al. (2016) estimated that health costs could be reduced by 2.94 billion USD and carbon emissions might be reduced by 800,000 tonnes. According to the findings of our study, a major impediment to the implementation of green ports in developing nations is a lack of advanced technology. For instance, the port greening process will take longer due to a shortage of electrical equipment, renewable energy sources, and monitoring software. The expensive setup and maintenance of the equipment used to make up for the lack of contemporary technology is one potential explanation for this.

Identifying the collaborative role of port stakeholders in the development of green ports in particular and other firms in general is one of the study's findings that are consistent with previous research (Bergqvist and Monios, 2019). For instance, a variety of methods are already being used by shipping firms to diminish their environmental impact, mostly in order to abide with international standards that demand that they reduce emissions. They can use an onshore power system, alternative fuels (MGO, LNG), slow down to 12nm when near the port, stop dumping ballast water at ports, or other cooperative behaviors that are thought to promote the attainment of the green port strategy.

Our research also focuses on how a port's reputation affects how it is implemented. In order to improve a company's brand equity and reputation, corporate social responsibility (CSR) is essential (Ahmad et al., 2022). Contrary to what we expected, the port's green image value had no impact on the performance of the green port. One explanation might be that consumers don't care about corporate social responsibility. Environmental issues usually receive less attention than economic ones, especially in underdeveloped countries.

Economic incentives appear to be an efficient way to persuade port authorities to adopt a green port strategy in order to promote the use of cutting-edge environmental technologies, improved resource management, and energy-efficient transportation. The restriction of access to transportation infrastructure, financial incentives like tax breaks, and price drops for energy are typical examples (see, for instance, Bergqvist and Egels-Zandén (2012). Our findings supported prior study (Lalla-Ruiz et al., 2019) in that economic incentives have a large and favorable impact on the implementation of green ports.

Port enterprises should raise their level of environmental protection awareness, actively build green ports, and occupy a favorable competitive position in green port transportation through the use of sustainable technology innovation, such as raising the utilization rate of environmental protection equipment and reducing pollution control costs. Additionally, staff employees can attend training sessions to better understand the role that sustainability plays in protecting both the environment and human health. Contrary to what we had anticipated, port authorities' implementation of green ports is unaffected by the fact that they are aware of them. One argument is that the government's necessity for their implementation, rather than the port authority's choice, is what has led to the public's knowledge of green ports.

4. Discussion and Conclusion

This study makes several contributions to theory and research. First, our research defined what a "green port" is broadly speaking and showed how it supports environmental protection without impeding port expansion (Zis, 2019). Therefore, green ports actively include climate change mitigation and adaptation approaches into their strategy and objectives in order to manage and balance the three bottom lines of economic development, social well-being, and environmental preservation (Lam and Yap, 2019). Our study has compiled the standards for a green port in order to reduce the port's detrimental environmental effects while preserving financial viability. Some of the criteria that have been mentioned in prior studies include staff training, alternative energy usage, noise pollution management, solid waste management, water pollution management, and solid waste management (Chen and Pak, 2017; Chin and Low, 2010; Peris-Mora et al., 2005). Our research offers a thorough knowledge of environmentally friendly ports, emphasizing not only the elimination of pollution sources but also the improvement of management and staff sustainability awareness. This important theoretical addition has improved the literature on green ports.

Our research also contributes to the body of knowledge already available on green ports by exploring the critical elements affecting the implementation of green ports. Our results support other research' conclusions that environmental laws play a crucial role in the development of green ports (Cullinane and Cullinane, 2013; Tseng and Pilcher, 2019). Our study supports both the effect of national policy on environmental protection through mandatory guidelines and norms as well as the significance of international accords. National laws and regulations have a substantial influence on port compliance with environmental criteria, even though the International Marine Organization (IMO) is the primary marine transport authority. The relevance of regulations at the national and

international levels is better understood as a result of implementing sustainability requirements to ports. National rules appear to be a substantial addition to international legislation on the preservation of the marine environment.

Although prior research had demonstrated the role of technological leverage in reducing environmental impact and supporting the construction of green ports, our study demonstrates that the absence of modern technology will adversely affect the implementation of green ports, which are widely used in developing countries (Cullinane and Cullinane, 2013; Di Vaio et al., 2022a). As a result of reduced atmospheric emissions and more effective resource usage brought about by digitalization and new technologies, business models are changing in order to support sustainable development goals. The results of our study have improved the theoretical foundation for green ports in developing countries where the demand for sustainable development and the availability of current technology for implementation are still in conflict. This study shows how important cutting-edge technology are for implementing a green port model, but it also emphasizes how out of reach these technologies are in underdeveloped countries. This adds to the corpus of research regarding obstacles to constructing viable ports in underdeveloped nations.

One of the major achievements of this study is the realization of the significance of stakeholder cooperation in the development of green ports. According to our research, stakeholders like shipping lines (which use light fuels, don't discharge ballast water at ports, and reduce speed in RSZ), transport companies (which use vehicles that adhere to Euro 4 standards), and others must work together for the green port strategy to be successful. Our understanding of the elements that contribute to successful sustainability requirements at ports is improved by this result. Stakeholders may drastically reduce emissions and aid in environmental conservation by changing their former behaviors. This result, which has important ramifications for port authorities managing stakeholder activities, affects the success of a green port. According to other studies (Tseng and Pilcher, 2019), our study supports the notion that financial incentives from the government could have a favorable impact on the development of green ports. Governments should continue to be mindful of the significant implications of our results if they want to extensively promote green ports. Ports are urged to implement sustainability standards by providing financial incentives such as lower taxes, cheaper energy, or loans with low interest rates.

Port administrations may also employ a variety of other possible policies to encourage stakeholder cooperation in the development of sustainable ports. Using an annual environmental excellence awards program, port authorities may select the most environmentally friendly businesses across a variety of operational areas, and they may then reward them with a bonus or a reduction in port fees. Peak and off-peak hours may be less frequent as a result of effective demand-based pricing regulations, which would reduce fuel waste and air pollution. It is suggested that a pollution tax, flexible port pricing, and a "carrot and stick" strategy may induce port operators to adopt more ecologically friendly operating procedures (such as low sulfur fuel, shore power, clear trucks, clear ballast, water recycling, solar energy, etc.).

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THE IMPACT OF NATURAL DISASTERS AND CLIMATE CHANGE ON GLOBAL AND VIETNAM INSURANCE INDUSTRIES

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Abstract

Climate change is one of the biggest environmental challenges facing humanity in the 21st century. Vietnam is not an exception of these perils; the consequences of climate change are extremely serious and are existential risks for Vietnam's sustainable development. In the context that climate change is a new risk with a large impact scale, if insurance industry does not proactively adapt, it will face losses significantly and lower opportunities for future growth. More seriously, risk management role of insurance industry could be threatened. The article identifies current climate risk insurance products in Vietnam industry and suggest recommendation for better practice.

Keywords: *Disaster Risk, Climate Change, Insurance*

1. Introduction

According to United Nations Framework Convention on Climate Change, "Climate change is a change in physical or biological environment that causes significant adverse effects on the composition, resilience or reproductive capacity of natural ecosystems, the operation of socio-economic systems or to human health and welfare".

The main manifestations of climate change that can be recognized globally including: Increase in atmospheric temperature - Global warming, Rainfall change, Sea level rise due to melting of polar ice caps and mountainous regions, natural disasters and extreme weather events (heat, cold, storm, flood, drought, etc.) occurring with increased frequency, irregularity, and possibly intensity.

According to Stern Review (2010), a sea level rise of 20-80 cm (due to a 3 - 4 degree Celsius increase in Earth's temperature) will put an additional 7-300 million people at risk of flooding every year. If there are no adaptation measures, the number of populations in 136 major cities around the world experiencing hurricanes will increase from 40 million (2005) to 150 million (2070s), and property damage could increase from \$3 trillion to \$35 trillion. UNEP FI report (2006) estimates that losses from weather events will increase by 6% per year and double globally every 12 years on average.

World Bank (2007) assessed that Vietnam is one of the five countries seriously affected by climate change and sea level rise, in which Red River Delta and Mekong River Delta will be most affected. If the sea level rises by 1.0m, it will imperil nearly 10% of the population; 10.9% of urban area; approximately 35% of Mekong Delta population; over 9%

of Red River Delta population; nearly 9% of central coastal population and about 7% of Ho Chi Minh City population; over 4% of the railway system; over 9% of the national highway system and about 12% of the provincial road. Moreover, GDP loss is approximately 10.2%

However, so far, despite facing many risks and challenges related to climate risks, Vietnamese insurers have not paid attention to develop exclusive product lines dealing with these growing risks. Additionally, there is almost no research on related products and insurance services which cope with disaster and climate risks.

2. Method

The article used the method of synthesis and statistical analysis. Data sources are taken from VCCI, Stern Review, ADB reports for summarizing and analysis. The article describes disaster and climate risks facing by insurance industry and then suggest some solutions to improve market performance to stakeholders.

3. Results

3.1. Vietnamese Enterprises' current status of participating in insurance to prevent disaster risks and climate change

In addition to taking specific actions to handle disaster risks and climate change's impact, businesses can reduce losses by purchasing insurance products. In VCCI survey (2020), 44.5% of 10,356 respondents are using a certain insurance line to prevent risks related to disaster risks and climate change. The proportion of FDI enterprises currently obtaining an insurance product is 62.2%, significantly higher than the rate of private enterprises (41.3%).

As demonstrate in Figure 1, the most commonly purchased insurance product is property, machinery and cargo insurance. 55% of FDI enterprises and 33% of private enterprises obtained this product. The proportion of enterprises obtaining interruption insurance products was relatively low, with only 4% of FDI enterprises and 2% of private enterprises. About 10% of FDI enterprises and 9% of private enterprises join other insurance policies.

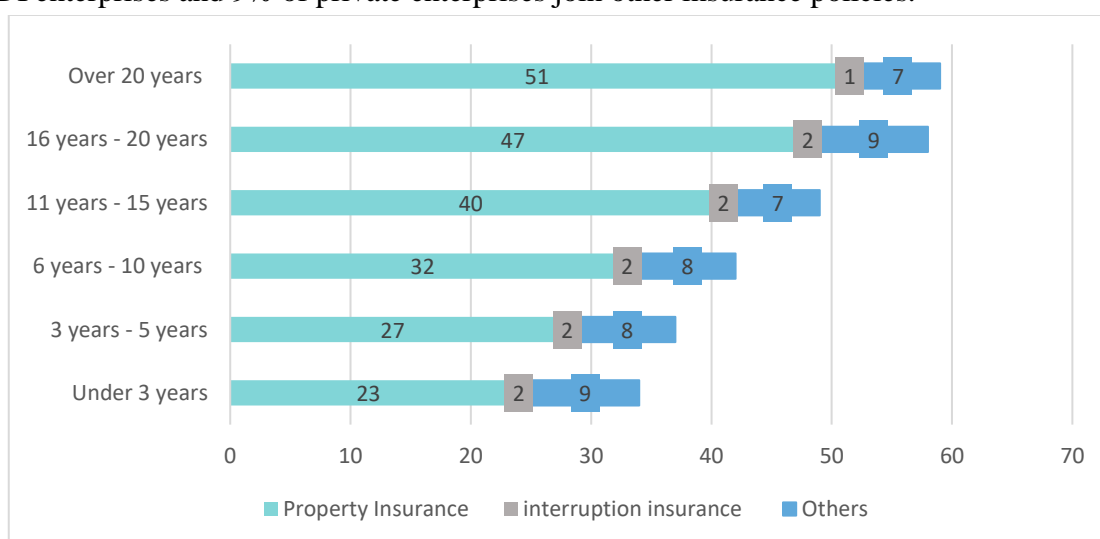


Figure 1. Categorizing businesses in terms of operation years and purchased insurance products

Source: VCCI

Besides, Mekong Delta enterorises have highest demand for insurance products. Meanwhile, Central Highlands enterprises have a lower demand than other regions. The possibility of obtaining insurance is positively correlated with the size of enterprises. Regardless of capital size or labor size, the analysis shows that as the size of the enterprise increases, the possibility of joining insurance policy increases.

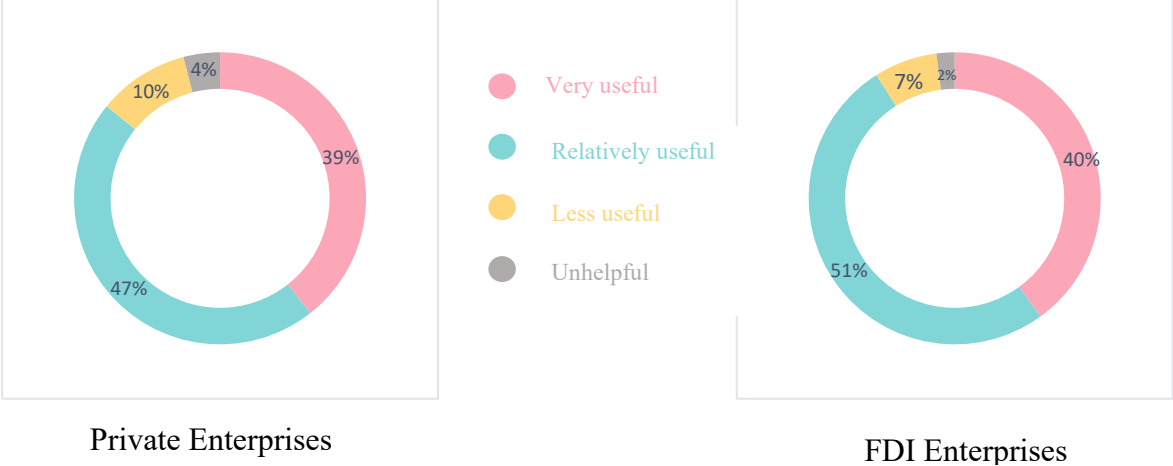


Figure 2. Rating insurance products' usefulness by enterprise clients

Source: VCCI

As insurance clients for disaster risks and climate change, these firms rate usefulness of insurance product as 4 levels, including: 1) Very useful; 2) Relatively useful; 3) Less useful; and 4) Unhelpful. The result implies that the majority of respondents, especially FDI enterprises highly value the usefulness of purchased insurance products. Overall, 86% of businesses highly rates purchased insurance lines whilst only 4% rates these unhelpfully.

3.2. Solutions to handle disaster and climate risks

Insured losses related to climate risks have tended to increase since 1990, leading increase in insurance deman which creates a potential market. In order to control loss payment and manage climate risk effectively, insurers improve and develop new products to limit losses and exploit hidden markets.. Global insurance industry has also taken action to seize opportunities and deal with these new challenges. Specifically:

Insurers' active risks management strategies

Since introducing new insurance lines, insurers have been shifting from being passive to proactive in responding to new risks. From suffering negative impacts and indemnifying costly claims caused by climate change, insurers has taken proactive steps, setting the foundation for new business opportunities. Leading insurers identify climate change as their top priority in long-term business strategy.

In competitive market, insurers tend to launch comprehensive insurance products and packages to meet consumers' requirements. At the beginning of the 1930s, Japan and the United States introduced agricultural insurance. By 1950, this insurance line become

more popular. Since the 1990s, insurance products such as flood insurance, green building insurance were also introduced in the market and gradually developed, accompanied by improvements in product design and add - on services for customers. Pioneering in providing these products are international insurers/brokers such as Fireman Fund, AON, Lloyd's...

Via researching on and developing climate risk policies, insurers have gradually developed risk assessment and analysis techniques, applied appropriate insurance terms, and provided new climate - related products and services, improved indemnity services; strengthened methods of loss reduction, shared knowledge and experience, thereby, enhance the ability to:

- Risk management through coping and adaptation measures and tools;
- Taking advantage of new business opportunities and sustainable investments;
- Assisting clients in risk management and loss reduction via knowledge sharing, experience and consulting services;
- Changing operating activities environmentally friendly.

Integrating new terms and services into traditional insurance policies

One of the solutions to adapt to climate risks is that adding more regulations and terms to limit losses when risks occur in high-risk areas. Instead of offering high premiums or not providing services, companies take a new approach: adding mandatory conditions that policyholders need to meet if they want to obtain insurance. In Australia and Japan, the government has issued a set of rules for residential buildings which specify their structures, the size of used materials, especially in areas that are often subjected to high damages caused by climate change such as earthquakes, tornadoes, tsunamis, etc. Thus, insurers make regulations that force customers in these high-risk areas to comply with above construction regulations when purchasing their products. In some cases, to limit losses, insurance companies can also add new terms to screen customers, target low-risk groups and satisfy provisions on limiting losses.

Enhancing customer service/ loss limitation consulting

When offer customers different types of insurance, especially product for assets with CO2 emissions such as cars, sales agent helps customers compare car models according to safety and environmentally friendly criteria. In addition to serving customers' new requirements, this service also indirectly adjusts their consumption behavior, which contributes to raising their awareness about environmental protection. Furthermore, when accessing company's website and submitting vehicle's technical information and usage level, clients support insurers calculating the amount of greenhouse gases emitted by this vehicle and then deciding on claim payment (AIG Insurance). Customers can voluntarily enroll in carbon credit program offered by AIG by paying a small fee (corresponding to vehicle emissions); 100% of the raised fund will be used for the carbon credit program, serving afforestation projects within 100 years.

Investing in early warning technologies of natural disasters and climate change

Understanding the characteristics and levels of risk and damage of natural disasters caused by climate change is especially essential for minimizing these damages. Increasing public awareness of climate change creates opportunities for insurers on supplying prevention limiting losses services, developing natural disaster risk assessment technologies from previous experiences and obtained knowledge. The British company Norwich Union (Aviva) has run an electronic flood map in the UK, thereby contributing to increase people's awareness of the risk to their property. The company also develops models of flood-resistant houses which are predicted to significantly reduce flood damage by using flood warning and flood control systems. Other insurance - related firms such as IAG, Munich Re, Swiss Re, Lloyd's have also developed disaster risk identification, warning tools and develop online maps for customers and insurers to refer to.

4. Discussion and conclusion

The barriers of Vietnam insurers in climate change adaptation strategies are still significant for the following reasons:

Significant Risk

Insurers are likely to go bankrupt due to payment for multiple disaster losses. Therefore, when risks are not geographically classified, insurers are suddenly faced with significant losses that cannot be offset by premium revenue. For example, insurance companies in river basins, coastal areas, and reclaimed land need to recognize the correlation between floods. Insurance companies will charge higher premiums for areas with higher systemic risk to compensate for the possibility of bankruptcy, ensuring solvency. One feature of climate risk is the low probability but high impact of insured events. This makes it difficult to cover losses and to provide adequate capital for subsequent losses.

However, these issues can be gradually resolved and their impact constantly reduced due to flexible nature of the insurance industry: Premiums and policies can be adjusted annually, thus contributing to limiting risks for insurers

Asymmetric information: Adverse selection and moral hazards

Concerns about problems caused by adverse selection will affect the expansion climate risk insurance. Adverse selection is a phenomenon in which policyholders focus their selection on higher-risk subjects to insure. Therefore, insurer will have to bear higher loss when the premium is calculated based on average probability of expected loss. The cause of adverse selection is asymmetric information between insurers and policyholders. This problem is more serious when customers can identify their risk levels and characteristics while insurance companies have difficulty in differentiating good risk and bad risk groups. If asymmetric information is excluded, insurance company only needs to charge higher premiums on high-risk subjects. Adverse selection leads to high premiums because insurers protect themselves against risk exposure.

Asymmetric information between insurers and policyholders also leads to moral hazards. The insured is often less careful, more prepared for risks which the insurance

company cannot control, so loss possibility will be higher. Moral hazards may increase when individuals are already covered under climate risk policy. Nonetheless, insureds' moral hazard is a secondary issue in climate risk insurance as they cannot control when insured event occurs (i.e. the probability of loss), although they can control the extent of damage during and after floods, droughts, epidemics...

Public awareness of climate change

Because additional terms related to climate change risks or "green" insurance are voluntary choices of customers. If customers are not aware of the role and importance in their consumption behavior, insurance enterprises will face difficulties in market development. Moreover, the phenomenon of unfair competition between insurers may appear. In same policy, but insurer only needs to remove green insurance clause to be able to reduce fees and attract customers. Therefore, business thinking and customer awareness are two factors that significantly affect the existence and development of green insurance products.

Product design

Firstly, in order to be insurable risk, its loss frequency and severity need to correspond to estimated benefits. It will be difficult to actualize these two conditions for climate risk policies because risks such as floods, droughts, etc. consequences of climate change often occur with low frequency and high severity. Loss calculation would be highly challenging without large-scale loss data systems which need to be gathered over a long period. The uncertainty associated with climate risk is substantial. The impact of climate change on the frequency of insured risks (such as droughts, floods, epidemics, etc.) is also an uncertain factor. Therefore, the solution to this problem is risk sharing between insurers and the government. However, in order to develop global insurance market which plays a role as an effective economic and environmental tool, it is necessary to develop new strategies.

Secondly, insurance firms must determine risk - based rates. This can be a major challenge due to uncertainty risk, adverse selection, moral hazard and systemic risk.

Difficulty in risk assessment

Difficulty in assessing risk possibility and estimating losses makes it difficult for insurers to offer appropriate premiums and manage risks. Practical experience shows that the more uncertain risk frequency and loss severity are, the higher the proposed premium is. Premium for climate risks will be higher than other risks, such as fire, explosion, machine breakdown, etc. although expected loss may be similar. The uncertainty factor associated with climate risks is significant because there is currently very few scientific information and data collected over a sufficiently long period of time to be able to identify risks characteristics (such as frequency, severity, location...). Insurers can use disaster models to study losses caused by these disasters, however, this approach is not yet able to completely solve uncertain factor.

From aboved issues, some recommendations are suggested as follow:

The government needs to take legal measures, including: providing a legal framework for business activities, administrative measures such as regulation of investment portfolio,

licensing of establishment...; financial measures such as tax and fee incentives, price subsidies to attract participation public and insurance enterprises participating in climate risk insurance market. Furthermore, the government create a favorable legal framework issue preferential policies for businesses to deploy this insurance line. Granting exemption and reduction of taxes and other payables to state budget for insurers providing climate change-adapted products.

Integrating regulations on compulsory purchase of climate risk insurance in some cases such as bank and mortgage loans. It can be upgraded to a general coercive regulation, especially in high-risk areas such as coastal areas, central coast, Mekong Delta... Promulgating regulations, framework decrees, documents guiding the implementation of climate risk products which specifies roles, responsibilities and coordination mechanism among stakeholders.

Additionally, the government also needs to create a legal corridor for insurers to coordinate with scientists to develop a database system which collect loss information on national scale continuously. Simultaneously, it also stipulates a mechanism for sharing information between stakeholders.

In long term, when new risk insurance have become popular, the government should support insurers to overcome difficulties in compensation when climate change risks cause great losses. In addition to facilitating the development of private insurance products, the government can also create public insurance to guarantee households in the event of large-scale and simultaneous losses. Instead of providing comprehensive coverage, the government can join reinsurance market to overcome difficulties caused by interrelationship between posed risks. The strength of governments playing the reinsurer role is that they can spread the risk to entire population as well as future generations. The cooperation between the Government and insurers is absolutely necessary, contributing to strengthening enterprises' financial capacity in dealing with correlated risks or large-scale damage, then builds trust in the insured

Insurers can organize specialized seminars, set up research groups, mobilize articles or organize research contests in specialized journals to gradually disseminate knowledge about green insurance. The exchange and cooperation in scientific research and training also contribute to raising enterprise awareness.

Insurance industry also needs to invest in developing infrastructure and information systems to create an appropriate premium schedule. Based on the mechanism and legal corridor promulgated by the government, insurers actively set up a database system on climate risks as well as customer database system for centralized management and serve as a basis for charging and controlling risks. These data systems need to be collected for a long time because climate risks are long-term accumulation process as a basis for scientists and researchers identify risk frequency and loss severity, overcome limitations of uncertainties in climate risk policy

In order to handle moral hazard, insurers may apply deductibles or coinsurance. An appropriate deductible will be an incentive for individuals to take loss-limiting measures.

One advantage of applying deductibles is to reduce transaction costs because only insureds with losses above the deductible are compensated. This provision is especially useful for climate risk policies. Under coinsurance terms, clients will be motivated to limit losses and take precautions due to shared risks

Scientists also play a supporting role in providing information, cooperating with insurers in risk assessment, loss assessment, completing information sharing mechanism and ensuring effective application of scientific research, especially in risk management.

As consumer is those who have full access to information on climate change, the sense of proactive self-protection and property is enhanced, the trend of green consumption is encouraged, they make the demand for insurance products with reasonably design and good service quality.

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EVALUATE THE POTENTIAL FOR THE DEVELOPMENT OF SOME CIRCULAR BUSINESS MODELS FOR PLASTIC PACKAGING IN URBAN AREAS IN DEVELOPING ECONOMIES

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Abstract

Prior to the global issues of climate change, environmental pollution, and ecosystem degradation, the world is aiming to achieve net-zero emissions by 2050. Many countries have implemented circular economy strategies and received participation from businesses in implementing business models. Depending on the scale of the enterprise and the circular business models, the implementation can vary. This article identifies some circular business models for plastic packaging in Hanoi. Through the SWOT analysis of strengths, weaknesses, opportunities, and challenges, this article evaluates the potential for the development of circular business models for plastic packaging in the future. The research results will be a useful reference for managers and businesses in developing new plastic economy business models in urban areas in developing countries like Vietnam.

Keywords: *circular economy model, plastic packaging*

1. Introduction

Plastic pollution contributes significantly to greenhouse gas emissions and other global environmental issues such as ecosystem degradation. According to calculations, in 2018, total emissions from the plastic industry accounted for 3-4% of the total global greenhouse gas emissions. In addition, plastic pollution in the ocean affects around 700 species of marine life (Gall & Thompson, 2015). Research has shown that the majority of plastic is used in packaging production, accounting for 36% of plastic production or 144 million tons in 2018 (UNEP, 2018). This is the source of pollution in the ocean and at open dumpsites. In Vietnam, plastic packaging waste accounts for about 70% of total plastic waste in landfills and beaches (WB, 2021). Therefore, global efforts are shifting towards a new plastic economy, which applies circular economic strategies in the plastic packaging industry.

One of the solutions that has been previously mentioned in research is the transition to a circular economy (CE). Implementing CE for the four main material industries, including plastics, has a positive contribution to the goal of achieving net-zero emissions by 2050 (EMF, 2018). Therefore, circular economy strategies and models are being applied in many industries such as agriculture, construction, and waste management. In the group of

service and retail businesses, some business models are regaining attention as they align with the circular economy framework.

In a developing economy like Vietnam, financial resources and consumer habits have a significant impact on business strategies. As the global trend shifts towards a circular economy, Vietnam is also introducing many new environmental policies such as Law No. 72, which considers circular economy as a necessary model for achieving sustainable development and net-zero emissions. Moreover, Vietnam's National Action Plan on circular economy also prioritizes circular business models.

The circular business model is the concrete implementation of circular economic strategies for plastic materials. EMF provided suggestions for implementing circular business strategies in the new plastic economy model prior to 2020 (EMF, 2018), which includes topics such as packaging design and implementing reuse and refill models. Accordingly, this model takes several forms, including (i) returnable, where the container is owned and cleaned by a company (or group of companies), and (ii) refillable, where the container is owned by the consumer after the initial purchase and then filled with refill products (at home) or taken to a station to be refilled while in transit (Ellen MacArthur Foundation, 2019; Greenwood et al., 2020). Implementing circular economic strategies has led to the emergence of circular business models in practice. The circular business model itself is an indispensable part of the circular system.

Regarding the concept, the circular business model is the theoretical basis for how an organization creates, distributes, and captures value within closed-loop resource cycles (Mentink, 2014). Thus, the circular business model goes hand in hand with the way a business distributes its products and implements resource loops. Subsequently, many other authors have specifically defined the concept of circular business by specifying principles (Bocken et al., 2022; Linder & Williander, 2017), detail strategies of the R framework (Geissdoerfer et al., 2018). Lahti and colleagues are more interested in the aspect of organizing stakeholders (Lahti et al., 2018) to achieve economic, social and environmental benefits. Therefore, the circular business model is a business model that cycles, extends, intensifies and/or dematerializes material and energy loops to reduce resource inputs and leakages of waste and emissions from the organization's system. Including 4 solutions that are cycling, extending, intensifying and dematerialising (Geissdoerfer et al., 2020). This concept has described in an easily understandable way about the circular business model according to the principles of the circular economy that EMF has put forward.

Faced with issues of climate change, ecosystem function degradation, and environmental pollution, the research on the circular business model in plastic packaging has increased over the past five years, directly and through implementing the EPR mechanism. Circular business models for plastic packaging have achieved the benefits of the circular economy principles that EMF has put forward, including reducing resource exploitation and natural materials, extending product life cycles, and limiting waste generation and negative environmental impacts (EMF, 2018). These business models have been implemented in many multinational corporations worldwide as well as in Vietnam. The

business trend is shifting to forms of leasing packaging products, applying reuse support platforms, and filling globally.

The development of a business model is closely related to the feasibility, desire, and ability to exist of business models. Experience in fast-moving consumer goods shows that five success factors are identified, including brand and retailer partnerships, consumer participation, operational effectiveness, model profitability (Bocken et al., 2022). Meanwhile, the main barrier for businesses to implement the model is cost (Bocken et al., 2022), usually the input cost when investing in a business model.

In urban areas of developing economies such as Vietnam, resource-saving models and waste reduction are common. However, research has only described the models and communicated more about the implementation results. Classifying and evaluating systematically with SWOT is still a gap. Therefore, there is a need for an article that specifically analyzes the circular business models for plastic packaging in the case study in Vietnam. From there, strengths, weaknesses, opportunities, and challenges in developing this business model can be clearly seen. The content will be considered on the ability to expand the scale over time and space.

2. Method

This study uses a typical case study method to investigate circular business models in Hanoi. A total of 04 typical models were selected for the study, which is appropriate for circular business models for plastic packaging. In-depth interviews were conducted with business owners or project owners, focusing on general operational information of the models and their representatives' assessment of the model's development potential.

To analyze these typical models, the study used the SWOT analysis technique. SWOT was first developed at Harvard Business School in the 1950s in classic studies (Benzaghta et al., 2021). This analysis method has gradually been widely used in many fields with the main purpose of making strategic decisions. Previous studies have also shown that SWOT is a common technique and is suitable for classical studies. It is also a suitable tool for organizing a company's position assessment in the market (Dyson, 2004). By evaluating the strengths and weaknesses of the model, opportunities and challenges can be identified for future model development. Model development is evaluated based on scalability and long-term development capability. A SWOT analysis diagram is created with the framework below.

S	W
O	T

3. Results

This section describes the typical circular business models for plastic packaging. The roles of related parties and the financial benefits they receive will be outlined.

3.1. Typical Circular Business Models for Plastic Packagin

Circular business models for plastic packaging are based on the flexible combination of the R strategies of the circular economy proposed by Potting (2015). "Reuse" means using the same product again or multiple times (by different users or owners) while it remains in good condition and is managed sufficiently to meet the product's initial function (Morseletto, 2020). In practice, there are many types of models, which are often flexibly combined with other R strategies such as "refill" and "return". Refill is a part of reuse. However, the concept of refill focuses on the product being traded, while reuse focuses more on the packaging of the traded product. The purpose of both refill and reuse is to increase the product's life cycle, limit waste, and extend its lifespan. Similarly, reuse and return are concepts that are more concerned with consumer behavior. This is how they treat packaging after use.

3.1.1. Refill Station

This is a Refill Station where refilling is conducted. Currently, it is implemented in three cities in Vietnam, including Hoi An, Quang Ninh, and Hanoi. The Refill Station offers a full range of environmentally friendly product solutions according to the 5R model (Reduce, Re-use, Recycle, Repair, Refuse) (Lại Văn Mạnh et al., 2022). Refilling is the only activity carried out at the station, thus encouraging consumers to bring their used packaging for reuse. The Refill Station provides both in-store and mobile (moving) product sales services.

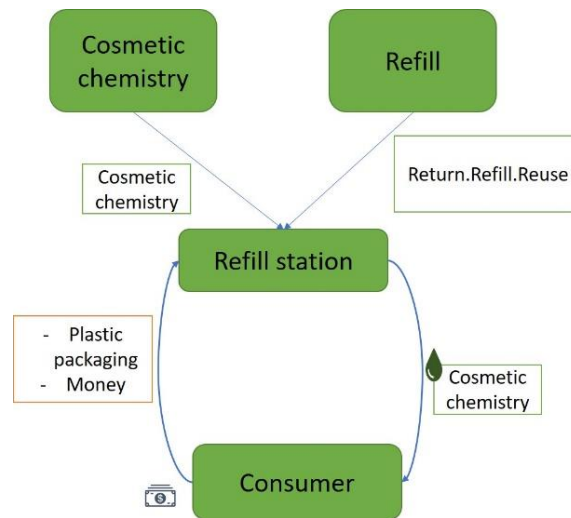


Figure 2. Refill Station

This model involves the participation of the sales business, consumers, and cosmetic businesses. However, the active and core role comes from the sales business. The involvement of the cosmetic business is less clear. Since this model exists in two forms: mobile sales at traditional markets and fixed sales at stores, the customer group is also more diverse and divided into two types. One is the group of customers who regularly purchase products and reuse plastic packaging at the store. Consumers in this group have a higher level of awareness and practice of environmentally friendly behavior. Meanwhile, the group of consumers at traditional markets has a more spontaneous nature and the model also has a high level of performance and experimentation.

3.1.2. The automated cosmetics vending machine model (ATM refill)

The automated cosmetics vending machine is a combination of R strategies, including refill, return, and reuse. The machine can provide recycled packaging, usually recycled plastic bottles and various Unilever cosmetics products. First-time buyers can purchase the plastic container separately before buying the product. The cost of purchasing the container is calculated separately from the cost of purchasing the product. Therefore, consumers have the option of bringing their own plastic bottle to refill, which can be done from the first purchase. Consumers have the option to reuse a plastic bottle that has been recycled from their previous purchase, for refilling the product they wish to buy on their second purchase.

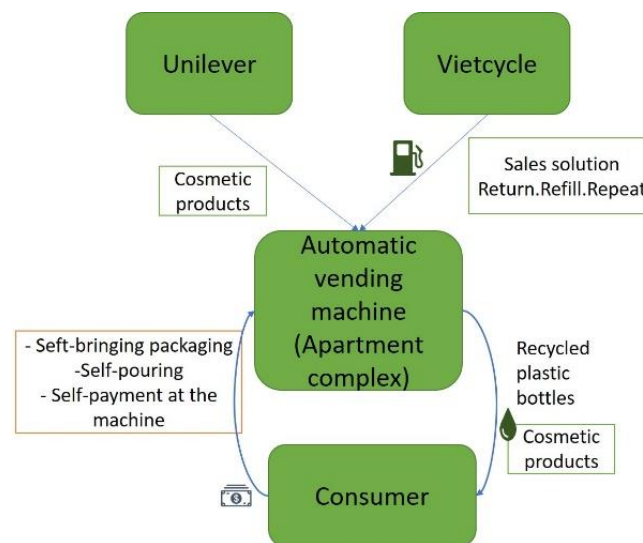


Figure 3. ATM-refill - Vietcyle

In this model, there is active and positive involvement of recycling businesses, who also operate the sales points. In addition, there is a close link between the recycling company and the Unilever brand.

3.1.3. Model of product packaging return at retail stores - Showroom

In small-scale cosmetic retail businesses, the model of exchanging packaging for gifts or points is being implemented. The plastic bottles are reused for the cosmetic products sold by the retail businesses. Consumers receive gifts based on the number of product packaging they bring in to exchange. This model maximizes the infrastructure of the product distribution process. In this model, the manufacturing, business and retailing companies and consumers are directly involved, with the retail businesses taking an active role.

3.1.4. Model of selling products and packaging

This model is widely used in fast-consumption drink businesses such as bottled water. Consumers pay for both the packaging and the product (packaged drink) on their first purchase. After consuming the product, consumers return the packaging to exchange it for other packaging and pay for the new product that comes in the new packaging. This model

is commonly used for drink businesses such as beer, bottled water and mineral water. The active role in this model is played by the product-selling businesses. Examples of this business model include distributing 20-liter bottled water and beer kegs.

3.1.5. Plastic packaging collection model - gift exchange

The plastic packaging collection model for gift exchange is popular among environmental groups. Although it is not a profit-driven business model, there are increasingly more groups collecting plastic packaging and offering gift exchanges. The development of this model is a precursor to the expansion of the responsibility of large-scale manufacturers. Currently, the active role belongs to environmental groups, with weak links mainly to informal collectors, some of whom are linked to recycling companies. This model can be developed into a business where environmental groups are linked to plastic waste-generating companies, recycling companies, and recovery companies. Among them, plastic waste-generating companies carry out environmental responsibility to society through the amount of plastic collected by environmental groups and transferred to the recycling company. The exchange mechanism is in the form of plastic credits.

3.2. Analysis of the development potential of circular business models for plastic packaging

The development potential of these models depends on factors that affect the implementation and practice of circular business models. These factors include policy, the degree of benefits to stakeholders, awareness of environmental benefits, and trends towards green or sustainable consumption.

Regarding the market and policies, these models are suitable for the trends in the market and circular economic development policies in Vietnam. The country is taking action to institutionalize the implementation of circular business models and expand the responsibility of manufacturers in plastic waste recycling.

In terms of the degree of benefits to stakeholders in implementing circular business models, consumers benefit directly from reduced costs of purchasing multiple packaging. Communities benefit from reduced plastic packaging waste after products are used and distributed in the market. Enterprises benefit by demonstrating responsibility for collecting and recycling plastic for society. However, the direct financial benefits of these models vary among enterprises. Not all business models result in cost reductions for companies. Only in the case of model 5, financial benefits are unclear. Maintaining the operation of model 5 currently requires additional funding. The mandatory implementation of the EPR mechanism is a driving force for promoting circular business models in the future.

Awareness of the environmental benefits for consumers and the trend towards green or sustainable consumption are both strengths that enable the circular business models for plastic packaging to develop in the present and future. Consumers' awareness has changed significantly, but there still exists a gap between awareness and behavior. The challenge is to make sustainable behavior become the norm accepted by the community.

The development potential of circular business models is analyzed based on criteria such as the level of benefits for stakeholders, popularity, stakeholders' awareness, policies and plans, and Extended Producer Responsibility (EPR)

Table 1. Model 1- Gift-for-shell model-Comem

<p>Strength</p> <ul style="list-style-type: none"> - Convenient and available at business retail locations - Both consumers and businesses benefit financially 	<p>Weak</p> <ul style="list-style-type: none"> - The amount collected is low and insignificant compared to the amount sold. - Customers have to keep enough packaging to exchange for gifts.
<p>Opportunity</p> <ul style="list-style-type: none"> - Build a green and socially responsible business brand - Create a community of consumers who are connected to the product. A loyal customer base 	<p>Theart</p> <ul style="list-style-type: none"> - Create a habit of cleaning, storing, collecting, and returning packaging after use - Ensure the profitability of the business

Table 2. Model 2 - ATM-refill - vietcycle

<p>Strength</p> <ul style="list-style-type: none"> - Reducing the amount of packaging waste released into the environment. - Aligning with the government's policies to encourage sustainable business models 	<p>Weak</p> <ul style="list-style-type: none"> - Investment in infrastructure and technology for the automated vending machines. - Higher investment costs from the business side. - Risk of leakage of cosmetic and personal care products during the production process. The quality of the product may be reduced if not properly packaged and sealed. - No connection with the retail supermarket system yet.
<p>Opportunity</p> <ul style="list-style-type: none"> - Expanding to more retail points - areas with low to medium collection rates. - Providing products for smart consumer market. - Scaling and replicating the business model. 	<p>Theart</p> <ul style="list-style-type: none"> - Ensure the benefits of both the cosmetics business and the business implementing the model. - Ensure the quality of cosmetics products, production techniques, and large-scale packaging. - Expand partnerships and manage vending machines.

Table 3. Model 3- Plastic waste collection and reward model

<p>Strength</p> <ul style="list-style-type: none"> - Supported by individuals and environmentally conscious communities - Collecting clean plastic - a secondary resource for the next production process - In line with consumer trends and waste sorting policies 	<p>Weak</p> <ul style="list-style-type: none"> - Irregular collection according to a predetermined schedule. - Customers have to keep enough packaging until they can exchange them for gifts. - Lack of financial resources to operate, frequently calling for support
<p>Opportunity</p> <ul style="list-style-type: none"> - Create a group of environmentally responsible, waste-sorting consumers. - Develop and expand in the future to form a plastic collection-only business. 	<p>Theart</p> <ul style="list-style-type: none"> - Ensuring the profitability of the business operation - Collaborating with plastic manufacturing and recycling businesses.

4. Discussion and conclusion

Refill-reuse business models used to be popular in economies facing shortages of goods and consumer products in the past decade. In the 90s, refill-reuse was widely implemented in beverage products such as beer, wine, and soft drinks in developing cities in Vietnam. This business model was not only applied in large companies but also existed in small-scale production and trading households. At the enterprise level, the implementation model followed a system of agents and retail points. The common practice was that consumers bought products (usually liquid, such as bottled beer), paid a deposit, and when returning the empty bottles, the retail agents refunded the deposit. However, due to the convenience trend in consumption and the explosion of goods in the past 20 years, this sales model has gradually narrowed.

The analysis of the models in this study shows that the implementation of business models between recycling companies, trading companies, and manufacturing companies has laid the foundation for the initial development of the business model. However, to facilitate management and expand the model, it is necessary to link with the regional management of stations/points. Based on the experience of the refill-reuse model in the UK, it is recommended to combine it with the retail supermarket system. The implementation of this specific circular business model in enterprises will be encouraged by the policy changes in Vietnam, which have a breakthrough character in circular economic strategies to achieve a net-zero emissions goal by 2050.

Along with the strong development of IoT technology and AI artificial intelligence, the circular business model for plastic packaging is increasingly growing. With the main trend of using more modern technology and techniques. In addition, the development of circular business models for plastic packaging in developing countries will follow the trend of selective learning from existing models in the world.

The development, dissemination, and expansion of this business model require encouraging policies and participation of all relevant parties. Policies should focus on exploiting opportunities and limiting the challenges of developing the circular business model for plastic packaging. Specifically, issues that need further research and discussion include:

First, perfecting the EPR mechanism for plastic companies in responsibility for recovery, recycling, and carbon credit implementation. Research on the responsibility of consumers regarding plastic credit or conversion into an ecological footprint.

Second, enforcing environmental policies on the use and production of plastic packaging, such as the implementation of regulations on the production of biodegradable packaging materials, reducing the use of single-use plastic packaging, and promoting the use of reusable packaging.

This study clarifies the operation of the model as well as the involvement of stakeholders. Using the SWOT analysis technique, it identified opportunities and challenges for developing circular business models for plastic packaging. This complements the use of SWOT analysis in research. However, to increase the reliability of this method when researching policies to encourage circular business models, the PESTLE technique could be combined. Furthermore, future studies on circular business models in urban areas of developing countries could continue to analyze consumer intentions for refill-reuse behaviors. This can lead to mechanisms and solutions to break down barriers, stimulate the motivation and behavior intentions of consumers. In addition to policies on EPR mechanisms and environmental funds being researched, the feasibility of plastic credits and consumers' willingness to pay for pollution fees can also be studied. This research direction will contribute positively to expanding and developing circular business models for plastic packaging.

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UTILIZATION OF NATURAL CAPITAL IN CIRCULAR ECONOMY: SOLUTIONS FOR SUSTAINABLE ECONOMIC DEVELOPMENT

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Abstract

With the complicated developments of climate change and the risk of depletion of natural resources, most countries in the world consider the development of a green economy as an indispensable step in their development strategy. Economic development, including Vietnam. Using natural capital in the circular economy, looking to the future, a closed system that does not waste natural resources.

Keywords: *Natural capital, green economy, circular economy.*

1. Introduction

The green economy will be a new direction for the economy in the future. Both developing and developed countries have recognized that the transition to a green economy is an opportunity to increase employment and develop markets for goods and services. Meanwhile, developing countries are focusing on solutions to poverty-related issues and sustainable development planning, in which a circular economy is a solution: (i). *The reason for conducting this research:* Faced with the increasingly complex and rapidly increasing predictions of climate change, together with the serious destruction of natural resources, resulting in negative impacts on the environment and society, integrating green growth goals into economic development is essential for every country; (ii). *Determine the research issues;* Efficient utilization of natural resources in a circular economy; (iii). *The main focus of the research is to address the following issues.* Utilizing natural resources in a circular economy is an economic model that combines sustainable economic growth with sustainable development through a harmonious and tight integration between them; (iv). *Introduction of research contributions:* Natural resources are necessary for the prosperity of humankind; Circular economy - green economy for sustainable development.

2. Theoretical Framework and Method

Research overview: (1). “Blue ocean economy - Issues and Approaches for Vietnam” (2020) by the author Nguyen Chu Hoi. The content clarifies the theoretical basis, approach, and objectives of implementing the blue ocean economy, the reality of blue ocean economy development in the world with some good practices and practical experiences on blue ocean economy development; (2). The Waste-Free World (2022) by Ron Gonen. The content highlights how the extractive-production-disposal economic system is depleting natural resources and putting the planet on high alert. But things don't necessarily have to happen

this way. The Waste-Free World presents a circular economy model, aiming for the future, a closed-loop system that does not waste natural resources.

Theoretical basis: Brown Growth, Brown Economy, Green Growth, and Green Economy mean the terms that are increasingly used nowadays. Countries around the world have undergone a transition from brown growth to green growth, which contributes to making production and consumption more sustainable, improving quality of life, and reducing the impacts of climate change. Brown growth describes economic development that is largely based on fossil fuels and does not take into account the negative externalities from economic production and consumption on the environment. On the other hand, green growth is seen as a transition to a cleaner energy system, more efficient use of energy, and better management of natural resources.

Research methodology: This article employs document analysis to provide an overview of the relationship between natural capital utilization in the circular economy and green economic development.

3. Results

3.1. Natural capital for human prosperity

3.1.1. Natural Capital

Natural capital plays a critically important role in human prosperity, serving as the foundation for sustainable socio-economic development and bringing prosperity to individuals and nations. However, until now, there is still no complete consensus on the concepts of natural capital and natural asset. The differences in these concepts often reflect differences in the purpose, scale, and target of exploitation, use, and management of natural resources on land and in the ocean.

- *Capital* is a concept in economics that refers to the assets, whether tangible or intangible, that can be used to generate income, goods, or services for human life and development” [12].

- *Natural capital* refers to the assets or resources that are naturally occurring, such as natural resources (organisms, ecosystems, minerals, land, water, rivers, lakes, oceans, climate, etc.), which human beings can utilize to generate income, goods, and services” [7]. Some other studies suggest that natural capital is a set of assets of the ecosystem (value of services and functions), combined with other types of capital (social capital, human capital) to create essential services for economic-social development and support human well-being” (Costanza R. & Daly H.E, 1992, 37). In other words, natural capital refers to all the values and benefits derived from natural resources or the natural supply of seafood, including geological resources, land, air, water, and the entire terrestrial, marine, and oceanic biosphere.

- *Natural capital (or resources)* is all types of natural resources (living and non-living), natural components (material and non-material), and ecosystems. According to James K. Boyce, natural resources only become natural capital when humans have the right to access their benefits (own them), such as clean water, clean air, and common natural

heritage, ... (James K. B (2001). Ecosystem services provide benefits such as food, water, cultural and recreational values, pollination, climate regulation, air quality regulation, and disease control (Costanza R (1997). Therefore, to ensure that these services continue to support human welfare and livelihoods, the aforementioned natural assets and capital need to be conserved and sustained in the long term. In reality, humans have lost many natural resources, but they can also regenerate them to varying degrees depending on the form of resource ownership, human perception, and effort.

From a relational perspective, natural capital includes physical capital and ecosystem capital, as well as natural resources with various types of goods and services.

Natural capital: comprising physical capital and ecological capital

- Physical capital: Commodities: Minerals, elements of the earth, fossil fuels, ...; Services: Energy supply, transportation means, ...

- Natural capital: Commodities: Products that are derived from the structure and function of ecosystems; Commodities: Support services, provisioning services, regulating services, cultural services.

3.1.2. Natural capital - the foundation of economic and social development

Economists have described the natural environment, including the marine environment, as natural capital since the early 1970s. However, recently, governments of countries and private sectors have started to use the concept of natural capital in the decision-making process for development plans. The advantages of a natural capital-based approach are that in addition to natural resources, the natural environment is considered a valuable asset that needs to be managed, valued (monetized), accounted for, and examined for the factors that may affect the natural capital's ability to provide goods and services in the future.

For national strategies, natural capital creates "static advantages", while mechanisms and policies create "dynamic advantages". *Static advantages* (the inherent potential of nature) are vulnerable to depletion and damage from natural disasters, climate change, and human activities, therefore it needs to be conserved; *dynamic advantages* need to be flexible, and adaptable, and create openness to awaken the potential of nature in a way that is efficient and sustainable. The dynamic advantage and the static advantage always support each other, interacting with each other in the process of development, and are two sides of an issue in efficiently exploiting and sustainably using natural resources.

The ecosystem services such as water resources, food, and energy are the pillars of economic development, but the contribution of these services has not been adequately evaluated in the accounts of many countries. It can be said that goods and services provided by natural resources are of significant value to human life and development, as well as to the nation. In reality, however, these assets are often viewed as "free assets" and are not economically valued appropriately, leading to unsustainable management, wasteful exploitation and use, and a lack of concern for the long-term benefits of natural assets for future generations. While if we have not fully understood the role of natural assets and their

true value (as recognized), we can easily answer the remaining questions such as: how to use natural assets efficiently and how their use affects human welfare, ...

In practice, there is a connection between biodiversity, ecosystem services, human health, and socio-economic development. The ecosystem services provide food, water, air, cultural and spiritual values, as well as support climate regulation and disease control. Biodiversity provides basic human needs for food and nutrition, maintains the sustainability of the environment and water resources, and promotes human health; creates direct benefits to address food insecurity and malnutrition; builds sustainable and efficient production systems for agriculture and aquaculture; enhances resilience to shocks and crises caused by climate change and natural disasters; improves rural economy and household livelihoods; supports to reduce external factors affecting land degradation, water cycles, and genetic diversity.

Most economic development plans and projects, from micro to macro scale, directly or indirectly impact the environment and natural resources due to the close linkages between ecosystems and economic activities. Along with economic growth comes the depletion of natural resources and the ability to sustain ecosystem services. The economic value of ecosystem services can be estimated, and the present value of ecosystem services is a fundamental part of natural capital. Natural assets such as forests, lakes, wetlands, river basins, oceans, and seas are important components of natural capital at the ecosystem level, playing a crucial role in maintaining the stability of the water cycle for agriculture and subsistence benefits; reducing the impact of climate change through carbon cycle management; the fertility of the soil and its value for agriculture; local climate conditions for habitat safety; aquatic protein, etc. These are all the decisive factors for green economic development. Integrating natural capital, especially ecosystem services, into the framework of sustainable development is necessary to ensure that development policies do not undermine efforts to maintain biodiversity and ecosystem services.

3.1.3. Natural capital - the foundation for energy, food, and water security

Various studies have demonstrated the importance of natural capital for ensuring energy, food, and water security, including oceans and poverty reduction for nations [10].

Many reports have also pointed out that Vietnam is one of the countries most affected by climate change, with the Mekong Delta being one of the three deltas in the world most vulnerable to sea level rise. According to the General Statistics Office of Vietnam, in the Mekong Delta region, up to 62.17% of the population is engaged in agriculture, forestry, and fisheries, and about 75% of the livelihoods of people in the region depend on agriculture, aquaculture, and partly on catching natural aquatic animals. Therefore, the expected impacts of climate change according to scenarios have highlighted a real threat to agricultural production in the Mekong Delta region and directly threaten the livelihoods of the people in this area (Nguyen Chu Hoi, 2020, 20).

3.1.4. The trends of climate change and the role of natural capital in supporting key economic sectors and adapting to climate change

- Trends of climate change in the world and Vietnam

Humanity is exceeding the carrying capacity of the natural environment and accruing ecological debts that future generations will be unable to repay. Climate change causes extreme weather phenomena, and sea level rise, and impacts various economic and social sectors, as well as different regions and territories. The more vulnerable objects are to climate change, the less resistant they are to its impacts. Climate change forces us to think in a completely different way about the interdependence between human beings. Regardless of any other aspects, humanity still shares a common existence on a planet - Earth. The bonds that connect communities across the planet are spanning regions, countries, and generations. No nation, no matter how large or small, can remain indifferent to the fate of other lands, or ignore the consequences of taken actions today that will affect future generations. In the past, the world had gone through four ice ages alternating with periods of melting, causing the surface temperature of the Earth to fluctuate, usually between 5-7 °C, with some places in the Northern Hemisphere experiencing up to 10-15 °C. That is the phenomenon of 'geo zone moving', corresponding to the periods of 'sea transgression, sea regression' caused by melting or freezing of ice. The last sea transgression period, named Frandrian, occurred about 20,000 years ago and the last ice age occurred about 6,000 years ago (Nguyen Chu Hoi, 2020, 47).

According to the climate change scenarios in 2009, 2012, and 2016 approved by the Prime Minister, by the end of the 21st century, the average temperature in our country will increase by about 2-3 °C, the annual and rainy season rainfall will increase, while the dry season rainfall will decrease, and the sea level may rise around from 75cm to 1m compared to the period of 1980-1999. Since 1951, the average annual temperature in Vietnam has increased by 0.7 °C. The average annual rainfall has not increased significantly over different periods and regions: there have been periods of increase and periods of decrease.

Over the past 50 years, at the Cua Ong and Hon Dau stations, the average sea level has risen by about 20cm, in line with the global trend. A recent abnormal climate phenomenon in the context of global climate change is the prolonged and severe cold caused by a cold air mass, which has caused significant damage to production activities. Recently, the number of strong typhoons has increased, the typhoon trajectory has gradually shifted to lower latitudes, and the typhoon season ends earlier. Many typhoons have irregular paths, and their trajectories are more chaotic, making them difficult to predict.

By 2100, it is projected that the sea level will rise by about 1 meter and the temperature will increase by about 3 °C. According to estimates, if the sea level rises by 1 meter, 10% of Vietnam's population will be directly affected, GDP will be reduced by about 10% and about 40,000 km² of Vietnam's coastal plain will be flooded annually. If sea levels rise by 90cm in 2070, about 50,000 hectares in the Red River Delta, 1.5-2 million hectares in the Mekong Delta, and around 400,000 hectares of mangroves and marshy areas in the South would be inundated (Nguyen Chu Hoi, 2020, 48).

- The role of natural capital in supporting key economic sectors and in adapting to climate change

Natural capital supports the development of key economic sectors such as agriculture, fisheries, forestry, tourism, and mining, ... Natural capital also supports industries and services such as tourism, which relies heavily on natural landscapes and particularly on eco-tourism associated with the conservation of nature, the sea, islands, and coastal areas.

Natural capital, especially ecosystems, provides a variety of services to humans and the economy, from provisioning services such as water and food to regulating services such as local climate regulation (Millennium E.A (2005)).

Protecting and restoring degraded ecosystems is an effective, cost-effective, and sustainable approach to offsetting the impacts of climate change and negative human impacts, particularly in the field of environmental economics. Strengthening ecosystem management will contribute to enhancing their self-healing capacity as well as increasing resilience to the impacts of climate change; protecting carbon sinks and contributing to climate change adaptation strategies. Climate change is increasingly impacting humans through increasing pressures on the integrity, functioning, and ecosystem services. Failures to invest in ecosystem protection that provides water and food services and protects critical coastal areas will jeopardize the livelihoods and millions of human lives (UNEP (2011)). Along with the growing awareness of the ecosystem's role in adapting to climate change is also increasing.

To rapidly reduce the number of atmospheric pollutants, scientists suggest that ecosystems in general and coastal ecosystems specifically (such as mangroves, seagrasses, and coastal wetlands) can absorb and store large amounts of CO₂ and are considered "carbon sinks" that help mitigate climate change. In principle, all living organisms, including animals, plants, algae, and bacteria, contain carbon, making them function as carbon sinks. If a green tree is still alive, it will absorb and store carbon, but once it is cut down and turned into firewood, the carbon will be released and emitted back into the atmosphere as CO₂.

3.1.5. The economy as an ecosystem

One of the far-sighted figures, among whom is Herman Daly. He popularized a viewpoint that he called a "steady-state economy," and as he wrote, this "is not a static economy but a dynamic, constantly regenerative one". He was inspired after reading the book *Silent Spring*. He recounted that at that time he was amazed to realize that "if you sit down, take out a piece of paper, and draw a small picture depicting the economy as a subset of a larger ecosystem", you will see that all economic growth is achieved at the expense of the ecosystem. He said that we were foolish to think that the human economy is an artificial structure that exists independently of nature, while in fact, it is completely dependent on the natural world and needs to learn a lot from natural processes. Next, he advocated for a radical shift from the growth-oriented economic model - and the cults of GDP - to a sustainable economic model and became one of the main advocates for sustainable development.

The question here is: How can we have a new economy that conserves, or even better, replenishes the natural world, while still being a prosperous economy that allows us to continue to improve the quality of life - including the quality of life of the developing world? In the search for answers, economists have turned to the field of ecology, and Daly had a huge impact as one of the founders of the new field of ecological economics, which laid the foundation for the concept of circularity.

3.2. Circular economy - green economy

3.2.1. From sustainable development to Regeneration

What is a circular economy? It is an economy that invests in advanced technologies related to material science, product design, recycling, and manufacturing, leading to a "closed-loop" system without waste where resources are not wasted. The products are made using clean, renewable energy sources and are locally produced; the materials used in production are sustainable, reusable, and recyclable materials, or biodegradable materials that do not cause environmental pollution and are being strongly developed today. The products are designed for long-term durability - not to quickly lose their value - and can be reused or repaired. Money is no longer wasted and the lives of all species are no longer destroyed by excessive dependence on natural resource exploitation and disposal of products in landfills. The design and production processes are optimized towards harmony with nature, with the product users, and with the communities in which they live.

The transition to applying circular methods to production, distribution, consumption, and the reuse of products and materials for healing our planet, also creates significant economic opportunities. Entrepreneurs with a spirit of innovation and creativity can use circular solutions to build businesses that have the potential to bring about significant social changes and rapid growth. Big corporations can reduce activities such as raw material procurement, product packaging, and transportation cost while satisfying customers with progressive, environmentally friendly perspectives. From a consumer perspective, we can save significantly by purchasing products that have a longer lifespan, can be upgraded and repaired when broken, and only subscribe to the services we desire from a product instead of paying a large sum to fully own the product. The circular economy ensures that consumers, consumer goods companies, and urban residents own an economy that operates for their benefit. It eliminates the need for a hundred billion dollars in costs for resource extraction and disposal of wasteful products that we have been paying for over the past seven decades. Equally important, it prevents the practice of stealing land and oceans from environmental polluters who loudly proclaim that such actions are necessary for economic development and growth. In a circular economy, fraudulent behavior is not encouraged. The factors here are practical effort, hard work, transparency, and innovative creativity.

Although a transition to a circular economy may seem infeasible due to the benefits of companies deeply ingrained in the extractive and wasteful use of resources. In fact, it is precisely the reasons for transitioning to a circular economy that is the strongest driving force behind the increasing adoption of this concept. Another important factor that is equally

important as the government's role is to encourage innovative activities in companies to produce products and services that have the potential to bring about change - of course, accompanied by the demand of consumers for these products and services.

At present, businesses have strong incentives to transition to a circular economy model. The reason here is not only because pioneering brands on this journey have achieved impressive achievements in both profit and consumer loyalty, but also because of the increasingly frequent appearance of effects caused by climate change. More and more companies are facing challenges in their supply chains, as the depletion trend of natural resources continues to drive up production costs. Not only that, they also struggle to cope with increasingly frequent natural disasters, from floods to water scarcity, from wildfires to rising sea levels. In addition, brands are increasingly aware that the public will hold them accountable for environmentally destructive practices as well as tactics to undermine the development of environmental protection solutions they implement.

3.2.2. The unique superiority of the circular economy model

In his role as founder and CEO of Closed Loop Partners, the first investment firm to prioritize mission-driven investments in circular solutions. The concept of the circular economy first appeared in the 1960s, but it is only recently that it has become a topic of interest for business leaders, financial investors, and key figures in non-governmental organizations. The driving force behind it is a group of entrepreneurs actively participating in designing products and services based on the circular economy model. The reason here is that these people have realized that the circular economy is a superior approach that helps them generate profits, while also having the potential to bring about change in the fight against climate change.

Walter Stahel, a Swiss architect and one of the thought leaders who founded the concept of a circular economy, has played a significant role in promoting the superiority of a closed-loop system. He founded the Product-Life Institute to implement circular production activities. Through these non-profit organizations, he has advised businesses, governments, and non-governmental organizations for many decades. He also played a critical role in setting out the core operating principles for the circular production model.

+ *Diminution*: Continuously reduce the demand for natural resources, waste generation, environmental damage, and greenhouse gas emissions.

+ *Reuse*: Prioritizing durability in product development, so that products and packaging can be transferred to new users without the need for refurbishment (or with only minor adjustments).

+ *Remanufacturing*: Repairing, refurbishing, and remanufacturing.

+ *Restoration*: Designing products that can easily disassemble parts and reuse materials within them, while also developing a "reverse logistics" process, is a model in which manufacturers and retailers reclaim sold products to refurbish and resell or recycle.

+ *Regeneration*: Utilize only renewable energy, apply regenerative production methods, and construct buildings that can self-supply resources (Nguyen Chu Hoi (2020), 23-24).

3.2.3. From sustainable development to Regeneration

In the climate change debate, the burning of fossil fuels is a topic that attracts a lot of attention, leading to important advances in this area. The process of converting energy from electricity and wind power is happening rapidly and plays a crucial role. But according to estimates, two-thirds of greenhouse gas emissions are directly attributable to the extraction of natural resources, production, and disposal of consumer goods.

The linear economy system, which is wasteful and harmful to the environment, was highly developed in the 20th century to enrich companies by exploiting an increasing amount of natural resources. For instance, extracting oil to manufacture plastic products, mining ores to produce metals, and logging trees to make paper, without taking responsibility for the damage they cause to the environment. They also disregard the public interest to earn profits by producing products that are not optimally durable, making these products quickly become obsolete or discarded after a single use. This behavior creates pressure that forces companies to continue to extract more natural resources to produce new products.

Consumers may thoughtlessly dispose of products along with their packaging after a single use rather than repairing, reusing, or recycling them, which has been deeply ingrained in the public subconscious through advertising campaigns. Advertising is also responsible for encouraging the habit of discarding products that are still in good use in favor of "upgrading products" or more attractive products. Taxpayers are often unaware that the companies responsible for these actions have been shifting the costs onto us for a long time. Many of the most serious violators, such as fossil fuel companies, have quietly lobbied for and received a hundred billion dollars in federal subsidies. The public is unaware that they have spent billions of dollars in taxes to subsidize the development and growth of industries that profit from the take-make-waste model of the economy.

There is no reason for us to continue paying for the exploitation of natural resources every time whenever we use a product or pay for the disposal of that product after it has been used. For the past 75 years, we have been deceived by paying for unnecessary costs, while the natural resources of land, air, and water that we jointly own are being seriously degraded and destroyed.

The damages that the Earth and societies living on the planet have to bear are becoming increasingly shocking. The pace of climate change is happening even faster than all previous predictions. Droughts are occurring more frequently and severely, contributing to the increase in the number of widespread forest fires. The large fires not only release a significant amount of carbon into the atmosphere but also greatly reduce the carbon absorption capacity of the burnt forests and destroy the habitat of hundreds of thousands of people each year. The tropical rainforests, which are currently the most powerful carbon sinks, are being degraded at an estimated rate of 80,000 square kilometers per year. The studies have shown that both the record-breaking heatwave in Europe in the summer of 2020 and the torrential rains brought by Hurricane Imelda, which caused severe flooding in Texas in September 2020, were intensified by climate change. According to the United Nations

estimation, by 2025, two-thirds of the world's population will be affected by the water scarcity caused by climate change (Ron. G, 2022, 15).

Many communities around the world have already witnessed the severe consequences of climate change, especially in poor regions and among indigenous peoples. According to Fourth National Climate Change Assessment Report released by the US federal government in 2018, people living in poorer areas of the United States are the most vulnerable to the impacts of pollution and property damage caused by extreme weather events. Polluting factories are often concentrated in impoverished areas, which are mostly home to minority communities. For example, according to information from Fortune Magazine, the West Louisville area of Louisville city in the state of Kentucky, where 80% of the population is black with an average income of \$25,000, is the place with the worst air quality among all medium-sized cities in the US. The air here is heavily polluted due to the presence of 56 regular emissions-producing factories. On average, residents in the West Louisville area have a life expectancy of about 12.5 years shorter than white residents living in wealthier areas of the same city (Ron. G, 2022, 15).

3.2.4. Sustainable development process

Looking back in history, before 1970, international efforts to protect the environment were still very fragmented, sporadic, and ineffective, with little impact on national and community levels. In the development process of the world, each region and country has faced many common pressing issues, including: as the economy grows, the scarcity of non-renewable resources such as fuels and energy sources increases, the natural environment is increasingly destroyed, the ecological balance is disrupted, and natural disasters are becoming increasingly devastating. The divergence between economic growth and social progress and development is a problem that plagues many regions and countries. Economic growth alone does not guarantee social progress and equality. Furthermore, economic growth often exacerbates the wealth gap, leading to social instability. Therefore, in the process of development, it is necessary to regulate a harmonious balance (harmonious development) between economic growth and ensuring social security and environmental protection. In other words, sustainable development has become a pressing demand for humanity and a global concern (Pham Thi Thanh Binh (2018).

The limits of growth prompted nearly 100 countries to come together at the United Nations Conference on the Human Environment held in Stockholm, Sweden in 1972. The conference marked the international community's initial efforts to address global environmental issues and a turning point in national-level awareness. In addition to the declaration of general principles with the Article 109 action plan, the 1972 Stockholm Conference officially addressed a global issue regarding the relationship between the environment and development, between nature and humanity. After 20 years of implementing the Stockholm action plan, in 1992, the United Nations organized the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil (abbreviated as Rio-92). The conference attracted 178 countries (including 114 heads of state), over 1.000 high-level delegates, 9.000 journalists, and 1.400 representatives from

non-governmental organizations. Each package consists of 5 main products of the Conference: Rio Declaration on Environment and Development, Framework Convention on Climate Change, Convention on Biological Diversity, Agenda 21, and Forest Principles. Since Stockholm in 1972 with the message of "Environment and Development", the world community has had to "give in" to pressing environmental issues and development needs to address widespread poverty around the world.

It can be said that the journey towards "sustainable development" leading up to Rio '92 began with the International Union for Conservation of Nature (IUCN) when it addressed the "narrow content" of this term in the "World Conservation Strategy" (1980). The goal at that time was "to achieve sustainable development by protecting biological resources", meaning that only ecological and biological sustainability was emphasized. Afterward, the report "Our Common Future", also known as the Brundtland Report (1987) by the World Commission on Environment and Development (WCED) acknowledged the interconnectedness of development and the environment; sustainable development was defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs. According to Professor Marco Adriatic (2020), this definition assumes that we only rely on renewable resources and do not alter the environment as we are doing, in which case the term "sustainability" is being misused. From there, a more practical and feasible definition is needed, which is: sustainable development does not harm the environment and does not deplete resources, and therefore supports long-term development (Marco Adriatic (2020). Although, as we all know, the content of sustainable development defined by WCED was reaffirmed and further developed at the Rio-92 Summit, and supplemented and completed at the World Summit on Sustainable Development held in Johannesburg (South Africa) in 2002 (Rio+10).

The essence of the concept is that sustainable development must be understood as a developmental process, in which the "spatial relationships" between the three pillars (welfare areas) - economy, society, and environment are always optimally adjusted, as well as the "time axis relationship" of needs and benefits between generations are harmoniously addressed. In other words, sustainable development emphasizes the three main aspects of development, and sustainable development principles must be implemented in all three pillars - economic, social, and environmental. In addition, attention should also be paid to other "encompassing" pillars such as culture and sustainable institutions. Specifically, sustainable development involves three main aspects: economic development (especially economic growth), social development (achieving progress, social justice; eradicating poverty and addressing employment), and environmental protection (treating and remedying pollution; restoring and improving environmental quality; fire prevention and forest clearance; sustainable exploitation and use of natural resources, and the ocean). It also involves preserving culture (cultural values, beliefs, and behavior, etc.) and reforming governance (mechanisms, policies, human capacity, coordination capabilities, etc. in implementing sustainable development).

3.2.5. Sustainable development criteria

- Sustainable economic development

Sustainable economic development means fast, safe, and high-quality development. Sustainable economic development requires the development of an economic system where opportunities to access natural resources for economic activities are shared equally. The key focus here is to create shared prosperity for all, not just to concentrate profits for a few, within the limits of the ecosystem and without violating basic human rights. The aspect of sustainable economic development includes some basic contents: (1). Reducing energy and resource consumption through energy-efficient technologies and lifestyle changes; (2). Changing consumption patterns without harming biodiversity and the environment; (3). Equality in access to resources, living standards, healthcare, and education services; (4). Dramatically eradicate poverty and hunger; (5). Clean technology and eco-industrialization (recycling, reuse, waste reduction, and renewable energy regeneration).

A sustainable economy needs to meet the following requirements: (1). Maintaining a high GDP growth rate and per capita GDP. Developed countries with high incomes still need to maintain their growth rate, while poor countries with low incomes need to increase their growth rate even higher. Countries that are currently developing (including Vietnam) need to achieve a GDP growth rate of around 5% per year to be considered to have sustainable economic development in the present conditions; (2). GDP structure is also a criterion for evaluating sustainable economic development. Only when the share of industry and services in GDP is higher than agriculture, the sustainable growth can be achieved; (3). Economic growth must be highly efficient and not accept growth at all costs (Pham Thi Thanh Binh (2018).

- Sustainable social development

Sustainable social development is evaluated by criteria such as the Human Development Index (HDI), income inequality ratio, indicators of education, health, social welfare, and cultural enjoyment are used to evaluate sustainable social development. In addition, social sustainability entails ensuring harmonious social life; maintaining equality among social strata; gender equality; keeping wealth disparity within reasonable limits and tending to converge; and minimizing regional differences in living standards. Social justice and human development, as measured by the HDI index, are the highest criteria for social development, including average income per capita; literacy, education, health, life expectancy; and enjoyment of culture and civilization.

Sustainable social development focuses on equity. Social development always needs to create favorable conditions for human development and strive for everyone to have the opportunity to develop their potential and have acceptable living conditions, without leaving anyone behind. Sustainable social development includes several main contents: stabilizing population, developing rural areas to reduce the pressure of migration to urban areas; minimizing the negative impacts of the environment on urbanization; improving education, eradicating illiteracy; protecting cultural diversity; gender equality, caring for gender needs and interests; enhancing public participation in decision-making processes.

- Sustainable development of the environment

The process of industrialization, modernization, agricultural development, tourism; urbanization, construction of new rural areas, etc. all have an impact on the environment and negatively affect the natural conditions. Sustainability in the environment means that when using natural resources, the quality of the human living environment must be ensured, including air, water, soil, geography, and landscape; regularly evaluated and verified according to national or international standards. Exploiting and using natural resources reasonably, protecting the environment, and improving the quality of the living environment. Sustainable environmental development requires us to maintain a balance between protecting the natural environment and exploiting natural resources for the benefit of humans, to maintain a level of resource extraction within a certain limit that allows the environment to continue to support living conditions for humans and living species on Earth. Specifically, sustainable development in the environment includes the following basic contents: (1). Efficient use of resources, especially non-renewable resources; (2). Developing without exceeding the carrying capacity of ecosystems; (3). Protecting biodiversity and the ozone layer; (4). Controlling and reducing greenhouse gas emissions; (5). Tightly protect sensitive ecosystems; (6). Reducing discharge, mitigating pollution (water, air, soil, food, crops), improving and restoring the environment in polluted areas, ...

Vietnam has implemented several models of the circular economy such as scrap iron recycling, paper recycling, etc. in agricultural models such as garden-pond-livestock, garden-forest-pond-livestock, gas recovery from animal waste, and cleaner production models in small and medium-sized industries. Although there are still some limitations, these models have begun to approach the circular economy.

At present, the whole society has a greater awareness of the issues related to sustainable management and use of resources, environmental protection, and climate change response. Some new models that are closer to a circular economy have been developed, such as ecological industrial park models in some localities; the "No discharge into the environment" concept initiated by the Vietnam Chamber of Commerce and Industry (VCCI); model of processing aquatic by-products; Packaging Recycling Organization Vietnam; Vietnam's global plastic partner... These models, when summarized and evaluated based on fundamental principles and criteria, will contribute to supplementing and improving the circular economy in Vietnam.

(ii). Draw the common relationship, the connection between the results in previous studies. No study examines the relationship between natural capital and circular economy, green economy.

4. Conclusion

Developing a circular economy has become a trend in countries, especially when natural resources around the world are increasingly depleted, helping to solve the problem of balancing economic interests and the environment. The circular economy is an economic model that aims to extend the lifespan of materials and eliminate negative environmental

impacts. Viet Nam is striving to develop a sustainable economy, minimizing negative impacts on the environment, and a circular economy is a model of interest and oriented development.

The shift from a linear economy to a circular economy is a global trend, and Vietnam is not an exception to this trend. That is the best way to address the relationship between economic growth and negative impacts on resource depletion, pollution, and environmental degradation, or in other words, no longer having to trade-off between economic development and environmental protection, achieving multiple sustainable development goals simultaneously. Implementing this direction, requires efforts from all sectors of society, especially businesses as the central driving force, the state plays a role in creating, leading, and engaging the community to change both the perception and behavior of the whole society.

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PROMOTING THE GREEN ECONOMY TOGETHER ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT IN VIETNAM: SOME THEORETICAL AND PRACTICAL ISSUES

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Abstract

The development of the economy causes great damage to the environment, such as air pollution, water resources; land degradation; biolayer depletion; increasing emissions of greenhouse gases such as CO₂, SO₂, and CH₄... especially global climate change. Therefore, the development of a green economy has become an inevitable trend of countries in order to achieve economic growth, while maintaining environmental and ecological sustainability. In Vietnam, in the past years, there have been many concrete actions to realize the goal of green growth and development of a green economy, initially bringing many practical results. However, the reality is also changing poses many challenges to be solved. The article analyzes the current situation of developing a green economy to protect the environment in a sustainable way in Vietnam, thereby offering solutions to develop a green economy in Vietnam today.

Keywords: *The green economy; Environment; Environmentally sustainable development.*

1. Introduction

The development of the economy causes great harm to the environment, such as air pollution, water resources, land degradation; Deforestation; biolayer depletion; increasing emissions of greenhouse gases such as CO₂, SO₂, CH₄... Therefore, the development of a green economy plays an important role in economic growth while maintaining environmental and ecological sustainability. The XIII Party Congress affirmed the importance of promoting the development of a green economy and a circular economy in association with ensuring environmentally sustainable development. The study focuses on clarifying the theory of the green economy, clarifying the current situation of green economic development for environmentally sustainable development in Vietnam today, thereby proposing some solutions to promote development. green economy development in Vietnam in the coming time.

2. Literature review and Theoretical framework

Green economy issues have been interested by researchers around the world since quite early, such as: Dorling (2007), Luo (2012), Egorova et al. (2015), Maria et al. (2015), Georgeson & Maslin (2019), Sulich (2020), Mikhno et al. (2021). In Vietnam, most of the current research focuses on a number of theoretical issues about green economy, green

economic development in the fields (agriculture, industry, energy,...); experience in developing green economy in the world and lessons for Vietnam; some green economic models (greening the economy, applying biotechnology, responsible business models of all economic sectors,...) such as Kim Ngoc, Nguyen Thi Kim Thu (2015), Do Phu Hai (2018), Nguyen The Chinh (2019), Le Nguyen (2022), Doan Thi Cam Thu (2022)...

Countries around the world have undergone a transition from brown growth to green growth. This transition enhances the quality of life for humanity and mitigates the effects of climate change.

Brown growth is a process of economic development that is mainly based on fossil fuels and does not consider the negative side effects of economic production and consumption on the environment. In contrast, green growth is seen as a shift to a cleaner energy system, more efficient energy consumption and more rational management of natural resources (The World Bank, 2013). The author Hallegatte (2012) believes that green growth will make the growth process save natural resources, create a cleaner and flexible environment, without necessarily slowing it down.

According to Matthews (2013), a brown economy is an economy that depends mainly on fossil fuels, increases the risk of environmental damage and does not consider social problems, environmental pollution and depletion resources. In contrast to the brown economy, the green economy is an economy with the goal of reducing environmental degradation and ecological scarcity, with the goal of sustainable development without damaging the environment. The green economy is often depicted in opposition to the use of fossil fuels and non-renewable resources (Matthews, 2013).

A green economy can also be understood as a dynamic economic transition, with the goal of low carbon, increased resource efficiency and increased people's well-being by using technology and creating create new jobs, while minimizing environmental degradation in the long run (Frone & Simona, 2015).

The data used in this study includes primary and secondary data. Secondary data is collected mainly from published documents such as specialized reports at home and abroad, reports of meteorological agencies and local statistics. Primary data is collected by several organizations such as Communist Party of Vietnam, General Statistics Office, Ministry of Planning and Investment, Ministry of Natural Resources and Environment.

3. Results

3.1. Some theoretical issues on the green economy, environmental sustainability

3.1.1. What is the green economy?

The European Union considers that "a green economy is an economy with smart, sustainable and equitable growth" (European Commission, 2010). The Green Economy Coalition Group defines a green economy as "an economy that produces a better quality of life for all within the ecological limits of the earth" (Green Economy Coalition, 2012).

In 2011, in the Report "Towards a green economy: A path to sustainable development and poverty reduction", UNEP defined a green economy as a green economy that improves living standards and improves equity in society, while significantly reducing environmental risks and ecological resource scarcity. A green economy can be thought of as a low-carbon, resource-efficient, and socially inclusive economy. The core meaning of the green economy is that economic growth goes hand in hand with environmental protection (UNEP, 2011).

The World Bank (WB, 2012) defines a green economy as "economic development that ensures the efficient use of natural resources, which reduces pollution and impacts on the environment, enhances resilience to natural changes, promoting the role of state management of the environment and natural resources in preventing natural disasters".

According to the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP): A green economy is an approach to achieving economic growth with the aim of economic development while ensuring environmental sustainable development. A green economy focuses on quality innovation of the growth model through promoting ecological efficiency. A green economy is considered a model of higher quality development, in-depth development, and green growth to integrate environmental protection and reduce carbon emissions in production and business as a driving force for development.

From the above definitions, it can be generalized that a green economy is an economy that uses energy economically and efficiently, has low emissions and reduces environmental risks, and improves the quality of life. social balance.

3.1.2. Environmental sustainable development

The United Nations World Commission on Environment and Development defines "sustainable development" as "development that meets the needs of the present without compromising the ability of other countries to meet their own needs " future generations" (World Commission on Environment and Development, 1987). The Earth Summit on Environment and Development held in Rio de Janeiro (Brazil) in 1992 stated that "sustainable development" is a process development has a close, reasonable and harmonious combination of three aspects of development, including economic development, social development, and environmental protection.

Thus, sustainable development is a development that ensures economic growth based on of rational use of natural resources and protection of the natural environment to satisfy the needs of the next generation. Today, while not affecting the conditions and ability to satisfy the needs and living environment of future generations.

Environmental sustainable development is the rational use of natural resources, maintaining a stable resource base, and avoiding the over-exploitation of renewable resource systems. Environmental sustainable development needs to maintain biodiversity, atmospheric stability, and other ecological activities, needs to limit environmental pollution including urban and industrial pollution, needs to must manage and treat well solid waste and hazardous waste, be able to prevent and minimize the impacts of climate change and natural disasters.

The green economy towards environmental sustainable development is a high-quality development model that focuses on innovating the quality of the growth model in depth, integrating the objectives of environmental protection, economic use, and environmental protection. Energy and natural resource efficiency, have low emissions and reduce environmental risks and improve social equity. Environmental protection, sustainable management and use of natural resources, and response to climate change are considered key issues of the green economy.

3.1.3. The role of the green economy in environmentally sustainable development

First, the green economy mitigates the impact of climate change. According to calculations, only about 1.25% of global GDP needs to be invested in improving energy efficiency across sectors and developing renewable energy, including second-generation biofuels, to worldwide energy consumption could be reduced by 36% by 2030 and annual CO₂ emissions would decrease from 30.6 billion tons in 2010 to 20 billion tons in 2050. Plus, thanks to agriculture Green, the green economy scenario is estimated to reduce greenhouse gas concentrations to 450ppm by 2050, a level that is considered reasonable and sufficient to limit global warming to 2 degrees Celsius. According to UNESCO, green investments in the forestry and agricultural sectors will help reverse the current trend of forest land decline, renewable about 4,5 billion hectares of this important resource over the next 40 years. Investing in green agriculture improves productivity, produces more food, reduces land use for agriculture and livestock by 6%, and improves agricultural land quality by 25% by 2050.

Second, the green economy encourages the use of renewable energy, and new energy more efficiently to protect the environment. The green economic model recognizes the value and role of investment in natural capital, creating jobs, as a pillar to reduce poverty. Therefore, instead of using fossil fuels, the green economy uses renewable energy and low-carbon technology, encouraging more efficient use of resources and energy. As natural resources are increasingly depleted and biodiversity declines and environmental pollution increases, the use of renewable energy will help reduce greenhouse gas emissions and risks of chemical fuel price fluctuations jelly.

Renewable energies are energy sources with almost inexhaustible reserves, long-term potential, and environmental friendliness such as wind, solar radiation, tides, biogas, wood, biomass, etc. block (straw, rice husk, leaves)... The United Nations Environment Program emphasizes the use of renewable energy (solar energy, wind energy, geothermal energy, biogas...); Designing and building greenhouses with the use of clean energy, efficient use of water, consumption of green products, environmentally friendly materials; Environmentally friendly transport with the increasing use of biofuels, cycling on the streets and public transportation by steam and electric vehicles...in the green economy.

Thus, the use of renewable energy is also one of the new driving forces of the green economy, which is environmental protection, towards sustainable environmental development.

Third, a green economy that reduces carbon emissions opens up sustainable urban life and protects the environment. Urban areas today are home to more than 50% of the

world's population, consume 50% - 60% of energy, and emit 75% of total greenhouse gas emissions. Rapid urbanization is putting increasing pressure on clean water supply, drainage, and public health, often resulting in poor infrastructure, declining environmental performance, and public health care costs. plus high. As urbanization and increasing urban affluence will continue to drive the growth of energy demand in cities, technology and behavioral changes in urban energy systems will be strategies to achieve long-term sustainability of global energy use - including the necessary carbon emissions cuts.

3.2. Current status of green economic development for environmentally sustainable development in Vietnam today

3.2.1. These achievements

In recent years, climate change in Vietnam has continuously set new records in terms of temperature, rainfall, sea level, occurrence frequency and influence of super typhoons, floods and storms. tropical depression... Vietnam is one of the countries most heavily affected by climate change and sea level rise. This is considered a direct cause of changes in the environment and the earth's ecology and is a risk of negative impacts on the socio-economic development of all countries in the world. The World Bank estimates that climate change will reduce Vietnam's GDP by 3.5% by 2050.

Along with the goal by 2030, Vietnam will basically become a modern industrialized country, in which a number of industries with international competitiveness and deep participation in the global value chain have increased. pressure on the environment and natural resources. Therefore, green economic development is an inevitable trend, both ensuring the goal of economic modernization, environmentally sustainable development and enhancing the ability to respond to climate change. Research to properly assess the impact of climate change, reduce environmental degradation and improve resilience and adaptation to climate change is an important and urgent goal that needs to be resolved soon to ensure green development in the future.

In the context of the Covid-19 epidemic, many countries are promoting the recovery of economic growth in the direction of green growth or "green recovery". For Vietnam, the shift to a green economy and green growth is not only an inevitable choice but also an opportunity to become a pioneer in the region, catching up with the development trend of the world.

- Firstly, the policy on green economic development, environmental protection

Vietnam is one of the few countries that is heavily affected by climate change and has suffered many negative impacts from natural disasters and epidemics. According to calculations, in the past 20 years, in our country, all kinds of natural disasters have killed more than 13,000 people and caused economic losses of more than 6.4 billion USD (Tuan Ngoc, 2022). According to climate change scenarios. According to the Ministry of Natural Resources and Environment, by the end of the 21st century, a 1m rise in sea level could directly affect the lives and livelihoods of about 20% of the population and the loss could reach 10% of GDP per year (Ministry of Natural Resources and Environment, 2016).

Recognizing the impacts of climate change on people's lives, over the years, Vietnam has had many green economic development policies. The orientation and goal of greening the economy are detailed in the Prime Minister's Decision No. 1393/QĐ-TTĐ dated September 25, 2012, approving the National Strategy on Green Growth 2011-2020. and a vision to 2050; Decision No. 2612/QĐ-TTĐ dated December 30, 2013, of the Prime Minister approving the Strategy on using clean technology for the period to 2020, vision to 2030; Decision No. 1658/QĐ-TTĐ dated October 1, 2021, of the Prime Minister approving the national strategy on green growth for the period 2021 - 2030, with a vision to 2050. The Prime Minister also approved the National Action Program on sustainable production and consumption from 2021-2030 to exploit and use resources in sustainable, and environmentally friendly as well as create stable jobs. decisions and green jobs, thereby promoting sustainable lifestyles and improving the quality of life. The 13th Party Congress affirmed the policy of building a green economy, a circular economy, and being environmentally friendly: "Continue to develop the country quickly and sustainably, ensure macroeconomic stability, strongly renew the growth model, improve productivity, quality, efficiency and competitiveness of the economy. Actively and effectively adapting to climate change, managing, exploiting, rationally, economically, efficiently and sustainably using natural resources; taking the protection of the living environment and people's health as the top goals; resolutely eliminate projects that cause environmental pollution, ensure the quality of the living environment, and protect biodiversity and ecosystems; build a green economy, circular economy, environmentally friendly". (Communist Party of Vietnam, 2021).

Secondly, transforming the economic production model, renewing the growth model from "brown" to "green" and integrating environmental protection goals.

Transforming the economic structure, renewing the growth model from "brown" to "green", from intensive exploitation of natural resources to development based on ecosystems, digital economy, circular economy, and carbon low is the development trend of the world. The production technology in Vietnam today compared to the world is mostly old technology, large energy consumption, and poor waste treatment leading to low production efficiency, generating a large amount of polluting waste, and increasing costs. increase greenhouse gas emissions. Green production is becoming one of the models targeted by many businesses, to meet new requirements and be in line with the general development trend of the world. At the same time, this model also helps to improve the position and competitiveness of enterprises in both domestic and foreign markets.

In the field of agriculture in Vietnam, green farms have been established with scientific production plans and strict production processes; production development is associated with the creation of a sustainable ecological environment and biodiversity. In addition, many local farmers have joined agricultural cooperatives to produce organically, without using chemical fertilizers and pesticides, providing clean products for consumers. use. For example, at Huy Long An Company Limited, fruit trees such as bananas, grapefruits, and durians, raising Australian cows, Japanese cows, and shrimp... are all

applied by enterprises under the continuous clean production model, self-contained according to the lowest standard is VietGAP.

In the industrial sector, enterprises have limited old and outdated technology; promote research and application of science and high technology to production. According to the data of the General Statistics Office, in the period 2011 - 2015, the proportion of high-tech products in the total industrial production value averaged 18.37% (UNDP, 2015). In the period 2016 - 2020, this number also increases from 63.9% in 2016 to nearly 80% in 2020 (Nguyen Tuan Phong, 2021). Besides, the industrial production sector has had positive changes. The rate of industrial enterprises applying cleaner production technology increased from 11% to 32% in the period 2011-2015, the industries that consume a lot of energy tend to decrease, especially the steel industry (down 8.09%), cement (down 6.33%), textile yarn (down 7.32%) (Lan Anh, Thu Phuong, 2019).

In the service sector, people and investors have gradually shifted their shopping habits to "green" consumption channels and prioritized health protection and renewable energy. To meet the needs of people to buy clean and clear products, clean food companies were born such as Sea Wolf, Uncle Tom, Home Food, and Hano Farm... Restaurants, food shops, supermarkets, etc. switch to using "green" products such as packaging and items made of environmentally friendly materials instead of nylon, single-use plastic such as milk tea shops using bamboo or stainless steel straws instead of plastic straws; Supermarkets use banana leaves to pack vegetables, food instead of plastic bags, use environmentally friendly packaging, etc. The survey results of Nielsen Vietnam Company show that Vietnamese consumers are increasingly more interested in "green" and "clean" issues, they are willing to pay more for brands with "green" and "clean" commitments. Specifically, up to 80% of consumers are concerned about the long-term harm of artificial ingredients and 79% are willing to pay extra to buy products that do not contain unwanted ingredients (Ministry of Industry and Trade, 2017).

Third, use energy economically and efficiently, renewable energy to reduce emissions and protect the environment. Vietnam is one of the countries most severely affected by climate change. Extreme weather events occur more and more frequently and erratically (long-lasting heat, drought, storms and floods, saltwater intrusion, and sea level rise in coastal areas...), and the causes are related to global warming and greenhouse gas emissions. It is estimated that the total amount of greenhouse gas emissions in 4 sectors: energy, agriculture, and waste in 2020 are 466 million tons of CO₂ and in 2030 will increase to 760.5 million tons of CO₂ (Ministry of Planning and Investment, 2021). In addition, Vietnam is currently facing the negative impacts of climate change. Large amounts of greenhouse gases have serious consequences for the atmosphere, especially in big cities, affecting the atmosphere. If these effects are not reversed by emission reduction measures,

Currently, Vietnam has promoted the development of renewable energy, and clean energy to reduce emissions. Biomass energy projects, such as the Bio-power plant in Phu Tho, the biomass thermal power plant in Binh Phuoc, rice husk-fired thermal power plant in Can Tho. The electricity of Vietnam has built 113 solar and wind power projects, with a total

capacity of wind and solar power sources of nearly 23,000MW, of which, solar power is about 11,200 MW, and wind power is about 11,800 MW. Bringing Vietnam into the top 10 countries with the highest installed solar capacity globally by 2020. With great potential for solar power and ambitious green energy targets by 2050, Vietnam South has many opportunities to become a global leader in renewable energy.

In the fields of agriculture, forestry, and construction, there have also been significant advances in the process of implementing green growth. Many programs have been put into practice, bringing efficiency in production and business, such as Good Agricultural Practices (VietGAP) for key agricultural products (such as vegetables, tea, rice, etc, and coffee), water-saving irrigation procedures for rice, for dry crops; biogas program in the livestock industry, saving and improving energy efficiency in fishing; action plan to reduce greenhouse gas emissions in cement production; implementing integrated solid waste management; green urban development or action plan to reduce CO2 emissions in civil aviation activities.

3.2.2. Limitations, existing in the process of developing a green economy toward environmentally sustainable development

Vietnam's green economy is also facing many difficulties and challenges.

- The lifestyle and consumption patterns of a part of some people are still wasteful, destroying resources, unfriendly, and in harmony with nature. Awareness and understanding of green growth, and building a green economy towards sustainable development, require extensive research and knowledge dissemination in both political systems, businesses, and industries. community.

- Labor quality is not high, science and technology level is still limited. Besides, the economic growth model is still mainly broad-based, dependent on foreign direct investment. Labor restructuring in the market is still slow, unable to keep up with economic restructuring: In 2022, 53.61 million people aged 15 and over are employed, including 17.0 million workers in industry and construction (accounting for 33.6%); service sector is 19.7 million people (accounting for 38.9%); labor in agriculture, forestry and fishery reached 13.9 million people, (accounting for 27.5%). While, in the economic structure in 2022, the agriculture, forestry and fishery sector accounts for 11.88%; industry and construction accounted for 38.26%; service sector accounted for 41.33%; product tax minus product subsidies accounted for 8.53%.

- The legal system is in a transition period that is not synchronized, not suitable for the trend of globalization and towards green growth;

- The efficiency of using resources is low and wasteful, natural resources (natural capital), especially biological resources, are severely degraded, non-renewable resources are exhausted; Production technology is outdated, consuming a lot of energy; The "brown" economic sectors are accounting for a large proportion of the economy. The old technology produced in Vietnam today compared to the world is mostly old technology, large energy consumption, and poor waste treatment leading to low production efficiency, generating a

large amount of polluting waste and increasing costs. increase greenhouse gas emissions. Clean energy production industries such as nuclear energy, wind energy, solar energy, biomass, and geothermal... have not yet developed. In addition, many supporting industries, solving environmental problems, environmental services, and recycling industry... are still weak;

4. Discussion and Conclusion

Developing a green economy is a trend of the world and also a goal towards environmentally sustainable development. The green economy meets both economic growth and environmental protection goals. The green economy has an important role in environmental sustainability: mitigating the impact of climate change; reducing energy consumption, increasing the efficiency of clean energy use; reducing carbon emissions to ensure the health of urban residents. In the strategy of developing a green economy, Vietnam has achieved positive results, but there are still certain difficulties. Proposing solutions to develop a green economy associated with environmental protection is very necessary for Vietnam today.

Firstly, propaganda to raise awareness of the political system, businesses, and the community about developing a green economy in association with sustainable environmental protection goals. Therefore, it is necessary to develop and implement communication and propaganda projects to raise awareness of the whole political system, businesses, and the community about implementing green growth and contributing to building a developed country. lasting; Extensive propaganda for people to participate more deeply in the green economy and green growth chains, thereby raising people's awareness of environmental protection and natural resource protection in production activities. production and consumption in particular and in economic development

Secondly, Completing the legal corridor suitable for green economic development. These can be financial measures, national policy reforms, international cooperation through trade, aid, and market development. .. To develop laws and regulations to promote, encourage and support the development of organizations, individuals, and businesses with the direction of green development, green business, and environmental protection. In addition, there should be sanctions for organizations and individuals that destroy the environment in the process of production and business. Resolutely not allowing foreign corporations and organizations that tend to cause harm to the environment to be allowed to invest in a business, construction, and production. Asianapply green economic tools, and uniformly use the national system of standards and green classification criteria for production and consumption activities.

Thridly, increase investment in science and technology development; especially promoting research and research cooperation with international partners in the fields of industries serving green economic development, such as: using renewable energy, production technology that saves resources, consumes less energy, seeking low-emission technological solutions, supporting conditions for technology transfer, and promoting the deployment of these technologies in all industries and fields to achieve the goal of economic growth while ensuring national emission reduction target.

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FACTORS INFLUENCING BEHAVIOUR OF HOUSEHOLD SOLID WASTE SEPARATION IN THANH XUAN DISTRICT, HANOI CAPITAL

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Abstract

Although some programs of waste separation at source have been deployed over the last decades in Hanoi capital, they have stopped at the level of pilot-programs and have generally not been replicable. Using the theory of planned behavior (TPB), this study examines factors associated with waste separation behaviors by analyzing responses to questionnaires distributed in Thanh Xuan district, Hanoi capital. Results from the survey of 75 valid respondents in Thanh Xuan district have revealed that two factors, namely: household attitude and subjective norms, have impacts on households of solid waste separation behavior. These findings suggest that it is indispensable to build up educational campaigns that may raise people's awareness and beliefs about the benefits of solid waste sorting in conserving natural resources as well as reducing the use of landfills and emissions of greenhouse gasses. Moreover, public media and communication campaigns should be designed appropriately with the aim to attract more and more people to perform waste sorting behavior.

Keywords: *Municipal Solid Waste, Solid Waste, Source Separation*

1. Introduction

During past years, Viet Nam has to face numerous difficulties and challenges in solid waste (SW) management due to urbanization process, rapid economic and population growth. According to the Ministry of Natural Resources and Environment (MONRE, 2020), the amount of SW increase at a rate of 12%/year, equivalent to 64,658 tons/day. It is estimated that in urban areas, the average amount of municipal solid waste (MSW) will growth by 10-16%/year (more than 13 million tons/year, accounting for 55% of the total volume of SW generated in the country). Although volume of SW is large, the qualifications of infrastructure system and management capacity are still limited, which has not met the needs of the development process, causing a lot of pressure on the environment and society.

Separation of SW at source is an important segment of SW management. It has been considered as the first step in this management chain, plays a critical role in determining the quality and quantity of waste flowing into the follow-up processing procedures, such as recycling, transportation, landfilling, incinerating, and composting. It is also a fundamental condition in *closing the loop of materials*, which is expected to reverse the negative impacts

of solid waste on the environment and the scarcity of natural resources (Zhu, 2013). In Vietnam, although pilot programs of waste separation at source have been deployed since the 1996, they have not been scaled up. Most of the SW generated is disposed of in landfill sites, causing severe pollution and overload of waste.

Thanh Xuan district is located in the southwest of the Hanoi capital, with an area of 9.11 km². With an average economic growth rate of 6.1% and an increase in population of about 8000 people (Hanoi Statistical Office, 2022), the district has many environmental problems, especially MSW. SW daily generation in the district is about 247 tons/day, equivalent to an average of 0.8 - 0.9 kg/person/day, of which food waste accounts for about 51.9%, and about 48.1% of household waste is recyclable (URENCO, 2021). To promote the recycling and reuse and reduce the amount of SW emitted in the environment, the active participations from the community in MSW classification activities play an important role. In this paper, investigation and evaluation of MSW source-separated collection are carried out. Based on these analyzes, some suggestions and recommendations are proposed to encourage households' participation and improve MSW management.

2. Research Method

2.1. Data collection

- *Primary data collection:* To identify the factors affecting the behavior of households' waste classification in Thanh Xuan district, questionnaires has been designed to collect opinions of households by randomly visiting households at 4 wards, including: Khuong Dinh, Khuong Trung, Ha Dinh, Thuong Dinh from 3/2023 to 4/2023. A total of 84 questionnaires were delivered, and 81 attained samples. After screening and removing invalid questionnaires (those were not fully completed or the answers were one - scale dimension), a total of 75 valid samples were used for further analysis. In this study, the questionnaire includes two main sections, which were designed to fulfill the research objectives and several key requirements from the research hypotheses. The first section focuses on the measurement of the construct in the research model. Questions on attitude towards waste separation, social norms, perceived behavioral control, knowledge about waste separation, laws and regulations, propaganda, and behavioral intentions were included. Studying factors impacting separation behavior intention uses the scale Likert that is 5 levels. In the second section, questions on demographic characteristics were asked, including gender, age, and education level.

- *Secondary data collection:* The study is based on information collected from documents including documents, laws, projects, and research reports related to the behavior of MSW classification in the period from 2018 to 2022. The author also collects information and statistics from the General Statistics Office, the Ministry of Natural Resources and Environment on MSW management.

2.2. Methodology

- *Quantitative analysis*

To investigate factors influencing on household's separation, the data is calculated and processed by excel and SPSS.29 software.

Frequency statistics: the authors use excel to re-statistic the frequency and percentage of factor groups, usually applied to qualitative variables. In this study, they are variables about demographic characteristics such as gender, age, income, education level. The results of frequency statistics help to evaluate the structure of each variable.

Methods of data processing: SPSS software are employed for exploratory factor analysis (EFA), scale testing (Cronbach's Alpha). Next, after the steps of checking the factors, the author removed the bad variables and continued to use SPSS software for correlation analysis and regression analysis - testing the hypotheses.

- *Theory of solid waste separation behavior*

Under the concept of pro-environmental behaviors, the Theory of Planned Behavior (TPB) has been applied to predict the likelihood or intention that individuals will engage in various pro-environmental behaviors (Ajzen, I., 1991). For SW management, many studies rely on TPB theory to prove that psychological factors including attitude, subjective norms, and perceived behavioral control (PBC) are main predictors to waste separation intentions and are based on their positive intention. Gold (2011) suggested that an individual's behavior can be predict better with a model that includes moral obligation, these additional variables are all consistent with the original TPB. In addition, Zhou, M. (2019) states that waste segregation advertisements are found everywhere in newspapers, television, radio and on the internet or local authorities take measures. If the policy promotes the classification of people and makes it widely available, it will contribute to increasing the behavior of garbage segregation.

Therefore, to assess the factors affecting the behavior of SW classification in Thanh Xuan district, this study is based on the TPB and adds two more variables, namely personal moral obligation. support policies of local governments.

(1) *People's attitude (AT)*

People's attitude is the positive or negative attitude of an individual in performing a particular behavior. Attitude is a relatively stable psychological structure that many studies have confirmed and predicted the influence of this factor on the behavior of participating in environmental protection. Studies have shown that individuals with a positive attitude are more likely to be willing to participate (Zhang Y. et al., 2019). This study expects that if people have a positive attitude towards environmental protection, the level of participation in the classification of solid waste will be high and vice versa.

(2) *Subjective norms (SN)*

Subjective norms refer to the influence of external social pressures on an individual's particular behavior. They are usually the regulations of units, mass organizations, authorities or from family, friends and colleagues. McEachan R.R.C. (2011) have shown that the greater the external social pressure, the stronger the individual's willingness to participate in environmental protection activities. In this study, subjective norm refers to the influence of external social pressure on people's willingness to separation SW. The greater the social pressure, the higher their willingness to participate and vice versa.

(3) *Perceived behavioral control (PC)*

Perceived behavioral control measures an individual's subjective perception of performing a particular behavior (Ajzen I., 1991) and whether that action is controlled or restricted. The proposed relationship between perceived control behavior and intended/actual behavior is based on two hypotheses: first, an increase in perceived behavioral control will lead to an increase in behavioral control. intends to perform the act and is likely to result in the performance of the action; second, perceived behavioral control will to some extent directly affect behavior where perceived control reflects actual control (Armitage, C. J., & Conner, M., 2001). Based on this argument, if people have confidence in their own garbage sorting ability, the higher the willingness to participate and vice versa.

(4) *Obligations of moral awareness (MO)*

Moral obligation refers to an individual's subjective judgment. This factor reflects the individual's self-expectations and attitudes towards specific behaviors, which are shaped by personal norms and values. Zhang (2019) argues that individuals feel proud if their actions are in line with the norm; otherwise, they will feel guilty. Moral obligation has also been included by Gold (2011) in predictive behavioral analysis. The results show that Moral obligation has a positive impact on environmental protection behavior. The individual ethical obligations in this study were measured by a sense of responsibility, duty and guilt if they did not sort their waste with the expectation that it would have a positive effect, promoting sorting behavior.

(5) *Policy of government (PG)*

Yu, He, Li, Huang, and Zhu (2014) proved that the laws and regulations had a positive effect on the willingness of residents to separate. Wang et al. (2016) found that promulgation and public spread of the laws and regulations improved environmental awareness among residents and in turn making them ready to sort waste. Noehammer and Byer (1997) founded that compulsory recycling programs launched by the government had a higher participation rate than voluntary resident recycling. Vietnam is a government-leading country which means all levels of government are responsible for issuing legislation on waste separation. In a nutshell, laws, and regulations ruled by the government play a vital part in waste sorting.

In addition, propaganda could motivate residents to realize the significance of household waste separation and hence perform separate collections better. De Feo and De Gisi (2010) presented the idea that propaganda and citizen encouragement could encourage residents to separate waste.

3. Results

3.1. Descriptive statistics of the survey sample

Among 75 survey participants, the number of men participating in the survey is 48 people, accounting for 64%, and women are 27 people (accounting for 36%). Age is a factor that impacts on the knowledge of respondents. Different ages may have different perceptions and understandings about SW classification due to their different knowledge. In the survey,

the most common age is from 22 to 60 years old, with 41 people, accounting for 41%. Regarding the respondents' education level, the highest percentage of education is college or university graduates, accounting for 40% of the respondents. Among the total 75 candidates, highest percentage of income ranges from 15 to 30 million VND/person/month, accounting for 40% and there are 19 people with income over 30 million VND/person/month, accounting for 25.4%.

3.2. Testing for reliability of the scales

Cronbach's Alpha analysis was used before the EFA factor analysis to remove unsuitable variables because these factors can create dummy factors. Cronbach's Alpha reliability coefficient only indicates whether the measures are related or not; does not indicate which observed variables should be removed and which should be kept. Cronbach's Alpha is used to evaluate the reliability of the scale based on the criteria of Cronbach's Alpha coefficient > 0.6 and the total variable correlation coefficient > 0.3 .

Table 1. Reliability of indicators

Item Code	Indicator	Item-total correlations	Cronbach's Alpha after deleting variables	Cronbach's Alpha
AT1	Sorting garbage helps to protect the environment and conserve resources, we should do	.694	.677	.801
AT2	I can create a model for children by doing household waste separation	.609	.767	
AT3	Waste separation demonstrates the effectiveness of personal hygiene	.640	.735	
SN1	Does your family support you in sorting household waste?	.778	.812	.877
SN2	Do your friends support you in sorting household waste?	.748	.839	
SN3	Does your neighbor assist you in sorting your trash?	.763	.826	
PC1	Do you have enough time to do waste separation?	.774	.873	.900
PC2	Does your home have enough space to store sorted trash?	.794	.865	
PC3	Does your local government or community provide you with complete facilities for waste separation (e.g. separation bags, sorting bins)	.780	.870	
PC4	Is it convenient for your home to do garbage separation?	.763	.877	
MO1	Garbage separation is an ethical act to protect the ecological environment, everyone has a duty to do so	.738	.784	.854
MO2	Separating waste is an act of thrift, everyone has an obligation to do so	.683	.835	
MO3	Do you feel embarrassed when waste is thrown in the trash without classification?	.757	.767	

Item Code	Indicator	Item-total correlations	Cronbach's Alpha after deleting variables	Cronbach's Alpha
PG1	The local government pay great attention to the issue of waste segregation and has actively campaigned for people to participate in the waste separation.	.690		.789
PG2	Local governments and communities provide a scientific, efficient and concise waste classification guideline	.690		
AC1		.744		.852
AC2		.744		

Source: Calculation results from survey data, 2023

From the results of reliability testing through Cronbach's Alpha coefficient in table 1, it can be seen that all factors have alpha coefficients greater than 0.6 and all variables have correlation coefficients with the total variable greater than 0.3 is satisfactory.

- *EFA exploratory factor analysis*

EFA factor analysis was conducted to evaluate the convergent and discriminant values of all observed variables, converging observed variables on a few large factor groups and distinguishing these groups of factors. The EFA method requires the observed variables to meet 5 criteria on the KMO coefficient in the range of 0.5 - 1; Bartlett's test has Sig coefficients. ≤ 0.05 ; Eigenvalue ≥ 1 ; Total variance extracted $\geq 50\%$ and Factor loading factor ≥ 0.6 .

- Exploratory factor analysis for all independent variables

After testing the reliability of Cronbach's Alpha, the scales were next evaluated by exploratory factor analysis (EFA). The factor analysis will be conducted with all observed variables, then will remove the variables with low transmission coefficient.

For the first time, 15 observed variables were included in the analysis. KMO coefficient = .890 (>0.5). However, the observed variables, CS1 and CS2 were excluded due to their low transmission coefficient.

For the second time, the PG1 and PG2 variables were removed, and the remaining 13 variables were included for factor analysis. The transmission coefficients are all greater than

Table 2: KMO test results of independent variables

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.900
Approx. Chi-Square		637.670
Bartlett's Test of Sphericity	df	78
	Sig.	.000

Source: Calculation results from survey data, 2023

The results of KMO analysis show that: KMO coefficient = .900 > 0.05, so factor analysis (EFA) is suitable with the research data set. Bartlett test is 637,670 with significance level Sig < .001, proving that the data used for factor analysis is completely appropriate. Total Variance Explained = 66.786% > 50%, so it meets the requirements, indicating that the above 5 factors explain 66.786% of the data variation. All observed variables have factor loading > 0.6.

- Exploratory factor analysis for the dependent variable

Table 3: KMO test results of the dependent variable

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.500
	Approx. Chi-Square	58.534
Bartlett's Test of Sphericity	df	1
	Sig.	.000

Source: Calculation results from survey data, 2023

The results of the EFA analysis of the dependent variable show that: The observed variable of "household waste sorting behavior" is grouped into 1 factor, no observed variable is excluded. EFA is consistent with the coefficient KMO = .500, the total variance extracted is 87.215% > 50%, so the EFA model is suitable; observed variables have factor loading coefficients > 0.5, significance level Sig. of Bartlett's test is <.001. So, the research model removes the variable of the local government policy

3.3. Multiple regression analysis

The regression model has the following form: $SI = \beta_0 + \beta_i X_i + e$

Where: SI: dependent variable; X_i : Independent variables

β_0 : Regression constant; β_i : Regression weight; e: Error

Regression analysis includes 4 independent variables: people's attitude (AT), subjective norm (SN), perceived behavioral control (PC), moral cognitive obligation (MO) and 1 auxiliary variable that belongs to the act of classifying domestic waste (AC)

Table 4. Results of Regression Analysis

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-.330	.331		-.997	.322		
ATtb	.585	.104	.499	5.647	.000	.521	1.920
SNtb	.499	.111	.414	4.476	.000	.476	2.100
PCtb	.021	.113	.020	.183	.856	.349	2.868
MOtb	-.002	.102	-.002	-.022	.982	.397	2.518

Source: Calculation results from survey data, 2023

The above results show that, with the significance level $\alpha = 5\%$, the perceived behavioral control variable and moral obligation are not significant and cannot explain the dependent variable.

From the regression results, the behavior of household waste classification is represented by the following formula:

$$SI = 0.414*SN + 0.499*AT$$

$\beta_1=0.414 > 0$ indicates that the higher the subjective standards of household waste classification, the higher the behavior of household waste classification.

$\beta_2= 0.499 > 0$ indicates that the higher the attitude of the person about the classification of household waste, the more the behavior of the household waste classification increases.

Thus, out of the given factors, only 2 factors have an impact on the behavior of people's household waste classification in Thanh Xuan district, Hanoi. The obtained results are quite consistent with the characteristics of the respondents.

Each of these factors represents a different group of observed variables and the importance of the observed variables for the representative factor is evaluated through the factor loading coefficient. Accordingly, the higher the factor loading coefficient, the more important the role of that observed variable for the representative factor is.

The normalized regression coefficient shows that the greatest influence on the household waste classification behavior of people in Thanh Xuan district, Hanoi based on the absolute value of the Beta coefficient. The greater the absolute value of the factor Beta, the greater the influence of that factor on the dependent variable.

Based on the model's regression coefficient table, it can be seen that the factor that has the greatest influence on the behavior of people in household waste classification in Thanh Xuan district, Hanoi is the people's attitude with the number β_2 is 0.499.

Cronbach's Alpha results for the independent variable scales of the subjective norm factor are relatively high (0.877), showing that this factor plays an important role in the behavior of household waste classification of households in Hanoi. Thanh Xuan district.

In the group of factors about subjective standards when classifying solid waste, the observed variable SN3 "does your neighbors assist you in classifying domestic waste" is the most important value with the highest transmission coefficient. (=0.801).

Next is the variable SN2 "does your friends support you to classify garbage with a transmission coefficient of 0.797 and finally the variable SN1 "does your family support you in sorting domestic waste" systematically? The lowest transmission number is 0.765.

Subjective standards have a positive impact on the behavior of domestic waste classification, when people have the right awareness or have the support of friends, relatives and the community, the garbage classification will be done well. than. This result is also found in the studies Ru et al. (2019), the author and collaborators said that people have a

high sense of responsibility and obligation towards the environment and community, the waste classification of they will be stronger.

The second factor affecting on the behavior of household waste classification is the attitude of the people. The results of Cronbach's Alpha reliability analysis are quite good at 0.801, showing the important role of this factor in the household waste classification behavior of households in Thanh Xuan district, Hanoi Capital.

4. Conclusion

With survey results of 75 households in Thanh Xuan district, Hanoi city, this study applied an extended theory of planned behavior to analyze factors affecting waste source-separation behavior in urban areas. From the initial 5 factors, after the process of testing and analyzing, the results revealed that there are two factors affecting the behavior of household waste classification, including household attitudes, subjective standards. From this analysis, combined with the views of the central and local government, some solutions have been proposed. As the study shows, attitude towards waste separation is the primary influencing factor in activating residents' household waste separation intention. That shows the fact that those who participate actively in waste separation do so mainly because they understand that waste separation is a cost-effective way of enhancing environmental quality and increasing socio-economic sustainability. In addition, knowledge about waste separation is the strong influence on household waste separating behavior. Consequently, it is indispensable to build up educational campaigns that may raise people's awareness and beliefs about the benefits of waste sorting in conserving natural resources as well as reducing the use of landfills and emissions of greenhouse gasses. By realizing how beneficial waste separating is, it would motivate residents to sort household waste and further foster these habits among residents. Besides that, the findings from this study revealed the significance of social pressure in developing residents' household waste separation intention. Therefore, public media and communication campaigns should be designed appropriately with the aim to attract more and more people to perform waste sorting behavior.

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**SESSION 5:
URBAN AND REGIONAL
DEVELOPMENT**

FACTORS AFFECTING PROFITABILITY OF REAL ESTATE ENTERPRISE LISTED ON THE STOCK MARKET

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Abstract

The objective of this study is to test the relationship between factors and profitability of real estate companies listed on the stock exchange in Vietnam in the period 2017-2022. The topic uses a multivariable linear regression model and a data table for the data of 74 Vietnamese real estate enterprises under the support of Stata software. And to test the influence of factors affecting the profitability of Vietnamese real estate enterprises, the models : OLS least squares regression method, REM random effect model and fixed effect model. FEM definition is also used. The research results show that the factors of enterprise size, debt-to-equity ratio and GDP have a positive influence while factors such as operating time, quick ratio and turnover ratio are not positive. Total asset cycle is not statistically significant and needs further study.

Keywords: *Real estate, corporate profits, stock exchange listing, OLS, REM, FEM.*

1. Introduction

Since Vietnam has joined the World Trade Organization (WTO), the economic situation has had many positive changes that have opened up many investment opportunities and increased income, so the needs of the people, especially especially the increasing demand for housing. Therefore, the development of real estate businesses is inevitable. The real estate market (real estate) is currently one of the economic sectors that play an important role, having a close relationship with the stock market, capital market, financial and

monetary market... Before 2008, Real estate is one of the fastest growing industries. However, in recent times, after the sudden growth of the real estate market, people have witnessed a period of decline in this market. In addition, in recent times, along with the crisis caused by the Covid-19 pandemic, the management and development of the real estate market still has many limitations. The government has introduced policies to curb inflation and control real estate credit, which "cools down" the market. That has brought many difficulties and challenges for businesses. In such competitive conditions, how to maintain profitability is a problem that real estate businesses are still constantly looking for answers to. This study will learn more deeply about the relationships of factors affecting profitability when the factors are changing markedly compared to the previous time and make judgments to help real estate businesses. Improve efficiency in the current context and at the same time help investors invest in securities in the real estate sector more effectively.

2. Method

2.1. Data collection methods

The data used in the model is secondary data collected from the financial statements of 74 real estate enterprises that have participated in listing on the Vietnam stock market. The total number of observations for the document is 359 for the 6-year period from 2017 to 2022. Analytical data on the overview of the economy and the real estate industry are obtained by the author from the General Statistics Office of Vietnam (GSO), the General Department of Family Planning, the State Bank of Vietnam (SBV), the Ministry of Finance (GSO), the State Bank of Vietnam (SBV), the Ministry of Finance. MOF), World Bank (WB), International Monetary Fund (IMF), Asian Development Bank (ADB), World Economic Forum (WEF), Provincial Competitiveness Forecast Center (PCI).

2.2. Data Analysis Methods

The topic uses a multivariable linear regression model and data tables for 74 real estate companies listed on the stock market in Vietnam in the period 2017-2022 with the support of Stata software. To test the factors affecting the profitability of real estate companies listed on the stock market, the study will use one of the OLS models, REM models, and FEM models.

Based on previous research results and to match the current situation of the real estate business in Vietnam, the author proposes a panel data regression model of the form:

$$E(Y/X_t) = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + u_t$$

Where: the dependent variable is return on equity (ROE) and return on total assets (ROA). The independent variables (X_{it}) are operating time of the business (X_1), Quick ratio (X_2), Total debt/equity (X_3), Annual net revenue growth (X_4), Asset turnover ratio (X_5), Total consolidated assets (X_6).

3. Results

3.1. Descriptive statistics

Table 2. Descriptive statistics of all variables

Variable	Observation	Mean	Standard deviation	Min	Max
ROE	422	1,044849	3,822618	-18,08	25,06
ROA	422	0,464461	1,883079	-12,03	11,84
AGE	422	17,87915	8,223545	3	46
QUICKRATIO	422	1,184626	1,051753	0,0618105	13,24707
DEBTEQUITY	422	19,6043	51,31174	0,0185491	334,75
GROWTH	422	-0,5537836	23,03772	-100	182,65
ASSETTURNOVER	419	0,2851789	0,2253384	-0,0032914	1,360875
GDP	422	0,0569403	0,0215928	0,0258	0,0802
SIZE	420	28,79344	1,498795	26,13741	33,98506

Source: Synthesis of the research team

Quick ratio (QUICKRATIO): some real estate companies listed on Vietnam stock market have quick ratio with minimum level of 0.0618. This value less than 1 indicates that “some businesses cannot afford to pay their short-term liabilities with their current assets without selling off their inventory. The figures show that the quick ratio of real estate businesses in Vietnam is generally not high.

Total Debt/Equity (DEBTEQUITY): With the mean value of 19,6043 and the variation around the standard deviation of 51,31174, it proves that there are many enterprises with this coefficient greater than 1, that is, The assets of real estate businesses are financed mainly by liabilities. When liabilities account for a high proportion of equity capital, businesses that borrow can be at risk of debt repayment problems. However, besides that, there are also enterprises with total debt-to-equity value less than 1, that is, liabilities account for only a small percentage, enterprises mainly rely on equity. From there, it can be seen that these businesses have less difficulty in corporate finance.

GDP growth: In the period 2017 - 2022, the average economic growth rate reached 5,6940%. During this period, due to the impact of the Covid-19 epidemic, GDP had an unstable growth with the variation of this index around the average value at 2,1592%, however, there was still a point It is positive that Vietnam still maintains a positive economic growth rate during this period.

Enterprise size (SIZE): Most of the listed real estate businesses are large-scale enterprises because real estate is an area that requires larger capital resources than businesses in other fields. These businesses need to spend money on other expensive assets such as land, housing, infrastructure, etc. These assets are mainly long-term investments that can be accumulated over a long period of time year.

3.2. Regression results

3.2.1. Model estimation of factors affecting ROE

Use the Modified Wald test to detect the phenomenon of variable variance. The results show that P-value = 0.0000 (<0.05) shows that the equation has variable variance. To overcome the phenomenon of variable variance of the model, robust technique is used. The results of model testing after error correction are shown in Table 4.

Table 4. Regression results of factors affecting ROE

```

. xtreg ROE AGE SIZE QUICKRATIO GROWTH DEBTEQUITY ASSETTURNOVER GDP, fe robust

Fixed-effects (within) regression      Number of obs   =       417
Group variable: ID                    Number of groups =       72

R-sq:                                  Obs per group:
    within = 0.4493                    min =           5
    between = 0.0438                   avg =          5.8
    overall = 0.1769                   max =           6

corr(u_i, Xb) = -0.7579                F(7,71)         =       9.06
                                        Prob > F         =       0.0000

                                        (Std. Err. adjusted for 72 clusters in ID)
-----+-----
      ROE |          Coef.   Robust Std. Err.    t    P>|t|    [95% Conf. Interval]
-----+-----
    AGE |   .2708794   .2796445    0.97   0.336   -.2867158   .8284747
    SIZE |   1.612481   .6847678    2.35   0.021   .2470928   2.977869
  QUICKRATIO | .3256655   .1901613    1.71   0.091   -.0535053   .7048363
    GROWTH | .0051914   .0151822    0.34   0.733   -.0250811   .0354639
  DEBTEQUITY | .0329167   .0083666    3.93   0.000   .0162354   .0495979
  ASSETTURNOVER | 1.69803   .7522114    2.26   0.027   .1981634   3.197897
    GDP | 29.76312   14.49432    2.05   0.044   .8622697   58.66397
    _cons | -53.36338   16.76887   -3.18   0.002  -86.79957  -19.9272

      sigma_u | 3.4177269
      sigma_e | 2.9000314
         rho | .58139636   (fraction of variance due to u_i)
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Source: Research team

The estimated results of the model show that the regression coefficient of the DEBTEQUITY variable is statistically significant at 1%; SIZE, ASSETTURNOVER, GDP are statistically significant at 5% level; QUICKRATIO is statistically significant at the 10% level. Thus, the ratio of total liabilities/equity, the size of the enterprise, the asset turnover ratio, GDP, the quick ratio has an impact on the level of profitability ROE.

$$ROE = -53.36338 + 0.2708794*SIZE + 0.3256655*QUICKRATIO + 0.0329167*DEBTEQUITY + 1.69803*ASSETTURNOVER + 29,76312*GDP$$

The SIZE variable is statistically significant at the 5% level with a regression coefficient of 0.2708. This means that, other things being equal, the profitability measured by ROE will increase to 0.2708 units when the size of the business increases by 1 unit.

QUICKRATIO variable, the regression coefficient of the variable has a positive result with a value of 0.3256. The P-value of the variable is 0.091, which means that the QUICKRATIO variable is statistically significant at the 10% level. Prove that, when the

Based on Table 4, the model's estimation results show that the regression coefficients of the variable *SIZE* and *GDP* are statistically significant at 5%; *QUICKRATIO*, *DEBTEQUITY* is statistically significant at the 10% level. Thus, enterprise size, GDP, quick ratio, total debt/equity ratio affect the level of ROA profitability.

$$ROA = -31.55761 + 0.8906429*SIZE + 0.1873439*QUICKRATIO + 0.00747*DEBTEQUITY + 23.81052*GDP$$

According to the analysis results, the variable *SIZE* is statistically significant at the 5% level with a regression coefficient of 0.8906. This means that, in the condition that other factors are constant, the level of profitability is measured by the indicator. ROA will increase to 0.2708 units when the size of the business increases by 1 unit.

For the variable *QUICKRATIO*, the regression coefficient of the variable has a positive result with a value of 0.1873. The P-value of the variable is 0.097, which means that the *QUICKRATIO* variable is statistically significant at the 10% level. Prove that, when the quick ratio of a financial institution increases by 1 unit, the level of profitability measured by ROA will increase to 0.1873 units (with all other factors constant).

With the *DEBTEQUITY* variable, the statistics show that the *DEBTEQUITY* variable has a positive regression coefficient with a value of 0.0074. The P-value of the variable is equal to 0.0067 which means that this variable is statistically significant at the 1% level. That is, the return on equity ROA will increase by 0.0067 units when the total liabilities to equity ratio increases by 1 unit (all other things being equal).

Finally, the *GDP* variable is also considered in the regression analysis. Statistics show that this variable has a positive regression coefficient with a value of 23.8105. The P-value of the variable is 0.01 which means that this variable is statistically significant at the 5% level. This proves that, the level of profitability measured by ROA will increase to 23,8105 units, GDP growth rate increases by 1 unit, provided other factors remain unchanged.

4. Discussion and Conclusion

The results of the study on factors affecting the profitability of real estate enterprises listed on the stock market in Vietnam in the period 2017 - 2022 show that there are 4 main factors affecting the profitability of real estate businesses. Assets include: (1) Enterprise size, (2) Quick ratio, (3) Total debt/equity, (4) GDP growth rate.

In order to achieve the goal of increasing profits, real estate businesses need to increase the size of their businesses, promote equitization, and strengthen the management and effective use of State capital. At the same time, it is necessary to expand the scale of operations and invest in projects with high feasibility and great profit potential, ensure the synchronization between fields of operation, build prestige and strengthen the the trust of customers and the community. However, when deciding to expand, businesses need to identify and understand the general context of the economy in general and the real estate market in particular. Enterprises should only increase their business size when the economy is in a development cycle with many supportive policies for industries to develop at the same

time. On the contrary, when the economy falls into a recession like the present one, the expansion can bring many great risks for businesses such as inability to pay loans on time, increase costs interest rates, etc. Therefore, it can be said that expanding the size of a business is a double-edged sword, used at the right time and in the right way will help the business to grow significantly, but if used at the wrong time, this method can be effective. can cause the whole business to go bankrupt.

Quick ratio is an important indicator to assess the ability of real estate businesses listed on the stock market to pay short-term debts in cash. To improve quick ratios, real estate businesses need to implement a series of financial management measures, including increasing equity, reducing fixed costs, applying risk management tools, etc. financial risk and business optimization. The ratio of total debt to equity is an important indicator in evaluating the performance of real estate businesses. To take advantage of this index's potential, businesses need to ensure the effective use of capital and debt management. at the same time, propose strategies to strengthen business activities and invest in highly profitable projects to reduce this ratio and improve business performance. Only when a balance is achieved between strengthening financial capacity and managing financial risks can businesses develop sustainably and enhance shareholder value in the long term.

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FACTORS AFFECTING VIETNAMESE CUSTOMERS' INTENTION TO PURCHASE RECYCLED PRODUCTS

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Abstract

In the context that Vietnam is moving towards a green and sustainable development strategy, promoting consumers' intention to purchase recycled products becomes even more necessary. Using a combination of qualitative research - in-depth interviews with 10 consumers and quantitative research - a large-scale survey of 587 consumers in the North, Central and South of Vietnam, this study demonstrated that perceived value has a positive relationship with customers' intention to purchase recycled products; perceived safety has been shown to have a greater opposite effect than perceived quality and perceived risk on customers' intention to purchase recycled products. Based on the research results, the author makes some recommendations for state management agencies and enterprises to promote the intention to recycle products of Vietnamese consumers.

Keywords: *Recycled products, sustainable development, Vietnamese consumers*

1. Introduction

Sustainable consumption behavior is the use of goods and services that meet basic needs and provide a better quality of life, while reducing the use of natural resources, hazardous materials, and waste in the life cycle, so as not to jeopardize the needs of future generations (Ofstad, 1994). Sustainable consumption involves satisfying the needs of consumers, while minimizing the negative impacts caused in the exploitation, production and consumption of resources (Cooper, 2013).

The amount of natural resources available on earth is limited and humans are consuming more than they can get back. One way to tackle the problem of overuse of natural resources is to integrate recycled materials into the production process of new products. Recycling is the practice of reusing materials from used products, instead of not using raw materials and turning them into new products of the same quality (Gaur et al., 2017). In addition to conserving the limited and available natural resources of the earth, recycling has a number of other significant environmental benefits including reducing pollution (in water and air), greenhouse gases and waste (Beasley et al., 2014).

Some companies are making efforts to use resources sustainably, such as clothing chain H&M, which aims to use 30% recycled materials in their clothing by 2025 (Hein, 2022). However, current studies show that consumers are willing to pay less for recycled products than for products made from new materials (Pretne et al., 2021), indicating an

increased perceived risk associated with to recycled products (Hamzaoui Essoussi & Linton, 2020). This suggests that it is important to continue to explore the factors that influence consumers' intention to purchase recycled products.

The general trend of the world in the coming time will change from the "brown economy" to "green economy" development model and Vietnam also has a green growth strategy and this is an opportunity to develop the recycled products market. However, Vietnamese consumers currently do not have a sense of environmental and ethical values when buying recycled products.

Therefore, this study will explore the factors affecting the intention to purchase recycled products of Vietnamese consumers, thereby making some implications for state management agencies and enterprises to promote the intention to purchase recycled products.

2. Conceptual Framework and Hypotheses

According to Pearce (2009), recycling is defined as the process by which a used product is broken down into consistent parts, converted into different products or used as raw materials and recycled products are items that are made from materials that are recycled and transformed into new products.

Purchase intention can be defined as an individual's willingness to purchase a particular product or service. Bigliardi et al. (2020) grouped factors affecting consumers' intention to purchase recycled products into three groups: personal-related, product-related, and context-related. Personal-related group consists of structures that explain the values, beliefs, norms, and attitudes that guide an individual's behavior toward a certain intention to act. Product-related groups contain structures that can be traced back to the object of the purchase review. Context-related group an influence the perception of a product. In this study, the author focused on a number of factors related to individuals and products that affect consumers' intention to purchase recycled products.

Previous studies have suggested that perceived value has been developed as an important construct, which has a positive influence on consumers' purchase intention towards environmentally friendly products (Wang et al., 2019). Perceived value refers to the consumer's view of the importance of a particular product or service based on its evaluation of its usefulness (Chen and Chang, 2012). Previous studies have found that perceived value has a significant influence in the customer's decision-making process and in the formation of their purchase intention (Yadav and Pathak, 2017). Therefore, it can be assumed that:

H1. Perceived value has a positive effect on customers' intention to purchase recycled products

Interest in consuming environmentally friendly products (known as "green products") can help consumers build a positive image of recycled products. Reducing waste, reusing waste materials and requiring less energy will create a good product image that can

change consumer behavior and contribute to wider acceptance of recycled products (Hazen et al., 2017). The positive image of recycled products as well as an increasing sensitivity to environmental issues has changed consumer behavior, including increased demand and greater acceptance of recycled products (Tsen et al. 2006) and are willing to pay more for these products (Laroche et al., 2001). Based on the previous findings, the author proposes the following hypothesis:

H2. Product image has a positive effect on customers' intention to purchase recycled products

In the view of some consumers of recycled products, purchasing recycled products is risky, uncertain and unsafe. These problems involve many aspects such as discouraging the production of recycled products; lack of consumer experience of recycled products; lack of knowledge about the safety of recycled products; and the possibility of contamination. The risk that consumers perceive is a deterrent to purchasing recycled products (Agostini et al., 2021). Previous studies of consumer reviews of recycled products have shed light on perceived risks that could hinder adoption of these products (Michaud and Llerena, 2011). As a result, recycled products can create a negative impact on perceived safety, adversely affecting the purchasing process. More precisely, some consumers perceive recycled products made from second-hand, waste, or contaminated materials, reducing their purchase intention (Meng and Leary, 2021). Therefore, the following research hypothesis is presented:

H3. Perceived safety has a negative effect on customers' intention to purchase recycled products

Perceived risk, defined as the perception of loss related to a purchase, is a factor that affects the purchasing process and consumer choice (Mitchell, 1992). Current research shows that consumers perceive green products to be more expensive and lower quality than conventional products (Zeng & Durif, 2019), leading to financial and performance risks. Furthermore, Hamzaoui Essoussi & Linton (2010) found that recycled products have a high functional risk leading to a lower willingness to pay. Based on these arguments, the following hypothesis is formed:

H4. Perceived risk has a negative effect on customers' intention to purchase recycled products

Perceived quality has been found as a factor influencing consumer purchase intention (Dodds et al. 1991). Perceived quality can be defined as an individual's subjective judgment regarding the superiority or excellence of a product (Zeithaml, 1988). Previous research has demonstrated that when a product is recycled, this practice can reduce consumers' expectations of product quality (Lin and Chang 2012; Wang et al. 2013). Furthermore, although some consumers may perceive that recycled products contribute to environmental problems, these products may be of lower quality or more contaminated (Baxter et al. 2017).

H5. Perceived quality has a negative effect on customers' intention to purchase recycled products

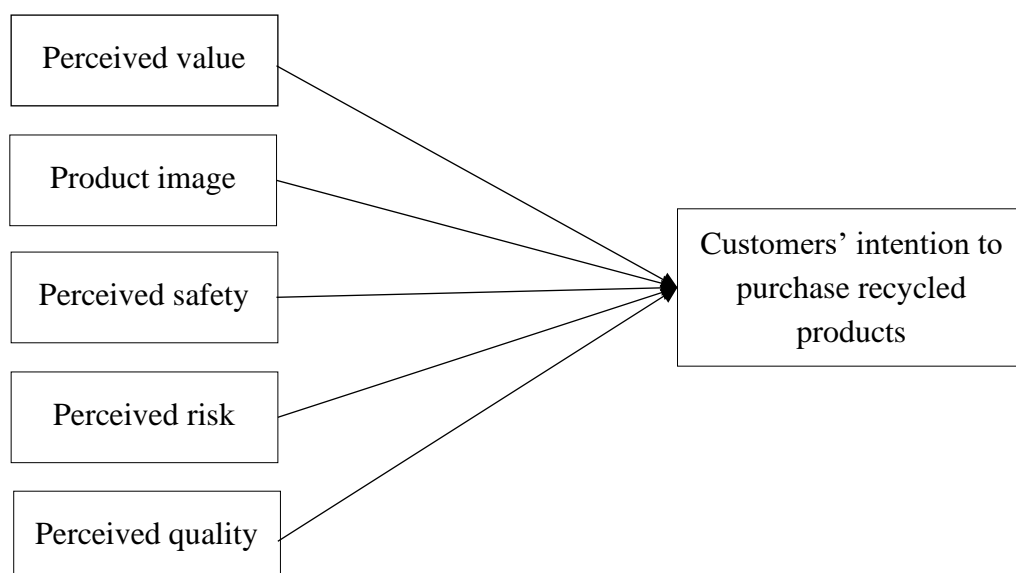


Figure 1. Proposed research model

3. Method

Survey and sample

Qualitative research was conducted through in-depth interviews with 10 consumers in Hanoi. The content of the interview to confirm the appropriateness of the scales and items was included in the questionnaire. Interviews were conducted for approximately 1 hour at a location chosen by interviewees in January 2023.

Quantitative research was conducted through a large-scale survey by random sampling method. The author directly distributed and collected survey questionnaires at three locations: supermarkets, universities and some enterprises in the North, Central and South in February 2023. The authors collected a total of 631 questionnaires. After screening the questionnaires with insufficient information and reliability, 587 questionnaires were selected to serve the quantitative analysis phase (details in Table 1).

Table 1. Characteristics of the sample

Variable	Frequency	Percentage
Gender		
Nam	281	47.9
Nữ	306	52.1
Age		
Under 25	179	30.5
25-40	211	35.9
40-55	115	19.6
Over 55	82	14.0

Variable	Frequency	Percentage
Educational level		
Did not graduate from high school	15	2.6
High school graduation	49	8.3
Intermediate and equivalent	127	21.6
University graduate and equivalent	335	57.1
Postgraduate	61	10.4
Income		
Under 5 million	59	10.1
5-10 million	87	14.8
11-15 million	162	27.6
16-30 million	214	36.5
Over 30 million	65	11.1
Area		
North	218	37.1
Central	119	20.3
South	250	42.6

Analyses

The analysis process includes three main steps. Firstly, Cronbach's alpha and explorative factor analysis (EFA) are implemented to assess the reliability of perceived value, product image, perceived safety, perceived risk, perceived quality and customers' intention to purchase recycled products. Secondly, correlation analysis to assess the relationship between variables. Finally, regression analysis to test hypotheses and assess the level of influence. The above statistical analyzes were performed with the help of SPSS 24.0 software.

Measures

All scales used in this study were adapted from the past researches including perceived value (Chen and Chang, 2012), product image (Luu & Baker, 2021), perceived safety (Luu & Baker, 2021), perceived risk (Wang et al., 2018), perceived quality (Luu & Baker, 2021) and customers' intention to purchase recycled products (Sun et al., 2018). For measuring each construct, five-point Likert scale was used ranging from "strongly disagreed = 1 to strongly agreed = 5.

4. Results

The reliability test was used to confirm whether the determine measures can be employed as representation of the global independent and its sub - variables and global depend variable and its sub- variable. Previous studies have shown that observers with a

small (less than 0.3) variable-to- aggregation coefficient will be excluded and criteria for scale selection when Cronbach's Alpha reliability is greater than 0.6. The larger the Cronbach's Alpha, the higher the internal consistency (Nunnally & Bernstein, 1994). Taken together, six variables in the survey had Cronbach's Alpha ranged from 0.850 to 0.903. All of these values are above 0.6, generally considered to be the higher limit of reliability (Hair et al., 1995). After assessing the reliability of scales by Cronbach's alpha, total of 22 items are used in the exploratory factor analysis (EFA). The results of testing the reliability of scales by the exploratory factor analysis shows that KMO = 0.844, Sig. (Bartlett's Test) = 0.000 < 0.005. The final results of the exploratory factor analysis are presented in Table 2.

Table 2. The results of exploratory factor analysis (EFA)

Variables	Component					
	1	2	3	4	5	6
Intention (INT) $\alpha = 0.870$	0.822					
	0.815					
	0.753					
	0.745					
	0.733					
Perceived risk (PR) $\alpha = 0.903$		0.888				
		0.881				
		0.861				
		0.860				
Perceived value (PV) $\alpha = 0.875$			0.867			
			0.817			
			0.816			
			0.778			
Product image (PI) $\alpha = 0.856$				0.899		
				0.879		
				0.828		
Perceived quality (PQ) $\alpha = 0.867$					0.872	
					0.842	
					0.841	
Perceived safety (PS) $\alpha = 0.850$						0.868
						0.845
						0.834
Cumulative % = 75.068						
Eigenvalues = 1,.371						

Table 3 presents the means, standard deviations and zero-order Pearson correlations of six variables. Perceived value ($r = 0.419$, $p < 0.01$) had proportional relationship with customers' intention to purchase recycled products. Meanwhile, perceived safety ($r = -0.403$, $p < 0.01$), perceived risk ($r = -0.106$, $p < 0.05$) and perceived quality ($r = -0.401$, $p < 0.05$) was negatively related to customers' intention to purchase recycled products. These results provided initial support or rejection for some of the hypotheses

Table 3. Means, standard deviations and correlations

	Mean	Std. Deviation	INT	PV	PI	PS	PQ	PR
INT	3.9370	0.69364	1					
PV	3.6644	0.69755	0.419**	1				
PI	3.6536	0.79961	0.174	0.252	1			
PS	2.4685	0.82774	-0.403**	-0.158	-0.084	1		
PQ	2.4134	0.85074	-0.401**	-0.272	-0.179	0.241	1	
PR	2.6427	0.78758	-0.106*	-0.177	-0.119	0.123	0.179	1

The results of the linear regression analysis show that all hypotheses are accepted ($\text{Sig} < 0.05$), except for hypothesis H2. In which, perceived value has a positive relationship with customers' intention to purchase recycled products ($\beta = 0.302$). In addition, perceived safety has been shown to have a greater opposite effect than perceived quality and perceived risk on customers' intention to purchase recycled products ($\beta = -0.249$, -0.201 and -0.028 respectively).

Table 4. Results of regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.928	0.220		17.887	0.000
	PV	0.300	0.036	0.302	8.383	0.000
	PI	0.028	0.030	0.032	0.928	0.354
	PS	-0.249	0.029	-0.297	-8.536	0.000
	PQ	-0.201	0.029	-0.247	-6.844	0.000
	PR	-0.028	0.030	-0.032	-0.929	0.000

a. Dependent Variable: INT

5. Discussion and Implications

Discuss research findings

This study was conducted to understand the individual and product-related factors that influence customers' intention to purchase recycled products.

Firstly, a significant positive relationship between perceived value and customers' intention to purchase recycled products was confirmed in this study. This result was in line with the findings of past studies (Chen and Chang, 2012; Cheung et al., 2015; Chaturvedi et al., 2020).

Secondly, product images have been shown to have no relationship with customers' intention to purchase recycled products. Some studies such as Luu and Backer (2021) when exploring consumers' purchase intention of rPET bottle-based apparel also agreed with this statement of the study.

Thirdly, perceived safety and perceived quality had a negative effect on customers' intention to purchase recycled products. Authors such as Luu and Backer (2021), Queiroz et al. (2021) also reached the same conclusion in their studies.

Finally, perceived risk, as expected, had a negative impact on customers' intention to purchase recycled products. This was consistent with existing research for other green products, e.g. refurbished products by Singhal et al. (2019); recycled products by Hein (2022).

Implication

In order for consumers to decide to purchase recycled products, state management agencies and enterprises need to join hands to change consumers' perception of recycled products through a number of measures. *Firstly*, it is necessary to improve the production process of recycled products, all stages from input materials to processing need to comply with safety and quality regulations to ensure safety for consumers. *Secondly*, actively communicate about the usefulness, quality and safety of recycled products through a variety of media such as television programs, advertisements, entertainment programs, fairs and exhibitions. In this context, enterprises should not have the idea that recycled products developed from recovered or waste materials would be preferred over new products. In contrast, enterprises need to make recycled products attractive enough to compensate for the low-quality bias associated with products made from scrap in order to compete with new products in the market (Singh and Ordoñez, 2016). Research results have shown that two factors that significantly affect customers' intention to purchase recycled products are perceived value and perceived safety, so state management agencies and enterprises need to focus on these two factors to promote customers' intention to purchase recycled products, thereby contributing to environmental protection and towards a sustainable economy.

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COMMUNITY-BASED TOURISM DEVELOPMENT IN PHONG NHA - KE BANG NATIONAL PARK

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Abstract

This study aims to evaluate community-based tourism development activities in Phong Nha -Ke Bang National Park. The research analyzed data collected from 400 residents with a pre-designed survey. The results of the linear regression analysis show that there are 7 factors affecting the development of community-based tourism in Phong Nha - Ke Bang National Park. The most significant factor is the attractiveness of tourism resources and the destination image. The participation of local people also has a statistically significant impact on the dependent variable.

Keywords: *Community-based tourism, Phong Nha - Ke Bang National Park, Tourism development.*

1. Introduction

Quang Binh is famous for its diverse and unique tourism potentials, Phong Nha - Ke Bang National Park has been recognized by UNESCO as a world natural heritage twice and become the most attractive destination of the province. According to Action Program No. 01-CTr/TU on 9/12/2020 on developing tourism to become a strategic industry in the period of 2021-2025 "Exploiting and promoting the potential and advantages of tourism resources. Sustainable tourism development associated with preserving and promoting the national cultural identity, protecting the environment and ecology" of the Standing Board of the Quang Binh Provincial Party Committee. In the past years, Quang Binh has focused on developing community-based tourism (CBT) in the Phong Nha - Ke Bang National Park, as a key factor to improve the efficiency of tourism activities, develop the local economy, towards the sustainable tourism development of the province.

However, up to now, CBT activities in Phong Nha - Ke Bang National Park are generally fragmented, the achievement are not really commensurate with the available potentials and advantages. Although the orientation and planning for CBT development has been implemented, it still lacks a methodical and synchronous approach; CBT products are still monotonous and not competitive and have not really attracted the attention of tourists. According to Quang Binh Department of Tourism, before being affected by the Covid-19

epidemic, the total number of tourists to Quang Binh was 4.985 million, of which, the number of community-based tourists in Phong Nha - Ke Bang National Park only reached 883,640, accounting for 17.7%. In 2021, due to the impact of the Covid-19 epidemic, the inbound market was basically closed from April 2021, the total number of tourists to Quang Binh was 569,826, down 69% over the same period in the previous year and achieved 11% of the plan. In 2022, the total number of tourists to Quang Binh was 2,010,720, 3.7 times higher than the same period in 2021.

With its potentials for CBT development, there have been many studies to develop tourism in Phong Nha - Ke Bang National Park. However, the research mainly revolves around assessing potentials and solutions for sustainable tourism development from the perspective of state management. For CBT, local people are considered as subjects and attracting tourists is one of the goals for tourism development. Therefore, it is extremely necessary to research and develop CBT based on the perspective of local people, and to propose effective recommendations and solutions for CBT development.

2. Conceptual Framework

2.1. Community-based tourism

According to Carard and Paddon (2010), CBT is a type of tourism, in which the community directly owns and participates in management, for the common development goal in the community. Tourism Law No. 09/2017 states that “CBT is a type of tourism developed on the basis of the cultural values of the community, managed, exploited and benefited by the local community”. In this study, the author approaches the concept of CBT from the perspective of tourism activities in which the local community directly participates, exploits and conserves resources, improves skills and knowledge to provide experience and satisfy the needs of tourists.

2.2. Community-Based tourism development

CBT development is an economic and social process based on the active participation of local communities (Jafari et al. (2000). Tourism development may lead to problems for the community, unless there is a clear direction and planning, tourism development will raise awareness for the community about the possible consequences, community opportunities, empowering communities to make decisions, training local communities on governance, providing better technical facilities and services, establishing stronger management mechanism in the community. Bui Thi Hai Yen et al. (2012) argues that CBT development is a way to develop sustainable tourism, in which local communities are directly involved in the development stages of tourism activities.

2.3. Research model and hypothesis

2.3.1. The attractiveness of tourism resources

Tourism resources are natural landscapes, natural elements and cultural values as the formation of tourist products, tourist sites and tourist attractions in order to fulfil tourism needs. Tourism resources include natural resources and cultural resources (Tourism Law

2017). Research on the attractiveness of tourist destinations by Alhemoud and Armstrong (1996) has shown that tourism resources are a factor that build up the attractiveness of destination and attract tourists' attention. Dang Trung Kien (2020) also proved that tourism resources are an important factor creating the attractiveness of tourist destinations and affecting tourism development.

Hypothesis H1: The attractiveness of tourism resources has a positive influence on the development of community-based tourism.

2.3.2. Destination accessibility

Accessibility to a tourist destination is the ability to reach a destination through different aspects. It can be the ability to travel to tourist destination; travel between points within destination or the accessibility to information about the destination... considered as one of the factors that evaluate the attractiveness of a tourist destination. Chi and Qu (2008) study the relationship between destination, tourist satisfaction and loyalty, The results supported the proposed destination loyalty mode (1) destination image directly influenced attribute satisfaction; (2) destination image and attribute satisfaction were both direct antecedents of overall satisfaction; and (3) overall satisfaction and attribute satisfaction in turn had direct and positive impact on destination loyalty.

Hypothesis H2: Destination accessibility has a positive influence on community-based tourism development.

2.3.3. Infrastructure - utilities

Infrastructure - utilities are service elements and facilities located at the destination or attached to the destination, that create favorable conditions for visitors to easily access the destination. Infrastructure - utilities are considered tangible factors in CBT development, is one of the most important factors to attract tourists to a country or a tourist destination (Phuong et al., 2020). Good tourism infrastructure will create favorable conditions to attract more tourists.

Hypothesis H3: Infrastructure - utilities have a positive influence on community tourism development.

2.3.4. Destination image

According to Bui Thi Hai Yen (2012), the more attractive the destination is, the more satisfied visitors will be. Therefore, destination image is considered as a factor that directly affects tourists' satisfaction with CBT destinations. Nguyen Trong Nhan (2013) emphasized that tourism activities in general and CBT in particular have a close relationship with the destination image, taking advantage of the characteristics of destination image can attract more tourists.

Hypothesis H4: The destination image has a positive influence on the development of community tourism.

2.3.5. Local community

In CBT activities, local people play an important role. Their skills, knowledge and attitudes are considered as a supporting tool for CBT development. Attaallah and Al-Ehewat

(2016) approach from the perspective of community awareness of tourism resources and activities, which is the ability to attract more capital for tourism, develop tourism human resources and increase tourism capacity of the community at the destination. Doan Thi Hanh Dung, Tran Thi Thu Ha (2019) also used this factor in terms of the community's attitude and decision-making ability. The authors examined people's attitudes towards promoting, learning to improve skills, being friendly with tourists as well as evaluating decision-making ability through exchange and contribution opinions with stakeholders to jointly make decisions. After reviewing related studies, consulting with experts and from reality in the study area, in this study authors approaches factors in three aspects: skills and knowledge about tourism of local people; local people's awareness and attitudes about tourism and the participation of local communities in decision-making.

Hypothesis H5a: Tourism skills and knowledge of local community have a positive influence on the development of community-based tourism.

Hypothesis H5b: The awareness and attitude of the local community about tourism have a positive influence on the development of community tourism.

Hypothesis H5c: Participation in the decision-making process of local community has a positive influence on the development of community-based tourism.

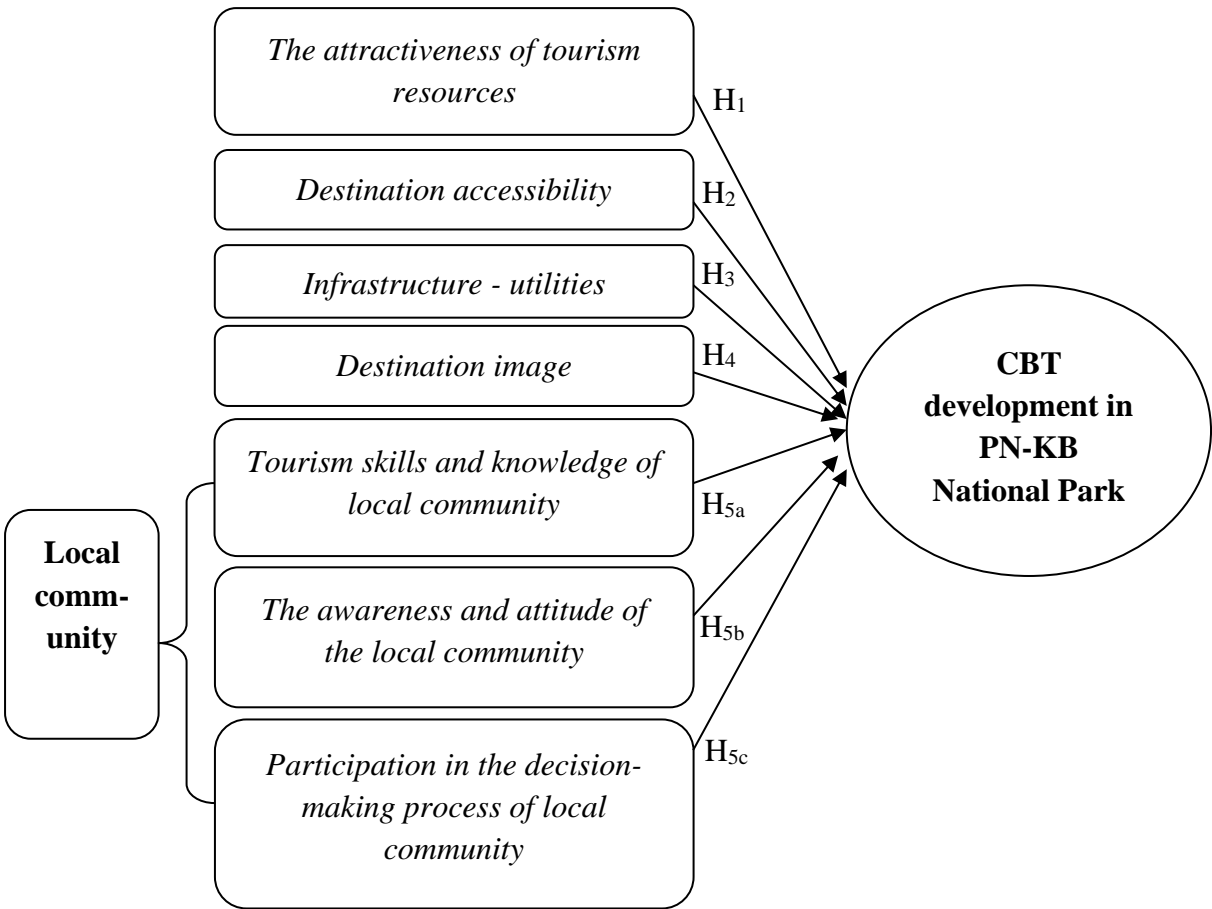


Figure 1. Research model

3. Method

3.1. Data collection and scale development process

The study conducted a survey of local residents participating in CBT activities in Phong Nha - Ke Bang National Park. The questionnaire was designed based on previous studies (Table 1). The study used a 5-point Likert scale for all variables.

Table 1. Variables and references

Variables	Number of Observations	References
The attractiveness of tourism resources (HDTN)	11	Alhemoud and Armstrong (1996); Dang Trung Kien (2020)
Destination accessibility (TCDD)	5	Dwyer and Kim (2003)
Infrastructure - utilities (CSHT)	9	Beerli and Martin (2004), Ha Khanh Nam Giao (2011)
Destination image (MTTQ)	4	Beerli and Martin (2004), Chi and Qu (2008)
Skills and knowledge (KNKT)	6	Nguyen Doan Hanh Dung, Truong Thi Thu Ha (2019); Beerli and Martin (2004)
Awareness and attitude (NTTD)	4	
Decision making (RQD)	3	
Community-based tourism development		
- Financial aspects	3	Andereck et al. (2005);
- Non-Financial aspects	8	Le et al. (2018)

Source: Authors

- Sample size

With a wide distribution space and based on the current scope of tourism development in Phong Nha - Ke Bang National Park, the authors conducted a survey with people living in the buffer zone around the National Park belongs to 3 districts: Bo Trach, Quang Ninh and Minh Hoa and with sample size determined according to the formula of Yamane (1973).

With a suitable error of $\varepsilon = 5\%$ (corresponding to a confidence level of 95%). With the number of households by 2022 in the study area according to statistics is $N = 17,125$ households (Quang Binh Statistical Department, 2022). According to Yamane's formula, the amount of sample to be determined is:

$$n = \frac{17.125}{1 + 17.125 \times (0,05^2)} = 391$$

Thus, the total number of questionnaires is 391. In this study, the authors distributed 450 questionnaires to ensure the research sample size.

3.2. Statistical technique

Data obtained from the official survey was processed by SPSS 22.0. The authors use regression analysis to find out the relationship between the dependent variable and independent variables, to estimate or predict the expected value of the dependent variable when knowing the value of the independent variables. The purpose of this analysis is to consider the level and order of impact of each factor on the development of CBT in the Phong Nha - Ke Bang National Park. The model is as follow:

$$DLCD = \beta_0 + \beta_1 * HDTN + \beta_2 * TCDD + \beta_3 * CSHT + \beta_4 * MTTQ + \beta_5 * KNKT + \beta_6 * NTTD + \beta_7 * RQD + \varepsilon_i. \quad (\varepsilon_i : \text{errors}).$$

Where: Dependent variable: Community-based tourism development (DLCD).

Independent variables (Xi): Attractiveness of tourism resources (HDTN); Destination accessibility (TCDD); Infrastructure - utilities (CSHT); Destination image (MTTQ); Skills and knowledge of local people (KNKT); Awareness and Attitude of Local People (NTTD) and Ability to Participate in Decision Making (RQD).

4. Results

4.1. Community-based tourism activities in Phong Nha - Ke Bang National Park

CBT based on natural resources: focuses on eco-tourism and adventure products, such as visit the cave system; plant and animal species; rivers, streams and natural landscapes in villages. The local residents act as tour guide for visitors, providing information as well as supporting visitors to make their own trip: porting, cooking, technical instruction (for adventure tour).... With a unique cave system, in recent years, Phong Nha - Ke Bang has focused on exploiting adventure tourism products and initially achieved good results. This type of tourism is unique compared to other localities in the country.

CBT based on human resources: focus on exploiting tourism products such as homestay/farmstay; visiting historical and cultural relics, craft villages, traditional festivals... Local people play the role as direct producer and performer, also responsible for guiding activities, providing information for visitors, creating connections between the community and tourists when tourists want to visit or participate in activities of craft villages and community's culture, learn about daily life, customs, beliefs, culinary culture, festivals, folk experiences, housing architecture.

In the period 2018-2022, Phong Nha - Ke Bang National Park welcomed 13,320,720 visitors, the total number of visitors participating in CBT accounted for more than 21.2% compared to the total number of tourists to Quang Binh. In recent years, this proportion has decreased due to the growth of other tourist destinations. However, by 2020, due to the impact of the Covid-19 pandemic, Quang Binh's tourism has severely damaged by the freezing of the international market, and decrease in domestic travel demand. Tourist arrivals to Quang Binh decreased by 63% compared to 2019, CBT visitors in the National Park also decreased significantly (down 64% compared to 2019). Visitors to the area are mostly domestic tourists. In 2022, the total number of tourists to Quang Binh reach 2,010,720, 3.7 times higher than the same period in 2021. In which, international visitors reached 30,787, 5.92 times higher than

the same period in 2021, domestic tourists reached 1,979,933 arrivals, 3.68 times higher than the same period period in 2021 (Quang Binh Department of Tourism, 2018-2022).

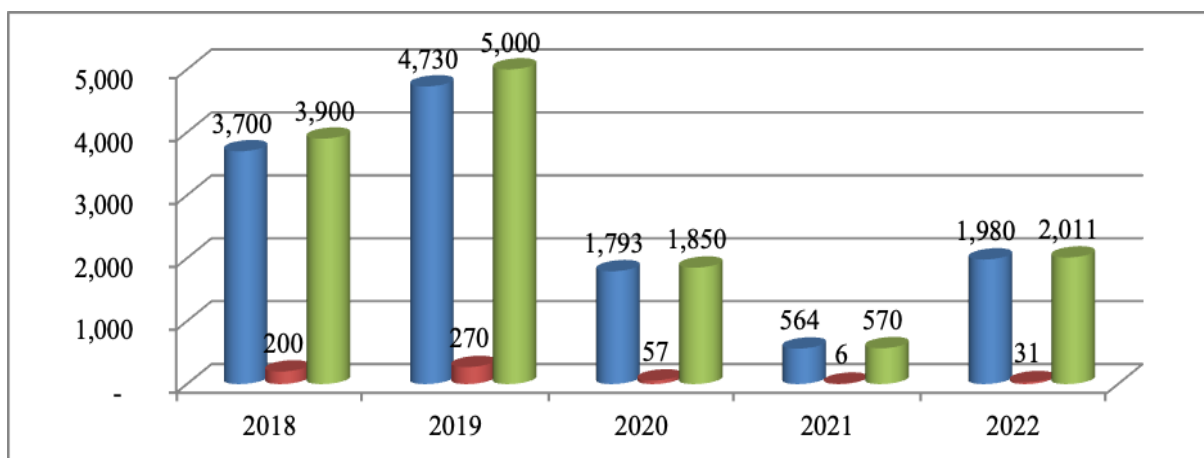


Figure 2. Number of visitors to Quang Binh from 2018 - 2022

Source: Quang Binh Department of Tourism

4.2. Cronbach's Alpha coefficient

Before being included in the exploratory factor analysis, the research data would be tested by using the Cronbach's Alpha of SPSS software to check the reliability of the scale. The test results are presented in Table 2.

Table 2. Factors affect CBT development

TT	Factors	Observations	Cronbach's Alpha
1	The attractiveness of tourism resources (HDTN)	10	0,949
2	Destination accessibility (TCDD)	5	0,883
3	Infrastructure - utilities (CSHT)	9	0,948
4	Destination image (MTTQ)	4	0,906
5	Skills and knowledge (KNKT)	6	0,920
6	Awareness and attitude (NTTD)	4	0,926
7	Decision making (RQD)	3	0,949
8	Community-based tourism development (PTDL)	11	0,849
	Total	52	0,933

Source: Data analysis

In Cronbach's Alpha analysis, observed variables with total correlation coefficient < 0.3 will be excluded from EFA analysis. Each component of the factors must have Cronbach's Alpha coefficient > 0.6 . The results of Cronbach's Alpha analysis show that after removing the HDTN11 variable (because it does not satisfy the testing criteria), the remaining values are all > 0.6 and the variable correlation coefficient - the sum of the observed variables are all higher than the allowable standard is 0.3. Therefore, the above scales are all used in the EFA analysis in the next step.

4.3. Exploratory factor analysis (EFA)

In EFA, all observed variables have the lowest factor loading factor of 0.724 and the highest of 0.935, ensuring the requirements in factor analysis. The factor loading coefficients are all greater than 0.5. The scale drawn is acceptable because the coefficient KMO = 0.872 ($0.5 < \text{KMO} < 1$) and the significance level of the Bartlett test = $0.000 < 0.05$, the test has statistical significance and the observed variables. correlated with each other as a whole.

The extracted variance $74.821\% > 50\%$ shows that the extracted factors explain 74.821% of the variation of the data at the Eigenvalue coefficient = 1.465. Thus, all criteria of factor analysis for measuring scale of CBT development in Phong Nha - Ke Bang National Park are accepted in terms of value.

EFA analysis for the dependent variable shows that: All the important variables in the scale of Community tourism development (including 2 groups: financial and non-financial aspects) are converted into a single factor, named the new factor: CBT development.

4.4. Regression analysis

The results of linear regression analysis (Table 3) show that the model has Sig coefficient. F is much smaller than the significance level $\alpha = 5\%$, so the regression model is significant and suitable for the obtained data set. Therefore, the independent variables in the model have a relationship with the dependent variable CBT development. The Durbin - Watson coefficient of the model is 1.787, showing that the model does not have autocorrelation.

Table 3. Regression analysis

STT	Independent variables	Model			VIF
		β	Std. β	Sig.	
	Constant	-0,228		0,000	
1	Destination image	0,242	0,215	0,000	1,134
2	Destination accessibility	0,170	0,150	0,000	1,853
3	The attractiveness of tourism resources	0,250	0,236	0,000	1,210
4	Skills and knowledge	0,158	0,123	0,000	1,450
5	Awareness and attitude	0,177	0,161	0,000	1,172
6	Decision making	0,064	0,066	0,029	1,334
7	Infrastructure - utilities	0,224	0,165	0,000	1,190
R^2		0,771			
Adjusted R^2		0,766			
F		153,077			
Sig. F coefficient		0,000			
Dubin- Watson coefficient		1,787			

Source: Data analysis

In this model, there are 7 independent variables, the results of regression analysis show that the model has statistical significance (adjusted $R^2 = 76.6\%$, $F = 153.077$, $\text{Sig. } F < 0.05$). Based on the results on Table 3, the adjusted R^2 coefficient is 0.766, which means that 76.6% of the variation of CBT development is explained by 07 variables included in the model. With this value in exploratory factor studies, the fit of the model is quite high.

Table 3 shows that all standardized coefficients β are statistically significant > 0 , indicating that the independent variables have a positive impact on the dependent variable of CBT development in the Phong Nha - Ke Bang National Park. This result confirms that the hypotheses stated in the research model are accepted and tested accordingly.

Thus, the model is represented in the form of a linear regression equation with the dependent variable of CBT development as follows:

$$DLCD = -0,228 + 0,250 * HDTN + 0,170 * TCDD + 0,224 * CSHT + 0,242 * MTTQ + 0,158 * KNKT + 0,177 * NTTD + 0,064 * RQD$$

With a sample size of 400 and research in the buffer zone of Phong Nha - Ke Bang National Park, the regression results show that, among the groups of factors included in the study, the factor Attraction of tourism resources (HDTN) has the strongest impact on CBT development with impact coefficient $\beta = 0.250$. The positive impact coefficient shows that the factor Attractiveness of tourism resources has the same and strongest impact with the dependent variable.

The destination image has the second largest impact on the development of CBT with the impact coefficient $\beta = 0.242 > 0$, showing that this factor has a positive impact with the dependent variable.

The third influencing factor on CBT development is Infrastructure - Utilities with impact coefficient (effect coefficient β is 0.224). The following influencing factor is the local community's awareness and attitude factor with a β coefficient of 0.177. The factor Accessibility to the destination has the 5th place with a β coefficient of 0.170. The sixth effect is the local people's knowledge and skills on tourism (coefficient $\beta = 0.158$). Finally, the decision-making ability with a β coefficient of 0.064.

5. Discussion and Conclusion

The study examines the influence of factors on the development of CBT in the Phong Nha - Ke Bang National Park. The results of exploratory factor analysis and linear regression show that the measurement model based on a sample of 400 local residents in the Phong Nha - Ke Bang National Park has theoretical as well as practical significance.

From a theoretical perspective, the study has clarified the impact of 07 factors constituting the development of CBT in the Phong Nha - Ke Bang National Park area, including: The attractiveness of tourism resources; Destination accessibility; Infrastructure - utilities; Destination image; Skills and knowledge of local people; Local people's awareness and attitudes and their ability to participate in decision-making. This is consistent with previous studies by Nguyen Bui Anh Thu et al (2019), Phuong et al (2020). Moreover,

based on the regression value, it shows that the attractiveness of tourism resources is the factor that has the strongest impact on the development of community tourism, followed by the environment of tourism. The regression results also show that the skills and knowledge of the local people, the awareness and attitudes of the local people have a great impact on the development of community tourism.

In practical terms, the research results contribute to improving the understanding of Phong Nha - Ke Bang National Park managers and local people about the importance of factors constituting the development of community-based tourism in the area. In this area, especially skills, knowledge and attitudes of local people in preserving and promoting tourism activities.

As with previous studies, this study also has some limitations. The research model is still limited in that it does not show all the factors that have an impact on tourism development in the study area, the factors included in the study only show more than 76% of the variation of tourism. community tourism development. This is also a suggestive direction for future studies to get more complete results.

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MIGRATION IN ASIAN COUNTRIES: EXPLORING THE EVIDENCE FOR THE INFLUENCE OF CLIMATE CHANGE AND SOCIO-ECONOMIC FACTORS

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Abstract

A new economic force for regional and global cooperation and integration has emerged in the Asian region. For the past three decades, migration in these countries has been a great concern. Although migration for work opportunities has been widely studied, migration resulting from climate change factors, such as temperature, rainfall, and environmental degradation, has mostly been overlooked in the current literature, especially for Asian countries. To address this gap, we conducted a study using the generalized method of moments to investigate the effects of climate change and key economic factors on migration for a sample of Asian countries from 1990 to 2020. Our empirical findings indicate that climate change factors, including temperature, rainfall have a significant impact on migration from these Asian nations. Furthermore, economic fundamentals such as unemployment have reduced migration and GDP per capita lead to the increase of migration at destination over the past three decades. Based on these findings, this paper offers policy implications.

Keywords: *Climate change; Migration; the Asian countries*

1. Introduction

Human beings have been on the move since the earliest times. People move in search of work or economic opportunities, to join family, or to study. Others move to escape conflicts, persecution, terrorism, or human rights violations. Still, other people move in response to the adverse effects of climate change, natural disasters, or other environmental factors. Today, Asia has 85.6 million international migrants by mid-2020, out of more than 280 million international migrants worldwide, this region is second only to Europe. While this is an area that is heavily affected by global climate change (UN, 2020).

Many countries identified as 'climate vulnerable' tend to experience high emigration rates. Therefore, it is critical to consider the existing environment and climate-related evidence when analyzing current migration patterns and estimating future flows. Environmental factors, including those related to climate change and natural disasters, directly and indirectly impact the resilience and vulnerability of individuals, households, and communities, which may lead to migration. Massey et al. (1993) and Stark & Bloom (1985) argue that households employ migration to diversify income streams and guard against climate-related economic uncertainties and shocks. If economic conditions degrade,

households can rely on a stable income stream through remittances from a member residing elsewhere. The self-insurance function of migration is best described when the household members are sent to an international destination where the weather and market conditions are uncorrelated to those at home (Massey et al., 1993). Many studies have looked at ways people migrate, beyond contributing to population increase, have impacted upon environments. These studies look at how migrants use the environment (Begossi, 1999; Curran & Agardy, 2002). Other studies have demonstrated that adverse climatic conditions can indeed increase the risk of international out-migration (Feng & Oppenheimer, 2012; Gray & Bilborrow, 2013; R. M. Hunter et al., 2013; Nawrotzki et al., 2013). However, these studies have predominantly emerged for Latin America, which may be partly explained by this region's unique historical, economic, social, and political context (Kaenzig & Piguet, 2014). In contrast, climate-related economic recessions may reduce the likelihood of international migration and 'trap' people in place (Black et al., 2011). The links between climate, environmental changes and migration are very complex. Environmental migration is a multi-causal and multi-dimensional phenomenon based on a stratified interconnection of economic, political and social factors (governance, policy and access to resources).

Additionally, temperature and rainfall have been widely used in empirical studies on migration at the macro level. For example, Backhaus et al. (2015); Beine & Parsons (2017); Dallmann & Millock (2017); Falco et al. (2018); Jha et al. (2017); Mastrotillo et al. (2016); Mueller et al. (2020); Sedova & Kalkuhl (2020); Sloat et al. (2020); Thiede et al. (2016) use temperature to examine the relationship between migration and climate change. Backhaus et al. (2015); Beine & Parsons (2017); Dallmann & Millock (2017); Falco et al. (2018); Jha et al. (2017); Mastrotillo et al. (2016); Mueller et al. (2020); Nawrotzki & Bakhtsiyarava (2017); Sedova & Kalkuhl (2020); Thiede et al. (2016) use the rainfall to investigate its impact on migration. Besides, Backhaus et al. (2015) and (Marchiori & Cantoni, 2015) suggest that an increase in temperature and precipitation in a sending country is associated with an increase in migration flows to the respective destination country

Our literature review identifies a research gap in the relationship between migration and climate change, including environmental degradation and economic indicators. The gap warrants this study to be conducted because of the following reasons.

First, despite an increasing amount of research, there is still a lack of understanding regarding the connection between the environment and migration and the mechanisms behind it. There are various theories that attempt to explain why and how climate change affects migration decisions. In addition to disrupting livelihoods, particularly for agricultural households that heavily rely on environmental conditions for income, climate change can influence migration through other means. The consequences of exposure to environmental changes can vary significantly across regions based on local agricultural conditions, opportunities for income diversification, and options for adaptation. Furthermore, environmental factors are interconnected and may be correlated with one another both spatially and temporally.

Second, the Asian region is characterized by its diversity. Climate change and environmental degradation is a significant concern, and it has a significant impact on vulnerable Asian countries. The coastlines in this region are densely populated, which makes the countries more susceptible to environmental degradation. Moreover, agriculture is a major source of livelihood, and there is a high dependence on forestry and natural resources. Additionally, the level of extreme poverty remains high. Compared to other regions, the Asian region is more vulnerable to climate change risks due to its dependence on natural resources and agriculture, weak institutions, densely populated coastal areas, and poverty among a considerable proportion of the population. Therefore, the key strategy for sustainable economic growth in this region is adaptation - making necessary adjustments in natural or human systems to respond to actual or expected climatic stimuli or their effects, which helps mitigate negative impacts and exploit beneficial opportunities. Failure to adapt could stall development, particularly in countries that depend on natural resources. Adaptive capacity entails taking a series of actions to change behaviours, shift priorities, produce necessary goods and services, and plan and respond in ways that reduce harmful climate change impacts or transform them into no-regret economic opportunities. Regenerate response.

This study examines environmental, and key economic factors affecting the international migration in Asian countries, such as temperature, rainfall and emission dioxide (climate change factors) and GDP per capita, economic growth, trade openness and unemployment (socio-economic fundamentals). This study focuses on the link between climate change and migration. Migration is considered one of several coping and adaptation mechanisms used by individuals, households and countries. It responds to both push and pulls factors. Changes in the climate (for example, warming temperatures, heat waves, declining rainfall, and CO₂ emission) are part of the push factors because they lead to a deterioration of the environment.

2. Method

This study examines the effects of environmental degradation and socio-economic factors on migration (Mueller et al., 2020; Backhaus et al., 2015; Marchiori et al., 2015). We investigate the impacts of climate change on international migration in Asian countries among five-year data by using the random effect, fixed effect and generalized least squares regression (GLS) for the following model:

$$MIG_i = \beta_0 + \beta_1 TEM_i + \beta_2 RAI_i + \beta_3 CO_{2i} + \beta_4 GROW_i + \beta_5 TRADE_i + \beta_6 UNEMP_i + \beta_7 GDP_i + u_i$$

where: $MIGRATION_j$ is net migration rate by country (per 1,000 population); TEM_i is an average temperature by country (World Bank); RAI_i is Rainfall, mean-temperature by country (World Bank); CO_{2i} is CO₂ emissions (Our World in Data); $GROW_i$ is Economics growth (World Bank); $GROW_i$ is Economics growth (World Bank); $TRADEI$ is Trade openness (Exports and Imports as a share of GDP (%)) (World Bank); $UEMPL_i$ is Unemployment, total (% of the total labour force) (International Labour Organisation - ILO); GDP_i is logarithm of GDP per capita (Current USD) (World Bank)

3. Results

The descriptive statistics of variables are presented in Table 3 below. The temperature (TEM) variable is 18.96°C on average. The highest temperature was in Bahrain at 29.09°C in 2010, while the lowest was in Mongolia in 2010 at -0.42 per cent. For migration, 134.414 per cent came from Qatar in 2010, whereas the smallest migration was 70.79 per cent for Kuwait in 1995.

Table 3. The summary of the descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
MIGRATION	329	2.2815	15.8831	-70.7870	134.414
TEM	329	18.9602	8.1033	-0.4200	29.0900
RAI	329	6.3024	1.2486	3.2402	8.2651
CO ₂	326	3.5629	2.1069	-2.0557	9.2749
TRADE	281	87.9692	58.8893	0.0209	420.4305
UNEMPL	329	5.6684	4.3138	0.1700	21.2060
GDPPC	328	7.8812	1.5917	3.8972	11.1185
GROW	329	4.2197	8.5747	-33.4999	58.1000

*Notes: **MIGRATION**_j denotes Net migration rate by country, 1990-2020 (per 1,000 population); **TEM**_i is average temperature by country; **RAI**_i stands for the rainfall, **CO₂**_i represents the CO₂ emissions; **GROW**_i denotes GDP growth; **TRADE**_i stands for the trade openness measured as the sum of a country's exports and imports as a share of that country's GDP (in %); **UNEMPL**_i represents the unemployment rate (% of the total labour force); **GDP**_i denotes GDP per capita (Current USD)*

Table 4 presents the results from the multi-collinearity test. Again, the results indicate that multi-collinearity is not a significant issue in our analysis.

Table 4. Results from the multi-collinearity test

	TEM	RAI	CO ₂	TRADE	UNEMPL	GDPPC	GROW
TEM	1.0000						
RAI	0.0906	1.0000					
CO ₂	0.0452	-0.1299	1.0000				
TRADE	0.2396	0.0627	-0.1992	1.0000			
UNEMPL	-0.3613	-0.2102	-0.0556	-0.0841	1.0000		
GDPPC	0.2454	-0.2529	0.3342	0.2781	-0.0691	1.0000	
GROW	0.0540	0.0153	0.0548	0.0339	-0.0802	-0.0531	1.0000

*Notes: **MIGRATION**_j denotes Net migration rate by country, 1990-2020 (per 1,000 population); **TEM**_i is average temperature by country; **RAI**_i stands for the rainfall, **CO₂**_i represents the CO₂ emissions; **GROW**_i denotes GDP growth; **TRADE**_i stands for the trade openness measured as the sum of a country's exports and imports as a share of that country's GDP (in %); **UNEMPL**_i represents the unemployment rate (% of the total labour force); **GDP**_i denotes GDP per capita (Current USD).*

The Wooldridge and the Breusch-Pagan/Cook-Weisberg tests are used to investigate the autocorrelation and heteroscedasticity in our sample. Results from Table 5 confirm that no autocorrelation is present in our sample. However, heteroscedasticity is present in the regression model.

Table 5. Results from the autocorrelation and heteroscedasticity tests

Model	Autocorrelation			Heteroscedasticity		
	Ftest	pvalue	Present autocorrelation	chi2(1)	pvalue	Present heteroskedasticity
	0.068	0.7960	x	383.58	0.0000	✓

GLS is used to deal with situations in which the OLS estimator is not BLUE (best linear unbiased estimator) because one of the main assumptions of the Gauss-Markov theorem, namely that of homoskedasticity and absence of serial correlation, is violated. Therefore, in addition to using re and fe regression, the model also uses GLS technique to overcome. Results is showed in Table 6.

Table 6. Empirical results on the effects of climate change and socio-economic factors on international migration using random-effects, fixed-effects, and the GLS estimations

	MIGRATION	MIGRATION	MIGRATION
	Random	Fixed	GLS
TEM	0.46623***	2.15527	0.37336***
lnRAI	-4.40876***	-24.73439***	-3.73162***
lnCO2	-0.30850	0.98354	-0.25836
TRADE	0.01596	-0.04547	0.02278
UNEMPL	-0.29336	0.30985	-0.46032**
GDP	3.38410***	25.80828	3.12647***
GROW	0.07000	0.12057	0.05677
_cons	-45.61523	95.40360**	-49.48753
No. of Obs.	279.000	279.000	279.000

Notes: MIGRATION_j denotes Net migration rate by country, 1990-2020 (per 1,000 population); TEM_i is average temperature by country; RAI_i stands for the rainfall, CO2_i represents the CO₂ emissions; GROW_i denotes GDP growth; TRADE_i stands for the trade openness measured as the sum of a country's exports and imports as a share of that country's GDP (in %); UEMMPL_i represents the unemployment rate (% of the total labour force); GDP_i denotes GDP per capita (Current USD).

In Tables 6, the results show that the TEM variable shows statistical significance and has a positive impact on the international migration in the 47 Asian countries. With an average increase in the international migration of 0.37‰ when the temperature increases 1°C. Similarly, the RAI and UNEMPL variables show statistical significances and have the negative impacts on the migration. Our results indicate that the temperature is associated with increased net migration. Similar results are documented in previous studies (Backhaus et al., 2015; Thiede et al., 2016; Beine & Parsons, 2017; Dallmann & Millock, 2017; Jha et al., 2017; Mastrorillo et al., 2016; Nawrotzki & Bakhtsiyarava, 2017; Sedova & Kalkuhl, 2020; Sloat et al., 2020). However, the RAI variable shows statistical significance and has a positive impact on the unemployment rate. Conversely, a 1% increase in rainfall decreases the migration to 3.73‰. This research also finds that rainfall decreases net migration. The result also aligns with previous studies (Falco et al., 2018; Mastrorillo et al., 2016; Mueller et al., 2020; Nawrotzki & Bakhtsiyarava, 2017). Similarly, when unemployment increases by 1%, migration decreases by 0.46‰. In addition, our empirical result presents that the unemployment is associated with decreased migration. In this case, the international migration rate is calculated by immigration minus emigration per 1000 population. Unemployment can be a cause of impediment to inward migration and promoter of outbound migration in Asian countries. This is consistent with previous theories and research. This result is similar to the GDP variable, when economic growth increases by 1%, migration increases by 3.12‰. Besides that, an increase of GDP per capita is considered a positive signal of migration. The results further support the theories of migration (Harris & Todaro, 1970; Lee, 1966; Ravenstein, 1885).

4. Discussion and Conclusion

Policy implications have emerged based on the findings of this study. First, our findings indicate that international migrants in the Asian countries migrate due to climate change. The increase in temperature or global warming, as well as the change in precipitation, has a great impact on the climate, living and working environment of the people of countries, especially in Asia. Environmental and climate issues are becoming more and more important, unpredictable and have a strong influence on the movement of people around the world, especially in Asia. And one of the best ways, among other important objectives, is to improve environmental quality to attract migrants from other countries and to prevent people from leaving their origin countries.

Furthermore, economic advantages will promote in-migration, while socioeconomic disadvantages will limit immigration and increase emigration. Meanwhile, unemployment is a major barrier to inbound migration and an important driver of outbound migration. Our empirical findings also support the view that high-income level will attract international migration to the Asian region.

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LIVELIHOOD DIVERSIFICATION AND POVERTY IN THE SALTWATER INTRUSION AREA OF THE MEKONG DELTA, VIETNAM

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Abstract

In rural Vietnam, agriculture is the main source of food and livelihood for many households, making it a central component of programs to reduce poverty and achieve food security. As the sector faces multiple shocks from natural disasters, rural households are forced to develop strategies through diversification to cope with the increasing vulnerability associated with an increase in agricultural production. The study uses data from 344 households from the 2018 Residential Living Standards Survey (VHLSS) dataset. The results of the logit model indicate that the factors of labor force, mean age of labor, education level of labor, participation in party local mass organizations, households' access to credit, and saltwater intrusion have significantly influenced livelihood diversification. In addition, the multinomial logit model also found 13/16 factors included in the model that affect strategies for diversification of livelihoods from agriculture - wage employment, agriculture - non-agriculture, and a strategy that combines all three livelihoods above. In particular, saltwater intrusion has a negative impact on the ability of rural households to diversify. In addition, the study also found an inverse relationship between diversification and poverty. The propensity score matching results show that household participation in livelihood diversification has an impact on increasing household income. This reinforces the hypothesis that diversification contributes to poverty reduction in rural areas of the Mekong Delta. Therefore, in order to secure the capacity of rural households to practice farming along with a variety of income-generating activities to improve the welfare of the rural poor and have a significant impact on poverty reduction, participation in livelihood diversification should be emphasized in development plans.

Keywords: *Multinomial logit model, livelihood-diversification strategies, poverty*

1. Introduction

Natural disasters such as hurricanes, floods, and droughts can directly deplete household resources, push them into poverty traps, increase inequality, and exacerbate the

poverty of those living in poverty. people who are already poor (Bui et al., 2014; Carter et al., 2007). Shocks disrupt household income and consumption flows and cause welfare losses in developing countries (Nguyen et al., 2022). Agriculture-based livelihoods (especially crop production) and smallholder farmers are particularly vulnerable to the effects of shocks caused by natural disasters (Ahmad & Afzal, 2020; Ferdushi et al., 2019), as smallholder farmers mainly rely on crop livelihoods for their livelihood and income (Donatti et al., 2019). For agricultural communities in low- and middle-income developing countries, the impacts of climate change and extreme events are more severe due to a lack of resources, knowledge, services, and resources veterinary and agricultural extension as well as research and technology development (Thornton et al., 2009).

Although agriculture is considered the main source of livelihood in rural areas of developing economies, rural households are increasingly diversifying their livelihood activities to generate income and *better* cope with adverse factors and events affecting agriculture (Ellis & Freeman, 2004). Livelihood diversification occurs when households perform a variety of activities and have social support capabilities to survive and improve living standards (Ellis and Allison, 2004). Diversification can protect vulnerable households from environmental and economic shocks (Eneyew and Bekele, 2012). To cope with the changing situation, reduce losses from agricultural activities, and secure economic and environmental shocks, rural households are adopting diversification strategies from agricultural activities (farming, livestock, and fisheries), non-agricultural activities, transportation and paid activities (Ellis 1998).

In this study, livelihood diversification refers to the efforts of households to find new ways rather than a single activity to raise incomes and reduce vulnerability to livelihood shock. This study examines and evaluates the influence of socio-economic and other factors (including the impact of saltwater intrusion) on the diversification of households' livelihoods. Therefore, this study examines and evaluates the influence of socio-economic and other factors (including the impact of saltwater intrusion) on the diversification of households' livelihoods in the Mekong Delta, Vietnam, a low-middle-income country with a high proportion of the rural population with agriculture as the main source of income (Nguyen et al., 2017) and one of among the countries most affected by climate change (Espagne et al., 2021). The questions of this study include: (i) what is the impact of saltwater intrusion and covariates on the livelihood diversification of rural households; and (ii) how effective is livelihood diversification to reduce rural poverty through increasing household income? The results of this study are intended to provide useful information for policy interventions to support one of the most vulnerable population groups, rural households, especially the poor, to overcome the negative effects of these shocks.

2. Theoretical basis

The Sustainable Livelihoods Framework provides a comprehensive view of the processes that households achieve or fail to achieve in rural livelihood diversification strategies. Livelihood includes a household's capacity, income-generating activities, and holdings that contribute to a means of subsistence (Ellis, 1998). A livelihood is sustainable

when it is able to survive and recover from shocks and stresses and to develop its capabilities and assets, including natural resources, both now and in the future. future. The Sustainable Livelihoods Framework (Figure 1) is useful to determine whether people's livelihoods are sustainable in terms of three main aspects, including livelihood background, livelihood strategies, and livelihood outcomes. Human, natural, physical, financial, and social capital are the five asset classes of a household highlighted by the Sustainable Livelihoods Framework. Households combine these assets with activities and develop a portfolio of livelihood strategies to achieve their livelihood goals, which can be defined as livelihood strategies. Households' choice of livelihood strategy is influenced by asset holdings and external factors such as geographical location and infrastructure (Tesfaye et al., 2011). Livelihood outcomes are benefits derived from livelihood strategies (such as income, food security, poverty reduction, environmental sustainability, etc.). The Sustainable Livelihoods Framework explains the combination of livelihood resources (or accessibility), policies, institutional settings, and processes within a household's ability to decide on the type of strategy or combination of livelihood strategies to pursue and what outcomes can be achieved in the specific context of trends and shocks (Figure 1).

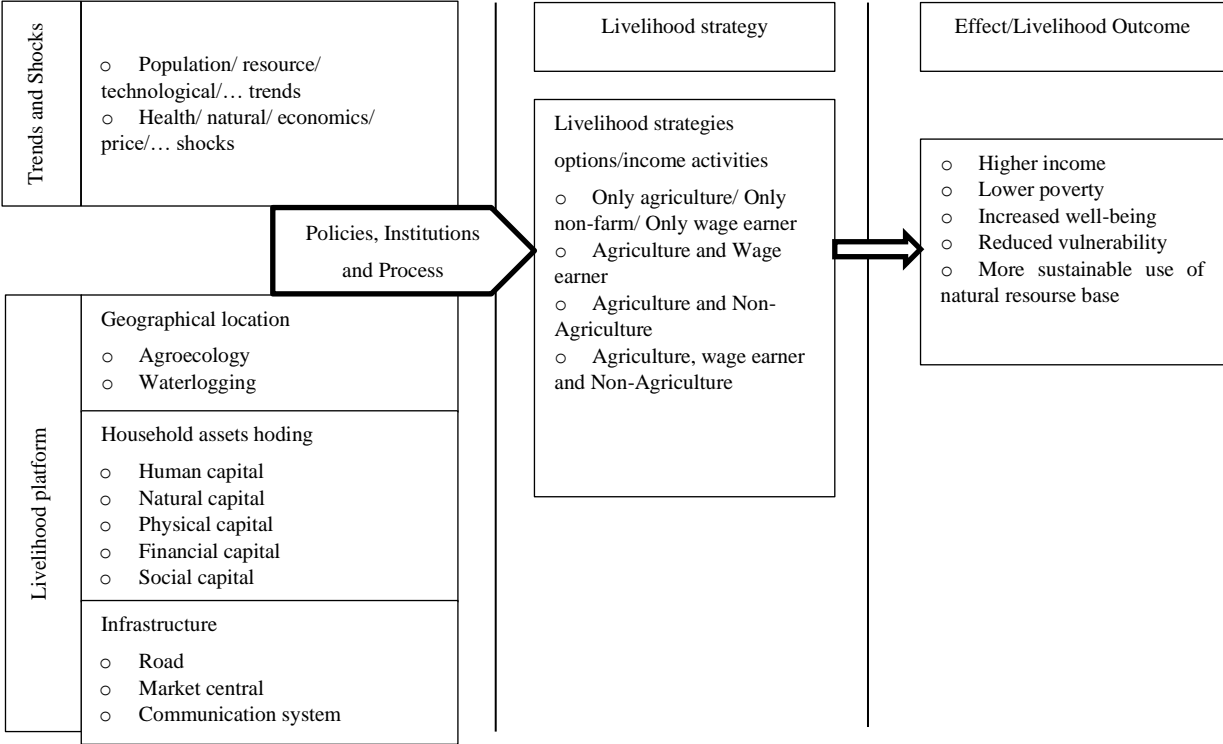


Figure 1. Sustainable Livelihoods Research Framework

Source: Adapted from Ellis (1998) and DFID (1999)

For rural livelihoods, the livelihood strategies of households fall into one of three broad categories: agricultural, wage employment, and non- agricultural. Rural households combine various economic and social activities, thereby building a portfolio of income-generating livelihood activities to meet and enhance sustainable rural livelihood outcomes

(Davis et al., 2010). Households have access to a variety of assets or resources that they can use to engage in agricultural or non-farm activities (including wage employment) or both (Scoones, 2009). According to Ellis (1998), livelihood diversification is a process in which household members develop a diverse set of activities to help them struggle to survive and improve their standard of living. Policy and institutional context refers to the policies and strategies available at the local level related to property rights such as land, community access to agricultural inputs and financial programs, and the availability of other programs that affect the livelihoods of households. Livelihood outcomes are the achievements of livelihood diversification strategies, such as higher incomes, increased welfare, reduced vulnerability, improved food security, and sustainable use of natural resources (DFID, 1999; Ellis, 1998).

3. Method

3.1. Research data

In this study, survey data from 344 rural households in the Mekong Delta region of Vietnam from the 2018 VHLSS dataset is used. Four of the provinces affected by the saline intrusion of the Mekong Delta were selected for the study, including Ben Tre, Tra Vinh, Hau Giang, and Soc Trang. In each province, communes in areas frequently affected by saltwater intrusion and communes in areas not regularly affected by saline intrusion were selected by overlapping the multi-year mean 4 g/l saline boundary map with the commune boundary map of the Mekong Delta provided by the Southern Institute of Irrigation Science in a GIS environment.

3.2 Analytical methods

3.2.1. Estimating factors determining the choice of livelihood diversification for rural households: a binomial logit regression model

The binomial logit model is used to determine whether the household in question is diversifying its livelihood. The binomial logit regression model estimates the probability that a household's choice for livelihood diversification activities can take on one of two values: value 1 if the household chooses to diversify livelihoods and value 0 otherwise. According to Gujarati (2004), the functional form of the binomial logit model is presented as follows:

$$P_i = F(Z_i) = \frac{1}{1 + e^{-(\alpha + \sum_{i=1}^m \beta_i x_i + u_i)}}, i = 1, 2, 3, \dots, m \quad (1)$$

where P_i is the probability that the i -th household engages in livelihood diversification and ranges from 0 to 1; e is the base of the natural logarithm; α is the intercept, β_i is the slope coefficient in the model; and Z_i is the functional form of m explanatory variables (X_i). The slope β_i shows how the log of the odds ratio for a given household engaged in livelihood diversification changes as the independent variables change. If P_i is the probability of a household's livelihood diversification, then $1 - P_i$ represents the probability that a household engages in only one livelihood strategy (no

livelihood diversification). Even so, the interpretation of the log value of the odds ratio is difficult; it only provides the direction of the effect of the explanatory variable on the probability of household participation.

A common alternative to odds ratios is the marginal effect of an explanatory variable based on the probability that Y_i equals 1 versus 0. A marginal effect is defined as the effect of a small change in a variable that explains X_i on the probability $Y_i = 1$, or $\partial P(Y_i = 1|X_i) / \partial X_i$. Marginal effects are less sensitive to changes in model specification than to odds ratios. For the logit model, the marginal effect of an explanatory variable X_i is:

$$ME_i^{Logit} = \frac{\partial P(Y_i = 1|X_i)}{\partial X_i} = \beta_i \times P_i \times (1 - P_i) \quad (2)$$

3.2.2. Estimating the determinants of rural households' livelihood diversification strategies: a multinomial logit regression model (MNL)

The basic assumption of MNL is that, in a given period, a household will choose livelihood diversification strategies that provide maximum utility from expected income household substitution, thus households cannot participate in strategies chosen by households of other groups (Tizazu et al., 2018). For a dependent variable with J livelihood diversification strategies, the j -th livelihood diversification strategy that the i -th household chooses to maximize its utility can take the value 1 if the i -th household chooses the j -th livelihood diversification strategy and 0 if it is not chosen. If a household's utility is measured in terms of realized income, its choice is simply the optimal allocation of available livelihood capital to choose a livelihood diversification strategy that maximizes its usefulness (Brown et al., 2006). The probability P_{ij} that the i -th household with characteristics X_i chooses a livelihood diversification strategy j -th is modeled as a multinomial logit. Therefore, the selection function can be written as follows (Tassew and Oskam, 2001):

$$P_{ij} = \frac{e^{(x_i' \beta_j)}}{\sum_{j=0}^J e^{(x_i' \beta_j)}}, \quad (j = 0, 1, 2, \dots, J) \quad (3)$$

where β_j is the coefficient of covariates between livelihood diversification strategies; X_{ij} are constant covariates between livelihood diversification strategies. Equation (3) is normalized to remove uncertainty by assuming that the probability $\beta_0 = 0$ is estimated to be:

$$P_{ik} = \frac{e^{(x_i \beta'_k)}}{1 + \sum_{k=1}^J e^{(x_i \beta'_k)}}, \quad (k = 0, 1, 2, \dots, J; \beta_0 = 0) \quad (4)$$

According to Greene (2003), the parameter estimates of the MNL model are difficult to interpret; they only provide the direction of the effects of the explanatory variables on the dependent variable, but the model does not estimate the actual size of change or probability.

Instead, the marginal effect measures the expected change in the probability of a given choice being made relative to the unit change in the explanatory variable. Therefore, marginal effects are often inferred to estimate the impact of the independent variables on the dependent variables according to the following probabilities:

$$ME_j^{MNL} = \frac{\partial P_j}{\partial x_i} = P_j \left[\beta_j - \sum_{k=0}^J P_k \beta_k \right] = P_j (\beta_j - \bar{\beta}) \quad (5)$$

Marginal effects measure the expected change in the likelihood of choosing a particular livelihood diversification strategy for a unit change in the explanatory variable. The marginal effect on the explanatory variables shows how $P(Y = 1)$ changes when the explanatory variable changes from 0 to 1, after controlling for other variables (Williams, 2012).

3.2.3. Estimation of propensity score matching (PSM) impact

To analyze the impact of livelihood diversification on household poverty through income, the propensity score matching (PSM) technique was used to generate estimates for the intervention group (households in the diversifying sample, $D = 1$) and the control group (households in the non-diversifying sample, $D = 0$) based on the similarity of observed characteristics. If random livelihood diversification is assigned to a household, we can assess the impact of livelihood diversification on household poverty by comparing the median income average based on diversification and non-diversification. In such a case, the average therapeutic effect (ATT) can be calculated as follows:

$$ATT = E(Y_{1i}|D = 1) - E(Y_{0i}|D = 1) \quad (6)$$

where ATT is the mean therapeutic effect on treatment; D is the core explanatory variable reflecting the diversification of livelihood of rural household i -th; Y_{1i} and Y_{0i} are the incomes of rural households, respectively, when the livelihood diversification sample and the non-livelihood diversification sample.

3.2.4. Dependent variable of the research model

For the binomial logit model, the dependent variable for diversification of household livelihood is a binary variable representing the diversification of the household, taking the value 1 if livelihood diversification and 0 otherwise. For the multinomial logit model, the J group of livelihood strategies of households in this study is classified as follows: $j = 0$ is the household engaged in only one agricultural or wage employment or non-agricultural; $j = 1$ is the household that combines agriculture with wage employment; $j = 2$ is the household combining agriculture with non-agricultural; $j = 3$ is the household that combines agriculture, wage employment, and non-agricultural.

Table 1. Dependent variable used in the livelihood diversification model

Dependent variable	Description of variables	Frequency	Ratio
Binomial logit model (Choosing to diversify livelihoods)			
$Y = 1$	Households with diversification of livelihood	223	64.83
$Y = 0$	Households do not diversify their livelihoods	121	35.17
Multinomial logit model (Choosing between livelihood diversification strategies)			
Y_0 : Non-diversification	Household engaged in only one agricultural or wage employment or non-agricultural	121	35.17
Y_1 : Agri + Wage	Household that combines agriculture with wage employment	122	35.47
Y_2 : Agri + Non-agri	Household combining agriculture with non-agricultural	41	11.92
Y_3 : Agri + Wage + Non-agri	Household that combines agriculture, wage employment, and non-agricultural	60	17.44
Total		344	100.00

4. Results

4.1. Determinants of livelihood diversification in rural households

The binomial logit regression model in Table 2 and the multinomial logit regression model in Table 3 have LR chi2 test values of 96.19 and 170.35, respectively, showing that both models are suitable for analyzing the factors in the choice of livelihood diversification for rural households at the 1% significance level. The estimation results of the binomial logit model show that out of 16 factors included in the model, only 6 have statistical significance, explaining 21.56% of the decision to diversify. In the multinomial logit model, up to 13/16 factors included in the model have statistical significance, explaining 19.15% of the decision to choose livelihood diversification strategies.

Table 2. Results Determinants of livelihood diversification choices of rural households in the Mekong Delta: a binomial logit regression model

Variables	Dependent variable: Choice of livelihood diversification (marginal effect)	
	Coeff.	Std.err.
Labor force	0.1286***	0,0343
Dependency rate	0.1334	0,1108
Percentage of male labor	-0.1195	0,0774
Ethnicity	-0.0856	0,0675
Average age of labor	-0.0055**	0,0024
Education level of labour	0.0437*	0,0231

Variables	Dependent variable: Choice of livelihood diversification (marginal effect)	
	Coeff.	Std.err.
Join party organizations and unions	0.1117**	0,0546
Land size	-0.0047	0,0036
Access to credit	-0.1063**	0,0467
Durable assets	0.0064	0,0074
Livestock value	0.0005	0,0007
Distance to district center	-0.0023	0,0034
<i>Provincial fixed effect (Ben Tre = base)</i>		
Tra Vinh	-0.0616	0,0680
Hau Giang	0.1309	0,0857
Soc Trang	0.0470	0,0721
Saltwater intrusion	-0.1191**	0,0506
<i>Observations:</i>	344	<i>Pseudo R2:</i> 0.2156
<i>LR chi2:</i>	96.19***	<i>Log likelihood:</i> -174.997

Note: ***, **, and * are significant at 1%, 5%, and 10%, respectively.

Table 3. Factors determining the choice of livelihood diversification strategies of rural households in the Mekong Delta: a multinomial logit model

Variables	Dependent variable: Choosing a livelihood diversification strategy versus no livelihood diversification (marginal effect)					
	Y ₁ : Agri + Wage		Y ₂ : Agri + Non-agri		Y ₃ : Agri + Wage + Non-agri	
	Coeff.	Std. err.	Coeff.	Std. err.	Coeff.	Std. err.
Labor force	0.0154	0.0341	0.0274	0.0228	0.0900***	0,0240
Dependency rate	0.0695	0.1279	0.0115	0.0906	0.0428	0,1018
Percentage of male labor	-0.0250	0.0940	-0.1234*	0.0727	0.0278	0,0815
Ethnicity	-0.1482**	0.0750	0.0463	0.0664	0.0284	0,0675
Average age of labor	-0.0074***	0.0027	0.0014	0.0019	0.0006	0,0023
Education level of labour	0.0229	0.0245	-0.0158	0.0172	0.0336*	0,0187
Join party organizations and unions	-0.0207	0.0581	-0.0080	0.0385	0.1313***	0,0400
Land size	0.0105**	0.0041	0.0010	0.0025	-0.0185***	0,0049

Variables	Dependent variable: Choosing a livelihood diversification strategy versus no livelihood diversification (marginal effect)					
	Y ₁ : Agri + Wage		Y ₂ : Agri + Non-agri		Y ₃ : Agri + Wage + Non-agri	
	Coeff.	Std. err.	Coeff.	Std. err.	Coeff.	Std. err.
Access to credit	0.1367***	0.0489	-0.0137	0.0351	-0.0183	0,0387
Durable assets	-0.0144*	0.0082	0.0155***	0.0057	0.0063	0,0064
Livestock value	-0.0002	0.0007	0.0007**	0.0003	-0.0001	0,0004
Distance to district center	-0.0036	0.0038	0.0045*	0.0025	-0.0031	0,0029
<i>Provincial fixed effect (Ben Tre = base)</i>						
Tra Vinh	-0.1128	0.0763	-0.0218	0.0546	0.0728	0,0592
Hau Giang	-0.0655	0.0907	0.0590	0.0568	0.1350**	0,0672
Soc Trang	-0.0248	0.0783	0.0338	0.0527	0.0402	0,0656
Saltwater intrusion	-0.1043*	0.0573	0.0203	0.0413	-0.0295	0,0476
<i>Observations</i>		344			<i>Pseudo R2</i>	0.1915
<i>LR chi2</i>		170.35***			<i>Log likelihood</i>	-359.70

Note: ***, **, and * are significant at 1%, 5%, and 10%, respectively.

Labor force of the household: Labor force has a positive impact on the implementation of household livelihood diversification and the choice of a diversification strategy to combine agriculture, wage employment, and non-farm at the 1% significance level. Specifically, if a household has 1 more employee, the household will increase the probability of livelihood diversification by 12.86%, and at the same time, the household will also prioritize the strategy of combining agriculture, wage employment, and non-agriculture 9% more than without diversification. This result is similar to that of Anshiso and Shiferaw (2016) and Amare (2018) and shows that the more members of a household engage in income-generating livelihood activities, the more opportunities for diversification the household will have. Each member can implement different livelihood strategies or jointly implement new livelihood strategies.

Gender of labor: Although the gender of labor does not affect the diversification of household livelihoods, households with more female workers will increase their ability to combine agriculture and non-agriculture is 12.34%. Consistent with Serkalem et al. (2014), this can be explained by the fact that non-agricultural activities in rural areas mostly belong to garment production, agricultural product processing, and retail trade, which are suitable for women's ingenuity gender than men.

Ethnicity: Similar to gender, ethnicity does not determine the diversification of households' livelihoods but reduces the probability of choosing agriculture and wage employment. Accordingly, Kinh households will have less choice in agricultural livelihood and wage employment than Khmer households by 14.82%.

Average age of labor: The average age of labor in the household has a negative impact on the probability of livelihood diversification as well as the probability of choosing a livelihood combining agriculture and wage employment, which are 0.55% and 0.74%, respectively. This implies that people of relatively younger age may be motivated to engage more in agricultural activities and wage employment than in only one livelihood because the younger generation is more educated, therefore more skilled, and has better access to technology. This finding is consistent with the studies conducted by Amare (2018) and Geremew et al. (2017).

Education level of labor: The results show education level of labor has a significant positive impact on the probability of livelihood diversification and the probability of combining agricultural, wage employment, and non-agricultural activities. This means that, other things being equal, a one-step increase in the education level of households increases the likelihood of households engaging in diversification activities by 4.37%, and the combination of agriculture, wage employment, and non-agricultural is 3.36%. The positive impact of education may reflect the fact that more educated workers may be interested in diversification because education can help households engage in more productive activities. The results support the findings of Anshiso and Shiferaw (2016). In addition, Ellis (1998), in his theoretical argument, pointed out that livelihood diversification activities that require more skilled labor will attract people with higher education levels.

Participation in party and mass organizations: Institutional factors that determine households' participation in livelihood diversification activities are related to awareness of households' livelihood activities in organizations, party and union. Becoming a member of these organizations increases the likelihood of participating in livelihood diversification activities by 11.17% while also increasing the probability of choosing a combination of agricultural, wage employment, and non-agricultural. This result is consistent with the study by Kassie et al. (2017). First, the financial constraints of households will be minimized so that they will have the opportunity to engage in non-agricultural activities and generate non-agricultural income when they become members of party organizations and local unions. Secondly, the social capital, market information, and other useful news that households have access to will increase when they become members of the above organizations, so they can grasp timely, effective information for livelihood activities.

Area of arable land: The area of arable land has a positive impact on agricultural-wage employment livelihood at the 5% significance level but has a negative impact on the ability to diversify agriculture, wage employment, and non-agricultural. The positive impact of arable land on livelihood diversification in this study is consistent with the results of Washo et al. (2021). It is possible that households with more land will follow livelihood diversification activities in addition to agricultural production activities; on the other hand, households with larger land areas are expected to lease land to increase their income. In addition, the negative impact of arable land on livelihood diversification is also consistent with the study of Anshiso and Shiferaw (2016). The explanation for this is that when households have more land, it takes more time to cultivate, leading to insufficient resources to combine all three types of livelihoods.

Access to credit services: Access to credit reduces the probability of livelihood diversification of rural households in the study area by 10.63% at the 5% significance level, which is consistent with the studies of Geremew et al. (2017) and Amare (2018). This shows that if the household needs more capital, it will prioritize one type of livelihood to ensure that there are no risks affecting the results of that livelihood activity and, at the same time, to ensure the ability to pay the credit. On the other hand, the possibility of access to credit increases the combined probability of agriculture and wage employment (Anshiso and Shiferaw, 2016). This result reflects the fact that credit services in the short term can solve household budget constraints and thus enhance the capacity of rural households. Households with little land to start and maintain a combination of agricultural and wage employment livelihoods. This shows that better access to credit services accelerates the diversification of rural livelihoods.

Durable assets: Durable assets reduce the probability of choosing a combined agriculture and wage employment by 1.44% at the 10% significance level but increase the probability of selecting the combined agriculture and non-agriculture strategy by 1.55% at the 5% significance level. This result shows that durable assets such as means of transport, means of communication, means of living, etc. support households more when performing non-agricultural activities.

Livestock value: Livestock ownership by households has a significant and positive influence on household choice of agricultural and non-agricultural livelihood strategies at a significance level of 5%. This finding supports Amare's (2018) and may be because owning livestock provides opportunities for other assets, allowing them to diversify their means of livelihood by selling livestock and producing their livestock products.

Distance to district center: The results in Table 3 show that at the 10% significance level, when the distance from the house to the district center increases by 1km, the household increases its ability to combine agricultural and non-agricultural livelihoods by 0.45%, in contrast to the results of Kassie et al. (2017). As mentioned, the non-agricultural activities in the study area are mostly retail trade. Therefore, when households are further away from the center, the efficiency of retail activities will increase due to reduced competition in prices and product categories in the central areas.

Provincial fixed effect: The location of the household is another determinant of livelihood diversification. Households in Hau Giang province will be 13.5% more likely to combine different livelihoods than Ben Tre at the 5% significance level. This can be explained by the fact that Hau Giang is less frequently affected by saline intrusion, so households have more opportunities to implement different livelihood strategies.

Saltwater intrusion: An important thing from the estimates in Tables 2 and 3 is that households in areas frequently affected by saline intrusion will reduce their ability to diversify their livelihoods by 11.91% at a 5% significance level while other factors remain unchanged. At the same time, the probability of implementing the strategy of combining agriculture and wage employment is also reduced by 10.43%, respectively. This is an

important result that shows the negative impact of saltwater intrusion on accessibility, pooling of resources, and activities to diversify livelihood strategies to increase income and stabilize the lives of people in the area.

4.2. The impact of livelihood diversification on rural household poverty

First, the descriptive statistical method combined with the chi-squared test for diversified and undiversified households shows that the two groups have significant differences in the poverty status of households. That means that there is a correlation between poverty and the diversification of rural households' livelihoods. Households that diversify their livelihoods are less likely to fall into poverty than those that do not.

The survey results in Table 4 show that out of a total of 344 households in the sample, the average number of households participating in different livelihood activities is 64.83%, and the remaining 35.17% only participate in one livelihood. In addition, of the total sample of households, 82.85% of households have never fallen into poverty between 2014 and 2018, while 17.15% of households have been poor for at least one year from 2014 to 2018. Results $\chi^2 = 4.71$ in Table 4 show that the difference between livelihood diversification and poverty is significant at the 5% probability level. This implies that most of the rural households in the study area diversify their livelihood sources, and this may affect how closely they link poverty and livelihood diversification.

Table 4. Livelihood diversification by poverty status

Poverty status	Livelihood diversification		Total	χ^2
	Yes (223)	No (121)		
Non-poverty (285)	55.81	27.03	82.85	
Poverty (59)	9.01	8.14	17.15	
Total (344)	64.83	35.17	100.00	4.71**

Note: ** is significant at 5%.

To achieve the stated objectives of the study, this section assesses the impact of diversification on livelihood outcome variables (income) in terms of their significant impact on household participation after pre-intervention differences were controlled. The results of the ATT mean intervention estimate of the propensity score matching method presented in Table 5 provide evidence of a significant impact of livelihood diversification on the income outcome variable. The propensity score matching results show that participation in different livelihood diversification activities has a significant impact on household income at 5%. The average intervention effect of the intervention households indicates that the annual income of participating households is higher than that of non-participating households. Thus, participation in livelihood diversification activities has improved the income of households in the study area. Participation in livelihood diversification has increased the income of rural households in the Mekong Delta by an average of 67.4 million VND per year. This finding is consistent with the study by Abebe et al. (2021) on the positive impact of livelihood diversification on household income.

Table 5. PSM estimation of the impact of saltwater intrusion on rural household income

Variables	Sample	Treated	Controls	Difference	SE	t-test
Change in household income	Unmatched	170437.09	95740.47	74696.62	33634.24	2.22
	ATT	170437.09	103013.20	67405.89	34014.38	1,98**

Note: ** is significant at 5%.

5. Conclusion

Agriculture is the main source of livelihood for rural households. However, due to the impact of trends and shocks on the livelihood platform of households, such as smaller arable land areas and faster population growth, adverse effects due to climate change, and extreme events such as saline intrusion, agricultural production has decreased over time and forced people to look for employment options other than agriculture to achieve food security and reduce poverty in rural areas. The results of the binary logit model show that the factors of labor force, average age of labor, education level of labor, participation in party organizations, local mass organizations, accessibility of household credit, and saltwater intrusion have significantly influenced livelihood diversification. In addition, the multinomial logit model estimate shows that factors such as arable land area and access to credit have a positive impact on the strategy of combining agriculture with wage employment, while ethnicity, working age, and saline intrusion reduce the possibility of choosing this livelihood strategy. Durable assets, livestock value, and distance to the district center will determine the probability of choosing a combination of agricultural and non-agricultural livelihoods, whereas male labor will be less likely to choose this livelihood than female labor. Finally, the ability to combine all three livelihood activities (agricultural, wage employment, and non-agricultural) increases when factors such as labor force size, education level of labor, and participation in party organizations are considered, while land size is the only factor that reduces the ability to choose this livelihood strategy. The propensity score matching results show that household participation in livelihood diversification has a positive and significant impact on increasing household income. At the same time, the study also shows that there is an inverse relationship between diversification and household poverty, which reinforces the hypothesis that diversification contributes to poverty reduction in rural areas of the Mekong Delta.

Based on the results of this study, special attention is needed from governmental and non-governmental agencies to increase access to credit and strengthen credit institutional arrangements in the study areas to improve the livelihoods of rural households. Livestock production is another important factor that positively and significantly influences livelihood diversification strategies. It can be concluded that the increase in livestock stock will provide opportunities for farmers to participate in livelihood diversification options. In particular, farm households can engage in non-agricultural activities by selling their own. Therefore, extension services that regularly liaise with veterinary services and provide necessary training to farmers in terms of animal health, production, and productivity should be sought by local authorities and organizations. NGOs working in the area of particular focus. Besides, expanding and strengthening agricultural extension services for rural households also contributes to creating diversified livelihood activities and improving the livelihoods of rural households.

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IMPACT OF THE COVID-19 EPIDEMIC ON REAL ESTATE COMPANIES IN VIETNAM

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Abstract

The paper used data from financial statements of 41 real estate companies listed on the Vietnam Stock Exchange in the period from the first quarter of 2018 to the fourth quarter of 2021 to examine the impact of the Covid-19 epidemic on the financial performance of these enterprises with the control variables being firm size, liquidity and financial leverage. Research results showed that the Covid 19 epidemic, liquidity and financial leverage have an impact on financial performance. The Covid-19 epidemic has reduced the financial efficiency of businesses compared to the time before the epidemic. Financial leverage also has a negative impact on the financial performance of the business. In contrast, companies with higher solvency have better financial performance. Since then, the article also makes some recommendations to relevant agencies to improve the financial efficiency of enterprises in the industry.

Keywords: *Covid-19, financial efficiency, Real estate, financial leverage*

1. Introduction

The outbreak of the Covid pandemic in China and spreading to other countries around the world has caused negative impacts on the global economy. In Vietnam, the pandemic has disrupted labor sources, reduced industrial output, and disrupted supply chains. The Covid-19 pandemic and lockdown measures have weakened consumption and investment, limiting Vietnam's growth prospects. Before the development of the pandemic, real estate businesses were all affected, although to varying degrees. The group of businesses investing in residential real estate and resort real estate were hit the hardest. The large-scale resort real estate projects in the country were invested and operated by real estate enterprises, which fell sharply; Most resorts have to close or reduce capacity. Besides, real estate investment and rental business activities in commercial centers, office buildings, etc. have also suffered heavy damage due to the business and sales of tenants being delayed or interrupted. The number of new leases is almost nonexistent. Many tenants returned the premises because they did not have enough funds. Most commercial and office leasing establishments must reduce rents during the Covid-19 pandemic.

Given the above facts, this study was conducted to assess the impact of the Covid-19 epidemic and financial leverage on the financial performance of real estate businesses in

order to add more evidence on the impact of the Covid-19 pandemic on the financial performance of real estate companies. The purpose of the paper is to clarify how the Covid-19 outbreak affects the financial performance of real estate companies listed on the Vietnamese stock market. Part 2 of the paper reviews previous studies on the impact of epidemics and corporate characteristics on corporate financial performance. Part 3 is the research method. Part 4 is the estimated results and the last part is the conclusion.

2. Literature review

There are many previous studies that have looked at the effect of dangerous infectious diseases on a company's financial performance. Serious communicable diseases refer to diseases that are highly contagious between people and require extensive health care resources to prevent and treat. For example, Spanish Flu, SARS, MERS, Ebola, Covid19, etc. (Rajakaruna, Liu, Ding, & Cao, 2017) . Therefore, when these diseases emerge, the blockade to prevent the transmission of diseases leads to disruptions to businesses' supply chains, increased job losses, reduced incomes and reduced spending. of consumers. As a result, businesses face a series of macroeconomic difficulties (Fernandes, 2020) . When looking at the impact of the MERS outbreak on consumer spending in Korea, Jung, Park, Hong, and Hyun (2016) found that the epidemic had reduced customer spending, effectively The company's operations were negatively affected due to the decrease in customer demand leading to a decrease in the company's revenue as well as its profit. Aifuwa, Musa, and Aifuwa (2020) studied the impact of the Covid epidemic on the financial and non-financial performance of Nigerian companies. By applying OLS, this study has shown that the Covid epidemic has had a negative impact on both financial and non-financial activities of these companies. However, this study used primary data, regarding the perceptions of business owners and financial analysts, the results are more subjective to that perception.

The Covid pandemic had a major negative effect on the performance of listed Chinese companies. Rababah, Al-Haddad, Sial, and Cherian (2020) found that SMEs are most affected by the pandemic and their data demonstrate that the severely impacted sectors and industries hardest hit by Covid experienced a sharper decline in financial performance than other sectors.

In another study, Khatib and Nour (2021) examined the impact of the Covid pandemic on the financial performance of listed companies in Malaysia. Covid has affected all company characteristics including corporate performance, governance structure, dividends, liquidity and leverage. During the Covid pandemic, leverage and short-term operating ratios increased, but liquidity ratios and profitability ratios of public companies decreased. Liquidity ratio and leverage ratio are not significantly different. However, the short-term profitability and operating ratios of state-owned enterprises differed greatly before and during the COVID-19 epidemic.

In addition, Covid 19 has different impacts on economic sectors. While most industries have been negatively affected by the epidemic, there are also some industries that have benefited from this outbreak. Mobile operators and Internet, electronics, insurance, and

healthcare providers are among the industries that could benefit from social restrictions during the COVID-19 pandemic. Business in the health sector can also make a profit in providing certain types of products such as masks, hand sanitizers, disinfectants, soaps. The food sector is considered a stable business in times of crisis, undergoing only modal adjustments, such as ordering, payment and delivery (Al-Mansour & Al-Ajmi, 2020) .

Financial leverage is also shown to affect the financial performance of the company. There are many studies on the impact of financial leverage on the financial performance of enterprises, but the research results are very different. Financial leverage i.e. the use of debt is considered a “double-edged sword” (Myers, 1995) . High levels of financial leverage can increase the profitability of companies when debt is used properly because firms can enjoy tax shield effects and higher rates of return. from projects with high financial leverage. However, if debt is abused for excessive investment activities, companies may experience reduced profit margins due to high debt burden while the returns generated from investment projects may not. good as expected. Furthermore, high levels of financial leverage increase the likelihood of financial distress that firms face. Previous empirical studies have shown that the impact of the covid epidemic on the financial performance of businesses can be negative or positive. Matar, Al-Rdaydeh, and Odeh (2018) , Salawu (2007) show a negative relationship while Robb and Robinson (2014) provide evidence that there is a positive relationship between leverage and financial performance. of the company. Several other studies have concluded that leverage is a non-statistically significant factor affecting a firm's performance (Gill & Mathur, 2011; Margaritis & Psillaki, 2010) .

Previous empirical studies have shown that there is an impact of the covid epidemic on the financial performance of businesses, these effects can be negative or positive depending on the industry. In addition to the impact of the Covid epidemic, the financial performance of companies may also be affected by other factors of the company, so the specific factors of the companies are controlled to isolate the effects of the Covid epidemic on the financial performance.

According to Afza and Nazir (2007) , different working capital management strategies can affect a company's profitability. An “active” capital management strategy is characterized by investing less in short-term assets, maintaining low inventory levels. This strategy aims to eliminate inventory costs and reduce late payments from customers. As a result, this strategy can allow companies to generate more profits. In contrast, a conservative strategy is characterized by a high investment in short-term assets, including high inventory levels. This strategy aims to respond quickly to fluctuations in customer demand. However, with more inventory, companies incur higher inventory storage costs, which leads to a decrease in their profits (Raheman & Nasr, 2007) . Therefore, there is a trade-off between liquidity and profitability, meaning that the more liquid assets companies hold, the lower their profitability. Ismail (2016) again shows that current liquidity and money conversion

ratios have a significant and positive effect on a company's financial performance (ROA). Chukwunweike (2014) also showed that the current ratio has a positive and significant impact on the profitability of the firm. Thus, liquidity has different effects on the financial performance of the company.

Firm size is also included in the model as a control variable when considering the impact of the Covid outbreak on the financial performance of companies. According to Lee (2009), increasing the size of the company can increase the profit of the company. Firm size can provide economies of scale for firms (Stigler, 1958), since increased size leads to a reduction in the cost per unit of capital. Large companies are more likely to increase financial performance. Larger firms can borrow at lower interest rates and are able to purchase more goods, so they enjoy more trade discounts. In terms of organizational structure with large companies, the level of expertise and specialization of labor is high, large companies can have the advantage of fixed cost-to-product ratio. Large-scale companies also have an advantage in purchasing and using modern machines to improve productivity and product quality.

3. Method

3.1. Data

We collect data from the published quarterly financial statements of 41 companies in the real estate companies listed on the Hanoi Stock Exchange and the Ho Chi Minh City Exchange for the period from the first quarter of 2018 to the fourth quarter to 2021. The data includes the balance sheet and quarterly business results statement of information, these reports provide information on revenue, expenses, and profit, assets and capital of the company. From this information, the author calculates the indicators to measure the variables in the research model. The study used Stata 14 software for processing, descriptive statistics and regression.

3.2. Estimated model

Financial performance is measured by various metrics depending on the purpose of the study. Profitability ratios are common measures used by researchers in financial performance studies (Hart & Ahuja, 1996; Liargovas & Skandalis, 2010; Stanwick & Stanwick, 2000). In this study, the return on assets (ROA) variable is used to measure the financial performance of companies. To assess the impact of the Covid epidemic on the financial performance of companies, the article uses the following research model:

$$ROA_{it} = \beta_0 + \beta_1 * SIZE_{it} + \beta_2 * CR_{it} + \beta_3 * LEV_{it} + \beta_4 * COVID_{it} + \varepsilon_{it}$$

In the above model, ROA (calculated by profit after tax on total assets) is the dependent variable expressing the financial performance of the company. Size (SIZE) is a logarithmic measure of firms' total assets, LEV represents the level of financial leverage (measured as a ratio of debt to total capital of firms), CR is the liquidity variable, which is calculated by dividing total current assets by total current liabilities. The variable COVID is a dummy variable, the quarters in 2018-2019, this variable will take on the value 0, in the quarters in the year 2020-2021, the variable COVID19 receive the value 1.

Table 1. Definition of variables

Variable	Measure
Financial Performance (ROA)	Profit after tax/Total assets
Financial leverage (LEV)	Total liabilities/Total assets
Current ratio (CR)	Current assets/current liabilities
Company Size (SIZE)	Logarithm of total assets
Covid-19 (COVID)	Dummy variable (Get the value 0, if the data is for the period from the first quarter of 2018- quarter 2019. Get the value of 1, if the data is for the period from the first quarter of 2020 to the fourth quarter of 2021)

Source: Author's own compilation

The above model will be implemented according to the following contents: First, the author performs descriptive statistics of the variables and considers whether there is multicollinearity in the model. Then, to estimate the influence of the independent variables on the dependent variable, the author performs Pool OLS, FEM, REM regression and tests to choose the appropriate model, test for heteroskedasticity, autocorrelation of the selected model. If there is a problem of constant variance or autocorrelation, using a general least squares (GLS) model to fix it.

4. Results

4.1. Descriptive statistics

Table 2 provides statistics and describes the variables used in the study. The results of descriptive statistics indicate that the average ROA value of the companies is 1.247113% indicating that the companies can be profitable in the observed time period. The SIZE variable has a mean of 11.87928 and a standard deviation of 0.433882, indicating that there is a difference between companies in terms of firm size. The average short-term solvency ratio CR is 1.764618 which means that on average current assets are 1.764618 times the current liabilities, indicating that companies have enough liquid assets to maintain solvency in the short term. However, the ratio of using debt to total assets of companies in the industry is also quite high, the average debt ratio of companies in the industry is 58.46%.

Table 2. Descriptive statistics of variables

Variables	Obs	Mean	Std. Dev.	Min	Max
ROA	656	1.247113	3.123971	-7.53025	36.75923
SIZE	656	11.87928	0.433882	10,60239	13,04361
CR	656	1.764618	3.359327	0.15305	45.46892
COVID	656	0.5	0.500382	0	1
LEV	656	0.584595	0.226383	0.013013	0.991878

Source: Author calculated from Stata 14

4.2. Regression results

To estimate the impact of Covid on the financial performance of companies, it is first necessary to see if there is multicollinearity in the model. The phenomenon of multicollinearity occurs when there is a linear relationship between the independent variables in the model, making the regression estimates less accurate, the confidence intervals for the regression coefficients are also wider. the significance and effectiveness of the model. Therefore, it is necessary to conduct multicollinearity testing to have reasonable remedies to increase the efficiency of the model. To consider whether the collected variables have multicollinearity phenomenon, we check the variance exaggeration factor VIF.

Table 3. Results of multicollinearity test

Independent variables	VIF	1/VIF
LEV	1.37	0.731447
CR	1.28	0.782615
SIZE	1.19	0.840321
COVID	1.02	0.983819
Mean VIF	1.21	

Source: Calculation from Stata14

The results of testing by Stata 14 in Table 3 show that the VIF variance magnification coefficient is very small, from 1.02 to 1.37 are all less than 2, showing that these independent variables are not closely related together, the model does not have multicollinearity.

The results of the Ftest in Table 4 show that the fixed effect model is non-zero, so it is necessary to continue the Hausman test to select the appropriate model. The Hausman test results show that the FEM model is a suitable model for the study.

Conduct tests to evaluate whether the built FEM model contains defects. The Wald test results show that the FEM model has variable variance. The Woodridge test results show that the FEM model does not have autocorrelation. Therefore, in order to overcome the phenomenon of variable variance, the FGLS estimation method (feasible generalized least squares estimate) was chosen for the regression.

Table 4. Estimated results

	Pool	REM	FEM	FGLS
SIZE	0.368	-0.244	-3,255***	0.368
	[0.293]	[0.443]	[0.946]	[0.292]
CR	0.188***	0.116***	0.0920**	0.188***
	[0.0392]	[0.0413]	[0.0440]	[0.0391]
COVID	-0.471**	-0.408*	-0.095	-0.471**
	[0.235]	[0.222]	[0.234]	[0.234]
LEV	-2.287***	-1.893**	1.065	-2.287***

	Pool	REM	FEM	FGLS
	[0.602]	[0.844]	[1,398]	[0.600]
WOMEN	656			
F test	Prob > F = 0.0000			
Hausman Test	Prob>chi2 = 0.0000			
Wald test	Prob>chi2 = 0.0000			
Wooldridge test	Prob>chi2 = 0.0944			

Source: Author calculated from Stata software

The estimation results from the estimation model with the FGLS method show that the regression coefficients of financial leverage, liquidity ratio and the Covid epidemic are all statistically significant, except for the variable of firm size.

The liquidity variable has a regression coefficient of 0.188 and has statistical significance at 5%, showing that liquidity has a positive impact on corporate financial performance. Thus, the efficiency of scale has been clearly demonstrated in the real estate industry. Larger asset size has contributed to increased profits for businesses. This result is similar to the results shown in the studies of Kipsha (2013) , Pouraghajan et al (2012) and Gatsi, Gadzo, and Kportorgbi (2013) .

The coefficient of the Covid variable is negative and statistically significant at 5%, showing that during the epidemic outbreak, the financial performance of real estate enterprises decreased compared to the previous time. This can be understood because during the epidemic period, many regulations on isolation have restricted the movement of people. Real estate rentals and sales declined. As a result, the revenue of businesses decreased sharply, leading to a decrease in profits.

The leverage ratio also has a regression coefficient that is negative and statistically significant at 5%, showing that firms with high debt ratios have lower financial performance. This is understood that high debt is accompanied by an increased cost of capital, the financial performance of the business will decrease.

5. Conclusion

By using quantitative methods, the above analysis has shown that factors such as business size, financial leverage and the Covid epidemic have an impact on the financial performance of real estate enterprises. The application of the feasible generalized least squares (FGLS) estimation method has overcome the variable variance so that the estimated results are reliable and unbiased.

The research results have shown that the solvency of enterprises has a positive impact on the financial performance of the enterprise, financial leverage has a negative impact on the financial performance of the enterprise, the Covid-19 epidemic. outbreaks also reduce the financial performance of enterprises.

Through the above research results, some recommendations can be made for related subjects. Firstly, businesses need to increase their solvency, improve their reputation in the market and have a sustainable development orientation. When the solvency is greater, the business will have a higher reputation. Second, companies should adopt an equity-based business model, improve equity financing ratios, and optimize corporate capital structures. In addition, these findings have important implications for policymakers, governments, banks, regulators and the State Bank must combine to address financial and regulatory impacts. economy of the Covid 19 crisis. In such a context, it is very important to provide financial support to companies or to support and enact certain policies, such as tax breaks, to help them alleviate the negative effects of COVID-19. This also has implications for the need to devise comprehensive policies to address the adverse impact of such crises in the future.

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THE EXPERIENCES AND CHARACTERS OF KAREN ENTREPRENEUR FARMERS IN NORTHERN THAILAND: A CASE STUDY OF HIGHLAND KAREN FARMERS IN OMKOI DISTRICT, CHIANG MAI PROVINCE, THAILAND

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Abstract

The research is a sociological study that aims to study the experiences and characters of Karen entrepreneur farmers in northern Thailand through the concept of the entrepreneurial farmer in an agrarian society. Research fieldwork was conducted between August 2020 and March 2021 at two Karen villages, Tamma and Phoenix villages (pseudonym), in Omkoi district, Chiang Mai province, Thailand. These villages were revisited again during January and February 2023. The qualitative data was collected from ten case studies. Four case studies are community leaders, six case studies are Karen entrepreneur farmers from both villages. The research findings indicate that, since the 2010s, some Karen farmers transformed into highland entrepreneur farmers depending on different backgrounds and experiences. They also have performed as the highland entrepreneur farmers into seven characters. There are (1) diversity of economic activities, (2) desire to be free, courage to venture and invest, and give priority to profit and loss, (3) systematical thinking, (4) dependence on social relationships, (5) business risks insurance, (6) innovative creation based on highland resources, (7) dependence on online marketing.

Keywords: *Entrepreneur farmer, Highland agriculture, Karen, Thailand*

1. Introduction

Since the 2010s, entrepreneurship in the agricultural sector and entrepreneurial farmer potential development have been officially placed important as a new form of Thailand's economic structure policy (Office of the National Economic and Social Development Board, 2011; Office of the National Economic and Social Development Board, 2022). The Thai government has worked at full capacity to develop and support the new generations to be entrepreneur farmers or smart farmers in their farmlands. Entrepreneurial training, giving funds, and entrepreneurial research are arranged by government sectors, for example, Department of Livestock Development, Department of Agriculture Extension,

Agricultural Research Development Agency, and universities. At the same time, the format and procedure of Thai entrepreneur farmers and smart farmers have been presented in different channels, such as handbooks, brochures, websites, and multimedia.

Although entrepreneurial farmer development has been formally supported through the Thai government's policies, it is missing from the highland context of Tamma and Phoenix villages (pseudonyms), Omkoi district, Chiang Mai province. After the late 1980s, commercial plants, such as tomato, chili, cabbage, and pumpkin, have been supported and grown in the villages. Most villagers became Karen farmers¹. They grew and traded those commercial plants to lowland merchants. The farmers got a small share from the merchants. For over four decades, even though Karen farmers in the villages have been professional farmers in growing commercial plants, they are still poor due to the fluctuation of crop prices. Supporting and training Karen farmers to be entrepreneurs by the government and other organizations have never happened. Consequently, many Karen farmers in the villages need to find new jobs and move to the lowland. This situation is like the results of many studies. A great number of studies show that most ethnic people, particularly new generations, have tended to immigrate from highland to lowland to find jobs and accumulate funds. The migration of ethnic groups to lowland areas has been derived from two conditions: (1) push factors (development policies, infrastructure development, invasion of commercial plants, loss, debt, poverty, escape from strict traditions; (2) pull factors (differences between rural and urban, cash requirement, educational opportunities in urban) (Thammabandit, 1993; Srisuko & et.al., 2005; Surarerks & et.al., 2008)

According to supporting and training entrepreneurship in Thailand's agricultural sector, Karen farmers in the highland villages have never been paid attention to and supported by the government. Entrepreneurship promotion and training have barely appeared in Tamma and Phoenix villages, Omkoi district, Chiang Mai province. In the past decade, most villagers did not have any chance to train and develop entrepreneurial skills. The quantitative data analysis from the study of Rugchat, Towthirakul, and Saramas (2022) concluded that over a decade (from 2009 to 2019) Karen farmers in Tamma and Phoenix villages had never received any training and support from the government to be entrepreneurs. This study also indicated that most Karen farmers in the villages, more than fifty percent of farmers, did not have entrepreneurial skills and mindsets, particularly creativity, off-farm working skills, risk insurance, finding benefits from different sources, and finding new information. In fact, most villagers are still poor farmers. They cannot transform themselves to be entrepreneurs. According to the problem situation, however, some Karen farmers in the highland villages can transform themselves to be entrepreneurs. Thus, this research article aims to identify the characters of Karen entrepreneur farmers in Tamma and Phoenix villages, Omkoi district, Chiang Mai province through the concept of an entrepreneurial farmer. It also discusses how some Karen farmers can transform themselves to be entrepreneur farmers and what are characteristics of Karen entrepreneur farmers.

¹ Karen is an ethnic group. Most of them scatteringly live in many highland villages in northern Thailand.

2. Method

This research aims to study some background and experiences of six case studies of Karen entrepreneur farmers. It also indicates the characteristics of Karen entrepreneur farmers in Tamma and Phoenix villages, Omkoi district, Chiang Mai province, through the concept of the entrepreneurial farmer. From a sociological perspective, in 1958 the concept of entrepreneurship was mentioned through the study of *Protestant Ethic and the Spirit of Capitalism* by Max Weber. In this study, he defined an entrepreneur as a personal charisma. From Weber's perspective, entrepreneurship was the ability to manage a business and control people. He also explained that the Protestant ethic could support and develop people to make benefits and work hard (Weber, 1958; Swedberg, 2000). Latterly, sociologists and historians brought the idea of entrepreneurship to study the changing of rural and peasant societies. In the same direction, they explained that ethnic groups, minorities, and rural people could become to be entrepreneurs and entrepreneur farmers. Moreover, they had outstanding characteristics different from urban entrepreneurs (Aldrich and Waldinger, 1990; McElwee, 2008; Kahan, 2012, Satayanuruk, 2017).

From Gerard McElwee's viewpoint, the term "entrepreneur farmer" is defined as a farmer who can develop and has entrepreneurial skills. Their farmland can be adapted to do many kinds of activities, such as agriculture, tourism, and service. Thus, they have to do both on-farm and off-farm activities. Entrepreneur farmers have more flexible and creative thinking. The motivation of entrepreneur farmers depended on pull factors, such as the need for freedom and security (McElwee, 2008: 471). In addition, highland entrepreneur farmers are defined as those who can make a profit by collecting agricultural products and selling them to markets, while at the same time, they and their household members still work on the farm. Highland entrepreneur farmers are creative persons. They also can create innovative ways to develop business, while can maintain connections in both vertical and horizontal dimensions (Rugchat, 2018: 129 - 130). In the highland context of Thailand, the study of Rugchat, Saramas, Ruamsap, and Thongsrikate (2021) explains that highland farmers can be developed and transformed themselves to be entrepreneur farmers through three stages: upstream (raising awareness of their own potential), midstream (developing entrepreneurial skills of farmers), and downstream (creating marketing channels).

2.1. Data gathering

This research is a sociological study that aims to study the experiences and characteristics of Karen entrepreneur farmers. In-depth interviews with ten case studies (four community leaders and six Karen entrepreneur farmers) were applied to study Karen entrepreneur farmers in Tamma and Phoenix villages. In addition, the researchers also place importance on the Facebook fan page for recommending products and services of some Karen entrepreneur farmers. The research data collecting was divided into three periods: (1) literature reviews and contact with the community leaders were conducted between August - October 2020; (2) the in-depth interview with ten case studies was conducted between November 2020 - March 2021; (3) two villages revisited and studying the Facebook fan pages did from January to February 2023.

2.2. Study areas and population

Two study villages, Tamma and Phoenix (pseudonym), Omkoi sub-district, Omkoi district, Chiang Mai province, Thailand, are Karen (*Pwo* Karen) villages. They are in a highland area along the 1099 Hot-Omkoi main road, around 170 kilometers south of Chiang Mai City. The north of villages connects to Hot district, Chiang Mai province, while the south is close to Tung Loi village, a Karen village, Omkoi sub-district, Omkoi district, Chiang Mai province (figure 1). In 2021, Tamma village had a population of 335 households, 847 people, while Phoenix village had a population of 329 households, 1,023 people (Community Development Department, 2023).

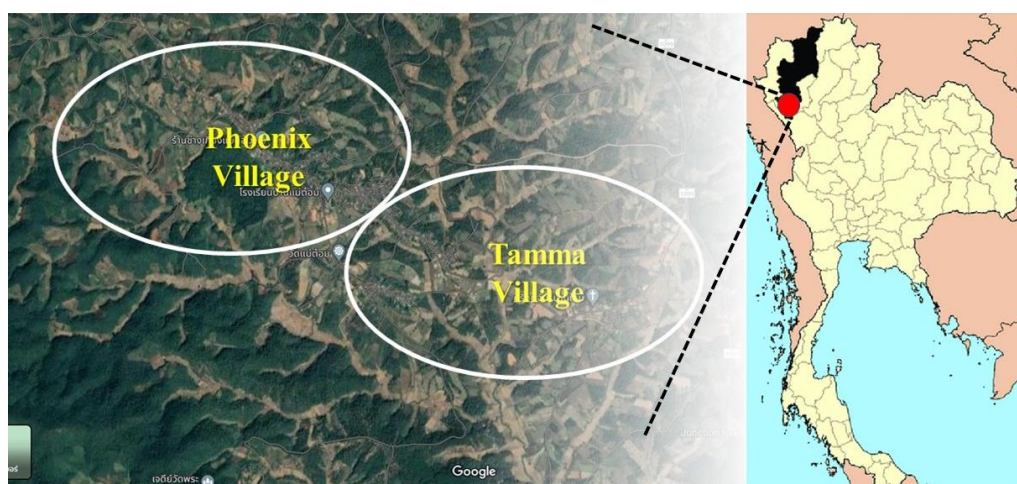


Figure 1. Location of Tamma and Phoenix villages, Omkoi district, Chiang Mai province

3. Results

The research findings can be divided into two parts: (1) the background and experiences of Karen entrepreneur farmers; (2) the characters of Karen entrepreneur farmers.

3.1. The background and experiences of Karen entrepreneur farmers

The findings from quantitative data of the study of Rugchat in 2021 show that the most representative household samplings, 63 households, or 56.80 percent, are female. According to all household samplings, the research found that the most representative household samplings, 48 household samplings (43.20 percent) were aged between 30 - 39 years old, followed by 29 household samplings (26.10 percent) were aged between 40 - 49 years old. Most household samplings, 77 households (69.30 percent), graduated from elementary and high school levels, while 27 households (24.30 percent) had never graduated from any levels (Rugchat, 2021).

According to a great number of Karen farmers in the villages, this research shows examples of six case studies of Karen farmers in Tamma and Phoenix villages - Mr.Song, Mr.Prasob, Mr.Boon, Mr.Sing, Mrs.Kai, and Mr.Thep² - who can transform themselves into

² All case studies' names and the name of someone who was mentioned in this article are pseudonyms.

highland entrepreneur farmers. Experiences of case studies are significant conditions to support Karen farmers to become entrepreneur farmers. In order to understand the transformation to entrepreneur and entrepreneurial characters of case studies, this article will indicate the experiences of Karen entrepreneur farmers case by case.

Mr. Song: From a peddler in the city to a Karen entrepreneur farmer in highland

Mr. Prasob: A highland farmer and seedling wholesaler

Mr. Prasob was 40 years old. Due to his health problems, Mr. Prasob had transformed himself into an entrepreneur farmer since 2014. During 2015 - 2016, apart from the health problems, he strongly desired to be self-employed by starting a seedling business in the village. Mr. Prasob had savings enough to invest in a seedling wholesaler. He built a seedling wholesaler on the land near the Omkoi district office. With two pickup trucks pawns and his savings, Mr. Prasob got approximately 200,000 baht. He spent this capital to build a seedling wholesaler and compile various kinds of seeds, for example, tomato, chili, pumpkin, and eggplant. He learned how to plant seedlings methods by peeping at other seedlings wholesaler owners and remembering the plant methods. In addition, his seedlings business also depended on the support of his sister, who had a chemical fertilizer shop and knowledge of agricultural chemicals used. At present, not only Mr. Prasob is a seedling wholesaler owner, but he also grows in-season rice, macadamia, cultivated banana, and dragon fruits. For making more profits, he sometimes processes cultivated bananas into sweet banana crisps.

Mr. Boon: Broker and transporter of tomato fruits to local warehouses

Mr. Boon was a 49 years old Karen entrepreneur farmer in Phoenix village. He owned three pickup trucks, one tractor, and a Sport Utility Vehicle (SUV). In late 1995, Mr. Boon became a broker and transport tomato fruits to local agricultural product warehouses. At that time, he was just a tomato peddler. He traded tomato fruits to many local merchants. Until 1995, he knew Jae Nam, a female local merchant, who was the biggest local tomato trader and was generous. He was impressed with her and agreed to support Jae Nam as a broker, who collected tomato fruits from tomato farmers for Jae Nam. The tomato trading business of Jae Nam was successful and smoothly conducted. Mr. Boon gained the trust and support of Jae Nam. At the same time, he also learned more about tomato trading methods, investment, and trading plans from Jae Nam. In 2015, Mr. Boon was a broker of Jae Nam, transported tomato fruits from farmers, and grew tomatoes by himself. From 2016 to 2017, he was a seedling wholesaler owner and a tractor driver to gentrify the farmlands of Karen farmers in Phoenix village and nearby villages. In order to increase income, Mr. Boon got an extra income from farmland gentrification of at least 30,000 baht per month. From 2018 until now, he has opened a small garage to repair all pickup trucks of Karen farmers in Phoenix village and nearby villages.

Mr. Sing: Thinker and innovator for growing high-value crop

Mr. Sing was a 33 years old Karen entrepreneur farmer. In 2003, after graduating from junior high school, Mr. Sing decided to find a new job in the city. He used to work in

a noodle shop employee and a gas station laborer in Bangkok. After that, he moved to work in Chiang Mai City as a laborer in an agricultural products warehouse. In 2012, Mr. Sing came back to Phoenix village and grew tomatoes on his farmland. In 2019, due to tomato prices falling, difficulty growing, and high levels of chemical use, he stopped growing tomatoes and changed to growing macadamia. In order to learn about macadamia growth, Mr. Sing searched much information about macadamia on social media and various kinds of websites on his smartphone. Then, in the earliest stage, he borrowed approximately 500,000 baht from his family members and close friends to invest in the macadamia business. To promote his macadamia, word-of-mouth advertising to teachers and government officers was applied to selling macadamia fruits. He expected that these customers will support and widely advertise his macadamia. One year later, macadamia advertising and promotion through social media - Facebook page - have played an important role for trade his macadamia products. From 2022 until now, Mr. Sing has launched a small modern coffee shop in Phoenix village. It also has been promoted on social media, a Facebook page. On the Facebook page, not only his coffee shop shows many beverages and desserts, but it also has presented beautiful and modern shop decorations.

Mrs.Kai and Mr. Thep: A Karen entrepreneur farmer family in Tamma village

Mrs.Kai and Mr. Thep are a couple. At present, Mrs.Kai was 39 years old, while Mr. Thep was 45 years old. Mrs.Kai graduated master's degree from a public university, while Mr. Thep graduated from high school with non-formal education. They helped their parents to grow tomatoes since childhood. After Mrs.Kai and Mr. Thep got married in 1999, they built a small grocery store in Tamma village. It was away from the main road around 500 meters. Mrs.Kai and Mr. Thep owned approximately 20 *rai*³ of cultivated area. Even though they worked on their farmland as farmers, they also owned a grocery store, sold fertilizers and agricultural chemicals, and traded gasoline to Karen farmers in the village. Due to an interesting in trade, in 1998, Mr. Thep began to start his business by buying the land and opening a small grocery in Tamma village. At the same time, he still grew tomatoes in his farmland. He thought that he could make more income together by growing tomatoes. Moreover, Mr. Thep also could estimate the situation and prices of agricultural products. Thus, he could accurately calculate the growing and harvesting periods of many commercial plants. Mrs.Kai could create, invest, and process agricultural products. For example, in late 2020, Mrs.Kai invested to buy an oven and a vacuum sealer for processing and packaging dragon fruits into a new product. She got these ideas from websites and social media. At present, this family (Mrs. Kai and Mr. Thep) has done many jobs. There are growing commercial plants (in-season rice, tomatoes, dragon fruit, macadamia, rambutan), grocery store owners, selling fertilizer and agricultural chemicals, trading gasoline, and selling agricultural equipment.

3.2. The characters of Karen entrepreneur farmers

By the research findings, Karen entrepreneur farmers in the highland villages can be categorized into seven characters as follows:

³ 1 *rai* = 0.14 acre

1) Diversity of economic activities

Karen entrepreneur farmers must do both on-farm and off-farm activities. For making more profits and capital accumulation, they will try to work many jobs and invest in many businesses. Not only plant various kinds of plants (in-season rice, tomatoes, pea eggplant, macadamia, bananas, etc.), but Karen entrepreneur farmers also trade many kinds of products. It differs from Karen farmers who invest particularly in growing commercial plants. Table 1 shows the economic activities (on-farm and off-farm) of six Karen entrepreneur farmers during 2019 - 2020.

Table 1. The economic activities of six Karen entrepreneur farmers during 2019 - 2020

Karen entrepreneur farmer	On-farm activities	Off-farm activities
Mr. Song	<ul style="list-style-type: none"> • growing in-season rice • growing tomatoes • growing pea eggplant • growing cultivated banana • growing organic tomatoes 	<ul style="list-style-type: none"> • grocery store owner • trade gasoline • selling chicken manure
Mr. Prasob	<ul style="list-style-type: none"> • growing in-season rice • growing macadamia • growing cultivated banana • growing dragon fruit 	<ul style="list-style-type: none"> • selling commercial plant seedlings • processing bananas and selling sweet banana crisps
Mr. Boon	<ul style="list-style-type: none"> • growing in-season rice • growing tomatoes 	<ul style="list-style-type: none"> • a broker of a local merchant • a tractor driver • a tomato transporter
Mr. Sing	<ul style="list-style-type: none"> • growing in-season rice • growing macadamia 	<ul style="list-style-type: none"> • processing, packaging, and selling macadamia
Mrs.Kai and Mr. Thep	<ul style="list-style-type: none"> • growing in-season rice • growing tomatoes • growing dragon fruit • growing macadamia • growing rambutan 	<ul style="list-style-type: none"> • grocery store owner • selling fertilizer and agricultural chemicals • trade gasoline • selling agricultural equipment

2) Desire to be free, courage to venture, invest, and give priority to profit and loss

In fact, most Karen entrepreneur farmers desire to be free. They don't want to be employees or laborers. For example, Mr. Prasob gave priority to free. He desired to own a business (seedling business) and be self-employed. Similarly, because Mr. Song didn't want to be a laborer and wanted to have free time, so he decided to resign from the company and start his own business later. In addition, the courage to venture, invest, and give priority to

profit and loss become the crucial characteristics of Karen entrepreneur farmers. For instance, Mr. Song started his business as a peddler by buying many instruments and a new pickup truck. Due to seeing the business opportunities, Mr. Sing ventured to borrow a lot of money from kinships and close friends in the village to start the macadamia business.

3) Systematical thinking

Currently, systematical thinking is an important skill and character of Karen entrepreneur farmers. The systematical thinking of Karen entrepreneur farmers here means two thinking methods: (1) calculation and analysis; (2) a full cycle of systematical thinking. In the case of Mr. Thep, who was satisfied to trade since childhood, he could calculate and analyze trends of agricultural products in the future. Mr. Thep precisely calculated that in the future his grocery store's area has become the best location for trade and transportation. Moreover, he also analyzed that rambutan was effectively grown in highlands. It will be a proper commercial plant to grow in the highland villages. Likewise, Mr. Song analyzed that pea eggplant was a proper commercial plant in a highland village because it yielded in summer and without high investment.

Besides, the full cycle of systematical thinking has obviously appeared in the cases of Mr. Boon and Mr. Sing. Mr. Boon has imaged the system of tomato trading (tomato seedling - tomato growing - harvesting - transportation). In the beginning, he started his business as a tomato transporter and a broker of Jae Nam. Then, he launched economic activities related to tomato trading, such as seedling wholesaler owner, tractor driver, and garage owner. While Mr. Sing has managed macadamia trading with the full cycle of systematical thinking by considering about growing, processing, selling, and promoting.

4) Dependence on social relations

Social relations have become an important condition for Karen entrepreneur farmers. For example, Mr. Prasob has applied kinship (his sister) to support agricultural chemicals knowledge. Moreover, during the labor shortage, his sister has become a laborer for helping him in processing cultivated bananas. In the case of Mr. Boon, the relationship and trust between Mr. Boon and Jae Nam are important factors to support Mr. Boon's businesses. Many times, Jae Nam has often supported Mr. Boon with funds, knowledge, cooperation, and business opportunities. Similarly, the growth of the macadamia business of Mr. Sing obviously happened through kinships and close friends in the village. Namely, at that time, his cousins and close friends gave loans of around 500,000 baht to support Mr. Sing's business.

5) Business risks insurance

Despite without savings in the banks, most Karen entrepreneur farmers have planned for the risk insurance, if they lose money. From Karen entrepreneur farmers' perspectives, doing various businesses both on-farm and off-farm is the business risks insurance. Income gained from many kinds of businesses is risk insurance. At the same time, they also have food security by growing in-season rice and local food around the villages. In addition, the research result also found modern business risk insurance in the highland village. Deposit

money in banks and life insurance become the new methods in highland areas. For instance, similar to entrepreneurs in the cities, Mrs.Kai and Mr. Thep, the prosperous Karen entrepreneur farmers, have risk insurance by depositing savings in commercial banks and doing life and health insurance with insurance companies.

6) Innovative creation based on highland resources

From the Karen entrepreneur farmer viewpoint, Karen ethnic identity has been utilized for trading. For example, in Mr. Song's case, because most Karen people live in the highlands, the Karen ethnicity of Mr. Song was applied to sell boiled local corn or mountain corn. In addition, Karen entrepreneur farmers have depended on the advantage of highland resources and the environment to create unique agricultural products. For example, Mr. Sing depended on the highland environment to grow macadamia (a perennial plant) instead of growing tomatoes. Not only Mr. Sing has shown the macadamia plant as a high-value crop, but he also has indicated environmental conservation, reduction of agricultural chemicals, and soil and nature restoration of macadamia. While Mrs.Kai has grown dragon fruits in the village and tried to create them into dried dragon fruits, new local innovation, with drying and new packaging.

7) Dependence on online marketing

After the internet and online communication systems spread throughout Omkoi district, smartphones, which are connected to the internet system, have played an important role in the businesses of Karen entrepreneur farmers. From Mrs.Kai's perspective, the internet system (via a smartphone) was the new channel to search for useful information. For business development, Mrs.Kai has searched for various data from many kinds of websites via her smartphone, such as cropping information (dragon fruit, tomatoes, rambutan), and processing of agricultural products. Youtube is a favorite website of Mrs.Kai to search for new information, interesting points, and different news. Not only the internet can support Karen entrepreneur farmers in searching for useful data, but it also is an effective instrument to create online marketing. Mr. Sing, a young Karen entrepreneur farmer, has given priority to the internet system and online marketing. He has used social media and online applications, for example, Facebook and Line, to contact and communicate with macadamia traders. Currently, macadamia products' Mr. Sing has been created and promoted on an online marketing channel via a Facebook page under the name "Omkoi Macadamia". He now is a creator and administrator of this Facebook page. Similarly, Mrs.Kai has applied the Line application to sell her dragon fruit product.

4. Discussion and Conclusion

The construction of entrepreneurship of Karen farmers in Tamma and Phoenix villages depended on many crucial conditions, such as the background, knowledge, experiences, mindset, and vision of Karen farmers. In this article, Karen entrepreneur farmers' characters differ from the definition of McElwee (2008) and other scholars. Not only Karen entrepreneur farmers have many economic and entrepreneurial activities, such as nonfarm working, flexible and innovative activities, depending on pull factors, and use

the farm's resources, Karen entrepreneur farmers in highland villages need to depend on social security, social network, innovative creating based on their environment, culture, wisdom. Thus, the research findings have shown Karen entrepreneur farmer's characteristics into seven points: (1) diversity of economic activities, (2) desire to be free, courage to venture and invest, and give priority to profit and loss, (3) systematical thinking, (4) dependence on social relationships, (5) business risks insurance, (6) innovative creation based on highland resources, (7) dependence on online marketing.

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THE DETERMINANTS OF VIET NAM'S URBANIZATION

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Abstract

This study estimates and tests the factors affecting urbanization in provinces/ cities in Vietnam in the period 2010-2021. The results show that Vietnam's urbanization rate increases with population density; gross domestic product (GRDP); tourism revenue; investment capital in the province/ city; Industrial production index; the percentage of trained workers over 15 years old; Provincial Competitiveness Index (PCI) increased. Meanwhile, the number of enterprises is negatively correlated with the urbanization rate and the number of cities is not significant for the improvement of the urbanization rate in Vietnam. This result can provide recommendations for the Vietnamese 2 government in setting goals and policies to improve the urbanization rate in Vietnam.

Keywords: *influence, urbanization rate, improvement*

1. Introduction

The process of urbanization is an opportunity for the Government to organize and re-plan the operation of cities and residents. Accordingly, areas with potential for economic development, cultural development and social development will be planned according to a modern system, areas lack of economic conditions or low population density will be adjusted with suitable industries and project to increase development opportunities in the future. Urbanization in a positive direction will promote economic growth and social development of urban and peri-urban areas. According to The World Bank, there are many examples of developing countries focusing on building and completing institutions and policies to promote urbanization and sustainable urban development that have created impressive economic development based on urbanization such as China and Taiwan in 1950, Korea in 1970, Southeast Asian countries such as Singapore in 1970, Thailand in 1960. Since then, many scientific works have been published, many seminars related to the factors affecting

urbanization in a country such as Anett Hofmann and Guanghua Wan (2013); research papers on the process and development of urbanization such as Henderson (2003), Moomaw and Shatter (1996); etc. In general, these studies refer to the main factors that can affect urbanization rate such as Gross domestic product (GDP), Gross national income (GNI), import-export rate, population density, and Foreign direct investment (FDI). Those are all core values within an economy that have been proven through real-life studies to affect the rate of urbanization. However, along with the development of science and technology and human resources nowadays along with The Fourth Industrial Revolution (4IR), the rate of urbanization in each country depends on both macro factors and micro factors. These factors are intertwined and complement each other in the process of urban development today.

Since the reform and opening up, Vietnam's urbanization level has increased rapidly. Especially in recent years, the development is even faster and the urbanization average annual growth rate has represented an increase of 2.8% (Vietnam Statistical Yearbook 2020), making it one of the fastest urbanizing countries in East Asia. By 2021, the statistics of the General Statistics Office have shown that the national urbanization rate has reached about 38.1%, has now officially entered the period of strong development and is in the process of transition, vertical development from increasing urbanization speed to improving urbanization quality.

Along with the importance of urbanization in the Industrial Revolution 4.0, required studies of the factors affecting the urbanization process in Vietnam. However, current studies have only mentioned the issues of urbanization in Vietnam, research on sustainable urban development and policies to promote the increase of urban proportions. For example Tran Thi Lan Anh (2013) mention the reality of urbanization in Vietnam, the current challenges currently; Dao Hoang Tuan (2009) in the book talks about some theoretical and practical issues for a sustainable development of urban areas. In addition, there are a number of research papers focusing on specific regions such as the research paper of Prof. Dr. Hoang Ba Thinh (2014) in the article "Urbanization and urbanization management in sustainable development in the Central Highlands", Nguyen Quang Giai (2017) in the research: "Binh Duong's urbanization process and the selection of a sustainable urban development model"; etc. In general, these studies has been very successful in presenting the current status and evaluate the impact of urbanization on the surrounding environment and development policies. However, there has not been a scientific study about factors that play the decisive role in the urbanization process in Vietnam. Meanwhile, the Industrial Revolution 4.0 is taking place more and more vigorously, and Vietnam is increasingly infiltrating the process of international economic integration, which requires the Government to have sharper policies to develop the economy towards the strategy of 2030, with a vision to 2045. With the aim of achieving that goal, understanding the core causes affecting the process and rate of urbanization in Vietnam is of top importance.

The measurement and study of the factors that robustly affect the urbanization rate in Vietnam is of great significance in finding basic solutions to limit the negative change towards building and developing an economy, helping the Government and policymakers

make better decisions, meeting the requirements of the new industrial revolution, and improving academic understanding of the urbanization and the origin of the increase in the rate of urbanization. Upon that, our group of students chose the issue "Factors play a decisive role in the process of urbanization in Vietnam." as the subject of this scientific research.

2. Theoretical basis

2.1. Related concepts

From the perspective of social and economic management, an urban area is defined as an area with a high density of people living and mainly operating in the field of non-agricultural economy, it is the economic, cultural and political center of an area having a role in promoting the social and economic development of a country or a territory or a locality, including inner cities and suburbs of a city; inner and outer towns of the town; towns, with a population of 4,000 people or more, an average population density of 2,000 people/km² or more, of which over 65% are employed in the non-agricultural sector.

2.2. Factors affect economic growth

Krugman's research (1991) set the foundation on factors and conditions for the population to be concentrated in one area instead of spreading over several areas. However, both endogenous models of city size and core and periphery models provide little insight into the determinants of a country's total urban population. Nevertheless, the first idea of urbanization has gradually formed from the factors of production conditions, population concentration has been expanded to factors of economic growth, science and technology.

The table below shows some previous research models related to urbanization rate:

Table 1. Summary of experimental research models

STT	Author/ year	Variable affecting urbanization and measurement methods	Research model
11	Pandey (1977)	<ul style="list-style-type: none"> - Population density= Population / Area (person/km²) - Income per worker = Total income of all employees/ Number of employees - Literacy rate = Literacy population/ Population*100% - Population growth = (Total population in current year - total population in previous year)/ Total population in previous year*100% 	OLS
22	Moomaw and Shatter (1996)	<ul style="list-style-type: none"> - GDP per capita = GDP/ population - Urban concentration (the proportion of urban population in cities is greater than 100,000). - Urban priority (proportion of population in largest cities). 	OLS

STT	Author/ year	Variable affecting urbanization and measurement methods	Research model
33	Gene Hsin Chang and Josef C.Brada (2006)	- Rate of industrialization= Industrial production rate/gross domestic product of a country - Foreign Direct Investment (FDI)	OLS
44	Anett Hofmann and Guanghua Wan (2013)	- Economic growth= (current year GDP - previous year's GDP)/ previous year's GDP*100% - Education is calculated based on three main indicators: the proportion of children attending school, the proportion of the population over the age of 25 with the highest degrees, and GDP per capita. - Rate of industrialization = Ratio of industrial production/gross domestic product of a country.	OLS
55	Michel Dimou and Alexandra Schaffar (2014)	- Gross Domestic Product (GDP) - Export rate = (Export value/ Production value)*100%	SAR, SEM
66	Yingchun Yang, Jianghua Liu, Yutao Zhang (2017)	- Economic growth = (current year's GDP - previous year's GDP)/ previous year's GDP*100% - GDP per capita = GDP/ population - Urbanization policy is calculated by two factors: • Urban land use ratio: This ratio represents the urban land area compared to the total area of an area. • Urban management index: This index shows the level of effectiveness in managing urban-related issues such as security, traffic, environmental sanitation, land resource management, planning Urban Development.	FEM, OLS, REM
67	Yuan Zhang and Guanghua Wan (2017)	- GDP per capita = GDP/ population - Total population - Trade openness = Total export value/ Total production value * 100%	OLS

Source: Synthesis of the research team

3. Method

To study the factors affecting urbanization, we analyze according to panel data and based on the premise model of Moomaw and Shatter (1996). Moomaw and Shatter (1996) modeled and considered a range of determinants (not limited to GDP per capita, rate of industrialization, production and export orientation, education) and political aspects). In addition, Moomaw and Shatter further researched the comparison of the relationship of the factors telling about the rate of urbanization and city concentration. The authors have consulted the above model and also learned and proposed a few other important variables.

3.1. Secondary data collection method

Collecting secondary data at relevant agencies such as the General Statistics Office, People's Committee,...

- Vietnam Statistical Yearbook 2010-2021
- Vietnam import and export report 2016-2021
- Statistical report of 63 provinces and cities in Vietnam
- Summary of socio-economic criteria for the period 2016-2021

3.2. Methods of synthesizing and researching in-depth documents

- Collect documents, search for information in related books, search on the internet all documents related to the problem to be researched.

- Refer to the results of relevant previous scientific studies, analyze the data and prerequisite documents on the topic of urbanization in Vietnam in the period 2010-2021, articles and research articles on urbanization, legal documents, urban and economic policies, etc.

- A system of available discrete data documents on the natural and social characteristics of Vietnam. Current status of urbanization, influencing factors and other documents related to the topics covered.

3.3. Quantitative research

The study uses panel data regression model, applies Pooled OLS, FEM, REM, FGLS techniques to evaluate the aggregate effects of independent variables on the dependent variable. The study sample includes 63 provinces, with a total of 756 per year-over-year observations for 12-year table data for the period 2010-2021. Based on the above theoretical basis and on the basis of a number of criteria considered urban, the model of estimating and testing the factors affecting the urbanization rate has the following specific form:

$$\text{LnTyleDTH}_{it} = \beta_0 + \beta_1 * \text{DNHD}_{it} + \beta_2 * \text{DTDV}_{it} + \beta_3 * \text{MDDS}_{it} + \beta_4 * \text{SoTP}_{it} + \beta_5 * \text{GRDP}_{it} + \beta_6 * \text{LnDTDL}_{it} + \beta_7 * \text{LnVon}_{it} + \beta_8 * \text{LnChisosxCN}_{it} + \beta_9 * \text{LnTyleLDQuadaotao}_{it} + \beta_{10} * \text{LnPCI}_{it} + e_{it}$$

Where subscript i denotes 63 provinces of Viet Nam; t denotes year, detailed measurement of variables is shown below:

Table 2. Interpret the variables included in the model

Variable	Description	Unit
Dependent variable		
TyleDTH	Urbanization rate of provinces in Vietnam (63 provinces) in the period 2010-2021.	%
Independent variables		
DNHD	Number of enterprises operating in provinces in Vietnam (63 provinces) in the period 2010-2021.	number of business
DTDV	Revenue of the service industry in the provinces in Vietnam (63 provinces) in the period 2010-2021.	billion Vietnam dong
MDDS	Population density of provinces in Vietnam (63 provinces) in the period 2010-2021.	person/km ²
SoTP	Number of cities under provinces in Vietnam (63 provinces) in the period 2010-2021.	number of city
GRDP	Gross regional product in Vietnam at constant prices in 2010 (63 provinces) in the period 2010-2021.	billion Vietnam dong
DTDL	Revenue from the tourism industry in the province in Vietnam (63 provinces) in the period 2010-2021.	billion Vietnam dong
Von	Realized investment capital of provinces in Vietnam (63 provinces) in the period 2010-2021.	billion Vietnam dong
Chisosxcn	Industrial production index of provinces in Vietnam (63 provinces) in the period 2010-2021.	%
TyleLDquadaotao	Percentage of trained workers aged 15 and over in provinces in Vietnam (63 provinces) in the period 2010-2021.	1000 %
PCI	Provincial Competitiveness Index of Provinces in Vietnam (63 Provinces) for the period 2010-2021.	%

Source: Synthesis of the research team

4. Results

The following regression results from Stata software have given the results of estimating factors affecting the urbanization rate of provinces and cities in Vietnam.

4.1. Descriptive statistics

Table 3. Descriptive statistics for the variables used in the study

Variable	Observation	Mean	Standard deviation	Minimum value	Maximum value
TyleDTH	756	34.14016	15.05494	9.66	87.62
GRDP	756	274,861.73	49,237.37	19,676.38	991,424.1
MDDS	756	481.6311	333.1845	42	4476
DNHD	756	8,558.378	27045.52	399	268465
DTDV	756	204,137.1	125,667.1	63,195.8	709,963.2
DTDL	756	1,452.486	1,027.713	0	107,487.018
SoTP	756	1.087366	0.6196874	0	4
Chisosxcn	756	123.5762	87.14356	70.96	345.8185
TyleLDquadaotao	756	170.5431	134.9974	100.47886	845.3292
PCI	756	55.82017	48.78101	42,12	75.09
Von	756	4.41e+07	3.47e+09	6.98e+05	2.17e+10

Source: Results of the research team estimated from Stata

The urbanization rate (TyleDTH) has an average value of 34.14016%, the lowest is Bac Giang province in 2010 is 9.66% and the highest is Da Nang City in 2017 is 87.62%. Gross regional domestic product (GRDP) has an average value of 274,861.73 billion VND, the lowest is Lai Chau province (19,676.38 VND billion, in 2010) and the highest is Ho Chi Minh City (991,424.1 VND billion in 2020). The population density has an average value of 481.6311 (people/ km²), the lowest is Dien Bien province (42 people/ km², in 2010), the highest is Ho Chi Minh City (4476 people/ km² in 2020). The number of operating enterprises (DNHD) with an average value of 8,558,378 enterprises is the lowest in Bac Kan province (399 enterprises, in 2010), the highest is Ho Chi Minh City. HCM (268465 enterprises in 2021). Service revenue (DTDV) has an average value of 204,137.1VND (billion), the lowest is Son La province (63195 billion VND in 2010), the highest is Ho Chi Minh City (709,963.2 billion VND in 2021). Tourism revenue has an average value of VND

1.08,486 (billion), the lowest is Bac Kan, Dien Bien, Son La, Lai Chau provinces (0 billion VND, in 2010), the highest is Ho Chi Minh City (107487,018 billion VND in 2019). The number of cities with an average value of 1.0873866 (cities) is lowest in Binh Phuoc province (0 cities in 2010-2018), the highest is Quang Ninh (4 cities in 2012-2021). Industrial production index (Chisosxcn) has an average value of 123.5762 % the lowest is Bac Kan province (70.96%, in 2010) the highest is Thai Nguyen (345.8185%, in 2018). The proportion of trained workers with an average value of 170.5431 (1000%), the lowest is Dong Thap province (100.47886%, in 2010), the highest is Hanoi (845.3292% in 2021). The provincial competitiveness index (PCI) has an average value of 55.82017%, the lowest is Dien Bien province (42.12% in 2012), the highest is Quang Ninh (75.09% in 2020). Capital investment (Von) has an average value of 4.41e+07 (billion VND), the lowest is Kon Tum province (6.98e+05 billion VND in 2010) and the highest is Ho Chi Minh City (2.17e + 10 billion VND in 2020).

4.2. Correlation analysis and linear multi-additive testing

Table 4. Correlation matrix

	GRDP	DNHD	DTDV	MDDS	SoTP	Ln (Chisosxcn)	ln(DTDLD)	Ln (TyleLD quadaotao)	Ln (Von)	Ln (PCI)
GRDP	1									
DNHD	0.115	1								
DTDV	0.908	0.125	1							
MDDS	0.765	0.106	0.829	1						
SoTP	0.087	-0.121	0.041	0.061	1					
Ln (Chisosxcn)	0.777	0.177	0.832	0.713	0.062	1				
ln(DTDLD)	0.800	0.126	0.871	0.732	0.041	0.760	1			
ln(TyleLD quadaotao)	0.734	0.155	0.792	0.673	0.070	0.658	0.742	1		
ln(Von)	0.765	0.169	0.832	0.689	0.036	0.745	0.754	0.681	1	
ln(PCI)	0.807	0.100	0.874	0.711	0.036	0.740	0.761	0.701	0.721	1

Source: Results of the research team estimated from Stata

Table 4.2 shows the correlation matrix between variables in the model. The magnitude of the correlation coefficients between the independent pairs of variables is less than 0.8 except for 8 pairs of variables with very high correlation coefficients, greater than

0.8, which can occur multicollinearity in the model. The results of multicollinearity test by Variance Inflation Factor-VIF according to Table 4.3 show that the VIF coefficients except for the DTDV variable with $VIF=11 > 10$ (or $1/VIF = 0.090935 < 0.1$) occur severe multicollinearity; the rest of the variables all have a VIF coefficient between 1 to 10 (or $1/VIF > 0.1$), means there is a slight multicollinearity phenomenon, which can be accepted

Table 5. Multicollinearity test results

Variable	VIF	1/VIF
DTDV	11.00	0.090935
GRDP	5.90	0.169396
lnDTDL	3.26	0.306748
lnPCI	3.23	0.309871
MDDS	3.14	0.318306
lnChisosxCN	2.74	0.364380
lnVon	2.55	0.391779
lnTyleLDquadaotao	1.98	0.505354
SoTP	1.06	0.943059
DNHD	1.05	0.949870
MeanVIF	3.59	

Source: Results of the research team estimated from Stata

4.3. Experimental results

Table 6. Regression results using OLS, FEM, REM, FGLS regression methods

Model	OLS	FEM	REM	FGLS
DNHD	-6.65e-07*** (1.59e-07)	4.65e-07 (3.20e-07)	-2.73e-07 (2.63e-07)	-6.22e-07*** (1.34e-07)
DTDV	1.57e-06*** (1.17e-07)	-	-	-
MDDS	0.0000669*** (0.0000233)	0.0000767*** (0.0000163)	0.0001798*** (0.0000213)	0.0002004*** (0.0000225)
SoTP	0.0154957** (0.0070279)	0.0854864*** (0.0111484)	0.0124964 (0.0106555)	0.0040776 (0.0088219)

Model	OLS	FEM	REM	FGLS
GRDP	6.00e-07*** (2.14e-07)	1.10e-06*** (1.48e-07)	2.41e-06*** (1.80e-07)	2.73e-06*** (1.91e-07)
lnDTDL	0.1389863*** (0.0128009)	0.0734691*** (0.0095929)	0.1438445*** (0.0126312)	0.1522754*** (0.0122785)
lnVon	0.0836695*** (0.0103456)	0.0362608*** (0.0078119)	0.0903194*** (0.0103138)	0.1020028*** (0.0099589)
lnChisosxCN	0.0825055*** (0.0116951)	0.0469066*** (0,0084082)	0.0850371*** (0.0114094)	0.0962152*** (0.0112681)
lnTyleLDquadaotao	0.0578095*** (0.0081788)	0.0345617*** (0.0060275)	0.0665453*** (0.0080737)	0.075915*** (0.008047)
lnPCI	0.1357208*** (0.0130391)	0.0628573*** (0.0098825)	0.1403832*** (0.0129106)	0.1489671*** (0.0125035)
_cons	-1.22063*** (0.2136956)	1.034819*** (0.1800477)	-1.343873*** (0.2136774)	-1.80675*** (0.2041262)
Coefficient of determination (R ²)	0.9473	0.8817	0.9361	
Adjusted R square (Adj R ²)	0.9466	0.7744	0.8746	
Test value	F=1317.86 Prob>F = 0.0000	F=67.32 Prob>F = 0.0000	Wald=3906.96 Prob>chi2 = 0.0000	Wald=7794.97 Prob>chi2 = 0.0000
Test Breusch-Pagan (xttest3)	<i>P-value</i> = 0.000<0.05			
Test Hausman	<i>P-value</i> = 0.000<0.05			
***p<0.01 , **p<0.05 , *p<0.1 ; Standard Error is shown in brackets				

Source: Results of the research team estimated from Stata

Due to different methods, the estimation results of each model are also different. To select the suitable model, the study conducts the Breusch-Pagan Test (xttest3) to choose between OLS and FEM/ REM and the Hausman Test to choose between FEM and REM. The Hausman test gives results of Prob > chi2 <0.05, so it rejects the H₀ hypothesis, therefore, the FEM model is suitable and reliable. We went on using the FEM model to

assess the impact of independent variables on the dependent variable. To test whether the model has a serial correlation phenomenon, the author used the Wooldridge test. The test results show that the model has the phenomenon of autocorrelation. To fix the above phenomenon, we used the FGLS model to increase the stability of the research model. The model estimation results in table 4.4 show that many variables are marked as expected.

Performed investment (LnVon): having a positive mark as originally expected, with a significant level of 1%, indicates that if investment rate increases by 1%, the urbanization rate will increase to 0.102%. This is easy to explain because when investment increases, it often leads to the establishment of new businesses, which can create new job opportunities. These job opportunities can attract people from rural to urban areas in search of better job opportunities, leading to an increase in population density in urban areas and leading to an increase in urbanization rates.

Tourism revenue (lnDTDL): has positive effect on urbanization rate, as expected, with the Cronbach's Alpha of 1%, when tourism revenue increases by 1%, it will cause the urbanization rate to increase by 0.152%. The rapid increase in tourism revenue contributes to the increasement of the contribution of the service sector to the structure of the economy. Development of the service industry is an important driving force for the implementation of industrialization and modernization goals. Along with the development of tourist cities, all local residents can be involved in tourism business and service activities, thereby contributing to improving the living standard of indigenous people, as well as changing the economic appearance of the whole region. Therefore, tourist urban development is identified as a central issue in the tourism and economic development strategies of many countries around the world.

Industrial production index (LnChisosxCN): bears a positive sign similar to the initial expectation, with the Cronbach's Alpha of 1%, when the index of industrial production increases by 1%, the urbanization rate will increase to 0.096%. There is plenty of evidence that when the index of industrial production increases, it leads to an increase in urban rates: industrialization can create new jobs in the manufacturing sector, jobs in the industrial sector can pay more than other agricultural or rural jobs, etc. Wage differences encourages people to move to urban areas. Moreover, industrialization can stimulate the development of infrastructure, such as roads, bridges and public transport, which can make urban areas more accessible and attractive to citizens.

Proportion of workers over 15 years old who have been trained (TyleLÐquadaotao): have a positive coefficient consistent with the author's initial expectations, with the Cronbach's Alpha of 1%, an increase of 1% in the proportion of people with a college degree increases the urbanization rate by 0.076%. The skilled labor force improve the competing capability of the economy, especially for workers operating in the non-agricultural sector, an important indicator to achieve the conditions to upgrade to urban status. Thus, skilled labor is an important factor to achieve economic growth, and economic growth creates favorable conditions for urban infrastructure adjustment, which helps increase the urbanization rate.

Provincial Competitiveness Index (LnPCI): PCI bearing a positive effect in line with the author's initial expectations and previous studies. With the Cronbach's Alpha of 1%, when the provincial competitiveness index increases by 1%, the urbanization rate will increase by 0.149%.. A high PCI may also indicate a higher standard of living, which may be a factor that attracts people to move to urban areas in search of better housing, education, and healthcare facilities.

Gross regional domestic product (GRDP): has a positive coefficient consistent with the group's initial marking expectations, with the Cronbach's Alpha of 1%, indicates that when the gross product in the area increases by 1%, it will make the urbanization rate increase by 2.73e-04%. This demonstrates that economic growth is an important factor in increasing the rate of urbanization in Vietnam. It also emphasized the importance of economic development in promoting urbanization in developing countries.

Population density of provinces in Vietnam (MDDS): with a positive sign in line with the initial expectation, with the Cronbach's Alpha of 1%, the model indicates that while other factors remain constant, when the population density increases by 1% then the urbanization rate increases to 0.02%. High population density is one of the main factors driving urbanization in Vietnam. Big cities, the center of the metropolitan area attract a lot of migrants from other parts of the country, leading to urban population growth and thereby helping to increase the urbanization rate.

City Number (SoTP): The regression model shows that $p\text{-value}=0.644>0.1$. From the model, it is not proven that the number of cities affects the urbanization rate in Vietnam. This is contrary to the original prediction of the author. Some of the reasons are that some cities do not have an increase in urbanization rate because the province/city does not have equivalent economic development. A weak economy often leads to no investment, no jobs, and low income, which can lead to hindering local urbanization.

Number of enterprises operated in each region in Vietnam in the period 2010-2021 (DNHD): Regression model shows that with the Cronbach's Alpha of 1%, when business activity increases by 1%, the urbanization rate will decrease by 6.22e-05%. This is contrary to the original hypothesis of the author. One of the reasons for the above results is because a higher degree of urbanization can lead to a higher cost of living, increased production costs, property taxes and higher labor costs. This leads businesses to move to neighboring suburbs to build factories, leading to a decrease in population, employment and goods and services in the city area and reduce the rate of urbanization in the city.

5. Discussion and conclusions

5.1. Policy implications

5.1.1. Increase service revenues

Identifying tourism as the strongest positive impact factor with the expectation of contributing significantly to the urbanization rate, and also a key economic sector of our country in the coming time, so we need to focus on developing tourism in a sustainable way,

developing tourism must be based on synchronous and community-based projects and plans, preserving traditional values but still promoting the strengths of "hidden beauty" of Vietnam's tourism.

5.1.2. Increase the proportion of trained workers over 15 years old

Based on the above regression results, the quality of labor positively affects the urbanization rate with the expectation of improving labor productivity to contribute to economic growth, we realize that focusing on training to improve the quality of human resources is very necessary.

5.1.3. Increase investment in Vietnamese provinces/ cities

The research model shows that investment has a positive influence on the urbanization rate in Vietnam. This finding contributes to supporting the pursuit of policies and measures to promote the progress of disbursement and attraction of investment, especially Foreign Direct Investment (FDI).

5.1.4. Improve the Provincial Competitiveness Index - PCI

The above research model shows that the PCI provincial competitiveness index has a positive influence on the urbanization rate in Vietnam. Improving the Provincial Competitiveness Index (PCI) in Viet Nam requires a holistic approach that addresses the various factors affecting competing capability.

5.1.5. Improve industrial production index

The above research model shows that industrial production index has a positive influence on the urbanization rate in Vietnam. This finding contributes to the pursuit of policies and measures to boost the index of industrial production in regions in Vietnam.

5.1.6. Increase population density

Population density is a variable that has a positive impact on the urbanization rate as analyzed above, so having solutions to continue maintaining the golden population structure period, thereby increasing job opportunities, diversification of professions in rural areas; improve the quality of vocational training and training according to labor market needs.

5.1.7. Increase in gross regional domestic product - GRDP

Based on the above regression results, the gross product in each province positively affects the urbanization rate with the expectation of increasing the income and living standards of residents in the region, we realize that focusing on economic development for each locality is very necessary and needs to be focused.

5.1.8. Improve the work of performed business

DNHD is currently a variable that has a negative impact on the rate of urbanization because in fact, although this variable increases in quantity, its quality is not guaranteed and has not been appropriately improved, so it becomes a negative impact factor. In order to overcome the situation of enterprises operating at a loss, which is a waste of resources, it is

necessary to take measures to reduce the number of "shell corporation" while improving the quality to help reduce losses and generate profits to the end of the year from both business and government intervention.

5.1.9. Policies of the Party and the State

In the coming time, it is necessary to continue to improve institutions and policies to facilitate the process of urbanization, construction, management and improve the quality of urban to meet the requirements of sustainable urban development construction and management. Focus on building and developing a sustainable and synchronous national urban system in terms of network. Promote housing development, synchronous, modern, linked and adaptable urban infrastructure system to climate change. Building and perfecting the urban government model; improve the effectiveness and efficiency of urban management and the quality of urban life, ensure social security and welfare, security, safety and urban order. Economic development of urban areas; innovate mechanisms, financial policies and investment in urban development.

5.2. Conclusion

This research article evaluates the impact of factors affecting the urbanization rate in Vietnam. The econometric model is built based on data collected from 63 provinces and cities of Vietnam with secondary data for the period 2010-2021. After running the model with 756 observations, the study has shown the influence of these factors on the urbanization rate of Vietnam.

The study has provided empirical evidence on the factors affecting the rate of urbanization in Vietnam, thereby contributing to affirming the pursuit of strategies and policies associated with the reality of the provinces in particular and Vietnam in general.

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ECONOMIC INSTITUTIONS: A BARRIER OF REGIONAL COMPETITIVENESS OF THE RED RIVER DELTA REGION?

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Abstract

The article studies a number of sets of criteria to measure regional competitiveness in the Red river delta region in Vietnam. The article chooses to use the EU's set of criteria to measure competitiveness of the Red river delta region, through groups of criteria (i) basic, (ii) efficiency and (iii) innovative and based on available statistics in Vietnam. The measurements of economic institution indicator will be focused on finding out whether it enhances or barrier the competitiveness of the Red river delta region. From that, draw some conclusions, policies implications and suggest orientations for further in-depth studies on the topic of regional competitiveness.

Keywords: *Economic institutions, Regional competitiveness, Regional competitiveness index, regional innovation, regional institutions.*

1. Introduction

Institutions can broadly defined as rules and norms for interacting in society. Institutions play a fundamental role in any country's economic growth and overall development performance. Institutions embody formal and informal rules devised by people that constrain or condition human activity and hence provide incentives that influence human behavior. Since institutions influence or even shape behavior, the extent to which they prompt or discourage growth-enhancing or other socially desirable activity is critical to whether a country achieves better economic or social outcomes. A strong relationship exists between the level of development and the quality of institutions that provide security, regulate economic activity, enforce the rule of law, and enable the public to take part in governmental decision making. Institutions encourage socially constructive behavior, help promote economic growth and other desirable outcomes. Institutions have close relationship with property rights enforcement and the rule of law and economic performance. Institutional quality is strongly related to the level of development. Data from the Worldwide Governance Indicators (WGI) project, which collects annual information on six dimensions of governance, reveal a strong relationship between the quality of governance over the long period and prosperity as measured by gross domestic product (GDP) per capita (Figure 1.1) (WorldBank, 2019).

Enhancing regional competitiveness is a common goal in regional economic policy making. Much of society's resources are allocated for this purpose, the region has been rediscovered as an important source of competitive advantage in a globalizing political economy (Scott, 1995; Cooke, 1997). In part, this rediscovery is based on studies of the success of highly dynamic regional economies and industrial districts which draw extensively upon local assets for their competitiveness. However, the rediscovery is also based on the insights of institutional economic theory, particularly its explanation of why territorial proximity matters for economic organization. Two conceptual strands stand out regarding that toward the regional competitiveness: (1) regional competitiveness is the sum total of enterprise-level competitiveness implemented in the region. or (2) simply reuse and redefine concepts from the macro level.

The Regional Competitiveness Index (RCI) has measured key elements of Competitiveness since 2010 for all NUTS-2 grant zones across the EU. With more than 70 comparable indicators, the index measures a region's ability to provide an attractive and sustainable environment for businesses and people to live and work in. The RCI provides a comprehensive and comparable picture of the competitiveness of all EU regions. The regional level described by the RCI allows the assessment of inequalities in competition between regions and monitoring of activity over time at the discrete spatial level. In most cases, the regional level is much more relevant than just looking at the country level. RCI should be seen as a tool to aid in the design of better policies and to monitor their effectiveness.

RCI scores facilitate the comparison of the competitiveness of one region with another. A dashboard designed for each region presents the region's scores and rankings, three indicator groups, and 11 pillars. The region's NLCT scores on each RCI component can then be compared with the mean scores of similar regions. The standard deviation of the similarity zone scores is considered as a measure of the change in scores within the group. If the scores of another region are one standard deviation less than the mean, the region is considered to have neither strengths nor weaknesses. If the region's score is one standard deviation more than the mean, it is considered to be performing well relative to the other regions, and vice versa.

Several authors have debated and suggested RCI (Gardiner, B., Martin, R. and Tyler, P., 2004, Huggins, 2011, Kitson, M., R. Martin and P. Tyler, 2004, Martin, R., 2005) for measuring the competitiveness of a region but the institution indicators given in the EU countries model are applicable in practices. The EU countries have proposed the structure of the RCI regional competitiveness index, which includes different aspects of competitiveness, divided into three groups: basic (including institutions, macroeconomic stability, basis infrastructure), efficiency (including higher education, labor market efficiency) and innovation (including technology readiness, state of business development and innovation). Competitive competence is a multidimensional concept, so research requires the coordinated efforts of many different subjects. The analysis of the RCI, three groups of 11-pillar indexes helps highlight the strengths and weaknesses of each region with the ability to assess the average level of each region with the average of the EU or other regions. The RCI is a single, comparable and transparent tool for national and regional planners responsible for regional development strategies, particularly in the context of coherent policy. These three groups of

indicators are detailed into 11 pillars as follows: i) BASIC INDICATORS: Institutions, Macroeconomic Stability, Infrastructure, Health, Basic Education; ii) EFFICIENCY INDICATORS: Further education and lifelong learning, Labor market efficiency, Market size; iii) INNOVATION INDICATORS: Technological readiness, Business maturity, Innovation.

2. Method

The proposal for the RCI starts from the premise that competitiveness cannot be measured directly because of its abstract, multidimensional essence, which means that it depends on many factors that cannot be determined conclusively, that are not independent and that do not have a known functional form. Nevertheless, it is reasonable to assume that competitiveness can be evaluated indirectly by analyzing a set of socioeconomic variables (indicators) which afford significant information about the multiple dimensions that make it up. Among the indicators, institutions indicator is a focal point. Suppose that for a given year t we have a number (m) of indicators for each of the n elements of our population. $I_i(k)$ denotes for the value reached by the element k in indicator i . For the construction of a synthetic indicator two order axioms established: (1) If two elements r and s present identical values in all the partial indicators ($I_i(r) = I_i(s); i = 1, \dots, m$), then their competitiveness must be equal; (2) If an element r presents, with respect to another element s , a greater or equal value in all partial indicators, and at least one of them is strictly greater, ($I_i(r) \geq I_i(s); i = 1, \dots, m$; with at least one j such that $I_j(r) > I_j(s)$), then the competitiveness of the element r must be greater than that of the elements.

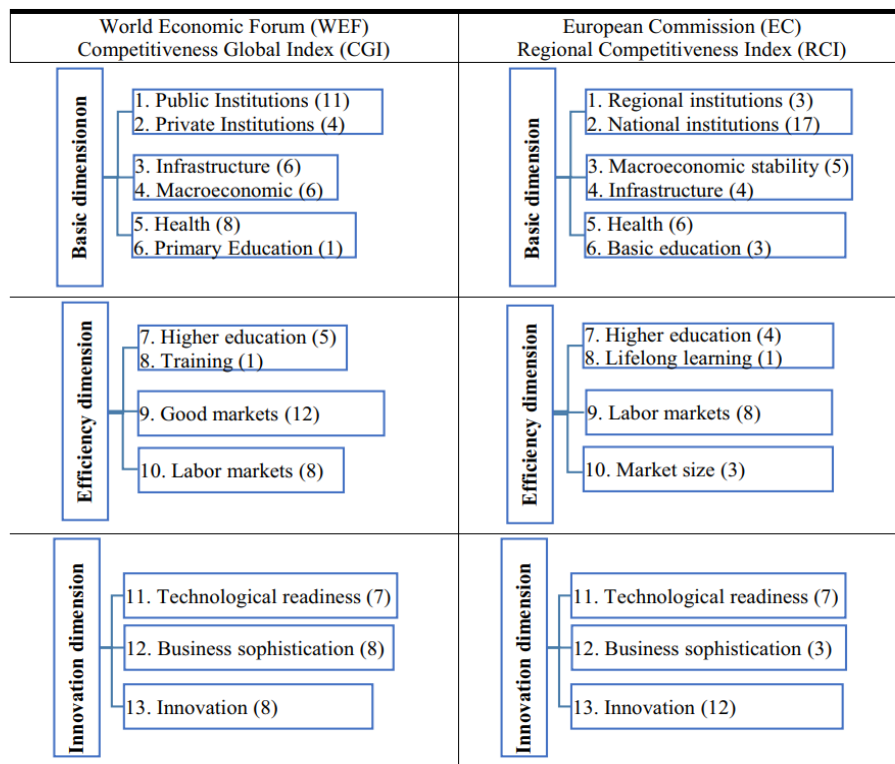


Figure 1. Regional Competitiveness Index

Source: José Carlos Sánchez de la Vega, José Daniel Buendía Azorín, Antonio Calvo-Flores Segura and Miguel Esteban Yago, 2019.

This research was preceded by consistent and rigorous collection and analysis of data using intensive qualitative and quantitative research. The main data gathering tools for qualitative research were key informant in-depth interviews. The study used both purposive sampling and snowball sampling to collect data. This combination can be possible to provide the broadest range of information. The more information that can be obtained, the better the chance of a complete picture of the cases being studied. Selection of interviewees began with a purposive sample of individuals known to be expertise and practices in planning and/or to be in positions of particular influence within the local government. Sixteen interviewees from across different organizations/departments and government levels including central government, provincial government, three district-level governments, commune governments, donors and expert consultants were interviewed. Interviewees were either the Chief Executive Officer (CEO) (or equivalent), Mayors and elected members or department managers and senior service officers in the organizations. In this study, transcripts of interviews and direct experiences and documents (plans, decrees, guidelines, instructions, websites, journals, and other public documents produced and provided by the organizations involved) were analysed for exploring and discovering the indicators and factors influencing the competitiveness. These were managed and analysed by using computers, particularly software package Nvivo. The secondary data were collected from General Statistic Office, particularly from the Statistical Yearbook for quantitative analysis of the regional competitiveness in order to discover and measure the index.

3. Results

Based on these premises, the Regional Competitiveness Index of the Red river delta region measured by the distance methodology described. Figure 1 presents the results for all the ACs for the period 2017-2021. The values have showed that the institutions have been improved over the years.

Table 1. Regional Competitiveness Index of the Red river delta region

Indicators	Indexes	2021	2020	2019	2018	2017
BASIC INDICATORS	1.1. Time cost index of enterprises	7.81	7.93	7.07	6.65	6.66
	1.2. Informal cost index of enterprises	7.20	6.58	6.36	5.72	5.27
	1.3. Transparency Index	5.82	5.86	6.76	6.26	6.31
	1.4. Equality Business Environment among business sectors	6.56	6.72	6.20	5.17	4.72
	1.5. Cost entering market	6.79	7.66	7.54	7.40	7.65

Source: VCCI and Calculated by the authors

Table 2. RCI indexes in the Red river delta region

RCI sub-indices	RCI indicators	Criteria of EU	Criteria Relevance in Vietnam	RCI Red river delta Region 2021/ comparison with national average /	RCI Red river delta Region 2021/ comparison with Mekong Delta region
Basics Indicators	Institutions Regional	Quality and accountability	1.1. Time cost index	7,81>7,46	7,81>7,45
		Corruption	1.2. Informal Charges index	7,20>7,06	7,20<7,39
		Impartiality	1.3. Transparency Index	5,82<6,02	5,82>5,81
		Regulatory quality	1.4. Policy Bias	6,56>6,02	6,56>5,86
		Ease of doing business	1.5. Entry Costs	6,79<6,88	6,79<7,18

Source: VCCI and Calculated by the authors

3.1. Time cost index

Measure the time that businesses have to spend when carrying out administrative procedures, as well as how often and how long businesses have to suspend business for the state management agencies of the province to carry out the work. inspect.

Table 3. Time cost index of enterprises in the Red river delta region

Province	Sub-Index 4: Time Costs	Percentage of firms spending over 10 percent of their time on understanding and complying with regulations	Local government officials are friendly	Local government officials are effective	Firms don't have to travel many trips to obtain stamps and signatures	Paperwork is simple	Fees are listed publically	Time to do APs is shorter than regulations specified (%)
Bac Ninh	8.47	24%	82%	84%	78%	75%	95%	75%
Ha Nam	7.04	24%	81%	85%	76%	74%	91%	80%
Ha Noi	8.45	26%	75%	80%	72%	64%	94%	83%
Hai Duong	7.23	22%	83%	94%	79%	71%	99%	85%
Hai Phong	7.64	23%	73%	83%	69%	66%	90%	79%
Hung Yen	8.46	28%	79%	88%	74%	71%	95%	81%
Nam Dinh	8.14	14%	88%	90%	84%	81%	93%	84%
Ninh Binh	6.71	20%	83%	87%	84%	90%	91%	83%
Quang Ninh	8.52	21%	91%	88%	86%	87%	95%	87%
Thai Binh	6.79	27%	80%	83%	72%	76%	90%	79%
Vinh Phuc	8.46	14%	93%	94%	86%	87%	98%	89%

Source: VCCI (2021)

The cost and time that businesses have to spend to learn and implement the State's legal regulations in the provinces in the Red river delta region are generally quite similar. In which, the highest time cost that enterprises have to spend is in Hung Yen with 28% of respondents agreeing and the lowest in Vinh Phuc with 14% of respondents agreeing.

3.2. Informal Chargesindex - PCI

This index helps measure the level of informal costs that businesses have to pay as well as the obstacles these costs cause to the business activities of enterprises.

Table 4. Informal Chargesindex of enterprises in the Red river delta region

Province	Sub-Index 5: Informal Charges	Firms in my line of business usually have to pay for informal charges (%)	Percentage of firms saying that informal charges usually or always deliver expected results	Rent-seeking phenomenon is popular in handling administrative procedures for businesses (%)	Informal charges are at acceptable levels (%)	Percentage of firms paying informal payment to inspectors	Percentage of firms paying informal charges in business registration/ re-registration	Percentage of firms paying informal charges when implementing sublicense procedures	Percentage of firms paying informal charges to fire safety inspectors
Bac Ninh	7.27	37%	52%	59%	86%	19%	17%	57%	28%
Ha Nam	6.63	47%	60%	63%	87%	24%	15%	74%	42%
Ha Noi	7.15	38%	59%	56%	84%	23%	26%	67%	36%
Hai Duong	7.24	33%	51%	40%	86%	19%	16%	53%	30%
Hai Phong	6.70	44%	61%	59%	84%	28%	30%	64%	35%
Hung Yen	6.63	38%	72%	54%	83%	26%	16%	70%	50%
Nam Dinh	7.62	35%	51%	57%	91%	15%	22%	63%	23%
Ninh Binh	7.56	33%	90%	67%	96%	21%	22%	67%	30%
Quang Ninh	7.85	24%	42%	45%	90%	18%	30%	61%	12%
Thai Binh	6.46	55%	53%	65%	83%	31%	26%	73%	30%
Vinh Phuc	8.05	40%	51%	65%	95%	10%	21%	66%	50%

Source: VCCI (2021)

The average corruption index of the whole region is 50,276 (% of respondents agree), higher than the national average (48.73%). Thai Binh is the city with the highest corruption index in public agencies in the region with 55 (% of respondents agree). Quang Ninh is the city with the lowest corruption index in public agencies in the region with 24 (% of respondents agree)

3.3. Transparency Index - PCI

The Transparency Index is one of the most important indicators to distinguish which business environment is conducive to private sector development.

Table 5. Transparency Index in the Red river delta region

Province	Sub-Index 3: Transparency	Access to planning documents (1=Impossible 5=Easy)	Access to legal document (1=Impossible 5=Easy)	Transparency in bidding (% Yes)	Received information requested	Median days to receive information requested (Days)	Website information about provincial investment incentives is useful
Bac Ninh	6.39	2.65	3.00	85%	79%	5	30%
Ha Nam	6.28	2.85	3.13	80%	50%	2	54%
Ha Noi	5.21	2.55	3.02	71%	80%	4	22%
Hai Duong	5.43	2.54	2.84	91%	73%	3	41%
Hai Phong	6.82	2.58	2.92	77%	54%	1	41%
Hung Yen	5.62	2.39	2.94	80%	79%	3	52%
Nam Dinh	5.43	2.56	2.90	82%	86%	6	43%
Ninh Binh	4.60	2.70	3.13	96%	60%	2	40%
Quang Ninh	6.31	2.83	3.13	88%	50%	1	27%
Thai Binh	6.31	2.57	2.87	79%	79%	6	43%
Vinh Phuc	5.63	2.56	2.79	94%	91%	3	43%

Source: VCCI (2021)

On average, the Red river delta region has a policy-making transparency index of 5.58, higher than the national average of 5.34. Quang Ninh is the city with the highest policy-making transparency index in the region with data of 6.31. Ninh Binh is the city with the lowest policy-making transparency index in the region with data of 4.60.

3.4. Policy Bias index

The policy bias index show how the regional policies have create the bussiness environment among the business entities within region. Moreover, the index also indicate which business industry or company has a prioror than the other.

Table 6. Policy bias index among business sectors at Red river delta region

Province	Sub-Index 6: Policy Bias	Local Gov's attitude does not depend on firm's contribution (%)	Provincial authorities prioritize handling large firms' difficulties over SMEs' (%)	Provincial authorities prioritize attracting investment from large firms over SMEs (%)	Land access as a privilege to large firms (%)	Faster and simpler administrative procedures as a privilege to large firms (%)	Ease in getting state contracts as privilege to large firms (%)	Mineral exploitation license as a privilege to large firms (%)	Ease in information access as privilege to large firms (%)
Bac Ninh	6.29	74%	57%	45%	25%	19%	16%	5%	16%
Ha Nam	6.07	70%	53%	39%	26%	19%	14%	8%	17%
Ha Noi	5.38	77%	53%	48%	31%	27%	22%	12%	27%
Hai Duong	8.38	86%	32%	25%	16%	15%	5%	4%	11%
Hai Phong	6.02	70%	44%	44%	28%	25%	16%	7%	26%
Hung Yen	7.17	83%	44%	32%	22%	22%	10%	8%	19%
Nam Dinh	5.91	79%	61%	24%	23%	17%	15%	7%	18%
Ninh Binh	7.57	76%	39%	32%	22%	8%	16%	2%	14%
Quang Ninh	6.96	83%	46%	36%	22%	20%	9%	6%	14%
Thai Binh	5.32	65%	55%	37%	28%	22%	17%	13%	22%
Vinh Phuc	7.07	75%	49%	27%	19%	10%	8%	6%	13%

Source: VCCI (2021)

The index shown that Hai Duong was a province having the highest score. It means that 86% companies in the province said that the provincial government policies were not favored by the contribution of the companies. Meanwhile the index was lowest in Thai Binh province, just 65% companies believing in non-bias policies among the business sectors.

3.5. Entry Costs

Entry cost sub-index is used to measure how long a firm has to wait to register a business and to apply for a land use right certificate, and how long it takes to receive all required permits to conduct a business, including the number of licenses, registrations and required official approvals. The lower entry cost is, the better business environment. Table 3.5 shows that the entry cost in the Red river delta has erratically varied from province to province. Quang Ninh province has a highest score with 7.98 while Thai Binh has a lowest score with 6.08.

Table 7. Entry Costs Index at Red river delta region

Province	Sub-Index 1: Entry Costs	Length of business registration in days (Median)	Firms have to make +2 revision to their biz registration dossier (%)	Length of biz re-registration in days (Median)	Firms registered online, PAC & Posts (%)	Biz Registration: Publically listed procedures	Biz Registration: Clear and adequate guidance	Biz Registration: Knowledgeable officials
Bac Ninh	6.53	10	21%	7	53%	39%	83%	22%
Ha Nam	6.73	7	14%	7	45%	50%	67%	42%
Ha Noi	6.57	9	14%	7	78%	55%	61%	35%
Hai Duong	7.24	7	17%	4	57%	91%	64%	45%
Hai Phong	6.52	7	16%	5	69%	63%	81%	30%
Hung Yen	6.78	10	15%	5	55%	67%	74%	43%
Nam Dinh	7.07	14	14%	5	48%	70%	60%	20%
Ninh Binh	6.20	7	13%	7	26%	89%	37%	19%
Quang Ninh	7.98	7	10%	4.5	61%	77%	77%	62%
Thai Binh	6.08	14.5	23%	10	54%	60%	60%	40%
Vinh Phuc	7.02	10	16%	5	66%	63%	58%	38%

Source: VCCI (2021)

This finding is completely consistent with the sub-index of time cost. The score for time cost sub-index for the Red river delta region (6.79) is lower than the national average score (6.84). While some indicators of time cost sub-index have been significantly improved (more efficient state officials, reduced number of hours worked with tax inspectors, civil servants friendlier so forth), the important indicators that reflect time costs have not changed much, especially the proportion of businesses who though they still have to go back and forth many times to complete administrative procedures are still high in recent years (from 30% to 40%). The “time cost” sub-index of the provinces indicate local limitations in administrative procedure reform. Although some provinces have made progress, they still

need to further reform and maintain achievements to facilitate business environment. Along with the review of all procedures, provinces need to pay more attention to the coordination among line departments in order to create favorable conditions for businesses.

4. Discussion and Conclusion

Through calculating the competitiveness indexes of the Red river delta region and the whole country, it can be seen that most of the indexes of the Red river delta region are higher than the whole country. This is understandable because the RRD is one of the two regions with high population and economic density compared to other regions of the country. However, some of the pillar indexes are difficult to find information, and many Vietnamese indexes currently do not have any reputable units to perform statistics. Therefore, the indicators that can be applied in the RRD research are not yet complete and comprehensive.

Some Institutional Indicators could use the Vietnam Provincial Governance and Public Administration Performance Index (PAPI) to complement the PCI index since PCI is based on a business perspective and PAPI considers three interrelated processes, that is: policy formulation, policy implementation and monitoring of the delivery of public services, from the point of view of the people.

However, the study is a good suggestion for further studies on regional competitiveness in Vietnam, thereby proposing recommendations to authorities add indexes to the annual published data system to help domestic and foreign investors, local government agencies and citizens have more basis for their decisions.

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DEVELOPING COMMUNITY-BASED TOURISM FOR ADAPTING TO CLIMATE CHANGE IN THIENG LIENG ISLAND, CAN GIO MANGROVE BIOSPHERE RESERVE, HO CHI MINH CITY, VIETNAM

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Abstract

Thieng Lieng is “island in island” and “the salt kingdom” of Can Gio mangrove biosphere reserve, Ho Chi Minh city, Vietnam. In Thieng Lieng, salt is not only a spice but also a “brainchild” of people. However, livelihood of salt farmers is strongly affected by climate change. Therefore, local community has just created a new livelihood - community-based tourism to help them “find opportunities from challenges”. Community based tourism contributes to giving socio-economic efficiency for localities and improving the lives of farmers. Community based tourism makes a major contribution to local sustainable development. This article emphasizes analyzing the support of tourism economy to help people adapt well to climate change associated with salt production. This study also expresses the approach that livelihood diversity as an appropriate strategy for farmers to “overcome to the threshold of survival in a fluctuating environment” in the context of current climate change.

Keywords: *community based tourism, Thieng Lieng island, climate change, overcome to the threshold of survival, sustainable development*

1. Introduction

Vietnam is identified by the International Panel on Climate Change as one of the countries likely to be most affected by climate change (Schmidt-Thomé et al, 2015, p.61). In rural areas in Vietnam, especially in coastal areas, people are heavily affected by climate change. And Can Gio is the only coastal district in Ho Chi Minh city. People's livelihoods in Can Gio depend largely on natural resources. Thus, any negative changes due to climate change will directly affect their livelihoods. These changes are potential risks affecting the livelihoods of local residents (L T Hoa et al, 2022, p.1). Ho Chi Minh city finding solutions to respond to climate change in Ho Chi Minh city is very urgent in the current conditions (Ngo, L. & Hoang, H., 2021). But solutions to adapt to climate change in Can Gio district by tourism livelihood is the research gap.

Eva Kaján and Jarkko Saarinen (2013) stated that “climate change impacts on tourism or the role of tourism as a new livelihood option cannot be evaluated as a single force but as

a dynamic phenomenon and a process that affects not only tourists and their decision-making and behaviour, businesses and their activities, and also local people and communities” (p.23). In particular, local people in Thieng Lieng island, Can Gio district, Ho Chi Minh city has flexibly integrated tourism livelihood into salt production. In this study, the research team mention that tourism as new livelihood to help local people adapt to climate change. Consequently, this article focus on discussing and illustrating the effectiveness of implementing community based tourism in the climate change context.

2. Method

Through the process of collecting secondary materials and field surveys in Thieng Lieng island, Can Gio district, Ho Chi Minh city from December 2021 to April 2023, we use research methods: in-depth interviews (tourist, local community, representatives of the government authorities on tourism management, representatives of travel company and consultant expert). Besides, we also carry out the community group interview method to identify and analyze the impacts of the natural environment on local livelihoods and tourism.

3. Results

3.1. Study Area: Thieng Lieng island context

Thieng Lieng is an island hamlet with an area of 12.999 hectares. The general topography of Thieng Lieng is a low coastal plain. The terrain elevation does not change much, from 0.2 - 0.5m. About Thieng Lieng climate is characterized by a sub-equatorial monsoon tropical climate, with two distinct rainy and sunny season. Thieng Lieng mangrove forest is a typical ecosystem in the southern region of Vietnam. Currently, in Thieng Lieng, there are 396 hectares of salt field. In addition to the livelihood of salt production, the people of Thieng Lieng also have a livelihood of keeping forests and fishing for aquaculture. All forms of livelihood are created by people and increase their production life to both rely on the natural environment but also live in harmony with the natural environment. The origin of the population from the Mekong delta has been immigrated since the early 1970s.

Associated with a special geographical position is the “island in island”, Thieng Lieng is located separately from the destinations of Ho Chi Minh city and other areas of the Southeast region of Vietnam. Thieng Lieng is only 70 km from the center of Ho Chi Minh city, the connection from the center of Ho Chi Minh city to Thieng Lieng must be done through the use of water transport. The problem of connecting and developing Thieng Lieng tourism is still facing many difficulties in terms of means of transport and berths. However, Thieng Lieng is a unique destination capable of contributing to the creation of the route “connecting from the river to the sea” in order to both characterize and diversify tourism products in Ho Chi Minh city in particular and in the Southeast region of Vietnam in general. The process of building a community-based tourism destination in Thieng Lieng aims to raise awareness of the community of Ho Chi Minh city residents in preserving and promoting the unique values of natural and humanistic ecosystem. Department of Tourism in Ho Chi Minh city has launched the community - based tourism product on Thieng Lieng island on the 28th of December, 2022. The tourist market to Thieng Lieng is identified as the segment of

international tourists and domestic tourists with high affordability. The main source of supply of Thieng Lieng tourists is customers using water transport from the center of Ho Chi Minh city. Currently, some travel agencies in Ho Chi Minh city are interested in connecting tourists to Thieng Lieng island. By the end of April 2023, Thieng Lieng has welcomed 1000 tourists.

3.2. Community based tourism as a strategy for sustainable development in Thieng Lieng island

According to Clause 15, Article 3 of the Law on Tourism 2017 of Vietnam: “Community based tourism is a type of tourism developed on the basis of the cultural values of community, managed, organized and exploited by the resident community. Benefit”. At the same time, according to Clause 3, Article 19 of the Law on Tourism 2017 of Vietnam, it is defined “Development of community-based tourism in order to preserve cultural identity and protect the environment”. Since then, the development of community-based tourism in Thieng Lieng island is towards sustainable development of livelihoods, natural environment and humanity. Development of community based tourism in Thieng Lieng island is consistent with the viewpoint of building the Ho Chi Minh city tourism development strategy to 2030 with the undertaking of “conservation and development of tourism resources, preservation and promotion of national cultural identity, regions” (The Ho Chi Minh City People's Committee, 2018, p.2).

“Tourism livelihood is considered an additional livelihood that contributes to raising incomes, improving lives and increasing the contribution of the tourism economy to the overall economy of Can Gio district in particular and Ho Chi Minh city in general. But the exploitation and development of community-based tourism in Thieng Lieng should be implemented in the direction of sustainable development.” (Result of in-depth interviews, The Leader of Department of Tourism in Ho Chi Minh city, 28/12/2022)

Jaeyeon Choe & Giang Phi (2022) supposed that: “the tourism research in Vietnam has explored alternative tourism forms and practices such as pro poor tourism and community-based tourism as a means for reducing inequity and poverty” (p.31). Therefore, community-based tourism contribute to sustainable development (Walkowski, M. d. C., Pires, P. d. S., Tricárico, L. T, 2019) or community based tourism as a sustainable direction in destination development (Heesup Han et al, 2019). In Thieng Lieng island, community-based tourism as a strategy for sustainable development.

3.3. Livelihood diversity to adapt to climate change in Thieng Lieng island

In Thieng Lieng hamlet, the population is scatteredly divided into many clusters according to production land, including: the central area of Thieng Lieng hamlet, 50 Canal, Can Gao, Ba Giong, Long Tau and Nong Truong Quan 1, with 226 households, 761 people. In terms of economic structure, the main occupation is salt production (80% of local people). From 2022, Thieng Lieng has a new livelihood - tourism.

Actual survey in Thieng Lieng from 2022 - April 2023, we found that the climate has changed. Specifically, the rainy season comes earlier and lasts longer than usual. This situation makes salt production increasingly difficult.

“This year (2023), the local people harvest less salt than in previous years. The production of salt is highly dependent on the weather. Salt making is very sensitive to weather. Due to the prolonged rainy season, the amount of salt decreased by nearly 50% compared previous year.” (Result of in-depth interviews, salt farmer, man, 45 years old, 6/4/2022).

The livelihood of making salt can hardly help farmers to ensure their daily life. Since then, local people have engaged in community-based tourism practices to adapt to climate change. Adapting to climate change have become main discourse and excited story to create unique tourism product in Thieng Lieng island.

About Thieng Lieng accommodation establishment, there are 3 homestay service providers: Ba Huyen (5 rooms, capacity: 16-20 tourists), Muoi Gia (5 rooms, capacity: 16-20 tourists) and Chin Tho (5 rooms, capacity 10 - 12 tourists). In terms of culinary facilities, there are households in Thieng Lieng that can participate in the supply chain such as Nam Doi restaurant (capacity: 150 tourist), Muoi Bung restaurant (capacity: 150 tourists), Ba Loan - site of making folk cakes (capacity: 60 tourist), Sau Trung - site of making herbal refreshments (capacity: 60 tourist). Regarding sites of supplying drinking water and soft drinks in Thieng Lieng, there are households that can provide such as: Ut Hai (capacity: 40 tourists), Tu Tuan (capacity: 80 tourists), Ut Kieu (capacity: 60 tourists) Muoi Gia (capacity: 50 tourists). About other services, there are site of relaxing footbath - Nam Tuyet (capacity: 40 tourists), Hai Nhoc - site of folk game (capacity: 40 tourists), Tu Huynh - site of traditional art performance (capacity: 60 tourists). All tourism services in Thieng Lieng are implemented based on the philosophy of “convergence tourism”. Especially, “convergence tourism” focuses on adapting to climate change.

“Developing community-based tourism in Thieng Lieng will contribute to unpacking local convergence values. Convergence in community-based tourism development is the convergence of human values associated with the natural condition of Can Gio in order to build a community-based tourism product with identity and uniqueness in the locality. Convergence tourism to adapt to climate change is the way to help local people overcome the challenge.” (Result of in-depth interviews, Director of Thieng Lieng Agricultural and Trading Tourism Service Cooperative, woman, 46 years old, 6/4/2022)

Developing community-based tourism in Thieng Lieng with the philosophy of “convergence tourism” towards strength of system and solidarity of the local people. From there, a network of tourism service providers was formed. Basically, this network is a value chain. When developing community-based tourism associated with salt production in the direction of the value chain, it will destroy the fragmentary nature, lack of systematicity and lack of cohesion of stakeholders. Invisibly, the value chain makes the structure of tourism products more stable, limits the risks brought by tourism livelihood practices. Therefore, people are increasingly connected to adapt to climate change.

4. Discussion and conclusion

Ho Chi Minh city is the convergence center of Vietnam's unique tourism development resources. In recent years, many resources have been exploited and made an important

contribution to raising the position of the tourism industry to become one of the key economic sectors of the city. Currently, the structure of tourism types and products of Ho Chi Minh city is quite diverse and highly universal, but still lacks the form of community-based tourism.

In fact, the resources for developing community-based tourism in the city have a lot of potential but have not yet been properly exploited. One of the unique areas containing many values of natural and human tourism resources cultivated along with the process of formation and development of the city is Thieng Lieng hamlet - Thanh An commune - Can Gio district. The return of residents to make salt, keep forests, and catch fish has created an integrated ecosystem with an identity that helps Thieng Lieng be compared to a beautiful, peaceful and attractive land. Developing community-based tourism in Thieng Lieng will contribute to connecting resources and networks to build a highly attractive model of community-based tourism for Ho Chi Minh city to adapt to climate change. To make the story of exploiting and developing community based tourism in Thieng Lieng more sustainable and create meaningful contributions to the goal of improving the lives of the local people, we suggest appropriate functions for the following tasks:

- The exploitation and development of tourism in Thieng Lieng should be implemented in the direction of sustainable development. Calculate the optimal capacity for Thieng Lieng. Propagating and mobilizing people to protect the natural landscape and environment, building Thieng Lieng as an environmentally friendly destination.

- Organize tours to learn experience in exploiting and developing community-based tourism in Vietnam for representatives of local households. The objective of the training courses is to raise awareness with practical skills associated with tourism in the local community to adapt to climate change.

- Building a solid tourism product structure and ensuring the quality of tourism services associated with the enjoyment process of visitors. Step by step specializing in local tourism products and at the same time contributing to diversify tourism products for Ho Chi Minh city. Create and supplement tourism services in Thieng Lieng in order to complete services and increase revenue for households engaged in local tourism activities.

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MOTIVATIONS OF HOUSING TENURE CHOICE AMONG RURAL-URBAN MIGRANTS: A CASE STUDY IN HANOI, VIETNAM

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Abstract

This study aims to assess the impact of motivations affecting the housing choice of migrants from rural to urban areas. These motivations were identified as sociology and physical well-being, household events and housing adequacy. A questionnaire survey was conducted to investigate migrant workers' housing tenure choice as well as the influence of motivations on housing tenure choice. The research results showed important implications. Firstly, the influence of migration purposes has a positive impact on housing choice. Secondly, when a life event occurs, it also changes the intention to change residence as buying or renting house. Thirdly, the important finding of the study showed that the majority of people who were not satisfied with the housing conditions in the city tend to change their house. This study recognized a number of important and significant results for investors and policymakers. However, it also has some limitations. It is necessary to clarify the binding factors, as well as the effects of opportunities and accessibility to housing of migrants from rural to urban areas

Keywords: *Housing tenure choice; migrants; motivations; sociology; physical well-being; household events; housing adequacy.*

1. Introduction

In Vietnam, since 1986, there has been remarkable economic development thanks to public policy reforms. Industrialization led to urbanization in big cities and led to a massive migration of people from rural to urban areas to live and work. The results of the 2019 population and housing census show that more than half - about 53.1% of people migrate from rural to urban areas in search of work and by family/relocating 20.7%. Housing becomes a major issue for migrants and migrants' intention to stay in the city. Firstly, the housing area of migrants in recent years has always been lower than that of non-migrants. The reason is that owning a house with a large area in the city is not easy for migrants. Second, migrants always face difficulties with housing ownership. For migrants from rural to urban areas, more than 62% have to stay in rented or borrowed private houses, while the household's own house accounts for only 33.6%, the lowest among migration flows.

Theoretically, there have been many domestic and international studies interested in the housing choice of migrants. In the world, the housing choice of migrants has been mentioned by many researchers from different aspects such as factors affecting the ownership of migrant housing, migrant housing in poor areas, housing purchase intention

(Costello, 1987; Owusu, 1987; Tian et al., 2017). Specifically, for the research on factors affecting the choice of migrant housing, the theoretical frameworks that are often applied in the research are the life cycle theory (Rossi, 1995), the theory of planned behavior (Ajzen, 1991), decision theory (Jansen et al., 2011). In general, the proposed theories are consistent and explain the research results. However, when studying on the same aspect, the studies give different research results. Because Vietnam has economic and political characteristics based on the socialist regime similar to China, especially both countries have high densities of migrants in urban areas. Therefore, the question is whether the factors affecting housing choice in Vietnam are similar to previous research results, and what policy changes need to be made by the government to help and housing support for migrants. In particular, the factors driving migration, constraints and opportunities for migrant housing, or financial capability, income, social capital are all very important in making policy decisions, housing investment for migrants. In this research, the author used the combination of two theories, namely risk approach and the theory of consumer behaviors as it is indicated that these approaches are appropriate to look at motivations or triggers of residential mobility and migration.

In terms of socio-economic regions in Vietnam, the Red River Delta is one of the largest regions with the highest proportion of rural-to-urban migrants, accounting for 22.4%. Besides the reason for finding a job, the reason for migrating with family or moving house of migrants in these two regions is also the largest in the country, showing that the housing needs of migrants is also very important. The author chooses Hanoi, because it is not only in terms of population size but also in terms of the number of people migrating from rural to urban areas. The study of migrants' housing choices in Hanoi will be representative of the provinces with rural-urban migration flows in Vietnam.

The main research purpose is to evaluate the impact of motivation factors affecting the housing choice of migrants from rural to urban areas. Specifically, the study will clarify theories to determine the factors affecting the housing choice of migrants, as well as the demographic characteristics. The study proposes a number of recommendations to help policymakers, businesses, and investors come up with appropriate policies and housing products to better meet the needs of rural-urban migrants when buying houses.

2. Literature review

2.1. Housing choice and risk approach

In housing research, the concept of housing choice (housing choice) is widely used as distinct from housing preferences (housing preference). However, in many cases, choice requires a motivation to find a housing option that is appropriate. According to Coolen and Hoekstra (2001), housing choice is oriented towards the values and goals achieved of that choice. This means that while tastes reflect housing preferences, choices refer to actual behavior after taking into account many factors. Even when preferences strongly influence housing choices, buyers still consider options more than they are influenced by preferences.

However, in terms of the migration issues, housing choice is associated with socio-economic goals such as employment opportunities, income, with institutional and policy constraints (Mulder, 1996). These components cannot be separated but related to each other.

In this study, the author uses the "risk approach". The term "risk" originated in demographic studies of mortality, but it is now more commonly used to express the likelihood of an event occurring. The risk approach is the dominant research method on the determinants of migration and population mobility as it is often practiced by geographers and demographers (Sandefur and Scott, 1981; Courgeau, 1985; Davies and Pickles, 1991). The occurrence of events leading to spatial displacement of people, either in a fixed time period or in continuous time is analyzed by regression models. The data used here is usually census or sample survey data that measures behavior: it is not known whether people participated in the choice process. This method is used to test whether a change or no change in residential mobility occurs over a short period of time.

2.2. Motivations

In order to make a decision to change or not to change a place of residence, there must be causes or factors that trigger the mobility, also known as the motivation to change the place of residence. In Western countries, these motivations are divided into two categories: material motivations (to satisfy financial, entertainment, and personal preferences); immaterial motivation (wanting to be recognized by society, confirming one's status). These factors are concretized in daily life by the following groups of factors: wealth (high or stable income); status (having prestigious work, power and influence); comfortable (living in a pleasant community; comfortable housing); spiritual (happy, excited, meeting many people); self-control (being able to say and do what one wants); affiliation (wanting to be near family, friends; staying with spouse, children); ethical culture (wanting family and children to interact with a cultural and ethical community). In addition, changes in family and life also directly create a change of residence from the countryside to the city, and also change the place of residence in the city itself. Housing adequacy also affect housing options, which determine whether to stay or leave the current place. The author selects three factors that are suitable for the research context in Vietnam, specifically in Hanoi, including the following factors:

2.2.1. Physical well-being and sociology

Material goals are one of the important reasons affecting migrants' housing choice. Hooimeijer et al (1996) clarified how these factors influence housing choice. For example, work is also a factor because it not only determines how much a household can afford to pay for housing, but also creates an incentive to get a better job. Owusu (1998) pointed out the primary reasons for migration that affect the choice of housing of migrants. In it, the author points out that migration can provide opportunities for migrants to achieve their material desires to improve their material well-being and their families.

In terms of sociology, Owusu (1998) also suggested that the desire to own a house in the place of migration is also affected by the need for accommodation as well as creating opportunities for relatives and relatives to live together. together. Besides, finding new accommodation in the place of migration also fulfills the desire to improve the quality of life and raise children better. In addition, the author also points out that when considering housing choices affected by the purpose of migration, the focus should be on who the migrants are. The migration status of each individual can have a significant impact on housing choice. For

example, long-term migrant workers have a desire to create self-worth in society through home ownership. In contrast, short-term migrants tend to own less housing due to their intention to return to their homeland after finishing work or achieving personal goals.

However, not all studies confirm that the above reasons have a significant influence on the housing choice of migrants. Research by Coolen et al. (2002) found that the values and goals of migrants as reasons for migration account for only 9% to explain the variance of the housing choice variable, but it is also a significant factor. the most representative among the micro-factors that affect the intention to choose migrant housing. These values include material goals, wealth, and a happy family life, and are part of a scale of power and achievement that reflects family values.

2.2.2. Household events

The above goals are only considered as general goals, but when analyzing an individual's intention to move, it is necessary to clarify the stages, or events that change the life. In fact, it is easy to connect with De Jong and Fawcett's migration goals such as education, work, changing family size, entertainment, and housing. Also, according to Mulder, 1993, there are two main reasons for changing residence. Firstly, it is the desire to change the current situation, towards improving the quality of life. Second, it is due to the occurrence of an event in the trajectory of life, or the desire for that event to happen, such as moving out, getting married, divorced, going to school away from home, or due to a change in job.

Events at different times of life produce different shifts in location, direction, and destination. For example, changes in the number of household members and jobs create changes in the demand for space as well as housing facilities. Mudler (1993) showed that a change in the number of household members caused a 10-fold increase in changes in housing in the proximal area instead of having to migrate to another area. Meanwhile, the reason for getting married only makes it 6 times more likely to have to migrate in the nearby area instead of migrating to the neighboring area. As can be seen, different life events will create different geographical travel distances.

2.2.2. Housing adequacy

Housing adequacy is a measure of how well housing conditions meets a household's needs, expectations and desires in terms of both quantity and quality of housing. One of the best descriptions of the housing adequacy was given at the second United Nations conference (Habitat II) held in Istanbul, 1996 concerning the issue of housing: “adequate privacy; adequate space; physical access; appropriate security; guarantee ownership; structural stability and durability; suitable lighting; heating and ventilation where appropriate; adequate infrastructure, such as water, sanitation and waste; relevant health and environmental factors; location with access to both the workplace and basic facilities at a reasonable price” (UN-HABITAT, 1996).

Research by Mohit et al (2010) has shown that physical factors such as housing services, followed by facilities, apartment characteristics, and neighborhood facilities, and social environment, respectively, are the factors affecting the satisfaction of affordable housing in Kuala Lumpur, Malaysia. Research has discovered that apartment dimensions,

such as the space of the loggia, bedroom, dining room should be improved to satisfy the needs of buyers. In another study by Dinc et al (2013), it was clearly shown that factors such as distance to the workplace, school, city, public transport, or the suitability of parks and trees, the landscape, the lighting system of the building, the size of the rooms of the apartment, and the outside light did not have a great influence on the satisfaction of the occupants of the individual house. Meanwhile, the above factors have a great influence on people living in complex housing such as apartment buildings and low-rise houses.

2.3. Research framework

According to the risk approach, it is not possible to shed light on what causes people to change their place of residence. One cannot distinguish between those who do not want to move and those who do not have the resources or opportunity to do so. But it is possible to get closer to such an elucidation by testing the correct hypotheses. Hypotheses about the effects of independent variables should best represent factors about goals, life-changing events, or housing suitability. These hypotheses should address the factors that lead to migration.

Besides, the theory of consumer behaviors also has its starting point as motivations to own a house. They often compare a range of alternatives under certain constraints in making a home tenure choice. Migrant workers will make reasonable economic considerations to maximize benefits and minimize risks. As a result, tenants' perception of the suitability of their home plays an important role in their home ownership decision-making process. When considering the degree of ownership restriction, only housing that matches or exceeds their needs, aspirations and expectations can stimulate their willingness to buy housing. The hypothesis about housing choice is formed as follows:

Hypothesis 1 (H1): There is a positive relationship between sociology and physical well-being of migrant people and their housing tenure choice.

Hypothesis 2 (H2): There is a positive relationship between household events of migrant people and their housing tenure choice.

Hypothesis 3 (H3): There is a positive relationship between housing adequacy satisfaction of migrant people and their housing tenure choice.

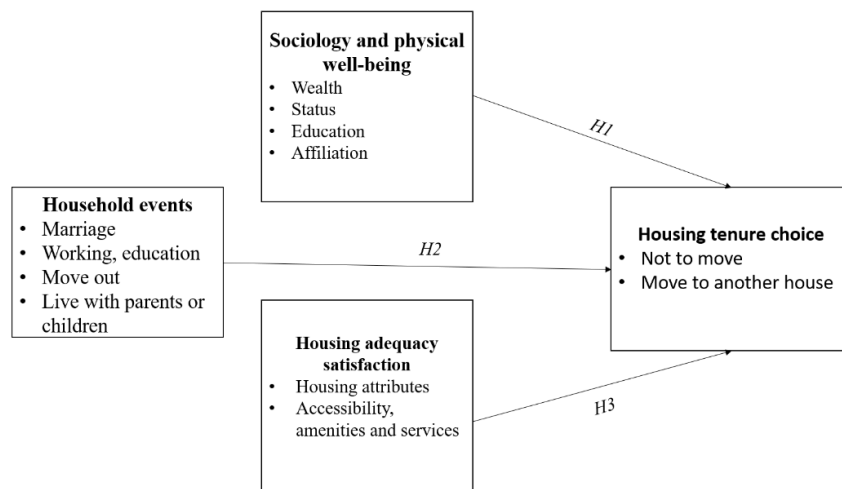


Figure 1. Research model

3. Method

This research employed a hybrid research methodology. An extensive literature review was conducted to identify the motivations of migrants moving from rural to urban city, including sociology and physical well-being, household events and housing adequacy. Secondly, the survey was conducted among 300 rural-urban migrant people with via five-point Likert scale. Finally, the influence of these factors on housing tenure choice are identified by regression model.

In terms of socio-economic regions in Vietnam, the Red River Delta and the Southeast are the two regions with the highest proportion of rural-to-urban migrants. It is estimated that every year the population in Hanoi increases by more than 200,000 people, of which more than a third are rural people who migrate to the urban area. According to the Institute of Population and Social Affairs, by 2050, the population in Hanoi may double to 14 million people. This research was conducted in Hanoi as it is one of the most typical cities in Vietnam which has enormous number of rural-urban migrant people. The study of migrants' housing choice in Hanoi will be representative for rural-urban migration flows in Vietnam.

The questionnaire survey was conducted to investigate migrant workers' housing tenure choice as well as the influence of motivations on housing tenure choice. The first section was designed to collect their socio-economic characteristics, consisting age, gender, income, family size, education, income, career, and residence length to housing type. The second section serves to measure the purposes of moving to the city such as wealth, status, education and affiliation; household events such as marriage, working or higher education, moving out and live with parents or children; housing adequacy including housing attributes, accessibility, amenities, and services satisfaction. All of questions are undertaken via five-point Likert scale (1=very unimportant, 2=unimportant, 3=slightly unimportant, 4=important, 5=very important). In the last section, the respondents were asked to express their housing tenure choice (1=not to move, 2=move to another house). A pilot test was conducted with 50 randomly selected migrant people. Preliminary research was conducted in order to check the appropriateness of the questionnaire in Vietnam.

Data collected from primary sources is analyzed by using quantitative tools, including descriptive statistics, factor analysis, testing and regression analysis. These methods are used to analyze the impact of motivation factors on housing choice of rural-urban migrants in Vietnam.

4. Results

4.1. Descriptive statistics

Table 1 showed the characteristics of respondents. About half of the respondents were women. Education is mainly university with 41%, followed by high school with 22% and college with 12.7%. Only 2% of respondents said that they have not finished primary school or have completed primary school. Most of the respondents were married, accounting for a total of 88%. The majority of migrants from rural to urban areas get married and have children, with the number of family members of 4 or more accounts for the majority, 68%.

The questionnaire survey were also conducted with both low- to medium- and high-income migrant people. Descriptive statistics showed that the majority of migrants have low and middle income, in which income from 5-10 million VND/month, accounting for about 30.7%. Average income from 10-15 million VND/month, makes up for about 23% and high income from 20 million VND/month or more accounts for 15.7%. Of these people, nearly half (41.7%) are self-employed, about 18.7% are civil servants and only about 15.7% are doing business..

Table 1. Characteristics of rural-urban migrant people

Socio demographic	Count	Percentage	Household structure	Count	Percentage
Gender			Married status	26	8.7
Male	124	41.3	Married	264	88.0
Female	176	58.7	Unmarried	10	3.3
			Divorced, widow	26	8.7
Education			Number of family members		
Primary school and less	6	2.0	1	12	6.0
Secondary school	35	11.7	2	17	8.5
High school	66	22.0	3	35	17.5
College	38	12.7			
University	123	41.0	4	88	44.0
Postgraduate	32	10.7	> 4	48	24.0
Employment type			Monthly income		
Civil servant	55	18.3	<5 million VND	46	15.3
Military	10	3.3	5-10 million VND	92	30.7
Officer	41	13.7	10-15 million VND	70	23.3
Self-employed	125	41.7	15-20 million VND	41	13.7
Business	47	15.7	>20 million VND	47	15.7
Online business	6	2.0			
Others	14	4.7			

4.2. Factor analysis

The Kaiser-Mayer-Olkin coefficient (KMO) of the observed sample after measuring is 0.944, showing that it is higher than the limit value of 0.5. Bartlett's test results also show a value less than $p < 0.0001$. Therefore, the indicators are suitable for factor analysis. Table 2 shows that there are 10 items and these items account for 82.5% of the total variance. These eight factors are wealth; status; education; affiliation; marriage; working; education; move out; live with parents or children; housing attributes; housing accessibility, amenities and services.

Factor analysis result in Table 2 showed that three components of motivations for housing tenure choice were identified. The factor loading of all items were appropriate as they reached more than 0.5. These factors represent a combination of reasons leading to the choice or not to choose to continue in the old place of residence. This is an important finding for previous studies, while being mentioned only as an implication for future studies in different geographical contexts.

Table 2. Factor analysis of measurement items

Motivations	1	2	3
Sociology and physical well-being			
SP1: To earn better income	0.878		
SP2: To earn better job with higher salary	0.873		
SP3: To have better education with moral standards	0.711		
SP4: To live with family and relatives	0.56		
Household events			
EV1: To get married and have children		0.633	
EV2: To work and study in the city		0.742	
EV3: To move out, no longer live with parents		0.712	
EV4: To live with parents or children		0.676	
Housing adequacy satisfaction			
HS1: Housing attributes' satisfaction			0.907
HS2: Accessibility, amenities and services's satisfaction			0.817

4.3. Regression analysis

The adjusted R Square in this model was 0.559 showed that four independent variables have influenced 55.9% of the change of the maximum HC variable, the remaining 44.1% is the effect of numbers and wrong variables outside model.

We need to evaluate the model fit accurately through hypothesis testing. To test the regression model, we hypothesize $H_0: R^2 = 0$. The F test is used to test this hypothesis. The test results showed that sig in F test was $0.000 < 0.05$. We can conclude that the R squared of the sample is not 0. Therefore, the linear regression model can be generalized and applied to the sample.

According to Table 3, the Sig. of t-Test are less than 0.05, showed that all dependent variables have impacts on dependent variable. Especially, the sociology and physical well-being components are the most significant factors as its significane are 0.002. The coefficient B of this factor is 0.122, indicating that as the motivations relating to sociology and physical well-being increase, the housing tenure choice will also increases. The same result is also shown for the variables of household events. When migrants have a change in the number of family members such as getting married, going to work or getting higher education in the city, they tend to rent or move to a new place. However, the coefficient of satisfaction with

housing adequacy is negative, indicating that the lower the satisfaction of housing adequacy is, the more migrants moving to other place will continue to increase.

Table 3. Regression analysis

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	Components	.960	.177		5.425	.000
	SP	.122	.039	.183	3.107	.002
	HE	.005	.047	.008	.103	.018
	HS	-.008	.037	-.016	-.216	.029

5. Discussion and Conclusion

The study results on the influence of three motivational factors on the housing choice of migrants from rural to urban areas have shown important implications. Firstly, the influence of migration purposes will have a positive impact on housing choice. Specifically, when migrants from rural to urban areas decide to change jobs with better income, they will choose a housing location close to the workplace, with affordable prices. For households with children living in the same city, families will consider choosing a good school and ensuring it is close to work, or they can choose only one location that is near school or work place. This finding fully supports previous studies (Hooimeijer et al, 1996; Owusu, 1998; Coolen and Hoekstra, 2001, Coolen et al, 2002).

Second, the occurrence of a life event also changes the intention to change residence or own a house. A person who is getting married, or has children will tend to look for more spacious housing in the city. These households will also tend to find houses to buy instead of rent if not financially bound. In addition, people who go to the city to work or study will also look for housing or tend to change their place of residence. They will choose to live close to school, work or both. And there are a few, who tend to leave the family to live on their own, or the elderly tend to move to the city to live with their children when they get old. This trend is in contrast to countries in the West, where retirees often go to the suburb rather than choosing the city.

Third, the important finding of the study showed that the majority of people who were not satisfied with the housing conditions in the city tend to change their house. The first group is people with middle and high income, most of which are not satisfied because they want to increase the housing area or change the already familiar living environment. This is completely consistent with previous studies of Gan et al, 2006; Dinc et al, 2013; Mohit et al., 2010. According to statistics, up to two-thirds of low-income workers, most of them living in temporary housing, with unfavorable housing conditions, are not satisfied. The rest low-income people are satisfied with housing conditions are simply because their financial ability allows only temporary conditions. This showed that if there are better job

opportunities, higher income, low-income migrants are more willing to move to a new better place. This is different from previous studies, especially in the context of the shifting economy in urban areas.

This study recognized a number of important and significant results for investors and policymakers. According to research data, more than half of the migrants surveyed are women. From a gender perspective, migrant women face many difficulties not only in terms of employment but also in housing and sanitation. The survey results described that more than half of migrants are low-income migrant workers with cramped living conditions, inadequate sanitation and clean water systems. Besides, renting houses for migrants is the majority compared to owning houses. In fact, the management from State with this housing type is still not strict and careful. The payment for water, electricity and living expenses in the slums is too high and uncontrolled, leading to an unsatisfactory quality of life for migrants. Therefore, the State needs to promote and implement meaningful policies for rural-to-urban migrants, such as employment policies, housing policies, or inventive policies for local level or housing investors towards a safe and affordable housing model.

The study also suggests that in further studies, it is necessary to clarify the binding factors, as well as the effects of opportunities and accessibility to housing of migrants from rural to urban areas. Clearly, when migrants are motivated to move to the city, they need to find a place to live, therefore, it is necessary to consider opportunities that give them the right to own or rent housing, as well as the factors that promote financial capability, improve their income and living standards in urban areas.

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ASSESSING THE POTENTIAL AND ORIENTATION DEVELOPMENT OF TOURISM ROUTES IN PHU YEN PROVINCE, VIET NAM

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Abstract

Located on the Central Highlands heritage road, on the gateway connecting Laos and Cambodia to the East Sea, Phu Yen province has many potentials and advantages to develop tourism. The location, the unique natural and cultural resources are the basis to develop its own tourism products and routes, with high competitiveness. The article analyzes the potential and advantages of tourism routes in Phu Yen province by applying the AHP method. The results of this paper demonstrate that Phu Yen can develop and exploit many competitive tourism routes within the province and link with the neighbors as well. This surely can make a great economic transition of such a rural province like Phu Yen.

Keywords: *tourism route, tourism potential, Phu Yen*

1. Introduction

Phu Yen defines tourism as a key economic sector in its socio-economic development strategy. By 2025, the goal of "Phu Yen tourism development project for the period 2015 - 2020 and orientation to 2025" is: "To strongly develop tourism to become a spearhead economic sector with many products: unique tourism products, strive to become a major tourist and service center in the region and the whole country; becomes an important bright spot in regional development linkages between the Central Highlands and South Central Coast provinces" (Provincial Steering Committee for Tourism Development 2012; Foreign Affairs Committee of Vietnam 2005).

Currently, the exploitation of natural and cultural resources of Phu Yen for tourism activities is still limited compared to the nearby province. In some coastal localities, tourism potential has not been converted into tourism resources (Pham, 2016). Over the years, there have been several investigations and projects to assess natural and cultural resources for tourism of Phu Yen. However, most of these focused on the level of general assessment, preliminary assessment on a large scale. The lack of focusing on tourism resource routes,

clearly evaluating the potential and exploitation status need to be bridge. And the paper "To assess the potential and orientation development of tourism routes in Phu Yen province, Vietnam" contributes to this job. Results of this paper supplements a necessary document, serving as basis information to plan and design specific and effective tourist routes, aiming at sustainable tourism development.

2. Theoretical Framework and Method

In fact, assessments tourism routes can be divided into different categories: elemental resource assessment and territorial resource assessment; qualitative assessment and quantitative assessment to determine the degree of convenience (very good, good, average, not good. In this paper, we apply *Analytic Hierarchy Process* to evaluate the potential and advantages of tourism routes in Phu Yen.

The process of evaluation of tourism routes

Tourism route is a route linking tourist attractions and tourist service providers in association with traffic routes. Tourism routes are an important basis for service providers to build up tours. In each locality, there are tourism routes connecting tourist destinations in the province called intra-provincial tourist routes; and tourist routes connecting tourist destinations of the province with others called inter-provincial (at macro-level it is called international tourism routes). There are different criteria to evaluate tourism routes for specific purposes. In this study, we define a system of criteria including 1-Criterion 1 (Cri.1) Average number of tourism resources in the route; 2-Criterion 2 (Cri.2) The attractiveness of tourism resources; 3-Criterion 3 (Cri.3)- The convenience of transportation; 4-Criterion 4 (Cri.4)- Synchronization of facilities; 5-Criterion 5 (Cri.5)- The duration of operation tourism activity. The evaluation score of these criteria is also determined by four levels 4,3,2,1 like the assessment of points and clusters of tourist resources (Mai, 2019). We will present the five criteria in the following part.

a. Average number of tourism resources

According to Ngo (2016), the average number of tourism resources in the route is calculated as the ratio between the number of tourism resources and the length of the route. A short route with several tourism attractions will be more convenient and attractive to tourists. Whereas a long route with few tourism sites will be less attractive to tourists. Therefore, this criterion is very important and is evaluated with 4 levels:

- + Very high: 0.4 tourism resources per kilometer.
- + High: from 0.2 to less than 0.4 resources per kilometer
- + Average: from 0.1 to less than 0.2 resources per kilometer
- + Low: less than 0.1 resources per kilometer

b. The attractiveness of tourism resources

In reality, the route with attractive tourism resources will attract tourists and generate high revenue. The more special the tourism resource is, the more attractive it is. This criterion

is also considered important to identify favorable routes (with high tourist attraction) and unfavorable routes (with low tourist attraction). This criterion is evaluated by 4 levels:

- + Very attractive: the route has at least 5 tourist attractions of national significance.
- + Attractive: the route has at least 3 tourist attractions of national significance.
- + Moderate attraction: the route has at least 1 tourist attraction of national significance.
- + Unattractive: the route has no tourist attractions of national significance.

c. The convenience of transportation

In tourism, traffic plays a very important role to move the tourists to the tourism site. In terms of traffic, the convenient tourism route has high tourism business efficiency and vice versa. Therefore, evaluating the capability of tourism routes, and proposing solutions to invest and exploit tourism routes effectively need to consider traffic criterion. This criterion is evaluated by 4 levels:

- + Very convenient: routes located along national highways, roads to tourism sites have been upgraded, and operated on both rainy and sunny days.
- + Convenient: routes located on national highways, have 1 or 2 tourism spots located no more than 10 kilometers from the national highway, and operate on both rainy and sunny days.
- + Moderate convenient: routes located near national highways or provincial roads, have 1 to 2 tourism sites located 10 to 20 kilometers from national highways.
- + Less convenient: routes located far from the national highway and operate only on sunny days.

d. Quality of facilities and techniques for tourism

The purpose of tourism activities is to enjoy both material and spiritual values. Visitors will be pleased if their physical conditions are satisfied. Tourism conditions, comfortable housing attract and retain tourists to stay longer. And tourism revenue will be greater. In fact, some destinations have attractive tourism resources, but the physical and technical conditions do not meet the needs of tourists. Thus, the length of stay is shortened, and of course low tourism revenue. This criterion is divided into 4 levels:

- + Very good: the route with many convenient places to stay, with 3 (or more) one-star hotels.
- + Good: the route with 2 to 3 (or more) one-star hotels.
- + Average: the route with 1 one-star hotel and has a motel system meeting the needs of average travelers.
- + Poor: the route without star hotels except a system of motels at average level.

e. The duration of operation tourism activity

In general, the good weather, not raining and warm will be very favorable for tourism activities. However, with the tropical and monsoonal climate, Phu Yen has lots of rain. The

rainfall is relatively large and varies seasonally. The rainy season in autumn - winter is not favorable for tourism activities. The dry season in June, July and August with southwester winds is also not suitable for tourism. The longer the travel period, the higher the tourism revenue is. Therefore, this criterion is also considered important to evaluate the convenience of tourism routes.

Operation time for tourism activity is defined by calculating the number of days operated tourism activity. This criterion is classified into 4 levels: very long, long, medium, and short.

- + Very long: over 200 days in a year can hold tourism activities.
- + Long: from 150 to 200 days in a year can perform tourism activities.
- + Average: from 100 to less than 150 days in a year can implement tourism activities.
- + Short: less than 100 days in a year can deploy tourism activities.

The results of the assessment method are presented in Table 1.

Table 1. Criteria for assessing tourism route (5 criteria), rating scale (4 levels)

Criterion (Cri.)	4 points	3 points	2 points	1 point
Cri. 1	very high	high	average	low
Cri. 2	very attractive	attractive	average attractive	less attractive
Cri. 3	very convenient	convenient	average	inconvenient
Cri. 4	very good	good	average	bad
Cri. 5	very long	long	average	short

In fact, the selected criteria have different important degrees of for the assessment score. Therefore, to ensure that the assessment results are accurate and objective, it is necessary to determine coefficients for the more important factors. We define that the criteria having great influence on tourism activities would be the highest coefficients, including the average number of tourism resources, the attractiveness of tourism resources, the duration of operation, respectively; then comes the two remain criteria. Based on practice in Phu Yen, and previous research results, we determine the coefficients as follows:

The average number of tourism resources has great influence on the choice of travelling. Generally, tourists do not want to sit in the car/bus for a long time. So, a route with lots of tourism resources within a short distance will be more favorable for its convenience and comfort. This criterion is determined the highest coefficient, number 3.

Tourist routes with the following things will attract a great number of tourists, i.e., attractive, and unique tourism resources, having national and international significance sites, having typical tourism products. Sometimes, this criterion is the vital reason for tourists to choose the tour. Thus, we also determine this criterion the highest coefficient, number 3.

The duration of tourism activities in the route determines the seasonality and rhythm of the tourist flow. It is also determined the highest coefficient, number 3.

The coefficient of synchronization of facilities and duration of operation tourism activity criteria are quite important. Because the convenient transportation and the better facilities and quality technical is, the stay of tourists is longer, the revenue is higher. Thus, we determine the coefficient of these two criteria as number 2. We summarize the coefficient and degree in Table 2 below.

Table 2. Coefficient and degree of tourism route assessment

Criterion (Cri.)	Coefficient	Degree			
		4	3	2	1
(Cri. 1) Average number of tourism resources	3	12	9	6	3
(Cri. 2) Attractiveness of natural resources	3	12	9	6	3
(Cri. 3) Operation time for tourism activity.	3	12	9	6	3
(Cri. 4) Synchronization of facilities	2	8	6	4	2
(Cri. 5) The duration of operation tourism activity	2	8	6	4	2
Total		52	39	26	13

With the above summarized table, the score is divided into 3 following levels. Each tier has a different level of convenience and meaning. Level 1 is from 39-52 points; level 2 from 26-38 points; and level 3 from 13-25 points. Thus, tourism route will be rated from 13 to 52 points. The least convenient route is rated 13 points, the most convenient ones is rated 52 points. Summary scores are presented in Table 3.

Table 3. Table of evaluation of the convenience of the tourist route

Number	Convenience	Points
1	Very convenient	39 - 52
2	Convenient	26 - 38
3	Inconvenient	13 - 25

3. Results

3.1. Evaluating 6 intra-provincial routes

In this study, we evaluate 6 intra-provincial routes as mentioned by (Tran & Dang, 2015).

* *The route within Tuy Hoa City*

The main tourism sites are Nhan Tower - Da Rang River - Tuy Hoa Beach - Long Thuy Beach - Chop Chai Mountain - Binh Ngoc Flower Village - Binh Kien Flower Village - Bao Lam Pagoda - Bao Tinh Pagoda - Ho Son Pagoda - Wind Afternoon tourist area - Da Ban tourist area - Thuan Thao eco-tourism area - Sao Viet eco-tourism area. The tourism products includes relics and landscapes in Tuy Hoa area; handicraft villages; cultural and art programs such as Bai Choi, Ho Drill, Ho Ba Chao, Rock trumpet, and harp performance, etc.

** Tuy Hoa city - Tuy An - Song Cau town*

The main tourism attractions on this route includes Long Thuy Beach - Hon Chua - Bai Xep - Temple of Le Thanh Phuong - O Loan lagoon - Thanh Loi poplar forest - Ganh Da Dia - Mang Lang Church - An Tho citadel - Da Trang pagoda - Ganh Do fish sauce village - Vung Lam - Wing Xuan Dai - Cu Mong Lagoon - Bai Rang - Bai Tram - Bai Tu Nham, etc. This route is along the 1A National Highway and reaches most of the valuable tourism destinations in the northeastern coastal area of Phu Yen.

** Tuy Hoa city - Tuy An - Dong Xuan*

The main tourism attractions on this route includes Long Thuy beach - Chua island - Bai Xep - Le Thanh Phuong temple - O Loan lagoon - Ganh Da Dia - Mang Lang church - An Tho citadel - Gò Thi Thung Tunnel (where the first branch of the Communist Party of Phu Yen was established) - Triem Duc mineral water - Tra O mineral water - Xi Thoai - Ha Rai mountain villages- Phu Xuan lake. This route is along 1A National Highway, Road 641, Road 647, and is a history, cultural, ecological, convalescence tourism route.

** Tuy Hoa City - Ca Mountain Pass - Vung Ro - Da Bia Mountain*

The main tourism attractions on this route includes Da Bia Mountain and Resort-Ca Mountain pass, Forbidden Forest - Bai Mon - Mui Dien - Bai Goc - Bai Bang - Vung Ro - Hon Nua - The historical site of the Ho Chi Minh Trail on the sea. This route is along 1A National Highway from Tuy Hoa City to Ca Mountain Pass, Highway 29, is a general sightseeing tour for eco-tourism in the North of Ca mountain pass, forbidden forest, climbing Da Bia Mountain, enjoying the sunrise in Bai Mon - Mui Dien, etc.

** Tuy Hoa city - Tuy An - Son Hoa - Phu Hoa*

The main tourism sites on this route includes Van Hoa Plateau - Revolutionary base of Phu Yen province - Hoa Nguyen Waterfall - Dong Cam Dam - Phu Sen mineral water - Hoa Thang Da Ganh - Luong Van Chanh's tomb and temple - Thanh Ho - Traditional craft villages. This tour is along the road 643, Highway 25. The main tourism products are historical cultural tourism and craft villages.

** Tuy Hoa City - Song Hinh - Son Hoa*

The main tourism attractions on this route includes Phu Sen mineral water - Song Hinh hydroelectric lake - Song Ba Ha hydroelectric lake - Hai Rieng town - La Diem ethnic minority cultural village - Son Nguyen Tourism area - Krong Trai Nature Reserve. This route is along highway 29, highway 25 connecting the South-Central Coast region and the Central Highlands. This route is associated with the cultural and ecological values in the western mountainous area of Phu Yen. In addition, there are other sea tourism routes such as Xuan Dai Bay - Cu Mong lagoon; O Loan lagoon - Hon Lao Mai Nha; Vung Ro Bay - Hon Nua; Chua river route; Ky Lo river route; downstream of Ba River route.

After assessing and calculating the scores of 5 criteria, the assessment results of some cultural tourism sites in Phu Yen province are presented in Table 4.

Table 4. Overall evaluation score of Phu Yen intra-provincial tourist routes

Tourism routes	Cri. 1	Cri. 2	Cri. 3	Cri. 4	Cri. 5	Total points
1-The route within Tuy Hoa city	9	6	12	8	8	43
2-Tuy Hoa City - Tuy An - Song Cau Town	12	12	12	4	8	48
3-Tuy Hoa City - Tuy An - Dong Xuan	6	12	3	2	6	29
4-Tuy Hoa City - Ca mountain Pass - Vung Ro - Da Bia Mountain	9	9	12	2	8	40
5-Tuy Hoa City -Tuy An-Son Hoa-Phu Hoa	3	9	9	2	6	29
6-Tuy Hoa City - Song Hinh - Son Hoa	3	3	3	2	6	17

Source: Author survey and calculation, 2022

Table 5. Evaluation results of tourism routes in Phu Yen province

Tourist routes	Total	Result
1.The route within Tuy Hoa City	43	Very convenient
2.Tuy Hoa City - Tuy An - Song Cau Town	48	Very convenient
3.Tuy Hoa City - Tuy An - Dong Xuan	29	Convenient
4.Tuy Hoa City - Ca Pass - Vung Ro - Da Bia Mountain	40	Very convenient
5.Tuy Hoa City - Tuy An - Son Hoa - Phu Hoa	29	Convenient
6.Tuy Hoa City - Song Hinh - Son Hoa	17	Inconvenient

Source: Author survey and calculation, 2022

Among the 6 evaluated routes, Phu Yen has 3 tourism routes rated very convenient, accounting for 50%. The route with the highest score is route number 1, with 48 points, accounting for 92.3% of the maximum score (52 points). The two routes considered convenient are number 3 and 5. Route number 3 is 29 points, accounting for 55% the maximum score. The route number 5 is considered only 17 points, accounting for 32% the maximum score. The route with the lowest score is route number 6, with only 17 points, accounting for 32.7% of the maximum score.

Inter-tourism routes with neighboring provinces.

** Tuy Hoa - Central Highlands provinces*

This route is along the highways 25 and 29. This route includes special tourism sites such as Phu Cuong waterfall, low Ayun lake, Ayun Pa tourism cluster (Da stream, Mong wharf, Hong valley), Tan Truc lake, and ethnic minority villages.

This is a meaningful tourism route strategy for the development of tourism in Phu Yen. The reason is that, within about 200 km, this is the shortest route to bring tourists from Phu Yen to the Central Highland provinces and vice versa, connecting the mountainous area with the East Sea. Besides, Phu Yen also plays an important role in promoting socio-economic cooperation between Vietnam, Laos, and Cambodia as a gateway to the East Sea. This role will become more obvious since the operation of Vung Ro port becomes more effective.

** Tuy Hoa - Quy Nhon - Da Nang - Hue - Quang Binh*

The inter-tourism routes connect Phu Yen with the northern provinces on the "Central Heritage Road" having many unique tourism resources such as relics of the Tay Son uprising, Cham towers (Binh Dinh), Truong Luy (Binh Dinh, Quang Ngai), My Son Sanctuary, Hoi An Ancient Town (Quang Nam), Ngu Hanh Son (Da Nang City), Hue ancient Citadel (Thua Thien Hue), Phong Nha - Ke Bang (Quang Binh), etc. In the future, when the trans-Asia tourism route through Lao Bao border gate (Quảng Trị Province) starts, this route can connect with Phu Yen to make an international route.

** Tuy Hoa - Nha Trang - Ninh Chu*

This is an important tourism route in the region, both national and international. Nha Trang (Khanh Hoa), Ninh Chu (Ninh Thuan) are two sea tourism destinations in the South-Central Coast. This route also can connect with Da Lat, and Tuyen Lam lake (Lam Dong province). Moreover, this route can be expanded to connect with the tourism areas of Southeast and Southwest along the 1A National Highway.

3.2. Orientation to develop and exploit tourism routes in Phu Yen province

In order to develop and effectively exploit the tourism routes, both intra and inter, in Phu Yen, we propose some orientations for the specific route in Table 6 and 7.

Table 6. Intra-provincial tourism routes

Route	The max length of the route	Main tourism activities	Duration
Number 1	36 kilometers	shopping, entertainment at the end of the day, sightseeing, visiting monuments, landscapes, handicraft villages; enjoying cultural and art programs.	1-2 days
Number 2	75 kilometers	resort tourism - sea sports, sightseeing, festivals, enjoying local cuisine.	1-2 days
Number 3	81 kilometers	historical - cultural - ecological - convalescent tourism.	1-2 days
Number 4	40 kilometers	eco-tourism, visiting forbidden forest, climbing Da Bia Mountain, watching the sunrise.	1-2 days
Number 5	95 kilometers	visiting historical sites, convalescence tourism, community tourism.	1-2 days
Number 6	150 kilometers	cultural, ecological, sea tourism.	1-2 days

Table 7. Inter-provincial tourism routes

Route	Significant tourism activities	Future prospect
1-Tuy Hoa - Central Highlands provinces	waterfall, low Ayun lake, Ayun Pa tourism cluster (Da stream, Mong wharf, Hong valley), Tan Truc lake, and ethnic minority villages.	Inter-tourism routes national routes (to the Highland, Laos, Cambodia)
2-Tuy Hoa - Quy Nhon - Da Nang - Hue - Quang Binh	relics of Tay Son uprising, Cham cultural and towers, My Son Sanctuary, Cham Museum, Hoi An, Hue ancient Citadel, Son My	international tourism routes
3-Tuy Hoa - Nha Trang - Ninh Chu	sea tourism (Ninh Chu, Nha Trang)	Inter-tourism routes, national routes (to the Southeast and Southwest).

4. Discussion and conclusion

Phu Yen has many valuable tourism resources, widely distributed throughout the territorial space of the province. This is an important basis to develop specific tourism products on each tourism routes. However, to develop and exploit the routes effectively, it is necessary to develop tourism services on balanced and appropriate routes.

Results of the paper show that some intra-tourism routes in Phu Yen are very convenient to exploit (route number 1,2, and 4), some are not (route number 6). In contrast, the inter-tourism routes are very prospect and may become important national and international tourism routes.

If the province has reasonable solutions to organize tourism territory; especially the industry has a breakthrough investment in infrastructure - facilities - techniques, Phu Yen tourist routes will have more prosperity, increasing attraction to tourists.

Therefore, Phu Yen should focus on assessing tourism resources according to specific routes. Combining tourism promotion with the enhancement of local culture, creating a healthy competition for products on the province's traditional tourist routes, combining tradition with modernity in serving tourists, increasingly bring high efficiency in terms of socio-economy and environment, contributing to improving people's living standards in the whole province could make sense.

The results of the article have shown the strengths and limitations of tourism resources for sustainable development. On that basis, the locality will develop suitable specific tourism products, increasing competitiveness with other provinces and cities in the country.

The results of the article also show that it is necessary to evaluate the synthesis of resources in tourist routes to develop sustainable tourism for the locality. In terms of methods, the author chooses a research method that combines both qualitative and quantitative assessment as appropriate, helping the evaluation research to achieve the most accurate and objective results. In particular, these results will contribute to the stable and sustainable development of Phu Yen tourism in the future, contributing to the province's tourism industry to integrate with the whole country and international friends.

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AN ANALYSIS OF ECONOMIC STRUCTURE AND DIGITAL TRANSFORMATION AT THE PROVINCIAL LEVEL: THE CASE OF NGHE AN

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Abstract

The study employs statistical analysis method to assess the ongoing economic restructuring and some analytical indicators of digital transformation in Nghe An province on the following pillars: digital economy, digital government, digital society, thereby making comments on the province's structural transformation in terms of digital transformation.

Keywords: *digital transformation, digital economy, digital society, digital government.*

1. Introduction

Digital transformation is one of the issues discussed in recent times, especially when the global outbreak of coronavirus led to more interest in online-related activities. Vietnam is one of the pioneering countries in promulgating National Digital Transformation Programs and Strategies. Indeed, Resolution No. 52-NQ/TW dated September 27, 2019 of the Politburo on a number of guidelines and policies to actively participate in the Fourth Industrial Revolution. The National Digital Transformation Program has set a goal of increasing its position to the top 70 by 2025 and the top 50 by 2030 on the United Nations e-government rankings. Along with that, the digital economy will contribute 30% of GDP and annual labor productivity growth will reach over 8%.

On August 5, 2022, Nghe An Provincial Party Committee issued Resolution No. 09-NQ/TW on provincial digital transformation to 2025, with orientation to 2030. Its focus is on developing a digital database; creating a foundation for the development of digital government and digital economy, towards a digital society; linking the digital transformation process with administrative reform in order to enhance the quality, effectiveness and efficiency of state management as well as the quality of public service served by authorities at all levels; striving to always keep the position in the group of 25-30 provinces and cities with high indexes of digital transformation.

To realize the goal of Resolution No. 09-NQ/TW, it is extremely necessary to evaluate the potential for digital transformation growth in Nghe An province, in line with

the general goals of the province as well as the goals of the country, effectively make use of resources from related parties; industrial groups of the province; facilitate other stakeholders to engage in digital transformation.

In this study, the authors employ statistical analysis method to assess the ongoing economic restructuring and some analytical indicators of digital transformation in Nghe An province on the following pillars: digital economy, digital government, digital society, thereby making comments on the province's structural transformation in terms of digital transformation.

2. Literature review

According to Demirkan et al (2016), digital transformation is the profound and rapid transformation of business activities, processes, capabilities and business models to take advantage of changes and opportunities brought by technological advancements to society. Hess et al. (2016) argue that digital transformation refers to changes in digital technology that can create new products and services, and new business models for companies, or the organizational structure converts to the automation of processes. This shift can be observed in the increasing demand for Internet-based media, which leads to changes in the entire business model.

The Digital Transformation Manual of the Ministry of Information and Communications introduces the following concept: “Digital transformation is a process of total and comprehensive change of individuals and organizations in the way of living, working, and production methods based on digital technologies”. Digital transformation is an objective process. Each individual or organization can participate in or stay out of that process. If you stay out of it, there will be a big gap between organizations that have done and have not yet implemented digital transformation. That gap will gradually widen at an exponential rate.

The assessment of the impact of Digital Transformation (including the Digital Economy, Digital Government and Digital Society) on economic growth in Vietnam has not been paid much attention. Some digital transformation-related research is as follows: the study on “Improving labor productivity in the context of the digital economy” (2019) by Tran Tho Dat and To Trung Thanh mentions the impact of the digital economy on labor productivity in enterprises nationwide. Research by Dang Thi Viet Duc titled "Digital economy: Current situation and growth direction in Vietnam" (2020) uses the production function to assess the contribution of the ICT industry to Vietnam's economic growth in the 2000 - 2018 period.

Huynh Thi Tuyet Ngan et al (June 2021) conducted research on "Impacts of Digital Transformation on Economic Growth in the provinces in the Southern Key Economic Region". In september 2021, these authors continue to publish the study: “The impact of digital transformation on economic growth in Asian countries”. The study using the SGMM

estimation method with data from 30 Asian countries in the 2004 - 2019 period indicates that digital transformation has a positive impact on economic growth in Asian countries. The study “The Impact of Digital Transformation on Macroeconomic Stability: Evidence from EU countries” by Inna Tiutiunsky et al (2021) examines the role of digital transformation in achieving competitive advantage of the economy. Research carried out by Inna Tiutiunsky et al (2021) identifies the benefits and risks of digital transformation for the macroeconomic stability of EU countries. According to Inna Tiutiunsky et al (2021), digital transformation and macroeconomic stability manifest in two aspects. The first aspect is digital transformation affecting the country's economic - technical development. The second one is that digital transformation is a tool to predict the level of macroeconomic stability

3. Results

3.1. Economic restructuring

In the period 2014 to 2021, the province's economic structure has shifted in a positive way, gradually reducing the proportion of agriculture, increasing the proportion of industry (including construction) and stabilizing services. Of these sectors, the service sector accounts for the largest proportion in the structure of the economy. The proportion of agriculture, forestry and fishery sector decreased from 26,48% in 2013 to 24,57% in 2021. During the same period, the industry and construction sector increased from 24,15% to 29,48%, the service sector receded from 45,55% to 40,87%. In 2021, the agriculture, forestry and fishery sector of Nghe An accounts for the highest proportion compared to the region and the whole country while industry and construction are lower than the regional and national average; services are higher than the regional average and approximately reaches the national average.

The growth trend of industries will determine the change in the proportion of added value of economic sectors in the GRDP or in economic restructuring. Figure 1 shows the economic structure by three main sectors: agriculture, forestry and fishery; industry (including construction) and services. Based on Figure 1, it is easy to see that the service sector accounts for the highest proportion of GDP in Nghe An province in the period 2017 - 2021 while the proportion of services is likely to decline slightly and the proportion of the agriculture, forestry and fishery sector is likely to increase slightly instead. Farming is still the main industry in agricultural production, with a clear shift towards commodity production and gradually improving product quality. Services develop rapidly, diversifying types across fields and regions. In the 2020 - 2021 period, the service sector is the most affected by the covid-19 pandemic, therefore its growth is only 2.8% and 1.3% respectively. Those are the lowest levels in recent years.

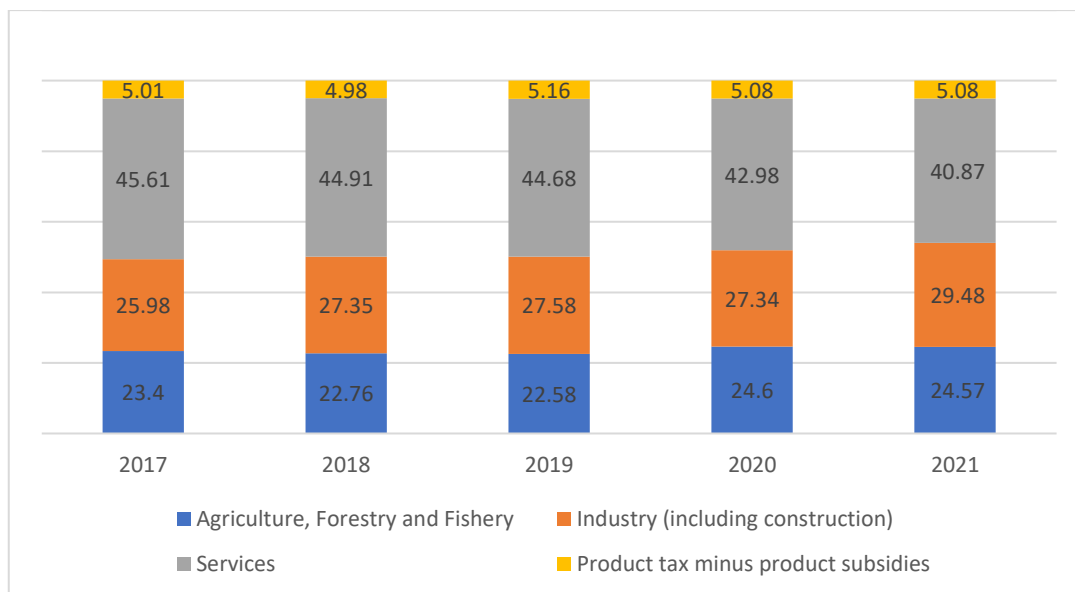


Figure 1. Distribution of GRDP across economic sectors in Nghe An province

Source: Nghe An Statistical Yearbook

The first-tier economic structure of Nghe An province in recent years are likely to shift positively. This trend is driven by the rapid growth of the industry - construction sector which is in line with the province's economic growth target to 2030 with expectations that the industry - construction sector will reach 38-39% in 2025 and 42,4% in 2030.

Table 1 describes the economic structure by sector in Nghe An province. Accordingly, in 2021 the agriculture, forestry and fishery sector accounted for a high proportion and increased 39,5% compared to 2018. Besides, Nghe An province also focused on developing the processing and manufacturing industry when it experienced a marked increase of 6.704.562 million VND from 2018 to 2021. During this period, there was also a notable growth in the construction industry, by 40,81%. Other economic sectors were also likely to increase slightly for 2018 - 2021.

Table 1. Economic structure by sector in Nghe An province

Unit: million VND

Number	Economic sector	2018	2019	2020	2021
1	Agriculture, forestry and fishery	27.370.778	30.034.685	35.563.247	38.192.329
2	Mining	873.311	1.066.945	1.167.022	1.358.587
3	Manufacturing and processing industry	13.996.349	15.897.867	17.432.364	20.700.911
4	Production and distribution of electricity, gas, hot water, steam and air conditioning	3.378.252	3.631.612	2.848.968	3.223.890
5	Water supply: management and treatment of waste and wastewater	338.623	376.158	387.770	391.753

Number	Economic sector	2018	2019	2020	2021
6	Construction	14.309.801	15.700.180	17.695.385	20.148.712
7	Wholesale and retail, repair of automobiles, motorcycles, motorbikes and other motor vehicles	8.652.959	9.779.620	10.548.483	10.862.652
8	Transportation, warehousing	4.610.902	5.027.922	5.195.263	5.403.909
9	Accommodation and food services	2.616.244	2.995.650	2.415.907	1.719.581
10	Information and communications	4.490.335	4.911.296	4.980.794	5.217.497
11	Financial, banking and insurance activities	4.380.368	4.821.130	5.070.030	5.620.457
12	Real estate business activities	9.581.257	10.191.634	10.566.515	10.739.731
13	Professional activities in science and technology	1.464.332	1.616.528	1.760.238	1.865.495
14	Administrative activities and support services	820.548	911.323	805.969	576.321
15	Activities of the Communist Party, political and social organizations, state management, compulsory assurance	4.661.159	5.050.224	5.456.529	5.473.021
16	Education and training	7.348.254	8.205.791	8.998.403	9.474.607
17	Healthcare and social relief activities	4.112.882	4.541.755	5.093.171	5.570.557
18	Nghệ thuật, vui chơi và giải trí	407.760	446.163	423.785	384.726
19	Other services	828.404	887.248	780.504	565.254
20	Employment in households, production of material products, services for self-consumption of households	32.589	35.694	37.370	39.310
21	Product tax minus product subsidies	5.994.864	6.863.604	7.341.924	7.895.449

Source: Nghe An Statistical Yearbook

3.2. Digital transformation in Nghe An

Table 2 represents the ranking of the Digital Transformation indexes in the North Central provinces/cities. Da Nang has the highest DTI index nationwide for 2020-2021, followed by Thua Thien Hue which ranks 2nd on the ranking. Excluding Da Nang and Thua Thien Hue, Thanh Hoa is the only one in the North Central provinces/cities in the top 20 DTI indexes nationwide in 2021. The remaining provinces' DTI rankings are likely to decrease compared to 2020. Indeed, the North Central provinces have a rather low DTI rating compared to the country average.

Table 2. Digital Transformation Index Rankings in North Central Provinces/Cities

Provinces/ Cities	DTI ranking		Digital government		Digital economy		Digital society	
	2020	2021	2020	2021	2020	2021	2020	2021
Thanh Hóa	15	12	10	12	7	22	31	12
	0,347	0,488	0,4226	0,5302	0,3115	0,4552	0,2817	0,4904
Nghệ An	36	55	40	56	34	52	32	55
	0,2923	0,3002	0,3407	0,3181	0,24	0,3205	0,28	0,2986
Hà Tĩnh	22	59	23	60	43	56	12	61
	0,3272	0,2775	0,386	0,2732	0,23	0,2984	0,3461	0,254
Quảng Bình	60	61	50	59	63	57	61	52
	0,234	0,2699	0,3121	0,275	0,1701	0,2972	0,1938	0,3131
Quảng Trị	56	57	57	54	53	59	47	59
	0,2493	0,2897	0,2803	0,3268	0,2109	0,2895	0,2464	0,2701
Thừa Thiên Huế	2	2	2	2	13	2	10	2
	0,4097	0,5872	0,522	0,6666	0,304	0,5922	0,3655	0,5782
Đà Nẵng	1	1	1	1	1	1	1	1
	0,4874	0,6419	0,5346	0,6868	0,4155	0,6483	0,4964	0,6312
Quảng Nam	24	25	31	27	25	19	11	19
	0,3264	0,4329	0,3539	0,4689	0,2677	0,4581	0,3486	0,4594
Quảng Ngãi	47	60	44	57	31	63	59	57
	0,2663	0,2707	0,3286	0,2721	0,2514	0,2492	0,1983	0,2751
Bình Định	13	34	13	33	17	35	17	36
	0,408	0,3624	0,408	0,4289	0,2987	0,3877	0,3307	0,3624
Phú Yên	62	50	62	52	54	40	63	38
	0,2151	0,3246	0,248	0,3286	0,2038	0,3639	0,1824	0,3586
Khánh Hòa	42	30	41	34	47	32	41	33
	0,2777	0,408	0,3365	0,4186	0,2233	0,4089	0,2538	0,3959
Ninh Thuận	63	53	63	47	59	47	57	49
	0,2108	0,3048	0,2308	0,3512	0,192	0,3393	0,2029	0,322
Bình Thuận	37	47	42	50	0,3315	46	42	48
	0,288	0,3387	0,3315	0,3379	0,2659	0,3452	0,252	0,3252

Source: <https://dti.gov.vn/>

In 2021, DTI index of Nghe An province decreased significantly compared to 2020. Indeed, in 2020, Nghe An's DTI index ranked 36th out of 63 provinces throughout the country. Digital government ranked 40th out of 63. Digital economy ranked 34th out of 63 and Digital society ranked 32th out of 63. Meanwhile, in 2021, DTI index decreased 19 places, ranked 55th out of 63 provinces. In particular, the ranking on digital government, digital economy, digital society are 56th, 52th and 55th out of 63 respectively.

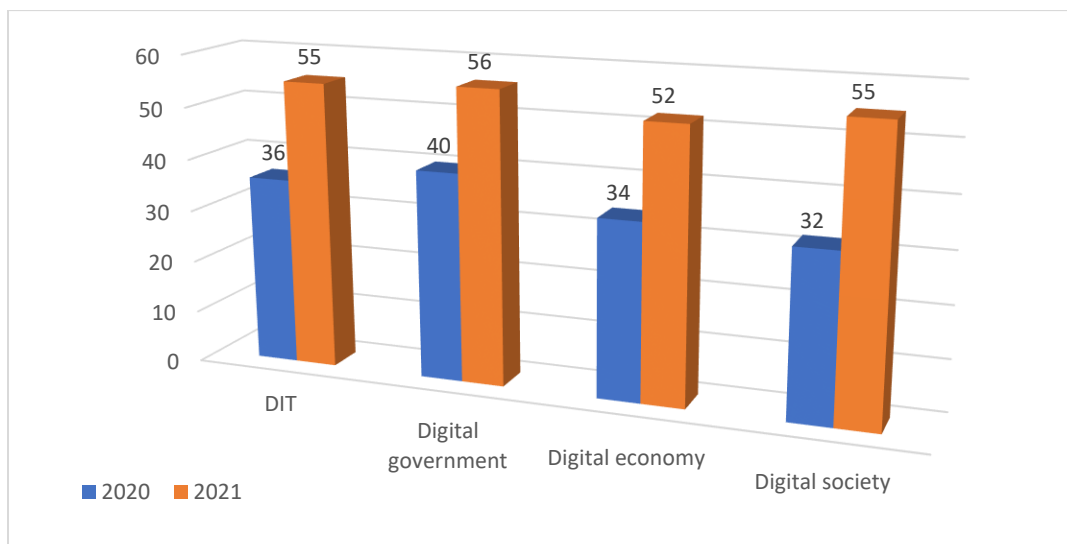


Figure 2. Nghe An Provincial DTI Ranking Indexes in 2021

Source <https://dti.gov.vn/>

3.2.1. Digital government

Figure 3 shows that Nghe An province belong to the group of provinces and cities with high PAPI indexes in 2021 (The Viet Nam Provincial Governance and Public Administration Performance Index - PAPI). Thua Thien Hue has the highest PAPI index with 48,059 points. Binh Duong ranks second with 47,178 points, followed by Thanh Hoa with 47,102 points. Nghe An achieved a total score of 43,821 points, which puts Nghe An in the list of provinces and cities with the highest PAPI index nationwide. Previously, Nghe An's PAPI composite score reached 43,86 points, ranking 15th out of 63 provinces and cities in 2020.

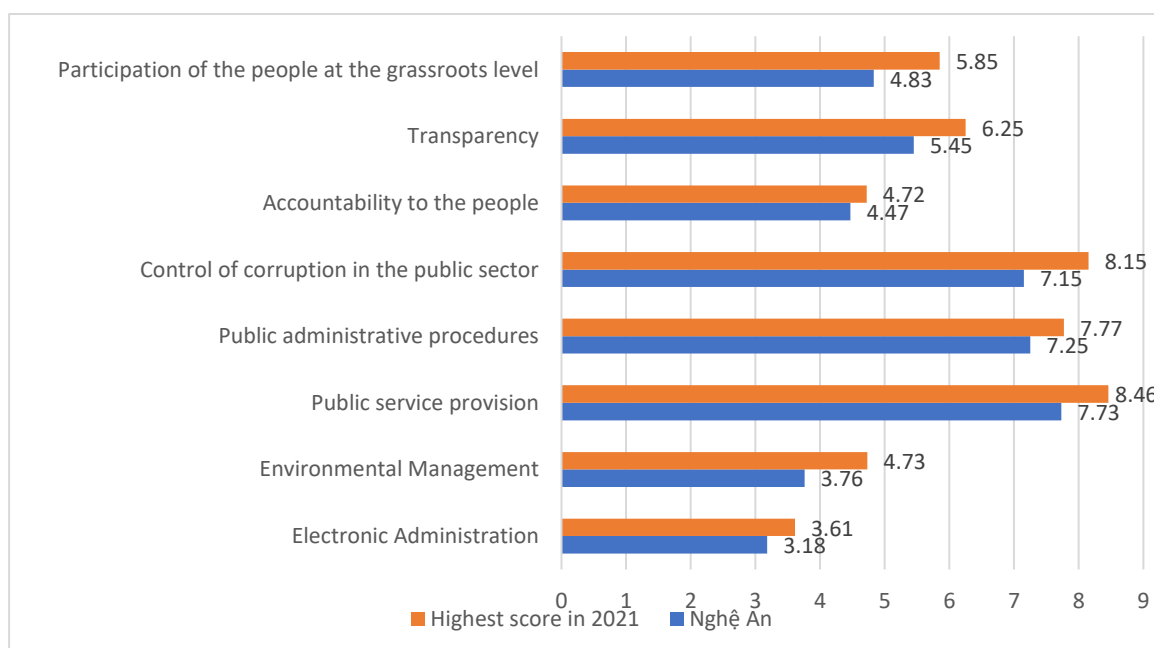


Figure 3. Nghe An Provincial PAPI Indexes in 2021

Source: <https://papi.org.vn/>

In 2021, management and public administration efficiency in Nghe An focuses on public service provision; corruption control in the public sector and public administrative procedures.

Table 3. Indexes of Public Administration Procedures in Nghe An Province in the period of 2018 - 2021

	2018	2019	2020	2021
Public administrative procedures	7,53	7,39	7,32	7,25
Certification/ Attestation	1,96	1,89	1,89	2,49
Construction permit	1,72	1,77	1,66	2,23
Certificates of land use rights	1,92	1,88	1,89	
Administrative procedures at commune/local level	1,93	1,85	1,88	2,49

Source: <https://papi.org.vn/>

Public administrative procedures are calculated based on 4 factors: Attestation/certification; Construction permit; Certificates of land use rights; Administrative procedures at commune/ward level. In 2021, although Nghe An's total index decreased compared to previous years, its total index consists of 3 components instead of 4, including: Attestation/certification; construction permits and administrative procedures at commune/ward level. All these 3 indexes in 2021 are higher than in the 2018 - 2020 period.

E-governance contains 3 elements: use of the local government's web portal; access to the Internet locally; response via the web portal. Nghe An's e-governance is at a high level in 2021 compared to the North Central provinces (behind Da Nang and Thua Thien Hue) with the usage of the local government's portal at 0.47 points. Access to the local Internet is 2.21 points and the response via the web portal is rated at 0.51 points.

Table 4. E-Governance Index of North Central Provinces in 2021

Province	E-Governance Index
Thanh Hóa	3,17
Nghệ An	3,18
Hà Tĩnh	2,85
Quảng Bình	2,82
Quảng Trị	2,86
Thừa Thiên Huế	3,37
Đà Nẵng	3,56
Quảng Nam	2,94
Quảng Ngãi	2,98
Bình Định	2,95
Phú Yên	2,6
Khánh Hòa	3,1
Ninh Thuận	2,65
Bình Thuận	3,09

Source: <https://papi.org.vn/>

Table 5. Nghe An's online public service in 2020

Province	Level 1	Level 2	Level 3	Level 4	Total	online public service index	Rank		
							2020	2019	2018
Nghe An	91,1%	76,7%	60,3%	26,5%	94,5%	0,4186	6	11	5

Source: Vietnam ICT Index Report in 2020

Nghe An's online public service index in 2020 reached 0.4186 points, ranking sixth nationwide, up 5 places compared to 2019. In 2021, Nghe An's online public service portal and inter-provincial electronic one-stop are integrated on the same system, with the participation of 20 departments and 21 cities, districts and towns. The system has been connected to the national public service portal. Up to 2021, 1.833 public services were provided on the system, including 673 level 2 public services, 407 at level 3 and 753 at level 4. In 2021, the system received 355.164 applications. The portal includes the main portal and 51 sub portals integrated. The number of articles and documents throughout the system in 2021 was 27.968, of which there were 7.185 on the main portal and 20.783 on the sub portals.

3.2.2. Digital society

Digital transformation in society is to form a digital society. Digital society, in a broad sense, covers all human activities. The main driving force of the digital society is digital technology based on the rapid growth of information and data, which changes every aspect of social organizations. Digital society in a narrow sense includes digital citizens and digital culture.

Digital transformation is people-centric. Mobile smartphones are prominent devices used in the digital world, so people-centered digital transformation must first equip people with necessary devices through the universalization of mobile smart phones. Each citizen has at least a mobile phone and have an Internet connection.

Table 6. Percentage of mobile phone users, Internet users and Internet-connected households in Nghe An

	2017	2018	2019	2020	2021
Percentage of mobile phone users (%)	80,3	74,29	84,56	88,83	81,68
Percentage of Internet users (%)	27,11	35,03	38,08	56,29	59,94
Percentage of households with Internet connection (%)	36,53	44,39	42,12	45	48

Source: Nghe An Statistical Yearbook

The percentage of mobile phone users in Nghe An increased slightly for 2017-2020; and decreased in 2021. However, the proportion of Internet users and the proportion of households with Internet connection experienced a steady increase during this period of time. Especially, the percentage of Internet users went up by 1,21 times.

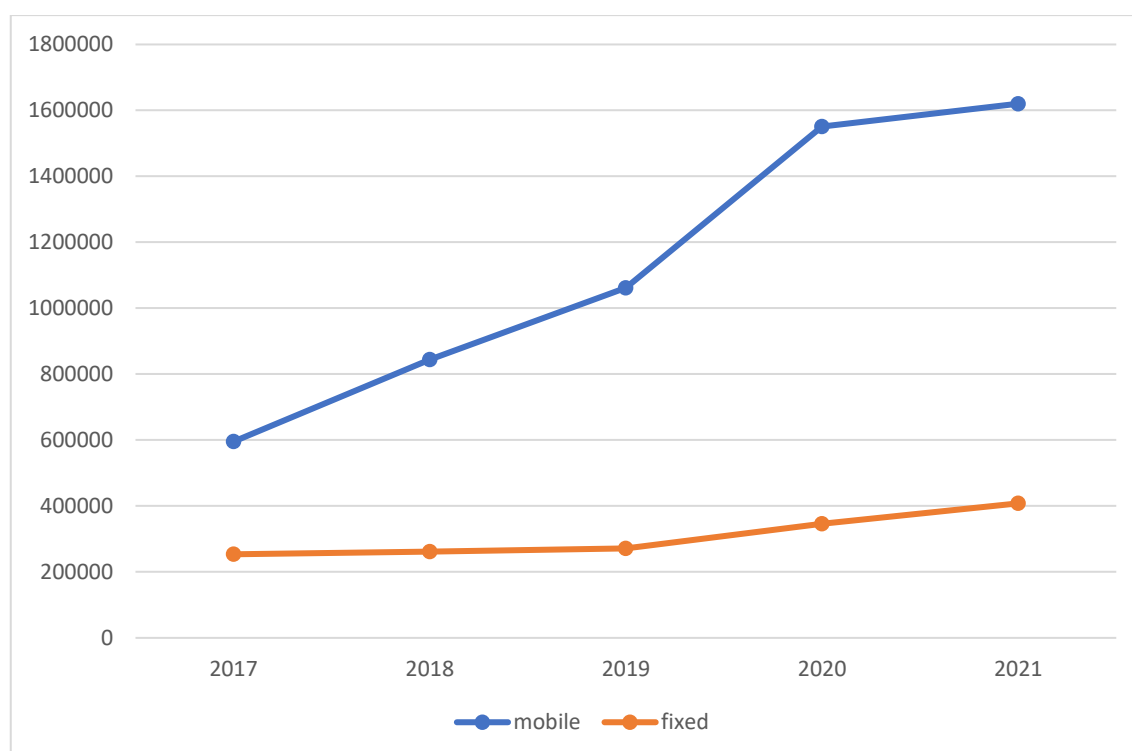


Figure 4. Number of Internet subscribers in Nghe An in the period of 2017 - 2021

Source: Nghe An Statistical Yearbook

Internet connection is the foundation for digital society. Figure 11 indicates that the number of Internet subscribers of mobile networks are likely to increase sharply in the period of 2017 to 2021. Indeed, the figure rose 1.72 times compared to 2017 and experienced a marked growth in 2020. Besides, Internet is also the basis of over-the-top media service (OTT).

3.2.3. Digital economy

Vietnam's digital economy includes 3 main components: ICT digital economy is the information technology industry and telecommunications services; Platform economy represents the economic activity of digital platforms, online systems connecting supply and demand, and online services on the network; Sectoral digital economy is digital economic activity in industries and fields. The following content concentrates on digital economy when it comes to ICT.

Table 7 shows that Nghe An province experienced a steady increase in investment capital in the Information and Communication industry from 2018 to 2021. Besides, the development index of the Information and Communication industry went up gradually in the period.

Table 7. ICT investment capital and investment development index in Nghe An province

	2018	2019	2020	2021
ICT investment capital (billion VND)	244	338	346	428
ICT investment development index (%)	107.97	109.03	105.34	105.11

Source: Nghe An Provincial Yearbook 2021

Nghe An has constantly increasing information technology revenue with an increase of 38.4% from 2017 to 2021, along with the continuous development of the telecommunications industry. Figure 6 shows that telecommunications revenue grew very well and accounted for a high proportion of revenue from postal, telecommunications and information technology activities.

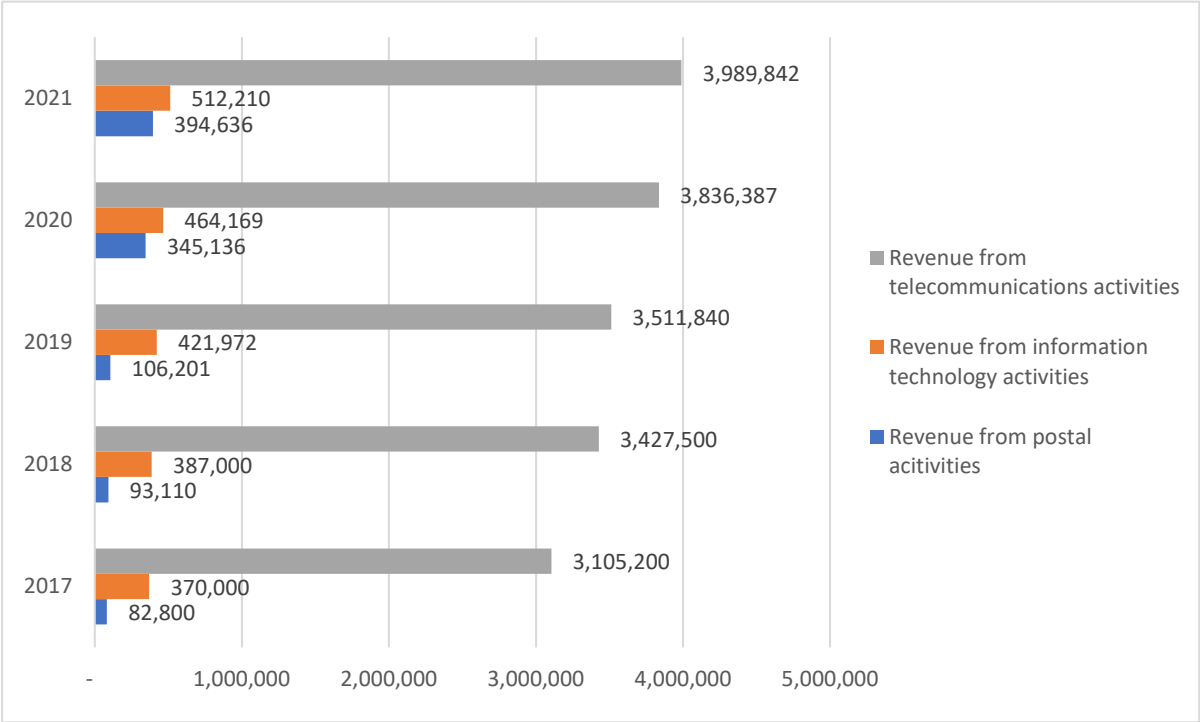


Figure 5. Revenue from postal, telecommunications and information technology activities in Nghe An province in the period of 2017 - 2021 (million VND)

Source: Nghe An Provincial Yearbook 2021

The ICT index is used for measuring the readiness to develop and apply information and communications technology to fields field of each locality or of each country. In 2018 and 2019, Nghe An's ICT index ranked 18th, however this figure dropped 8 places and ranked 26th by 2020. In contrast, Nghe An's IT services index increased 18 places with revenue of 120.007 million VND. In Nghe An, there is no export value related to IT production and IT services.

Regarding other components of the digital economy, containing the platform economy, the digital economy of all sectors, their current data has not been fully updated. In 2022, Nghe An's e-commerce ranking index ranked 15th out of 56 provinces, equivalent to 21.3 points. In the North Central Coast, Nghe An was the third place after Da Nang and Binh Duong. Although being ranked 15th position, the e-commerce index of Nghe An was quite far from the figure of two leading provinces, consisting of Ho Chi Minh City and Hanoi. Meanwhile, in the North Central Coast, the provinces such as Ninh Thuan, Phu Yen, Quang Ngai, Binh Dinh, and Thanh Hoa did not have a local e-commerce exchange (according to the report of Vietnam e-commerce index 2022).

4. Conclusion

From the above analysis, it can be concluded that the economic structure of Nghe An province tends to grow positively. The trend is driven by the strong growth of the industry and construction sector; consistent with the goals set forth by Nghe An. In 2021, Nghe An's growth rate ranked 22nd out of 63 provinces. Besides, digital transformation indexes in Nghe An decreased in terms of three pillars: Digital Government; Digital Economy and Digital Society even though there have been positive changes in digital government activities such as the integration of the online public service portal and the electronic one-stop system. For digital society assessed based on people-centeredness and mobile smartphones, Nghe An has not focused on developing digital infrastructure and digital human resources. For digital economy, revenue from information technology and telecommunications services increased slightly in the 2017 - 2021 period. The majority of revenue comes from telecommunications services. In addition, the number of ICT enterprises in Nghe An is 113 out of 11,225 in 2021, accounting for only 1% of total revenue of enterprises in the province. This result is due to Nghe An's goal which is to grow the industry and construction sector. Therefore, resources concentrated for ICT businesses are still limited. In conclusion, it is necessary to invest in digital infrastructure and digital human resources as well as issue preferential policies for ICT enterprises in order to accelerate digital transformation process in Nghe An.

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THE WORLD'S POLICIES ON DEVELOPING REAL ESTATE ENTERPRISES AND GOVERNANCE IMPLICATIONS FOR VIETNAM

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Abstract

State policies play a leading role in influencing the development of real estate enterprises, thereby directly affecting the movement and development of the real estate market. This study analyzes and summarizes policies on developing real estate enterprises of some countries around the world. Thereby recommending a number of solutions for the State to develop a system of real estate enterprises that are large in number, balanced in structure, and sustainable, effective in operation.

Keywords: *real estate, real estate market, real estate enterprises.*

1. Introduction

The system of real estate enterprises plays an important role as a key part constituting the enterprise system in general in the socialist - oriented market economy of Vietnam. This system is formed, mobilized and developed under the influence of many factors, of which state policies play a leading role.

Over the years, the development of the real estate market in Vietnam and the system of real estate enterprises have contributed many achievements to the economic growth and development of the country. However, the shortcomings of the market and the system of real estate enterprises are also gradually revealed such as: the situation of real estate prices is too high, the market information lacks of transparency, the market is sometimes unstable and has experienced many fluctuations, the number of real estate enterprises fluctuates, is unbalanced in structure, unsustainable and inefficient. Therefore, it is very necessary to find out about the experiences of other countries and draw lessons for Vietnam regarding the policy of developing real estate enterprises.

2. Method

This study utilized a desk research approach to examine the real estate policies of various countries around the world. The study was conducted primarily through the use of secondary sources, including academic literature, government reports, and policy papers.

The search strategy for identifying relevant literature involved a systematic search of multiple online databases, including Google Scholar, JSTOR, and ProQuest. The search terms used included "real estate market development policies", "price policy," and "tax policy," as well as the names of specific countries and regions.

The data collected through the literature review was analyzed thematically, with key themes and trends identified and compared across different countries.

The study also utilized a case study approach, focusing in-depth on the real estate policies of several countries. These case studies were conducted through a combination of literature review and expert interviews with policymakers and practitioners in each country.

The limitations of the study include the potential for bias in the selection of literature and the focus on a limited number of case studies. However, the study provides valuable insights into the similarities and differences in real estate policies across different countries and highlights key policy challenges and opportunities.

Overall, the desk research approach was effective in providing a comprehensive understanding of real estate policies in different countries, and the findings of this study can inform future research and policy development in this area.

3. Results

3.1. Experience in real estate market development policies of several countries

Real estate includes many types, there are different classifications depending on the criteria, but the basic point is that the real estate is attached to the land or the real estate commodity itself is land. Correspondingly, we will have types of real estate market. Real estate market development includes many contents and involves many policies. However, when it comes to the policy on developing real estate enterprises, we often review the following specific policies:

3.2. Policy on creating and owning real estate

The policy on creating and owning real estate plays an important role in the real estate market, because the value of real estate can only arise when the ownership of such real estate is established (Dinh Van An, 2011) [1], Basically, this policy regulates the registration and establishment of ownership of real estate properties. In the world, there are two main types of regulations in creating and owning real estate in general: (i) Regulations that private owned land is a commodity, therefore, it can be traded and exchanged. according to market principles; (ii) Regulations that land is owned by the State, belonged to the nationalization, so it cannot be traded and exchanged.

In each country, depending on the common ownership regime, the policies on creating and owning real estate stipulate that land is privately owned, state owned or multi - owned (including both types). In the G7 countries (UK, Germany, Canada, Italy, USA, Japan and the French Republic) a form of multi - ownership of land is practiced - recognizing both private ownership and state ownership of land. In countries with transition economies - countries belonging to the former Soviet Union and Eastern Europe such as Albania, Bulgaria, Czech Republic, Hungary, Poland, Romania, all recognize that land of private ownership and land owners is entitled to buy - sell - rent - lease; however, land owned by the State still accounts for a large proportion. A number of countries in the ASEAN region: Timor-Leste, Indonesia, Malaysia, Singapore, and Thailand all implement state and private

ownership of land. In China, the land ownership regime is public ownership - including: State ownership and collective ownership regimes [2].

Therefore, the policy on creating and owning real estate in countries is determined by the political regimes of such countries. Basically, the countries follow the multi - ownership regime on land, in fact, there is no country implementing the absolute private ownership of land. In addition to regulation on private ownership of land, there are regulations on State ownership of land. Normally, the content of ownership of land and real estate in countries is stipulated in their Constitution and the Land Law.

3.3. Policy on transactions, real estate supply - demand

Countries have strict and specific regulations on conducting transactions related to real estate, including regulations on registration of land use rights and real estate fluctuations after the transfer. The implementation process complies with provisions of the Law on registration of land - real estate (except for adjustments according to provisions of the Civil Code), market participants must comply with conditions on goods and transfer procedures. The implementation of transaction policies contributes to the transparency and revitalization of the real estate market. Most countries in the world have a real estate registration system that was established early and has undergone a long development process.

Documents regulating the real estate registration in some countries: Japan (Law on Real Estate Registration of 1899 dated February 24, 1899); Korea (Law on Real Estate Registration of 1960 (Law No.536 dated January 01, 1960); Federal Republic of Germany (Law on Real Estate Registration of 1897 dated March 24, 1897 and amendments and supplements of 2004 dated December 09, 2004); Philippines (Law on Land Registration, also known as the Law on Torrens Registration of 1903, Law No.496 dated February 01, 1903 and reinstated in 1974); Malaysia (National Land Code of 1966); Singapore (Ordinance on registration of land ownership rights of 1956); Cambodia (Land Law of 2001 dated August 13, 2001); Indonesia (Government's Regulation on land registration of 1997); China (Law on property ownership of the People's Republic of China dated March 16, 2007), (Ministry of Justice, 2008).

3.4. Policy on real estate enterprises and real estate business

The policy on real estate enterprises and real estate business contains contents related to the formation of enterprises and the process of conducting real estate business. Most countries regulate that the establishment of real estate enterprises and real estate business is a conditional business process. Real estate business is considered including business investment and real estate service business. In Germany, domestic and foreign subjects trading in real estate must comply with and obtain full permits to carry out the construction or purchase or sale of a building, project or piece of land. In Japan, in addition to regulations on the establishment and investment of real estate enterprises, the government uses a number of policies to encourage the development of real estate which is industrial parks [3]: tax incentives, subsidies or preferential loans.

The implementation of real estate service business in countries is subject to very strict regulations. In the US, the real estate market currently consists of 1 548 058 real estate brokers (NAR, 2023). There are many regulations that must be satisfied in order to be able to practice as a real estate broker. First, they must pass an exam with fee collection to obtain a certificate of real estate brokerage practice and registration for brokerage practice issued by the state government. Appraisers must pass an exam and obtain a license for practice issued by the Federal government. In Singapore, the Singapore government through the Taxation Authority allows ERA Singapore (a company which develops a training system for real estate brokers learned from the US) to train real estate brokers and agents. In Poland, since 1992, individuals who wish to engage in brokerage activities must undergo specialized training courses in real estate brokerage for 6 months and undergo a half - year internship in real estate companies, directly conduct brokerage operations (at least 15 real estates). In addition, after satisfying all the conditions, candidates must pass a national exam organized by the National Assessment Council in the field of professional practice [4]. In Sweden, real estate brokerage services are not only regulated by commercial law, but also complied with provisions of the Law on Real Estate Brokerage (established in 1984 and revised).

3.5. Financial policies in the real estate market

When it comes to financial policies in the real estate market, we consider three specific contents as follows:

3.5.1. Pricing policy

In other countries, the Government sets out pricing policies and price frames for the market to operate. In principle, prices are formed by the market and the State only intervenes in case of appearing real estate "bubble" situation or being used for social purposes. Real estate prices are made up of land prices and property - on - land prices. Therefore, normally when studying price policies in the real estate market, the policy on land valuation is often focused on. Through the study, it is found that, most countries in the world have regulations in the laws related to land price, which specifically regulates: purposes, principles and methods of valuation, forms of land price, involvement in valuation services, valuation and control bodies.

3.5.2. Tax policy

Tax policy for real estate is a form of property tax, which plays an important role in maintaining and ensuring State budget revenues. At the same time, real estate tax is an effective tool helping the State manage the use and transaction of real estate, perform the function of checking the operation of the real estate market, contribute to limiting speculation and encouraging the effective use of real estate. Taxes for real estate include tax levied on real estate and tax levied on real estate transactions. Most countries around the world use real estate taxes with different taxes, methods and bases for tax calculation and tax rates. Through studying, real estate tax includes the following main types: tax on land, tax on housing, tax on real estate transactions, tax on registration of real estate ownership.

Experience in land tax policies in France, China, Taiwan, Korea

In China, the tax on land use is calculated on the basis of area, the applicable tax rate takes into account different types of land. Therefore, the unit for calculating land tax in big cities, medium - sized cities and mining districts is 0.5 - 10 yuan/m², 0.3 - 6 yuan/m² và 0.2 - 4 yuan/m², respectively.

In France, the government conducts land classification for taxation, accordingly, land without structures or vacant land will be taxed at a higher rate than land with construction works and land in use. The average tax rates in 2009 for vacant land and land with works in France were 45.5% and 19.32%, respectively. Tax rates levied in the second house in is very high, from 2015, the tax rate in Paris is up to 60%.

In Taiwan, the tax liability is borne by the owner, based on a taxable beginning rate based on the value of the land parcel declared annually by the owner. The amount in excess of the taxable beginning rate will be subject to a progressive taxation.

In Korea, land tax is based on the value of the land parcel brought by the land use purpose. There is a difference between national and local tax rates. The tax rates for land used for business and non - business purposes according to the local tariff are 0.2 - 0.4% and 0.2 - 0.5%, according to the national tariff are 0.5 - 0.7% and 0.75 - 2% [5].

➤ Experience in housing tax policies in Russia, France, Korea, China

Table 1. Housing tax policy in several countries

Countries	Tax base	Tax rate
Russia	Value of a house is valued by the tax authority	0.1% < (house value under 300 thousand rubles) 0.1 - 0.3% (house value from 300 - 500 thousand rubles)
France	Apartment rental price	Average tax rate 14.97% (in 2009)
Korea	Standard value of a house, (tax threshold of 900 million Won)	Local Tariff: 0.15 - 0.5%/unit National Tariff: 0.5 - 1%/unit
China	Rental value or house value	12% (rental price) or 1.2% (house price)

Source: Compiled according to (Thuan, 2011) [6].

➤ Experience in tax policy for real estate transactions of Singapore, Korea, Japan.

In essence, this tax is a kind levied on the difference between the selling price and the purchase price of real estate. Taxpayer is a person who earns income from real estate transactions. The taxable price is the market price of real estate. In Singapore, purchased land which is resold in the first year will be levied at 100% of the difference, and after 2 years and 3 years, the land tax rate is reduced by 50% and 25%, respectively. In Korea, the tax rate is 50% (if resold before 1 year), 40% (if resold from 1 - 2 years) according to the profit and 70% (for unregistered real estate) [7]. Korea applies a tax rate of 50% and 60% of profits to individuals owning 2 and 3 houses or more [5]. In Japan, income from real estate transactions by individuals and enterprises is adjusted according to personal income tax and corporate tax.

Experience in policy on real estate registration tax in Japan and Korea: Normally, real estate registration tax is collected once when the owner of real estate registers real estate transactions or real estate ownership.

In Japan, the tax base is the actual value of real estate. The tax rates will be: 0.4%, 0.4% and 2% for registration of ownership, transfer of ownership through inheritance, capital contribution, merger and transfer of rights through purchase and sale [8].

In Korea, real estate registration tax is calculated based on the value of real estate at the time of registration, with the tax rate based on the nature of ownership registration. The tax tariff for: registration of ownership due to inheritance, non - inheritance and outside these two cases are: 0.8%, 1.5% and 3% respectively; registration of protection of property rights is 0.8%, transfer of real estate lease rights is 0.2%.

➤ **Policy on capital channels for the real estate market**

In different countries, capital channels for the real estate market are very diverse. In practice, capital for the real estate market is provided through the following main channels: Credit channels from commercial banks; Channel through the mortgage and re - mortgage system in the banking system. Real estate savings channel; Channel through bonds, real estate stocks; Channel through investment funds (notably Real Estate Investment Trust - REIT).

In developed countries, the channel of mobilizing and lending real estate through commercial banks and credit institutions plays an important role, accounting for 50 - 80% of the total market share of real estate mortgage loans [9]. For example, in Australia and New Zealand, there are many credit products for real estate investors such as: home equity loan, split purpose loan.

The mortgage banking model in Denmark provides borrowers with long - term loans at fixed interest rates, mortgage banks accounts for more than 90% of total credit in the country.

In developed countries of Europe, the form of savings under house purchase contracts has been developed, notably the Bauspaken system in Germany. The model of financing channels through real estate investment trusts (REITs) is very developed in some countries due to the strength of REITs with their high diversity, liquidity, dividends as well as stable average annual income. In the US, the first REIT was applied in 1960, after 40 years of development, REITs have been very successful in the US with a total market capitalization up to 450 billion USD. The regulations applicable to REITs fall within the U. S. Domestic Income Law system. Each REIT may be structured as a joint stock company, association, or trust and is managed by one or more trustees or managers, and the shares of REITs are transferable.

4. Discussion and Conclusion

4.1. Governance implications of real estate development policy of Vietnam

After researching, analyzing and comparing market development policies and real estate enterprises in some countries, the author believes that:

In each country, the role, content and impact level of policies on real estate market are different, depending on the level of economic development and the level of real estate

market. However, in order to create market and real estate enterprise, the first thing to do is to create a legal framework system;

The State not only creates the economic, legal and social environment, but also plays the role of a “midwife” for the real estate market through guidelines, policies and solutions to support in all aspects [10];

The land market is the first market formed in the development process of real estate market. Therefore, there is a legal element on land that is particularly important. In order for the land market to develop sustainably, it is necessary to well carry out the establishment of land ownership and use rights, and land use planning. This is a factor contributing to healthy and transparent real estate market;

The State should strictly implement the housing policy. In some cases, the State should intervene more deeply in regulating the housing market, especially the housing issues for social subjects, ensuring the supply of housing types for people and the limit of buying and selling;

In market activities, the activities of enterprises providing services to support the market are necessary, particularly brokerage and real estate valuation services;

Financial policies contribute to promoting the formation and development of real estate market.

Some lessons learned for Vietnam about real estate market development policy:

Firstly, the State plays a very important role in the development of real estate market, from regulating the market, balancing supply and demand, anti - speculation, macro - economy stabilization to ensuring basic housing needs for people. To do so, the State must implement the policy on ownership and creation of real estate well;

Secondly, when conducting land reform, it is necessary to have land planning and implement land policies well; compensation in land acquisition must be carried out carefully and openly;

Thirdly, in terms of housing development policy, it is required to pay attention to the diversification of housing types, along with the process of housing construction with a mechanism for allocating house area to the subjects which is extremely important. Pay special attention to social objects in housing issues;

Fourthly, promulgate and implement policies on real estate transactions, supply and demand well. First, promulgate the Law on Real Estate Registration. This is a prerequisite to solve the problem of transparency in Vietnamese real estate market and ensure that other policies are implemented, being especially meaningful in creating capital for the real estate market;

Fifthly, professionalize enterprises, organizations and individuals providing services to support the development of real estate market step by step, clearly define and realize the goals of quantity, structure and operation efficiency of real estate enterprises;

Sixthly, improve efficiency in the implementation of financial policies in the real estate market. Continuing to research and perfect on pricing policy and real estate valuation; research and promulgating the Law on Real Estate Tax; research and issue legal documents in relation to policies on funding channels for the real estate market.

4.2. Conclusion

Policy on real estate market development is a broad issue with many contents, in which, developing the real estate enterprise system is the top goal. It is the real estate enterprises that will contribute to creating a healthy and fair real estate market and operating in accordance with the market mechanism under the management and regulation by the State. Therefore, there will be many methods and approaches in studying the experiences of countries on real estate enterprise development policies. Within the scope of this study, it will not be possible to cover all the contents in relation to the development of real estate enterprise system. Therefore, this issue should be studied more deeply, forming a scientific basis for perfecting the policy of developing the real estate enterprise system in Vietnam.

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PROMOTING THE ROLE OF CULTURE IN ECONOMIC - SOCIAL DEVELOPMENT IN THE NORTHWEST OF VIETNAM TODAY

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Abstract

The Northwest is one of the rich cultural regions of Vietnam. If culture is exploited well, it is really a "golden resource" for the sustainable development of the region. Therefore, it is really necessary to study the Northwest culture as well as the directions to exploit the cultural potential to promote the growth of the Northwest. In this article, the author focuses on analyzing the instrumental role of regional cultural values that can promote the effect of creating strength for the sustainable development of the Northwest region.

Keywords: *promote, culture, sustainable development*

1. Introduction

During the 9th Plenum of the Central Committee of the 11th term, the Communist Party of Vietnam emphasized the implementation of the view that "Culture must be put on an equal footing with economy and politics". From this point of view, culture is not only a goal but also a driving force, a condition, a potential, and a soft power for the country's development in the context of international integration. With such awareness, our Party has issued many directives on preserving, preserving and promoting traditional cultural values, arousing the endogenous strength of culture to achieve the goal of "rich people", strong country, fair and democratic"

In preserving and promoting culture as the "spiritual foundation" of society, our Party and State pay special attention to promoting good cultural traditions in regions. Because Vietnam is a country with a unified, rich and diverse culture. Each region, with its unique geographical and natural conditions, has its own unique cultural influences and characteristics, which can be utilized for sustainable socio-economic development. The Northwest is a unique cultural region of Vietnam with many values Cultural "DNA" cannot be mixed with other regions of our country as well as the world. This is one of the precious capitals of this land that should be properly recognized and actively promoted for development.

On the basis of the awareness that the "golden resource" of the locality is a region-specific culture, the Northwest provinces of Vietnam have tried to implement the policy of promoting the role of culture in performing economic tasks. economic, political, national security... in the area. With the efforts of the government and people of the Northwest region, the endogenous strength of the culture of the region has been aroused, have important achievements, and contributed to "changing the skin" of some villages. countryside.

However, the promotion of the role of culture is still not commensurate with the inherent potential in localities in the region. The exploited cultural value has brought economic benefits but compared to the proportion in the economic structure of the region is not as high as expected, this land is still considered as the "poor core" of the country. In the process of promoting culture for economic development, there is also a situation of "exploitation" of culture, commercialization of traditional cultural products, the phenomenon of overloading tourist areas in heritage sites. Culture has affected the environment and the lives of indigenous people.

Therefore, researches to promote traditional cultural values, find solutions towards sustainable development and draw lessons for other localities in exploiting the strengths of the specific cultural region towards to sustainable development is very meaningful in both theory and practice. Therefore, this article focuses on analyzing and clarifying the role of culture in the sustainable development of the Northwest region of Vietnam today.

2. Method

Methods of data collection, documentation, use of secondary data collected through reports on relevant contents of specialized agencies, statistical yearbooks.

Method of analyzing documents and data: using descriptive statistics method.

3. Results

3.1. The role of culture in the sustainable development of the Northwest region of Vietnam today

Economic activity is one of the material activities of human beings, which is the basic aspect of social life. To be able to exist and develop, people need to be met with essential needs, so people conduct production, exchange products, and carry out economic activities. Economic development thus becomes a common goal of human communities. However, economic development cannot be separated from other social issues.

Socio-economic development of a region or a country is an increasing process towards the improvement of all aspects of the economy. It is not only an increase in quantity but also must be consistent with the qualitative changes of the economy such as the progress of economic structure, economic institutions, quality of human life, prosperity. and social progress. The depth of this issue is towards people, towards perfecting the living environment of people both in terms of material - economic, spiritual - cultural, natural environment - environment. To achieve that goal, the system of ethical principles, lifestyle, aesthetics.... plays an important role in directing people to practical action in the present without encroaching on the interests of the future. It means that process culture plays an important role in permeating all areas of life, orienting and leading people to work to achieve sustainable development. The role of culture in sustainable development in the Northwest is reflected in the following main points:

Firstly, culture is the goal of the sustainable socio-economic development of the Northwest today. Even in economic and social development itself, there are cultural

requirements. When cultural goals are achieved, sooner or later socio-economic goals will be realized. Because culture also contains a series of elements of spiritual life - social consciousness has a strong impact on social existence - material life, economic life of society. Culture stipulates a series of values that sustainable development needs to achieve, such as prosperity, happiness, solidarity, love between people, the national spirit, the will to rise...

Secondly, culture is the driving force of socio-economic development. The Northwest is a land rich in heroic traditions, with a long history of formation and development, with natural geographical conditions associated with rugged mountains. Therefore, the tradition of loving labor, hard work, industriousness, spirit of overcoming difficulties, spirit of solidarity, and love for the homeland has been molded. the driving force of development besides scientific and technical factors. When the motivational factors are activated, it will create economic development, changing the quality of development. In fact, a land rich in tradition and culture is an important basis for development. No matter how developed science and technology, no matter how favorable the objective conditions of natural geographical position, each ethnic group and land do not have the consciousness and aspirations to rise up of the ethnic group. impossible to develop: "It is impossible to move the peoples of countries forward without making them understand their identity, their roots and their past"¹. Therefore, awakening and arousing the cultural potential and aspirations of good ethnic groups will create strong motivations for healthy development.

Third, culture acts as a regulatory system for the region's socio-economic development. Today, in the context of integration, the exchange between countries in all fields of economy, politics, culture - society has been creating favorable conditions for the transfer of positive cultural elements. polar regions, paving the way for rapid development for the Northwest because the Northwest borders on the border of China and Laos. However, in that exchange process, the Northwest of Vietnam is facing challenges of sustainable socio-economic development. The general trend of the current market economy development is integration, so economic activities not only take place in localities but also take place on an international scale. to cultural values in production, business, and economic development in general. The cultural identity and good cultural values of the nation will play a role in regulating economic activities in the direction of humanity, directing people to good values: truth, goodness, beauty, eliminating those Evil and negative factors are entering the social environment

Fourth, the culture of the Northwest contains great potentials for socio-economic development. Facing the majestic and dangerous natural environment, the Northwestern people have adapted and improved these environmental conditions to be able to survive. It was during that process that all the typical cultural values of the Northwest were formed. At present, it is possible to exploit the cultural "golden resources" of the region for socio-economic development: Each province of the Northwest has ethnic minorities, corresponding to unique cultural heritages: cuisine, folk art, traditional craft villages, festivals, customs.... These are specific cultural features that can be exploited in the long

¹ Thomas L. Friedman (2000), *The Lexus and the Olive Tree*, World Publishing House, Hanoi, tr.373

term for socio-economic development: developing community-based tourism, cultural tourism, and eco-tourism while ensuring towards an appropriate economic structure. while preserving the environment and preserving the ethnic cultural identity.

3.2. Promoting the traditional cultural values of the Northwest region for sustainable development today

Promoting the role of culture in the sustainable development of the Northwest is essentially exploiting the inherent cultural strength of this land to serve economic development, realize social goals, and protect the environment. With the inherent advantages of a land which is considered as the "pearl of tomorrow" of the country, the Northwest besides the majestic poetic landscape also has a rich history of culture that can arouse and awaken the development of the country. develop. The unique cultural values of the Northwest region can be exploited for sustainable development:

The first, the people of the Northwest have a very rich indigenous knowledge capital that can be promoted in agricultural production and development of specific traditional handicraft villages. The basis for forming these indigenous knowledge is due to the process of adapting to the specific natural conditions here. The region has rugged mountainous terrain and is inhabited by two large rivers, the Ma River and the Da River. To be able to survive in such a special environment, the people here had to learn, penetrate, stick to, and immerse themselves in the environment to cultivate a unique treasure of indigenous knowledge. Only the people here understand the homeland, the village, the strengths and limitations of their land. Therefore, self-use and exploit that cognitive cultural capital combined with modern technology to develop agricultural production with products with the unique flavor and quality of the land such as tea, fruit trees. : pear, peach, plum, mango, passion fruit... is what the Northwestern government and people are trying to do. An experience of the people here is to closely combine the indigenous cultural knowledge capital with modern technology, combine clean agricultural production with tourism development to improve economic efficiency, ensure "green development". About 60% of households have combined traditional knowledge and modern new techniques in farming, 33.8% have applied new techniques in crop production¹. Agricultural production in some localities is gradually moving towards branded export products to major markets such as Japan, Korea, and Europe.

The second, the Northwest is also a land with a culture that behaves with the natural environment in harmony: love the forest, love the land, stick with the village, the homeland.... In terms of nature, origin, traditional roots, the Northwest ethnic groups love nature and get along with nature. In the culture of the Dao and Thai people, the forest is the environment, the ancestor, the source, so it must be protected. Previously, most villages had the custom of banning exploitation, cutting down the watershed forests was a crime, being punished, ostracized and cursed by the Muong. The consciousness of protecting the forest

¹ Tran Hong Hanh (2018), Climate change and livelihoods of some ethnic minorities in the mountainous Northwestern region of Vietnam, Social Sciences Publishing House, Hanoi, tr.159

and living environment has become the way of life, law and spirituality of the Thai and Dao ethnic groups. Sticking with the native nature, but because they do not know how to exploit the strengths of forest resources, there are some communes and districts in the region with the phenomenon of ethnic minorities mainly living on nature and depriving it of nature. In recent years, the harmony in cultural behavior of the Northwest ethnic groups towards the natural environment is threatened by outside interference with important resources as well as changes in the environment. in their own behavior. That change causes many consequences, among which are more and more natural disasters, floods, and forest fires. These are proofs of the people's excessive impact on the environment and the consequences are not only economic losses, the environment is destroyed but human lives are also threatened. Therefore, continuing to research and promote knowledge, experience, and lessons in dealing with forests and nature of people in the Northwest to find solutions and mechanisms towards environmental protection is very valuable. for the sustainable development of this land. Because the environment is not only the living place of the ethnic minorities here, but also an important natural basis for the formation of their culture and spiritual foundations.

Currently, in many lands of the Northwest, people have used the culture of dealing with the natural environment to develop their economy as well as preserve their own culture and environment. For example, they sell typical products that are renewable, harvested from the native forest such as bath medicine of the Dao people, pickled wine, buffalo meat, rice lam, etc. They create tourism products. From the Northwest nature itself: eco-tourism to discover villages such as Lac Mai Chau village of Hoa Binh, Moc Chau Plateau of Son La, discover nature in Sa Pa of Lao Cai, explore the field heritage trail terraces in Lao Cai, Yen Bai and Ha Giang provinces; tourism "Northwest flower colors": Ban flowers, azaleas, buckwheat flowers

The third, promote the role of behavioral culture in ethnic communities in the Northwest in order to achieve socio-political stability and create conditions for strong economic development. The Northwest is a region with a history of heroic revolutionary struggle. It meets the border of Laos and China. This is one of the favorable conditions for economic development in the border region, with opportunities for economic, political and cultural exchange and integration with other countries in the region. In contrast, border exchanges in general also have potential challenges in protecting the border and political security of the country. People living in the Northwest provinces are mainly ethnic minorities, with a complex spiritual life. Therefore, it is very important to maintain solidarity and build a politically stable area, contributing to creating favorable conditions for economic development.

The building of a stable political environment in the locality begins with arousing the spirit of solidarity, attachment and mutual assistance in the community of the Northwest ethnic groups. This traditional culture was formed during the struggle to survive the harsh natural conditions as well as the invasion of hostile forces. Currently, in localities in the region, people continue to support each other in socio-economic development. 72.2% of Thai

households, 42.9% of Dao households and 44% of Mong households receive support from brothers, relatives and neighbors in growing maize and rice². In addition to supporting each other in production in that traditional way, a part of the people have jointly implemented the cooperative economic model to jointly increase the benefits of the participating members, typically in Son La province. As of October 2022, the province has 877 registered cooperatives with 38,328 members. The development of cooperatives has helped to improve and solve problems that the individual household economy could not do or do inefficiently, facilitating the transformation of economic structure towards modernity.

Fourth, promote the potential of folklore sources in the Northwest for sustainable economic transformation. Products of traditional crafts, traditional cultural and culinary products, folk music and traditional festivals of the ethnic minorities have the conditions to become economic products, creating more jobs and income for people, changing the perception of preserving traditional cultural values. With that cultural potential, the provinces in the Northwest can fully develop community-based tourism in combination with promoting traditional craft villages in villages inhabited by ethnic groups with the state model. and the people do the same. Accordingly, each village can send people along with cultural officials to participate in tasks such as introducing cultural products, providing products, guiding tours.

However, in the process of exploiting community-based tourism, it is necessary to avoid hasty development, unsustainable development model because this can lead to many negative impacts on people's lives. The development of models of community-based tourism combined with the promotion of specific handicraft villages is clearly essential to achieve the dual goals of economic development without infringing on the preservation of cultural characteristics. But in which the responsibility of the government and the people must be put first, the coordination of stakeholders, the distribution of profits, the rights and responsibilities of the community requires each locality to develop a specific project, clearly suited to the local situation. To do this, it is necessary to have a mechanism to promote the support of state management agencies in tourism, tourism research institutes and development organizations in collecting and analyzing information, orientation of market research, product development... to, together with the community, step by step identify opportunities suitable to the locality, ensure sustainable development, preserve and promote good cultural identity Of the area.

The above are specific cultural aspects of the Northwest that can be promoted in sustainable development. However, in order to really exploit and promote the "golden resources" of the Northwest culture in order to develop a healthy society, it is necessary to implement synchronous solutions. First of all, the provinces in the region need to pay special attention to strengthening education on cultural values of the Northwest region, especially education for young people, young people, and cultural cadres as an important foundation.

² Tran Hong Hanh (2018), Climate change and livelihoods of some ethnic minorities in the mountainous Northwestern region of Vietnam, Social Sciences Publishing House, Hanoi, tr.176

important in continuing to preserve and promote unique cultural values. Because obviously, if the people themselves do not understand the values of their national identity, they will easily lose the direction, goals, and meaning of socio-economic activities, ultimately unable to achieve their goals sustainable development.

At the same time, it is necessary to have a localization policy in the process of integration and economic, political and cultural exchanges with other countries to ensure the preservation of traditional cultural values. Localization is the process of ensuring the integration of new cultural values in the direction of growth but not crushing the inherent endogenous values of the nation. In order to do well this process, it is necessary to improve the state management of culture, solve the limitations and weaknesses in the ineffective exploitation of the role of culture in economic development and environmental protection.

In the region, it is also necessary to focus on building typical models of promoting the role of culture in socio-economic development and environmental protection in the provinces. From these examples, there is an assessment of effectiveness, quality and when satisfactory, it can be replicated. A system of laws and market policies is needed to ensure that these models are developed in a healthy way, with the right goals for sustainable development. In particular, the legal system will allow unique cultural areas to avoid the negative attack of the "claw" of the market, avoid the exploitation of culture, cultural heritages for commercial purposes only. not interested in solving social and environmental problems.

4. Discussion and Conclusion

Socio-economic development associated with environmental protection, better implementation of social security and preservation of national cultural identity is always a difficult problem for each country, ethnic group and region. In realizing the dual goals of the sustainable development of the Northwest, the cultural identity of the people of the land plays an important role in realizing and ensuring those goals are maintained in the long term. First of all, culture is the goal, the driving force, and the endogenous strength for the development of the region. It is the cultural identity of the land that will arouse the spirit, the will to rise, the national pride to overcome difficulties and challenges and "solve difficult problems" for economic development associated with the implementation of national security. social welfare, environmental protection and preservation of ethnic identity. In the context of integration, the Northwest region has favorable conditions for cultural enrichment as well as cultural potential exploitation for economic development, but it also faces the challenge of being culturally infiltrated by other countries. China, Laos - two countries bordering the border. The cultural identity of the region will play a regulatory role to direct the Northwest communities to humane and good values.

The Northwest has been gradually promoting its cultural potentials for sustainable development. The cultural capitals that have been and need to continue to be promoted in this land, the culture of perception - indigenous knowledge, the culture of dealing with the natural environment, the culture of behavior in the community, the culture of art. folk. All these cultural aspects have very unique values that can be exploited to develop the economy

of community tourism, cultural tourism, eco-tourism, cultural tourism.... When the economy develops, it will create conditions for poverty reduction, increase income, and direct people to healthy livelihood activities, useful for environmental protection. And in order to turn the cultural potentials of the Northwest into an endogenous force towards sustainable development, it is necessary to encourage the positivity and initiative of the indigenous people through education, policy systems, Statutory...

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ANALYZING THE IMPACT OF PUBLIC INVESTMENT ON PRIVATE INVESTMENT IN THE CENTRAL KEY ECONOMIC REGION

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Abstract

In the post-Covid-19 context and the complicated developments of the Russian-Ukrainian war and the fiercer global competition for FDI flows, domestic public and private investment have become the driving force to help economic recovery and accelerated growth in the global countries. In Vietnam, the Central Key Economic Region with its existing potentials in the marine economy is oriented to "become an economic driving force for the development of the North Central Coast and Central Coast". However, in the Central Key Economic Region, there are some limitations related to public investment and private investment. Specifically, localities in the region have not used public investment effectively, thereby limiting the ability to attract private investment, and reducing the growth rate of the whole region. Using the PMG method to analyze the impact of public investment on private investment in the Central Key Economic Region in the period 2010-2021, the study shows that public investment has a complementary effect on private investment in the long-term, but the short-term impact is not clear. Based on the research results, the author has proposed some solutions to effectively use public investment to promote private investment in the Central Key Economic Region.

Keywords: *Central Key Economic Region, PMG method, public investment, private investment*

1. Introduction

Public investment is a controversial concept not only in Vietnam but also in the world. The United Nations (UN, 2009) states that public investment can be understood as investments made by the State to increase the productive capacity of the economy in the future. According to the World Bank (WB, 2010), public investment is public expenditure that helps to increase the accumulation of physical capital. Meanwhile, the Organization for Co-operation and Development (OECD, 2016) believes that public investment means government investment in physical infrastructure (roads, government buildings, etc.) soft infrastructure (innovation support, research and development...).

In Vietnam, recognizing the importance of public investment, in 2014, Vietnam developed and promulgated a law on public investment (Public Investment Law 2014). This is the first time that public investment policy has been recognized in a law, clearly

demonstrating the importance of this field. In addition, a series of other relevant laws have also been updated, amended and supplemented to ensure compatibility. However, after a period of implementation of the Law on Public Investment in 2014, there were limitations and inadequacies that hindered public investment activities (Le Nhat Bao et al., 2020). To remove limitations and shortcomings, on June 13, 2019, the National Assembly passed the Law on Public Investment 2019. According to Clause 15, Article 4 of the Law on Public Investment 2019, public investment is "investment by the State in other public investment programs, projects and objects in accordance with the Law on Public Investment".

Thus, the concept of public investment introduced in the Law on Public Investment 2019 consists of two parts: first, the owner of the investment capital is the State and second, the purpose of investment activities is to invest in socio-economic infrastructure programs and projects and invest in programs and projects in service of socio-economic development. The second part includes programs and projects in service of socio-economic development, which are considered to include all projects invested by the State because the projects are neither directly nor indirectly serving economic development - society. So, the term Public Investment under the Law on Public Investment 2019 can be understood as an investment of the State.

Private investment

According to the Cambridge dictionary (2008), private investment is defined as an investment made by companies, financial institutions or other investors other than the State. Meanwhile, according to the World Bank (2019), private investment is the expenditure of the private sector, including private nonprofit organizations, to supplement domestic fixed assets. In more detail, it can be understood that private investment is the purchase of capital assets by the private sector with the expectation of generating a larger amount of income and value in the future.

Meanwhile, in Vietnam, based on the concept of investment according to Article 3 of the Law on Investment 2020, it can be understood that private investment is the investment by private investors to form assets to conduct other activities in accordance with the provisions of the Investment Law and other relevant laws.

Thus, from the above points of view on private investment, it can be seen that private investment differs from public investment in the ownership nature of the investment capital and the investment purpose. Private investment is the investment of private economic sectors while public investment is the investment of the State. The purpose of private investment is to make a profit while the purpose of public investment is to serve socio-economic development, not for profit.

The impact of public investment on private investment

Theoretically, the impact of public investment on private investment is explained through the following points of view.

The first view favors the crowding-out effect. Accordingly, the increased demand for government investment causes private investment to decrease (Blejer and Khan, 1984; Beck,

1993; Voss, 2002; Ganelli, 2003). Accordingly, the crowding out effect can take place through two main channels: (i) debt financing and (ii) competitive production of goods and services with the private sector. First, if government investment is financed through borrowing from the financial system or issuing bonds in the capital markets, the market must reserve a certain amount of capital for the government. On the one hand, this leads to a decrease in the amount of credit provided to the private sector. On the other hand, the scarcity of capital in the market pushes up interest rates in the market. Both of these factors lead to a contraction in private investment. Second, public investment can also reduce private investment as it produces goods and services that compete with the private sector (Khan and Kumar, 1997).

In contrast to this substitution effect, the crowding-in effect is seen when there is an increase in private investment due to an increase in public investment. First, through the construction or improvement of physical infrastructure such as roads, highways, water and sanitation, ports, airports and railways (Aschauer 1989a and Hatano 2010) public investment creates an environment a more favorable business environment, often increasing the productivity of private investment. Second, the demand for goods and services from the government causes the demand for products of the private sector to increase, encouraging this sector to invest more due to the expectation of better revenue and profit (Ramirez, 1994; Greene and Villanueva, 1990). Third, the increase in national income arising from public investment can also attract private investment. This is because an increase in national income stimulates economic growth, which in turn can prompt the private sector to increase investment to exploit any profitable opportunities (Reungsri, 2010).

2. Literature review

2.1. Public investment

The Central Key Economic Region (Central Key Economic Region) was established under Decision No. 1018/1997/QĐ-TTg, dated November 29, 1997 of the Prime Minister, including Da Nang, Thua Thien-Hue, Quang Nam, Quang Ngai and Binh Dinh. With a natural area of 27,881 km² - accounting for 8.45% of the country's area, the Central Key Economic Region has a population of 6.55 million people. Regarding the scale of public investment in the region, it did not change much in the period 2010-2021. The scale of public investment increased from VND 20,829 billion in 2010 to VND 31,216 billion in 2021. The Central Key Economic Region was established in July 1997, experiencing the first phase with a rapid increase in public investment to support. In the field of construction and infrastructure improvement, from 2001 to now, public investment capital has not increased much in scale. Specifically, the average size of public investment capital in this period fluctuated at VND 28,208 billion. However, in the period 2018-2020, the scale of public investment increased rapidly because the Central Key Economic Region prioritized investment and completed the inter-provincial and inter-regional axes, the system of highways, roads, seaports, and airports. Besides, public investment in the Central Key Economic Region develops unevenly among cities and provinces in the region. While the scale of public investment in Binh Dinh increased sharply in the period 2010 - 2021

(increasing by 4.1 times), the scale of public investment of the remaining provinces/cities did not increase or show signs of decreasing.

Regarding the growth rate of public investment in the region, in the period 2010-2021, public investment will grow at a rate of 4.17%. In general, the region's public investment in the 2010-2015 period grew stronger than in the 2016-2021 period. Specifically, in the period 2010-2015, the average growth rate of public investment in the region was 8.25%, but in the period 2016-2021 it was 0.78%. The reason is that in the period 2010-2015, the Vietnamese and local economies were negatively affected by the world economic crisis and the European public debt crisis; and Dung Quat oil refinery suspending production for maintenance in 2014 also slowed down the growth rate of the whole region. Therefore, the Government has implemented public investment packages to support the regional economy because in this period, private investment is still growing moderately, so public investment still plays the role of the growth engine of the whole region. However, in the period 2016-2021, domestic private investment as well as foreign direct investment (FDI) both increased sharply, becoming the fulcrum for the growth of the region. Therefore, the growth rate of public investment also decreased compared to the previous period. Among the provinces/cities in the region, Thua Thien Hue and Da Nang are the two provinces/cities with the strongest growth in public investment. For the remaining provinces and cities, the growth rate of public investment tends to increase and decrease unstable in the period 2010-2021.

Unit: Billion VND

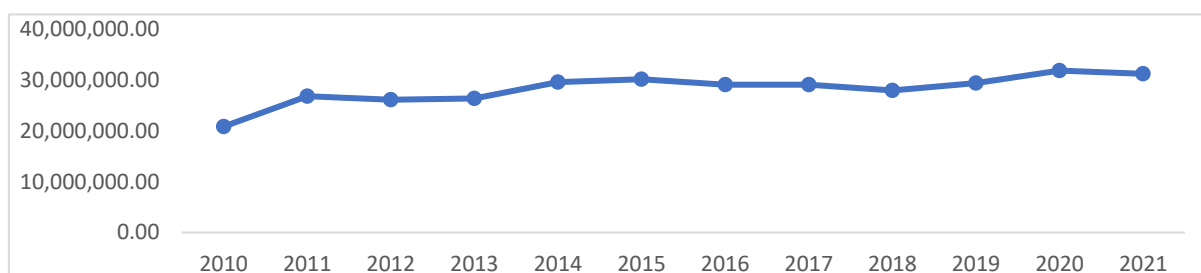


Figure 1. Scale of public investment in localities in the key economic region Central region in the period 2010-2021

Source: Statistical yearbook of localities in the Central Key Economic Region

Regarding the structure of public investment by capital source, it can be seen that public investment mainly depends on the state budget. This capital source reached VND 232,936 billion, accounting for 69.39% of public investment capital in the 2010-2021 period. Thus, public investment capital from the State budget is mainly focused on building socio-economic infrastructure, especially traffic and irrigation, and at the same time focusing on investment in education and training, hunger eradication and poverty alleviation. Loans from Government bonds, local government bonds, official development assistance (ODA), concessional loans from foreign donors, and development investment credit capital of the State accounted for 30, 61%, ranking second after the State budget capital. This capital mainly focuses on areas such as: Construction and development of infrastructure such as renovation of water supply, drainage and traffic systems; Building and upgrading

information and communication technology infrastructure; Providing high-tech medical equipment ... with loans and ODA, actively contributing to supporting the socio-economic development of the Central Key Economic Region. In terms of capital structure, loans accounted for 86% and grants accounted for about 14%.

2.2. Private investment

Regarding the scale of private investment, the scale of private investment has increased significantly in the period 2010-2021. If in 2010, the scale of private investment capital reached VND 17,406 billion, in 2021 the scale of private investment capital reached VND 60,853 billion, in 2018 alone, private investment capital reached VND 77,648 billion. Thus, within 12 years, the scale of private investment has increased 3.46 times. In addition, while public investment in the Central Key Economic Region increased or decreased insignificantly, the scale of private investment in the provinces/cities in the Central Key Economic Region changed markedly during the period 2010-2021. Specifically, the scale of private investment increased sharply in the period 2010-2018 and decreased in the period 2019-2021. The scale of private investment of provinces/cities in the period of 2019-2021 decreased due to the negative impact of the Covid-19 epidemic.

Unit: Billion VND

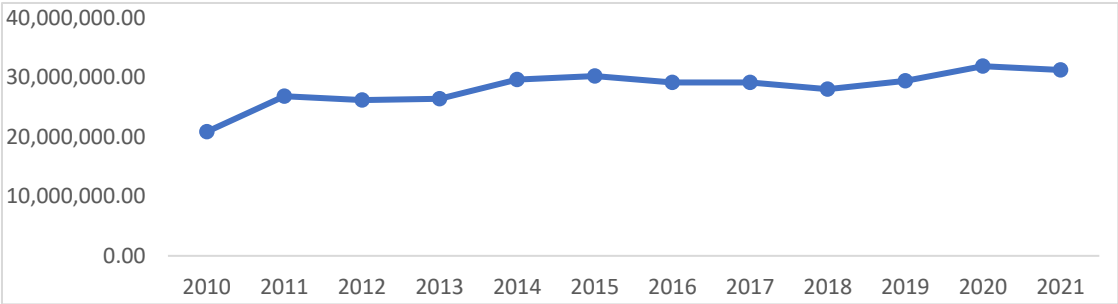


Figure 2. Scale of private investment in localities in the key economic region Central region in the period 2010-2021

Source: Statistical yearbook of localities in the Central Key Economic Region

Regarding the growth rate of private investment in the region, in the period 2010-2021, on average, private investment grew at a rate of 12.37%. Compared with the growth rate of public investment during the same period, private investment increased at a faster rate. This is completely consistent with the economic restructuring of localities with the increase of investment capital of the non-state sector and the gradual reduction of dependence on investment capital of the state sector. Among the provinces/cities in the region, Quang Ngai has the highest growth rate of private investment with 16.33%, while despite being the province with the largest scale of private investment in the region, the growth rate is high. Investment growth in Danang is decreasing, only 8.09% on average. Quang Ngai has attracted a large amount of private investment, with 1 economic Region, 4 industrial parks and 15 industrial clusters. Especially, Dung Quat Economic Region is a multi-functional area, attracting important and large-scale private investment projects in industries such as shipbuilding, mechanics, cement production, automobiles, etc.

Regarding the structure of private investment by capital source, the proportion of private investment capital from the enterprise sector is 64.69% while the proportion of investment capital from the household sector is 35.31% for the period 2010-2021. Thus, the Central Key Economic Region has a clear difference in the structure of private investment. Specifically, the contribution of the business sector to private investment is almost twice that of the household sector. This shows the important role of the business sector in promoting private investment and economic growth. Regarding the types of enterprises operating in the local localities in the Central Key Economic Region, mainly enterprises belong to the group of micro, small and medium-sized enterprises. The number of large-scale enterprises is very small in the local areas within the region. Large-scale enterprises are mainly concentrated in Da Nang, Quang Nam and Quang Ngai, although the proportion of this type of enterprise in the provinces is quite low (6.18 percent on average).

3. Impact of public investment on private investment in the Central Key Economic Region

3.1. Research Methods

The study uses the PMG method to analyze the impact of public investment on private investment in the Central Key Economic Region. The PMG method allows for short-term parameters to differ between groups while constraining long-term parameters to be uniform across subgroups. Therefore, the advantage of PMG is that it allows to distinguish short-term (difference between groups) and long-term (homogeneous between groups).

The PMG is used to estimate the elasticity coefficients and adjustment speed as follows.

$$\Delta Y_{it} = \theta_i (Y_{it-1} - \gamma_i X_{it}) + \sum_{j=0}^n \rho_{ij} \Delta Y_{it-j} + \sum_{j=0}^m \beta_{ij} \Delta X_{it-j} + \tau_i + \varepsilon_{it}$$

Trong đó

$(Y_{it-1} - \gamma_i X_{it}) = EC$ The error correction factor reflects the adjustment speed

γ_i và ρ_{ij} , β_{ij} are the long-run and short-run regression coefficients, respectively

τ_i, ε_{it} are the unobserved and observable error respectively

Model estimation by the PMG method requires that the variables included in the model have cointegration, so it is necessary to test the cointegration of the dependent variable and the independent variables included in the model. The model uses unit root test by Breitung test (2000) based on Augmented Dickey Fuller and Philips Perron with a lag of 2 for two cases with and without trend. To test the panel cointegration for the variables included in the model, the author uses the Pedroni test (2004).

3.2. Research model

Accordingly, based on the research of Malik (2013) and Omotogun, O. (2018), the research model has the following form:

$$PI_{it} = \alpha + \delta PU_{it} + \sum \varphi_j X_{itj} + \mu_{it}$$

In which: $i=5$ provinces in the Central Key Economic Region, t is the period from 2010 to 2021, PI is the total private investment (at 2010 constant prices), PU is the total public investment (at 2010 constant prices), X is the control variables μ_{it} is the error.

Based on the studies of Peltonen et al. (2012), Demilie Basha Hailu et al. (2015), Carrasco, M. (1998), Cavallo, E., and C. Daude (2010), Sofia Vilela São Marcos (2019), X can be measured through real interest rates (IR), inflation (INF) and gross local product (GRDP). Besides, based on the research of Tran Ngoc Anh Thu and Le Hoang Phong (2014), Nguyen Thi Canh (2018), and Nguyen The Khang (2022), foreign direct investment (FDI) is one of the factors that affects private investment in Vietnam. Therefore, the research model is rewritten as follows

$$PI_{it} = \alpha + \delta PU_{it} + \varphi_1 IR_{it} + \varphi_2 GRDP_{it} + \varphi_3 INF_{it} + \varphi_4 FDI_{it} + \mu_{it}$$

3.3. Research data

The data of the variables in the model are collected year by year mainly from the Statistical Yearbooks of the provinces of the Central Key Economic Region, including total public investment capital PU, total domestic private investment capital (PI), total foreign direct investment (FDI), Gross Local Product (GRDP), Inflation (INF). The real interest rate (IR) is collected from the World Bank.

Variables are expressed in logarithmic base natural form. In addition, the variables are calculated in per capita form. Specifically, the variables will be calculated by the logarithm of the value of the variable divided by the local population (POP- Entire labor force in the provinces aged 15 years and over (thousand people), for example $PU = \ln(PU/POP)$. With this calculation, the values will be adjusted to suit the characteristics (population size) of the locality.

3.4. Research results and discussion

Table 1. Unit root test results

Variable	Level		First deference		Integrated level
	Constant	Constant & Trend	Constant	Constant & Trend	
PU	-0.075 (0.469)	0.490 (0.688)	-3.020*** (0.001)	-2.180* (0.097)	I(1)
PI	-0.688 (0.245)	-0.405 (0.342)	-1.855** (0.031)	-1.085* (0.053)	I(1)
PIE	-1.842 (0.032)**	-1.365 (0.047)**			I(0)
PIH	0.109 (0.543)	0.457 (0.756)	-2.279** (0.011)	-2.056* (0.063)	I(1)
FDI	0.159 (0.563)	-0.583 (0.279)	-2.556*** (0.005)	-0.181 (0.428)	I(1)
GRDP	0.516 (0.697)	0.328 (0.628)	0.119** (0.032)	0.954 (0.830)	I(1)
IR	-3.222*** (0.001)	-2.437*** (0.007)			I(0)

Source: Stata-15

The research results in the table above show that the initial values of the variables (except IR) are not stationary when testing the trend factor and no trend factor. However, when using the first difference, the unit root hypothesis is rejected at 1% and 5% significance levels when there is no trend factor. Therefore, the study is based on stationarity at first difference to assess the relationship between public investment and private investment in localities in the Central Key Economic Region. The above results show that the variables in the model have a co-integration relationship or a long-term relationship. To test this hypothesis, the author uses the Pedroni test (2004) to assess the short-term and long-term impacts of public investment on private investment in localities in the Central Key Economic Region.

Table 2. Cointegration test results

Test	Coef.	p-value
Modified Phillips-Perron t	2.426***	0.0076
Phillips-Perron t	-5.521***	0.0000
Augmented Dickey-Fuller	-3.530***	0.0002

Source: Stata-15

The results presented in the table above suggest that the null hypothesis H0 without cointegration is rejected at the 1% significance level or that there is a long-term equilibrium between the variables in the model.

Table 3. Testing the long-term and long-term effects of public investment on private investment in the Central Key Economic Region

		Coef.	Std. Err.	z	P> z	[95% Conf.Interval]	
Long run	PU	0.417***	0.048355	8.64	0.000	0.322776	0.5123233
	FDI	0.082***	0.018388	4.47	0.000	0.04622	0.1182976
	GRDP	0.525***	0.022776	23.06	0.000	0.480589	0.5698681
	IR	-0.041***	0.010067	-4.13	0.000	-0.06126	-0.0218037
Short run	EC	-0.660***	0.220469	-3.00	0.003	-1.09243	-0.228212
	Δ PU	0.013	0.278405	0.05	0.961	-0.53208	0.5592477
	Δ FDI	-0.012	0.014702	-0.86	0.391	-0.04143	0.0162024
	Δ GRDP	-0.221	0.49371	-0.45	0.654	-1.18897	0.7463429
	Δ IR	-0.004***	0.001317	-3.6	0.000	-0.00732	-0.0021556

Source: Stata-15

The error correction vector (EC) is negative and statistically significant (at the 1% level) indicating the existence of a co-integration relationship between the variables in the model in at least one of the four provinces in the Central Economic Region.

In the long term, public investment, foreign investment, interest rates, and GRDP all affect private investment. In which, PU, FDI and GRDP have the same effect and IR has opposite effect. More specifically, when public investment increases by 1%, private investment increases by 0.417%. This result coincides with the research results of Oshikoya (1994), Kamps (2004b), Afonso and Aubyn (2008), Su (2011), Nguyen (2018) and Nguyen (2022). This result also shows that it is consistent with the general situation in the Central Key Economic Region when the proportion of public investment in total social investment and the growth rate of public investment tends to decrease in the period 2010- 2021. Meanwhile, the proportion of private investment in total social investment and the growth rate of private investment tends to increase gradually in the period 2010-2021. On the other hand, in the structure of public investment capital in the Central Key Economic Region, investment capital from the State budget for infrastructure accounts for the highest proportion. Therefore, as the analysis results show, in the long term, public investment has a complementary effect on private investment in the Central Key Economic Region. Besides, the research results also show that a 1% increase in FDI increases private investment by 0.082%. Similarly, a 1% increase in GRDP boosts private investment by 0.525%. Meanwhile, the IR real interest rate increased by 1%, while private investment decreased by 0.041%. The impact of the variables in the model on private investment shows that it is consistent with the theoretical model and the studies of Jorgenson (1963), Bui et al. (2017), Nguyen (2018).

In the short term, however, the impact of PU public investment on private investment in the Central Key Economic Region is unclear. This result is not as expected of the author but can be found in the study of Kollamparahr and Nicolaou (2011). According to the author, the cause comes from the short-term factor that public investment in infrastructure cannot immediately create a complementary effect for private investment, while public investment in the Central Key Economic Region is due to account for a smaller proportion than private investment, so it does not create a crowding effect. Similarly, GRDP is also unknown for private investment. In contrast to the long run, in the short run FDI has a crowding out effect on private investment. Specifically, a 1% increase in FDI will cause private investment to decrease by 0.012%. The research results were in line with the author's expectation and coincided with the study of Fry (1993), Agosin and Mayer (2000), Nguyen (2018), Nguyen (2021). In the short term, the construction of infrastructure to encourage foreign investment has not yet brought into play the complementary effect of private investment. In addition, foreign-invested enterprises always have advantages in technology and management over domestic private enterprises, so the increase in FDI capital will create an overwhelming effect on private investment. However, the degree of crowding is not significant because the proportion of FDI capital compared to the proportion of private investment in the Central Key Economic Region is relatively small compared to public and private investment. In addition, short-term real interest rates have the same overwhelming effect on private investment as in the long-run.

4. Discussion and conclusion

Firstly, affirming the "leading" role of public investment in private investment, especially in the long term in the Central Key Economic Region. Through the above research results, public investment in the Central Key Economic Region has an impact on private investment in the long run. Currently, public investment in infrastructure in the Central Key Economic Region has not kept pace with demand, so additional public investment is necessary and must be accompanied by efficiency in planning, avoiding duplication and delay. ... inhibiting infrastructure development in the region (UNDP, 2022). However, the current road transport infrastructure still exposes many weaknesses, partly due to the region's topography (saltwater, landslides, poor geology...) difficultly to implement road projects. In the context that the budget is shrinking due to the Covid-19 pandemic, the Government budget cannot invest in all items related to road projects in localities, so the Government needs to support for public investment capital focusing on intra-regional linkages.

Secondly, strengthen the coordination between public investment and private investment in the localities of the Central Key Economic Region. The study shows that in the short run FDI has a negative effect on private investment. Moreover, in the context that FDI inflows are highly volatile due to the impact of the Covid-19 pandemic and public investment resources from the state budget are shrinking, public investment combined with private investment is the solution. PPPs help the State transfer project-related risks to a private counterparty that is perceived to be better able to manage risks. Especially in the field of infrastructure, public investment from the State budget or even loans cannot be fully financed. Therefore, combining with private investment resources and policies on ways to mobilize the necessary capital to support the localities in the region to continue to grow. Currently, localities in the Central Key Economic Region have implemented this form of investment and Da Nang is leading in the number of projects. Specifically, Da Nang currently has 32 projects in the form of public-private partnership (PPP). In which, there are 4 volume payment projects, 7 transition projects and 21 new investment projects invested by the Departments and PMUs as investors and invested in the form of BT, BOT, and BLT.

Thirdly, it is necessary to promote the leading role of Da Nang city as an economic, cultural and social center, a driving force for the development of the Central Key Economic Region. With its position as the center of the Central Key Economic Region, Da Nang needs to accelerate the disbursement of public investment capital, focus on investing in key projects, and in the immediate future attract a lot of investment resources from the private sector. Specifically, the city needs to focus investment capital on developing the logistics system, setting aside land fund to develop infrastructure and logistics centers. In addition, focusing on speeding up the implementation of key infrastructure projects. In addition, there should be preferential policies and support for logistics service enterprises to apply high technology in their operations.

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ASSESSMENT OF POTENTIAL AND SOLUTIONS FOR SUSTAINABLE TOURISM DEVELOPMENT OF THE CENTRAL COASTAL PROVINCE - WEST HIGHLANDS

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Abstract

The Central Coast region and the Central Highlands of Vietnam have many advantages in marine - forest tourism and concentrate many famous heritages imbued with the region's national cultural identity. However, the potential factors affecting the sustainable tourism development are increasingly evident. Therefore, the article focuses on surveying, evaluating, analyzing potentials and providing solutions to link sustainable tourism development in the Central Coast - Central Highlands provinces. The research results serve as the basis for the effective planning of the province's tourism development in the coming time.

Keywords: *Links, tourism, The Central Coast region*

1. Introduction

The provinces of the Central Coast - Central Highlands are facing problems of sustainable development, especially the rapid urbanization rate but the lack of synchronous investment in technical infrastructure. The construction of too many hydropower projects on rivers has caused a lot of loss of natural forest area, a huge amount of soil and rock has been excavated and moved, but no measures have been taken to restore and replace forests in time. . In coastal coves and bays, spontaneous and unplanned development of aquaculture also causes many environmental consequences. Along with that is the massive development of industrial parks, which creates considerable pressure on the environment. The problems of natural resource depletion and the impact of climate change lead to environmental pollution, especially the water environment, and the decline in the value of ecosystems and biodiversity leading to the decrease in attractiveness for tourism activities... The master plan on tourism development of the Central Coast and Central Highlands to 2020, vision to 2030 approved by the Prime Minister shows the importance The close guidance of the leaders of the Party and Government for the development of the tourism industry in general and the region's tourism in particular, creating a premise for investment and management of regional tourism development in the right direction and lasting.

The development objective is to maximize the potential and advantages of each region to develop tourism to become the leading strength of tourism in the Central Coast - Central Highlands provinces. In the past few years, provinces. The Central Coast - Central Highlands has been interested in tourism development, but in fact. That planning work only stops at some basic

orientations, the main development targets as well as spatial zoning only stop at a few tourist areas and attractions without highlighting the planning scope. development of the industry (Tourism Research and Development Institute - Ministry of Culture, Sports and Tourism, 2010).

2. Method

Methods of data collection and processing: on the basis of collected data on tourism development in the Central - Central Highlands; The author conducts analysis, assessment and synthesis to clarify opportunities and challenges in order to provide solutions for sustainable tourism development for the region.

Field method: conduct discussions with managers, owners of tourism businesses and some leaders of provincial departments to find out the current status of regional tourism development linkages about advantages and disadvantages. need to be removed in tourism development cooperation.

Qualitative method: conducting interviews with experts to find out the advantages and disadvantages of linking and cooperating in regional development; and breakthrough solutions, in order to help regional tourism promote its inherent strengths in the short term as well as in the long term.

3. Results

3.1. Opportunities in linkage and cooperation in tourism development in the Central Coast - Central Highlands provinces

The Central Coast region - Central Highlands of Vietnam includes 19 provinces and cities with a natural area of about 152,000 km², a population of more than 25 million people. With 1,870 km of coastline, more than 1,500 km of land border with Laos and Cambodia. The Central Coast - Central Highlands region has diverse and rich resources with many outstanding potentials. The whole region currently has 12 airports in operation with 5 international airports; The seaport system has been upgraded with 10 class 1 seaports, including Chan May deep-water port (Thua Thien - Hue), Cam Ranh port (Khanh Hoa) to receive the world's largest seagoing vessel. The Central Coast - Central Highlands region converges many resources and tourism potentials, in which: potential for sea and island tourism is a strength with a chain of world-class beaches and many beautiful bays in the world. such as: Lang Co Bay (Thua Thien - Hue), Xuan Dai Bay, Vung Ro Bay (Phu Yen), Nha Trang Bay (Khanh Hoa) (Prime Minister, 2013 - 2014). Many attractive islands and peninsulas stretching from Thanh Hoa to Binh Thuan; Mountainous tourism resources with many famous hilly eco-tourism sites, lakes and waterfalls are concentrated in the Central Highlands provinces. Notably, there are 9 national parks here, notably Phong Nha - Ke Bang (Quang Binh) with a system of caves that are magnificent and fanciful wonders. The Central Coast region - Central Highlands is the residence of 47 ethnic groups, creating a treasure of tangible and intangible cultural heritages imbued with ethnic identity with 9 world cultural heritages. Among them are the Ho Dynasty Citadel (Thanh Hoa), the complex of Hue monuments, Hue royal court music (Thua Thien - Hue), My Son Cham relic complex, Hoi An ancient town (Quang Nam).), the system of Cham temples and pagodas along the Central

Coast... The Fisherman Festival in the sea area, epic treasures, the space of gong culture in the Central Highlands... these are great and valuable potentials and advantages that allow development. Integrated economic development with many key industries, especially linking tourism development, when combining two different cultures and geographies, complementing and creating diversity and uniqueness with tourism products “Sea - Forest” (Prime Minister 2011 - 2013).

Based on the 2019 ranking of the World Tourism Organization (UNWTO), Vietnam ranks 5th in ASEAN in terms of international arrivals, specifically Vietnam is behind the following countries: Thailand, Malaysia, Singapore and Indonesia. Although the growth rate of our country's tourism industry has improved year by year, it is not difficult to see the regional disparity in reality. In 2019, Vietnam welcomed more than 18 million international visitors, especially international visitors to the Central Coast and Central Highlands are still modest; while Thailand welcomed more than 38 million arrivals, of which 1 million international visitors were Vietnamese.

Table 1. World tourist destination ranking in 2019

Numbers	Destination	International arrivals (millions of arrivals)
1	France	90.0 million of arrivals
2	Spain	83,7 million of arrivals
3	United States	79,3 million of arrivals
4	China	65,7 million of arrivals
5	Italy	64,5 million of arrivals
6	Mê - hi - cô	45,0 t million of arrivals
7	UK	39,4 million of arrivals
8	Türkiye	51,2 million of arrivals
9	Germany	39,6 million of arrivals
10	Thailand	38,9 million of arrivals
(Ranked 5/10 ASEAN countries)	Vietnam	>18 million of arrivals

Source: World Tourism Organization - UNWTO

The Central Coast with the "heritage road" gives visitors a wonderful feeling about the scenic spots associated with the sea, islands, historical and cultural relics, and unique traditional folk festivals. Along with culinary dishes rich in coastal emotional flavors, the Central Highlands will be the unique experiences and discoveries of the great culture where many plateaus, natural reserves and national parks are gathered. many rare and precious plants, ornamental plants and medicinal plants; rich and diverse multi-layered vegetation and rare wild animals. In particular, Chu Mon Ray and Kon Ka Kinh National Parks are recognized as ASEAN Heritage Parks. This is a favorable natural condition for building unique eco-tourism products bearing the characteristics of the Central Highlands (Vietnam National Administration of Tourism (2015).

Stemming from the potentials and advantages mentioned above, in recent years, the Central Coast - Central Highlands provinces have expanded links and cooperation in tourism development with other provinces in the region and other provinces and cities. regions, regions nationwide. From the joint efforts of each province combined with the programs of signing, cooperation and tourism promotion, tourism in the Central Coast - Central Highlands provinces has made new strides, the number of domestic and international tourists to localities has increased compared to previous years. The question arises how the Phu Yen tourism industry can take advantage of geographical factors in regional cooperation to promote strong growth in tourism while still meeting competitive needs. ?

According to Philip Kotler, in a competitive market there are always four components: the leader, the challenger, the follower, and the corner-filler. From that perspective and based on the actual situation, it is not difficult to realize the current state of tourism in each locality:

Table 2. Recent statistics on tourism development in localities

Gr.	Provinces/ Cities	Visitors	International visitors	Domestic visitors	Revenue (Unit: billion VND)	Accomm- odations	Travel businesses	Forecast 2023
1	Đà Nẵng	>7,6 million	>2,8 million	>4,7 million	24.060	785	331	>9 million
1	Quang Nam	6,5 million	3,78 million	2,79 million	4.700	624	>50	>8 million
1	Khanh Hoa	>6,3 million	2,8 million	4,5 million	20.524	750	128	>7,5 million
1	Lam Đông	>6,5 million	485.000	>6 million	11.700	426	>60	>6,6 million
2	Binh Thuan	5,8 million	670.000	5,1 million	12.864	488	49	7 million
3	Binh Định	>4 million	286.463	3,8 million	3.301	217	36	5,8 million
4	Ninh Thuan	2,19 million	80.000	2.110	1.050	132	6	2,35 million
4	Phu Yen	1,6 million	41.005	1,6 million	1.556	126	12	>2,2 million
4	Đac Lac	812.00 0	76.000	736.000	761	199	25	>1,6 million

Source: compilation

However, the effectiveness of tourism development activities, especially in terms of income and job creation for the society, is still limited. In 2022 alone, the total number of tourists to Vietnam will reach 104.96 million, of which international tourists will reach 3.66 million, domestic tourists will reach 101.3 million, total revenue from visitors tourism reached

VND 495,000 billion, reaching 66% compared to 2019 (<https://vnexpress.net/nam-bung-no-du-lich-noi-dia>, December 24, 2022); but the Central - Central Highlands only received about 38 million visitors, of which international visitors reached 6.3 million, the total tourism revenue was about 80 billion VND (2018: 58 million visitors; international visitors more than 9.5 million visitors. total revenue of 120 billion VND, accounting for 18.75% of the total tourism revenue of the country). In addition, although the number of tourists is relatively large, the distribution is uneven, the total revenue from tourism is still low, not attracting the high-end tourist market, the tourism infrastructure system is still limited, the tourism infrastructure is still limited. Technical material is still weak and lacking. The linkage in tourism development is not tight, especially the linkage to build specific tourism products. (<http://www.vtr.org.vn/phat-trien-du-lich-mien-trung-va-tay-nguyen-no-luc-cung-nau-phat-trien>).

Through contact, it can be seen that Phu Yen tourism today has been lacking in mutation in tourism business management activities. Provincial Competitiveness Report 2022 Phu Yen ranks 47 out of 63 provinces and cities, rated medium, which also partly demonstrates the province's competitiveness and investment attraction. An interesting coincidence is that the ranking of localities in the South-Central Coast - Central Highlands also partly corresponds to the level of tourism development, specifically:

Table 3. Assessment of Provincial Competitiveness in 2022

Places	Provincial/City	Ranking PCI Index (total score:100)	PCI Rank	Tourism Development Level
2	Đà Nẵng	70,11/100	Very good	Leading group (1)
7	Quang Nam	65,41/100	Good	
18	Binh Định	64,08/100	Fair	The following group (3)
22	Lam Đông	63,50/100	Fair	Leading group (1)
23	Khanh Hoa	63,36/100	Fair	
24	Binh Thuan	63,34/100	Fair	Challenge group (2)
31	Đạc Lac	62,19/100	Average	Corner group (4)
38	Ninh Thuan	61,60/100	Average	
47	Phu Yen	60,59/100	Average	

Source: Vietnam Chamber of Commerce and Industry

3.2. Challenges in linkage and cooperation in tourism development in the Central Coast - Central Highlands provinces

The association and cooperation in tourism development in the Central Coast - Central Highlands provinces revealed limitations such as: the linkage and cooperation programs in tourism development between the Central Coast and Central Highlands provinces have not yet been established. concretized, has not yet given a way to do it for businesses but let businesses "swim by themselves". Among the provinces in the region, there is not a "conductor" in this field; Most of the attractions and tourist products of the Central - Central Highlands provinces are quite similar. This "copying" has both lost the unique characteristics of each province and created a feeling of monotony and boredom for tourists, and at the same time affected the healthy competitive environment.

The Central Coast - Central Highlands provinces have signed quite a number of cooperation and tourism development cooperation programs with other provinces and cities in the region and the whole country, but this connection mostly just stops at Italy. The will of local leaders/or of the Culture, Sports and Tourism industry, in fact developing tourism in a strong way, still lacks an overall vision. The association and cooperation in tourism development between the Central Coast provinces - the Central Highlands is not stable and sustainable, there are still many shortcomings. Specifically: not yet coordinated and implemented the plan for cooperation in developing tourism products. Tourism products are still quite monotonous, duplicated, not specific and unique. Has not yet created tourism products with specific characteristics and high quality. The common tourism brand of each region has not been built yet. There has not been a general tour of the provinces with unique characteristics of each locality. There has not been any association or cooperation in training and development of tourism human resources. The organization of cultural and tourism events has not yet been linked to form a series of events to attract tourists... Tourism promotion and promotion is still limited, not yet highly competitive in the region and internationally to promote tourism. attract customers from key markets with high affordability. The ability to exploit and link tourism products between provinces has not met the actual requirements of many tourists, especially foreign tourists (VNAT, 2010 - 2015).

Another limitation is that human resources in the tourism industry in the Central Coast - Central Highlands provinces have increased in number each year, but there are still many aspects that have not met the task of tourism development when integrating into the world. deepening, comprehensive and demanding development of a knowledge-based economy. The number of trained human resources is small, the structure is not synchronized, and the practical capacity is not commensurate with the qualifications. There are not many qualified and skilled human resources and there is a shortage of leading cadres to act as the core of young human resource training. The knowledge of integration, foreign languages, informatics, creative capacity, leadership, management, administration and practical experience still have many limitations (Vietnam National Administration of Tourism, 2005).

3.3. Proposing a group of solutions to link sustainable tourism development in the Central Coast - Central Highlands provinces

3.3.1. Pay proper attention to tourism planning and management and investment according to planning

It is necessary to pay attention to tourism planning and management and investment according to planning. Continue to focus on synchronously implementing many positive measures, developing in depth and stability, constantly improving competitiveness, affirming and maintaining the brand on the basis of maximum exploitation and potential efficiency. capabilities and advantages of each province. Identify the main types of tourism as a driving force to promote tourism development in the province, thereby creating a driving force for the development of the whole region. With the potential of existing tourism advantages such as: Long coastline, many historical and cultural relics, beautiful landscapes, the central provinces can strongly develop the type of tourism in the sea and islands, tourist

relics. history - culture, festivals associated with the river region. The Central Highlands provinces focus on strongly developing forms of eco-tourism, agriculture, culture and festivals imbued with indigenous national identity. These types of tourism are being loved by young people, especially international tourists.

Focus on improving the investment environment. Strongly reform administrative procedures and perfect mechanisms and policies to create favorable conditions for investors. Actively support to remove difficulties and obstacles of investors regarding land, clearance, compensation..., to quickly deploy the project after the investment project is approved by the province.

To increase investment and call for investment according to planning in infrastructure for tourism development, on the basis of ensuring the natural landscape, protecting the natural environment and preserving and conserving tourism resources. calendar. The distance between the provinces of the Central Coast - Central Highlands is not too far, the road, railway, waterway and air transportation system is quite convenient, so the link and cooperation in sustainable tourism development between the two countries are very convenient. This province to support and complement each other, can meet many different segments and markets of tourists, creating a strong development in tourism for each province and the whole region.

3.3.2. Focus on training human resources in the tourism industry

The tourism industry includes many professions, many different business fields, human resources also have respective departments and groups, but it can be seen that there are two main groups, indirect groups and direct groups. The indirect group is a force of leaders, managers, experts and researchers with the requirement to have talent in leadership and management, to have a vision, to be sensitive to trends and prospects of the tourism industry. domestic and international. Must know how to use, retain and attract talented people who have the ability to dedicate and create for the sustainable development of the industry. Direct human resources group includes tour guide, receptionist, room service, table, chef..., with high requirements on professional ethics, job skills, creativity, life skills, coordination work, know how to apply appropriate advanced technology, especially knowledge about history, culture, good at foreign languages. In order to overcome the above mentioned shortcomings and limitations, tourism human resources in the Central Coast - Central Highlands provinces need to be trained in awareness, professional knowledge, and sense of responsibility to be able to spread success. responsible tourism practices, towards sustainable tourism development. Localities in remote and isolated areas, ethnic minority areas and flat sea areas due to difficult economic conditions and inadequate educational attainment. Therefore, it is necessary to provide practical assistance to employees in tourism business activities, such as organizing free vocational training programs, training in tourism skills, and supporting vocational training for people. labor force, gradually specializing and formalizing the labor force. Continue to improve the mechanism in attracting the community to participate in tourism activities, on the other hand, it is necessary to raise awareness and improve the capacity of the community so that they are the ones who have a sense of protection and promotion of the values. natural tourism resources and humanistic tourism resources in the area to live in a sustainable way.

3.3.3. Raise awareness of stakeholders in activities on sustainable tourism development

Sustainable tourism development requires a synchronous and comprehensive implementation of a system of economic, social and environmental solutions. With this importance, local authorities; State management agencies in charge of tourism in the Central Coast - Central Highlands provinces need to strengthen propaganda and education to raise the awareness of stakeholders about sustainable tourism development. Each entity has an important role, which is expressed in both responsibilities and obligations to ensure tourism activities are developed in a sustainable way. For local communities, especially ethnic minorities, it is necessary to pay attention to people's livelihoods, create jobs, and provide vocational training for workers. Promote propaganda and explanation so that people can clearly see the immediate and long-term benefits from tourism activities, and be responsible for sustainable tourism development; actively participate in protecting the environment, protecting historical and cultural relics, festivals, traditional industries and fine customs and traditions of the nation, preserving civilized lifestyle, maintaining security and safety. social, friendly attitude towards tourists... All of these actions have great significance for the sustainable tourism development of each locality and the whole region.

3.3.4. Coordinate and support businesses, organizations and individuals in tourism-related activities

Close linkages between local authorities in the Central Coast - Central Highlands provinces, businesses in the tourism industry, and between the tourism industry and other industries such as transportation, diplomacy, security, and finance , industry and agriculture in the province as well as connecting with the Central Coast - Central Highlands provinces and the whole country to expand the market. Tourism is an interdisciplinary, inter-regional and highly socialized economic sector, tourism development cannot be isolated and confined within each locality, province and city but must be a common issue. of the region and the country as a whole. Therefore, it is necessary to focus on linking in promotion and promotion of destinations, linking in product design, in customer service organizations, and building value chains. It is necessary to develop a common operating mechanism of the association and cooperation programs in a practical and effective manner. Do well the promotion of tourism types of the Central Coast - Central Highlands provinces with regional, domestic and international markets.

Support investors, businesses, organizations and individuals operating in the field of tourism, carry out administrative procedures; visa procedures; link building complete tourism products. Enterprises are considered as the root for tourism in the provinces to develop, management agencies need to support locations and land taxes for businesses so that businesses can boldly invest in construction in rest stops, shopping for tourists. tourists on national highways 1, 7, 8, 9, 14, 19, 25, 26, 27, 29... go through Vietnam and the central provinces - the Central Highlands. Connecting the traffic system along the East-West Economic Corridor connecting Laos and the Northeast region of Thailand. Strengthen professional training for staff working in tourism businesses; business enterprises need to develop price policies and seasonal promotions to support tourism service businesses of the provinces.

3.3.5. Promulgating a mechanism to operate linkages and cooperation in tourism activities

The Vietnam National Administration of Tourism has researched and launched tourism products, the "Central Heritage Road" tourist route, connecting the "Central Highlands Green Road" tourist route, becoming a cross-border route from the coastal provinces. Central Highlands to Central Highlands in order to exploit and link tourist attractions, landscapes, cultural heritages, festivals of the Central Coast region with natural and cultural heritages of the Great Highlands... Currently, this route has not fully promoted its value, as well as opportunities and potentials to stimulate tourism in the Central Coast - Central Highlands provinces. In order to effectively implement the program of cooperation and cooperation in tourism development among the above localities, it is necessary to issue a mechanism to operate linkages with clusters as the center for tourism development. There needs to be a "conductor" to coordinate and have a common voice for the development of the whole region. The Central Coast - Central Highlands provinces need to connect in clusters of industries to promote tourism promotion to domestic and international friends. Leverage common strengths. The provinces need to discuss to develop common tourism products for the Central Coast - Central Highlands provinces and specificities of each locality such as: food court, shopping mall for handicrafts, street vendors; entertainment area to meet the needs of many tourists; preserve and enhance culinary culture. It is recommended that the National Administration of Tourism, the Ministry of Culture, Sports and Tourism also need to regularly pay attention to professional guidance and continue to have policies and activities to support and support tourism in the coastal provinces. Central - Central Highlands.

3.3.6. Strengthening state management capacity and international cooperation in tourism

The local state management agencies in charge of tourism promote the role of leading businesses and communities in tourism activities towards sustainable development. Play an important role in formulating policies and strategies for sustainable tourism development. Disseminate, train, issue guidance materials, support local businesses and communities to follow the principles of sustainable tourism development. Organize seminars and training classes to raise awareness and exchange practical experiences during practice. Promote propaganda, encourage and honor examples of sustainable tourism development. Strengthen inspection and supervision, have sanctions to strictly punish the infringement of historical, cultural relics, scenic spots, discharge of waste, irresponsibility in waste treatment, causing environmental pollution, breaking the law. destruction of natural resources in the area.

The Central Coast provinces - Central Highlands, it is necessary to strengthen the expansion of international exchanges and cooperation, learn from experiences in developing community-based tourism, green tourism, responsible and environmentally friendly tourism; learn from the experience of handling environmental issues and responding to climate change of countries around the world. Take advantage of the support of countries and international organizations to contribute to ensuring the requirements of sustainable tourism development of the Central Coast - Central Highlands provinces.

4. Discussion and conclusion

Tourism is identified as a general economic sector with profound cultural content, interdisciplinary, inter-regional and highly socialized, the tourism industry is oriented by the Government to develop into a spearhead economic sector. , actively contributing to socio-economic development, bringing job opportunities and improving people's living standards, and at the same time enhancing the country's image in the international arena. In order to be determined to achieve the goal of turning the tourism industry into a spearhead economic sector with sustainable development, the Central Coast - Central Highlands provinces need to implement a synchronous and drastic orientation, grasping the awareness of the government to the people, turning awareness into concrete action. Accordingly, in order to ensure sustainable tourism links and cooperation, the most important issue is to know how to conserve and use resources rationally and effectively. To do so, tourism business activities must always have a sense of responsibility in the process of exploiting and using tourism resources. This not only contributes to the long-term sustainable tourism development of the tourism industry, but also creates conditions for each tourism activity of the Central Coast - Central Highlands provinces to develop continuously and sustainably.

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A CHANGE IN CULTURAL LIFESTYLE IN PROCESS OF URBANIZING AND BUILDING NEW RURAL AREAS IN PHU XUYEN DISTRICT, HANOI CITY

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Communist Review, Hanoi, Vietnam

Abstract

Based on the material of a field survey from 2019 to 2022 and some data from the economic and social reports in recent years of Phu Xuyen District (Hanoi City), this writing has analyzed the impacts on the process of urbanizing and implementing the Program on building the new rural areas and the cultural lifestyle of the local people. Through the analysis, the Phu Xuyen district people have still maintained their practicing the traditional culture, yet, they also have a change on the basis of being proactive in their adaptability, flexibility and creativity to be in conformity with the criteria of a new rural area and the influence in the process of urbanizing has been tremendously happening. Through this, this writing has discussed the challenges and had recommendations concerning the solutions with a view to maintaining the fine traditional cultural features to be conforming to the context of building the current new rural areas and the urban civilized lifestyle.

Keywords: *cultural change; cultura lifestyle; urbanization; rural areas*

1. Introduction

Through many visits and participations in experiencing a number of the residential communities in some communes of Phu Xuyen District, Hanoi City, we have recognized that the process of modernizing and urbanizing in this region is happening rapidly, the building of new rural areas has become ever more important in the rural-urban connectivity. Some cultural and spiritual aspects in the rural areas have happened in an extremely complicated and unpredictable manner and behind them is the diverse movement from habits, the way of life, livelihoods, family culture, the organization of cultural activities and so on. As far as these changes are concerned, the culture subject has manifested the adaptability to some new cultural factors, the flexibility and creativity so as to be in conformity with the concrete conditions. The arisen issues in the process of urbanizing and building the new rural areas in the cultural aspect need to be studied and on that basis, we can have a scientific base to see the adaptability and flexibility in the cultural practices of the rural residential areas before the impacts of the context of social change.

2. Theoretical framework

First of all, it is *the system of viewpoints, the way of accessing to the culture change*. When studying the culture change, the element that we have determined to have the most important role is the process of modernization based on the modernization theory) which

appeared and developed in the West from late 19th century to early 20th century. The important point of the modernization theory holds that the societies that have embarked on the modernization stage have got the very diverse forms, not only comprising industrialization, but also urbanization and the very high social mobility. The changes in the aspects such as education, gender, social welfare, job specialization are related to the cultural and social changes. The next way of getting access is *the subjectivity and the capacities of the culture subject*. According to the theory of social action by Max Weber, “social action is the action of the subjective in correlation with the action of the other person and oriented in the action of certain person in his subjective meaning concerning the premeditated goal. In other words, social action is the purposeful action of the subjective that is explained clearly in terms of motivation, goal and means on the basis of orientating in the action of other person and waiting for the response from that person” (Vu Hao Quang, 2016: 110). Weber mapped out 4 kinds of social action, consisting of the traditional action, sentiment and emotion, instrumental rationalism, purpose of rationalism. In which action of instrumental rationalism is the action implemented by the subject with the consideration, calculation, selection of instruments, means and purpose in such a way as to have the best effectiveness. This can be seen that whether it is in a traditional society or in a modern society, the subject always has a calculation and selection suitable to their capacities, levels, factual conditions of the society (it means that this also takes other people into account) so as to obtain productivity, quality, effectiveness and best interests.

3. Method

In the process of study, we have collected the summary reports in 10 years of implementing the Program on building the new rural areas and a number of emblematic communes, the latest reports on the economic and social development of Phu Xuyen District; books or materials recording the history and culture of villages and communes. Besides, the ethnographic fieldwork method is aimed at collecting the qualitative data for the subject. The point of time when the fieldwork was being conducted, COVID-19 pandemic broke out complicatedly, globally and in Vietnam. The impacts of the pandemic and the social distancing measures had made the travelling, contacts and friends making by the researchers with the local cadres and people had become more difficult. With the help of the district cadres, we could be able to get access to and have the interviews with a lot of objects. The total number of respondents was put at 35 people, in which the respondents of the district/commune cadres were 10 people, the heads of villages were 5, the villagers (from 20 years of age to 70 years old with different jobs) were 20 people. It depended on the different objects that the time and content of the questions for interview could be changeable in a flexible way so that the respondents could feel more comfortable in expressing their opinions and viewpoints. The close association of the ethnographic fieldwork method is the qualitative design, the information collected to get the deep insight of the issue from the perspective of the respondents (from the world outlook, from the subjective experience of the respondents and so on), collected by a lot of operations such as observations, note-takings, photo takings of the customs, habits, rituals and so on; the study of materials, files and materials on the tradition, customs, traditional jobs of the villagers in the areas under study.

4. Results

4.1. *The program on bulding the new rural areas in Phu Xuyen District*

According to the general assessment, “the animated building of new rural areas has become the extensive movement in the whole district. As of the end of 2019, Phu Xuyen District had 100% of communes which had met the standards for a new rural area; the district had reached 9/9 criteria of the new rural area; as mapped out by the roadmap, to the year 2020, the district would reach the standard of the new rural area” (deep interview, a man, 45 years of age, a district cadre). The agricultural production of Phu Xuyen District in the initial step had developed comprehensively in the direction of mechanized, high quality, concentrated commodities production. The outstanding result in Phu Xuyen is the amassing of rice fields and the implementation of the rice seedlings in trays and rice planting machines, making a contribution to creating a new vitality for the district’s agricultural production.

In the set of the National Criteria for the new rural areas ⁴¹, the culture criteria are divided into two kinds: the cultural material and spiritual basis (criterion 6); the cultural life (criterion 16). The two above criteria manifests the “requirement of reaching the standards of infrastructure, the cultural and sport institutions, while it poses the requirements of reaching the standards of the soft contents - the core value of culture” (the Ministry of Culture, Sports and Tourism, 2019:5). In the 2016-2020 stage, Phu Xuyen District concentrated on the perfection of the cultural material basis by taking a lot of proactive, flexible and crative measures in combination with the new building and renovation, transformation of the existing institutions such as the communal houses, pagodas, the meeting halls of the people’s committees. Especially, the district had paid much more attention to improving the quality and effectiveness of the activities of the cultural institutions, forming the clusters of sports - entertaining culture in association with the communal houses of culture of the communes and villages; empowering the residential communities in villages and hamlets to operate and manage them in such a way as to be the most practical and effective. Phu Xuyen District had also linked the Movement called “The entire people unite to build the cultural life” to the Mobilization entitled “The entire people unite to build the new rural area and the urgan civilization” in combination with the implementation of 19 criteria of building the new rural areas. The content of the programs have the integration of goals, tasks, the material and spiritual resources with a view to successfully implementing The National Goals Program on Building New Rural Areas.

¹ Based on Decision 318/QĐ-TTg, on March 8, 2022, of the Prime Minister on issuing the Set of National Criteria on communes of new rural areas and the Set of National Criteria on communes of upgraded new rural areas in the 2021-2015 stage, the Set of National Criteria on new rural area communes has 19 criteria. Specifically: the Planning group has 1 criterion (1-Planning); the Economic-Social Infrastructure group has 8 criteria (2- Communication; 3-Irrigation and prevention of natural disasters; 4- Electricity; 5- Schools; 6- The cultural material basis; 7- The rural trade infrastructure basis; 8- Information and communications; 9- Inhabitants’ houses; the Economic and Production Organization group has 4 criteria (10- Income; 11- Multidimensional poverty; 12- Labour; 13- Production organization and development of rural economy); the Cultural-Social-Environmental Group has 6 criteria (14- Education and Training; 15- Health; 16- Culture; 17- Environment and Food Safety; 18- The Political System and Access to Law; 19- National Defence and Security).

According to assessments, after 10 years of implementation, Phu Xuyen District has 25/25 communes which have fundamentally reached the criterion 16. In 2019, the whole district had 109/141 villages which were recognized as the “Culture Village”, reaching 77.3%; the number of families which were recognized as the “Culture Family”, reaching 95.1%. In 2020, there were 95.8% of villages being recognized as the “Culture Village”, 94.8% families being recognized as the “Culture Family”. That the culture families, the culture villages and the culture city wards have been built has promoted the nuclear role of each family in building the new rural culture. Phu Xuyen District has 345 relics, in which 120 historical relics have been recognized (38 relics have been classified as the national level, 82 relics as the city level); 58 traditional festivals of different sizes have happened annually (The Party Committee of Phu Xuyen District, 2020). The communes in the district have also mobilized the organizations, individuals and outside guests to build, repair the local communal houses and pagodas. The folklore festivals are organized annually together with the maintenance of the melodies of folk songs, the singing of heave-ho at the communal house’s gate, the singing of spiritual songs, the ceremonial song called *ca trù* and so on. The festivals are organized in accordance with the traditional rite, ensuring security, order, safety and healthiness, creating the enthusiastic atmosphere, serving the people’s requirements of religious and belief life. As recorded, of 19 criteria for building the new rural areas, there are only 2 criteria for culture, but these criteria imply almost all the remaining criteria. Because in the final analysis, if the criteria for building the new rural areas want to reach the sustainable result, they all stem from the consciousness and self-consciousness of the people and this is really the cultural lifestyle.

4.2. Changes in the cultural way of life in the process of urbanizing and building the new rural areas

a. Cultural activities are associated with building and operating the new cultural institutions

In a recent field trip, we are able to listen to the villagers telling about their building the village gate and the culture house in Đông village², Chuyên Mỹ commune. According to the villagers, about ten years ago, the village did not have their village gate, the culture house, “all the village affairs, community activities and movements had all depended on the material basis of the elementary school and the communal house. Therefore, it was impossible to have the conditions to rally the residents to popularize them with the general activities in a methodical way” (group exchange). Only until 2013, thanks to the joint efforts of the local authorities, the determination of the villagers, the contribution of both efforts and money of the households in the village, the spacious Culture House was built in an area of 4,000 hectares with a capacity of over 250 people and with sufficient loudspeaker system and the Internet. Since having the Culture House, all the community activities have been regularly organized, such as the Mid-Autumn Festival, the Children’s Festival, the volley ball competitions, the village festival and so on. According to the village headman and the

² The name of village has changed in accordance with the principle of concealing the name of the qualitative study. So all duplications are coincidental

women in the local women's union, in the time to come, the village's Culture House will be used to organize the wedding ceremonies, meetings and the proceeds from these events will be geared to the village's fund with a view to helping the community activities.

The culture houses of the villages have the Internet and the loudspeaker system, the radio to meet the requirements of information of the people in the localities. *"The Culture House was just inaugurated last year; the villagers had contributed their money and efforts, some contributed building materials such as sand, cement, stones, while young people in the village came to help the building work. On average, each month, the culture house has a meeting, such as the meeting of the local party cell, the activities of the old-age people, the clans' meeting, the meetings of the mass organizations and so on"* (depth interview, man, 72 years old, the village headman). Thanks to the culture house, the place for sport activities, the people have more conditions to meet each other and exchange experience in keeping the happiness of families, in building the culture families and in participating in the entertainment activities, in doing physical exercises to improve their health and to unite in the spirit of good neighbours in the village.

During the field trip in mid-August 2020, we had an opportunity to attend the cultural activities of the villagers at the cultural house in Đông Village, Chuyên Mỹ Commune. As shared by the culture cadre of the district, the cultural and art and sports movement in the villages and communes in Phu Xuyen District has developed vigorously with such games as martial arts, the nourishing sports, football, volley ball, badminton, chess, bicycle and so on. These are the main, modern sport games, conforming to the practical conditions of each locality. Ms Tâm³ told me: "Whenever the afternoon comes, I no longer "lingers" in the office to "try" to solve certain issues; on the contrary, I leave the office soon to take my child home from school and then "quickly" go to practice popular dancing with my villagers." She also says: *"In my village, all the cultural, artistic and sport activities are very animated. Whenever the afternoon comes after the school hours, the working hours, the yard of the culture house is crowded with people, looking so bustling. Some middle-aged people like to play the air volleyball, whereas young people and children like playing football or badminton and so on"* (depth interview, female, 54 years old, a communal cadre). The Mai Vàng Popular Dance Club (Đông Village) where Ms Tam has joined has been set up for two years. Every late afternoon, the yard of the Culture House is crowded with the village women to practice dancing, even there are spectators. Every month, the Popular Dance Club has the exchange with other popular dance clubs from other communes and they learn how to dance Zumba and other dances with each other. *"Every village has got an art team, a sport team and they have organized regular performances and competitions in the villages and in the whole communes"* (an exchange with a group of women, Đông village). Even though they have different jobs to do, so they are all busy with their jobs and as a result, the time to practice and play together is more difficult for them to arrange, and yet, in the end of the day they can be able to arrange the time to come in time to do things together. The activities in

³ To ensure the confidentiality in accordance with the principle of the qualitative interview, the name of the interviewer has been changed. All the duplications are accidental.

the culture house has always attracted young people, boys and girls, who are very enthusiastic with the badminton and air volleyball.

The aged people like to play table tennis, to dance Tai Chi Chuan callisthenics or the fan dance. The elementary school or junior secondary school children like to participate in the popular dance clubs or the aerobics clubs. According to Mr. Học - the headman of Vân Village, whenever the village has something to celebrate, such as the Vietnamese Teachers' Day, the Women's Day, the Children's Day or the International Aged People' Day, the above-said performing items are indispensable. These items are painstakingly trained, "all home-grown", and they are all organized inside the culture house or on the yard of the culture house.

b. The implementation of civilized lifestyle in weddings and festivals

Besides the conventions, the village rules, the village customs which have existed for a long time in the villages, the implementation of the civilized lifestyle in the weddings, funerals and festivals have contributed to promoting both the values of the traditional culture and to helping the family and neighbor relations become ever more closely attached. The villagers have the consensus in building the village's New Rural Rules. Now in the area of the whole district, there are 153/153 villages and residential areas having their new rural Rules built and approved. In general, these villages' rules have got concrete stipulations on implementing the civilized lifestyle in the weddings, funerals and longevity wishing ceremonies and in other religious activities.

Accordingly, *the wedding* has been organized in accordance with the provisions of the law on marriage and family, the registration of civil status and they are only carried out after the communal People's Committees supply them with the marriage registration certificates. As provided by the law, a ceremony to hand over the Marriage Certificate will be organized by the communal or ward People's Committees. During the handover event, a ceremonial rite is held with a representative of the local authorities coming to hand over the certificate and the members of the two families are present to witness it with the motto "Solemnity - Jubilance - Healthiness - Thriftiness". Almost all the weddings here are organized within one day, without any carousels. "Many families organized their weddings right in the village's culture house in a day without pitching tents with noisy music played through the loudspeaker system" (depth interview, male, 60, Vân Village). All the weddings in villages and communes of Phu Xuyen District are organized in conformity with the cultural tradition and customs of the localities in a way that the representatives of the families, clans, neighbours and friends and the representatives of the parents' offices and of the brides and grooms are invited to the weddings. The number of invited guests are not over 300. The dinner party is organized within the families and kinship clans, close friends with the limited number and the use of cigarettes and alcohol and beer is not encouraged. Nowadays, most of young people are busy with their work, that is why they find it unnecessary to choose the lucky days to organize their weddings. Most of them select Saturdays or Sundays for their wedding days because these days are suitable to the holidays, "*the relatives and close friends can be able to come and attend their weddings*" (depth

interview, female, 28, a worker). This is a great change in thinking, habit and cultural practice in the current rural areas. In recent years, the wealthy families in rural areas can be able to hire a wedding package, from the pitching tents, supplying tables and chairs, doing the cookings with sufficient bowls and dishes and even a master of ceremony was hired to come to play the host of the event. Some villages can use the meeting hall, the culture house and a certain place for sport and cultural activities to organize their weddings. The weddings can see the participation of the representatives of the local authorities, the mass organizations. They come to attend the weddings and on behalf of the commune, they present the bride and the groom flowers and a gift with a value of VND 1 millionm, while the village representative present a gift with a value of VND 500,000. The guests coming to the weddings also change their gifts. Intead of giving gifts both in cash and in kind as in the past, now they present mainly cash and the value of the gift depends on the closeness between the hosts and the guests as well as the place where the weddings are organized. The change in the wedding organization shows that the people in the rural areas have changed their awareness in the way of organizing the time and space, the cultural method of organization of the wedding in the rural areas, particularly in their following the civilized criteria of an urban culture and the rules of building the new rural areas.

Since there is the rule stipulating the organization of funerals in Phu Xuyen District, almost all have met the spirit of “Solemnity - Thriftiness - Attachment”. This low-lying summer rice region has seen the relatively great changes in organizing the furnerals. The villages, residential areas and so on have set up the funeral organizing board in order to unify the process and rites in conformity with the spirit of the Rules on building the new rural areas which can help save the money, express the concern and mutual assistance of the members of the communities when they are in difficulties and misfortunes. According to the Rules on New Rural Areas, the funeral is jointly organized right in the deceased’s family by the Head of the Funeral Organizing Board, by the party committee level, the representatives of the mass organizations and the families of the chief mourner. All the funeral rites have been cut down to be much simpler. The deceased must be shrouded withint 12 hours and then must be encoffined (all the bad habits which are no longer suitable such as the elimination of ghosts before encoffing the dead, called the Ghost Punishment Ceremony or casting a spell to chase or driving away evil spirits have been abandoned). Apart from maintaining the traditional procedures and rites such as the chosen time to encoffin, to bury the dead or the recite of prayers together with playing liturgical music and reading the funeral oration, the formalities of making offerings in 3 days, 7 days, 49 days, 100 days, the first death anniversary and the rebury ceremony are now organized within one day within the family of the dead. *“The state of organizing the superfluous, prolonged funerals, abundant feasts have been eliminated a lot. A lot of bad habits such as rolling on the road, hired mourning, gambling are almost no longer in existence”* (depth interview, male, 72, village headman). The eating and drinking in the funeral are organized only in the family together with close relatives, friends and neighbours, whereas friends and colleagues only come to pay respects to the deceased and never stay for the dinner.

One of the great changes in practicing the funeral beliefs is the change in the form of burying the dead, from burial to cremation, thus reducing a lot of formalities such as exhumation, thus limiting the state of environmental pollution. *“My village has got 4 deaths since the beginning of the year and the families of the dead are proactive in registering to have the dead cremated; it is very civilized in doing so now; no burial, no exhumation, as it was troublesome like in the past”* (depth interview, male, 65, the village headman). Many villages in Phu Xuyen District have still maintained two forms of burial and cremation, depending on the requirements of each family of the dead so that the rites to say good-bye to their dear ones to the other world can be carried out. Many families have recognized the strong points and limitations of each of the above forms, particularly when the Program on New Rural Areas has been implemented; the preferential policies in giving support of partial costs for cremation have gradually changed the people’s awareness. As compared to the burial habits in the past, *“the cremation and one-time burial have got much better advantages: no hardships for the living; not much time, human force, money to be spent; good hygiene conditions and so on”* (Bui Xuan Dinh, 2020: 140). Many families find that the above-mentioned forms help save time, efforts, costs, reduce some post-funeral rituals and keep safe hygiene for environment. The number of mourning wreaths has been much more limited, even some localities have used the mourning wreaths prepared by the Funeral Organizing Board so as to save money. The mourning delegations also come to pay respects to the deceased with a black ribbon inscribed with the name of the office attached to the mourning wreath prepared by the Funeral Organizing Board; no show-off mourning wreaths and embroidered hangings, especially there is no form of offering with cook food to the deceased. The organization of the festivals is provided for once in two years that falls on Lunar February 12 of the odd year. In the past, the festival was often organized on a small scale, within the villages and communes. (The festival of Đông Village was organized once in two years with the folklore games such as the tug of war, playing chess, the blindman’s buff). There are also art performances, the aerobics performing and so on. The longevity wishing ceremony is the fine trait of the tradition, reflecting the respect to the aged people. The authorities combines with the Fatherland Front and the aged people association to hold the longevity wishing ceremony for the old people of 70, 75, 80, 85, 90, 95, 100 years of age. The time to organize the event is associated with the annual traditional Tết day (the Lunar New Year) and it is organized in the communal house with no lavish banquet to cause costliness.

c. The activities to keep environmental hygiene in the residential areas

As usual, every week, young people of the Youth Union in Chuyên Mỹ Commune do the cleaning up of streets, roads, cemetery, the road around the office of the communal People’s Committee, the culture house and communal houses of the villages. The competition *“To keep the village, the street of the residential area to be clean, green, beautiful and safe”* has been launched, attracting the overwhelming participation of the young people, particularly the Youth Unions members of the other communes. According to the

assessment, *“the environmental hygiene in many villages and residential areas has become the good habit and it has been maintained regularly on weekly Saturday and Sunday”* (depth interview, male, 40, communal cadre). As shared by a cadre of the local women’s union, *“the internal road of the village, the culture and sport house in my village have been invested a few years before. The villagers are well aware of it and they have encouraged each other to do the cleaning up of the hamlets and village roads to look magnificent and clean”* (depth interview, female, 60, a retired cadre). Many villages have also maintained regularly the environmental sanitation in the central parts, in the public areas, mobilized even the middle-age people, young people, school children during their free time or in the year-end days, to take care and trim green trees, to plant the new trees and grow a lot of flowers on the either side of the village roads, thus creating the cool, airy, green and clean environment. In front of a number of families, the owners have also improved the look of their houses, planted green trees and assorted flowers in their house gates, along the fences and on the balcony to embellish more the village. Besides growing flowers and ornamental plants; some villages have also maintained their collection of wastes in the lanes and alleys. *“At first, the village authorities launched the movement of building key models. Day in and day out, the villagers are aware of classifying their daily life wastes and put them inside the house, so as to throw them away in time and in accordance with the schedule when there is the clang of the bell. Children are advised not to throw wastes on the roads, so the village roads and alleys are always clean”* (a exchange with a group of youth union members).

According to the Rules on building the new rural areas, all the members of all the families must have the sanitary works, the clean water system and the waste water must be treated before releasing it into the sewers and gutters of the blind alleys and lanes, village roads, ponds and lakes. They are held responsible to join the movement of keeping the general hygiene called *“It is clean from houses to alleys”*. They also have the responsibilities and obligations to protect the clean, green and beautiful environment of the village, to build and repair the village roads and alleys, to dredge the sewers and gutters to have them drained. In Chuyên Mỹ, all the households must participate in the general cleaning-up on Saturdays every week, and each family must have a barrel to contain wastes and the wastes must be dumped into the provided places. Each village has got a hygienic team to collect wastes every day and take them to the village’s dumping ground.

d. Some forms of new entertainments

After two years of being affected by COVID-19 pandemic, all the cultural, sport and other entertaining activities have almost come to a standstill due to the distancings. Only until early 2022, with the state policy on expanding the vaccination, all the activities could be able to come back to the *“new normal”* state. In August 2022, in a field trip in Phu Xuyen District, as we observed and found that the dike had been asphalted, looking clean and nice and people were busy going to work on it. In the past few years, that clean and nice dike has also been used for the *“race”* of the aged people who ride bicycles to train their physical exercises. At the foot of the dike, there are spontaneous football and volleyball fields for rent

and they have attracted a great number of young villagers to join. *“Every week, we have gathered here to play football. Each village has got one football team and have the friendly matches together. In each occasion, we young people have shared and connected our work, families so as to enhance our friendliness”* (group discussion, in August 2022). With an advantage of the low-lying summer rice land area with a lot of lakes and ponds, many rural households in Phu Xuyen have availed themselves to the situation to transform their own gardens, stagnant ponds by dredging them to breed fish, let alone they have also created some other services such as supplying drinks and cooking feasts and so on so as to do business by giving services in angling in their ponds. Of late, the movement of having entertaining angling has inclined to develop vigorously, because many villagers consider it as *“a new play ground”* and they can enjoy fully their relaxing time after the hard-working days. As shared by the couple of Ms Loan - the owner of the angling pond Trần Gia, *“the anglers here are our relatives and friends in the commune, or possibly some of them are the outsiders, even from Hanoi City and the areas around such as Hưng Yên, Hà Nam and so on. They all come here and rent the angling facilities”*. Some of the households find it profitable from the angling services, so they have set up some shops to sell the angling equipment with all sorts and sizes of facilities available. Many garden houses have also given food and drink services and there are some delicious food cooked from the fish caught by the “anglers” themselves and thanks to it, the services of renting the fishing pond and the fishing rods in Phu Xuyen in recent time have attracted a lot of customers.

In the process of our field trip in some villages and commune of Phu Xuyen District we have had conversations and observations with some groups of objects and we know that apart from the cultural movements organized by the district and commune authorities, the regular sport activities in the localities are consciously launched and organized by the local villagers. The objects who have initiated the movement are the village cadres, the women in the women’s union with the games of folklore character such as the popular dance, the fan dance, together with the sport games like aerobics, zumba dance or gymnastics. Most of the objects under interview have said the reason that *“they have taken part in the games for fun, unity and for training to improve their health conditions”* (depth interview, male, 45, commune civil official), while women do the physical exercises to *“keep their good shape healthy and create the joy in life”* (group exchange, the Popular Dance Club of Đông Village). The change of the daily habits of the peasants have reflected in part their adaptability to the urban way of life.

In the area under study, according to our observation, the appearance and development of food and drink services have become relatively popular, mostly in the alleys and lanes, markets, the pavements and so on. With the development of the Internet and other social communication means, the food and drink services have also been sold online with the ready made food and the goods are delivered right to the doors of customers. Many families, due to their work in agencies, companies or industrial parks, have chosen to have their breakfasts in food stalls, not at home. These families are mostly the young families with

young people and school students. With the current expansion of food stalls, the rural women are less laborious than before in preparing food for the families and they have got more time to take care of themselves. On the weekend days, the whole families go to have breakfasts and coffee, fully enjoying their relaxation after a busy week. At present in the countryside, even though people are geographically distant from each other, they still have the connectivity and keep contacts with each other through the social networking sites such as Zalo, facebook and so on to exchange and cooperate in production and business. “The life rhythm and activities in the rural areas are no longer leisurely or loafing; on the contrary, they have a busier, hastier life in a race with time, particularly for young people” (Nguyen Huy Phong, 2020).

5. Discussion and Conclusion

5.1. Discussion

At first, the process of urbanizing and building the new rural areas has made a contribution to forming a class of farmers in the new generation with the dynamic and modern mindset. The programs on agricultural - rural - farmers development of the State and localities have made great influences on the farmers’ life. The farmers have shifted from the mode of livelihoods based on agriculture and small-scale industry to the combination with many other kinds of livelihoods, from the working and earning their lives by the groves of village bamboos, now they have the mutual linkage and cooperation in the form of chains and unions to create the higher values in production development. Even there have appeared the farmers’ households have done the marketing of their goods online or they have gone abroad to learn experience in doing high-tech agriculture, thus helping agricultural production have a lot of positive changes both in productivity, quality, and income value over a farming unit has been improved much better than before. The use of machines, scientific and technical advances in some production links has helped the farmers get less laborious farming work. Income of individuals, households and production establishments has been improved, thus forming a class of dynamic owners of production establishments. “A part of farmers thanks to their knowing the way of doing business, getting access to the market, linking the economy, applying technologies and re-organizing labour has become *the farmers of the new generation*” (Đoan Minh Huan, 2022: 27). Besides the prestigious, old-aged people based on their experience, there have appeared the prestigious young farmers who are proactive in linking and cooperating closely with agriculture, cooperatives, the scientists and the centre for seedling services and they have become the better-off or wealthy farmers. The development of this farmer class can enhance the poor - the rich distance, but it has also created the motivation for economic growth, thus promoting the change in the cultural practices in the rural areas.

Secondly, the process of urbanizing and building the new rural areas has made a contribution to changing the thinking, lifestyle and way of life of the farmers. When they are proactive in selecting their jobs that are adaptable to the new background, the farmers can be able to take more parts in the cultural, sport and entertaining activities, and thanks to

them, their cultural and spiritual life has become more diverse and abundant. A part of villagers has gone to work in the distant areas or lived in other areas, yet, their families and relatives have still lived in the villages, so whenever the Lunar New Year days come, they have come home, bringing along the practices and values of the new culture from the areas and regions where they live and work, thus leading to the definite influences on the homeland's culture and society. The farmers have paid ever more attention to the conservation and promotion of the traditional cultural values, to the investment in upgrading the grass-root cultural institutions such as the village gates, the culture house, the communal houses, the pagodas and so on. The rural environment and landscape have been planted with green trees, creating the clean and beautiful views, embellishing the villages and the families and even they consider it a pride of the current rural residents.

Thirdly, the process of urbanizing and building the new rural areas have made impacts on the cultural change in the complicated direction alternated with the negative impacts. In many villages and rural areas, particularly in the places where the urbanizing speed has happened tremendously, the farmers' life is as rich as it is, but their way of life has also changed faster, the social evils such as lotteries, gambling, drinking, drug injecting, prostitute, social violence and so on have happened in a more complicated manner. Many restaurants and karaoke shops have mushroomed, hidden with the danger of social insecurity and safety and disturbances in the villages. Even though there are changes in livelihoods appearing in the new sectors and jobs which are more dynamic and ensure the maintenance of the farmers's life, sometimes the farmers are landed in the passive, confused positions before the immediate changes. A part of farmers who is less dynamic has fallen into the social evils or lured to the vices. The impacts from the process of urbanizing has made the core values of villages - the basic units of the rural organization, which have been accumulated and transmitted through various generations, gradually faded.

5.2. Conclusion

The countryside is not only the residential area of rural inhabitants and agricultural production, but also takes charge of the functions which the cities are unable to meet, in which there are the issues of conservation and development of the traditional cultural heritages, the maintenance and exploitation of the tangible and intangible cultural values, the humane values and human resources, the historical traditional values. On that basis, some recommendations which might be useful for the conservation and maintenance and promotion of the fine traditional cultural traits, conforming to the context of building the new rural areas and the current urban civilized way of life, they are:

It is necessary to diversify the rural cultural institutions, select and use most effectively the traditional cultural institutions and the new cultural institutions. To create conditions for the farmers to take part in building the planning and plans, programs, steps in building the new rural areas; to deploy the implementation of these programs, it needs to have the farmers' initiatives, contributions and participation in management.

To enhance the decentralization and empowerment to communes and villages, to be active and proactive in promoting democracy, mobilizing the participation of the people in the process of building the new rural areas; to empower the community to carry out the small-scale, uncomplicated activities with the mobilization of the contribution of the community, under the supervision of the community, ensure the openness and transparency.

To enhance the coordination between the state managerial agencies, the sectors, the levels and the relevant organizations, the rural communities, individuals to create the consensus of the community itself, the clans, families and the cultural subjects so as preserve and promote the cultural identities in building the new rural areas. To have the reasonable policy on making investments and on fostering cadres in charge of the cultural field and the folklore cultural artisans./.

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**SESSION 6:
LAWS AND INSTITUTIONS**

FACTORS AFFECTING PUBLIC PROCUREMENT PERFORMANCE IN HANOI

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Abstract

The study investigated the factors affecting the public procurement performance in Hanoi by using primary data collected through a survey of 300 questionnaires. Based on previous researched, the study added the procurement procedure variable to the model to assess the factors affecting public procurement performance. Research results show that procurement plan, staff competence, resource allocation, procurement procedures have a positive influence on the public procurement performance. However, contract management has a negative effect on public procurement performance.

Keywords: *Public Procurement, Procurement Performance, Hanoi.*

1. Introduction

The objective of study is to determine the factors affecting public procurement performance and then measure the effect of these factors on public procurement performance in Hanoi. Previously, relevant research only assessed the public procurement performance in Vietnam from a macro perspective. In fact, there are very few research papers evaluating the factors affecting public procurement performance from an internal perspective. The researches referenced by the research team have shown the factors affecting public procurement performance, but these reasearches have not yet shown the procurement performance measurement.

Further research papers should be conducted in other public entities to identify and find more influencing factors. So, we consider all the variables under Procurement Planning, Staff Competency, Procurement Procedure, Resources Allocation, Contract Management.

2. Literature Review

2.1. Public procurement

Procurement is defined as acquisition of goods, services, capabilities and knowledge required by businesses, from the right source, the right quality, in the right quantity, at the right price and at the right time to maintain and manage a company's primary and support activities (Triantafyllou 2007; Giunipero et al. 2006; Hines, 2006; and Van 2000). Public procurement is a government's activity that spends public budgets, it means the procurement of any goods, construction work or services implemented by government or state organizations (UNCITRAL, 2011).

2.2. Public procurement performance

Procurement performance is a measure of identifying the extent to which the procurement function is able to reach the objectives and goals with minimum costs. There are two main aspects of procurement performance effectiveness and efficiency. According to Knudsen (1999), procurement performance starts from purchasing efficiency and effectiveness in the procurement function in order to change from being reactive to being proactive to attain set performance levels in an entity.

2.3. The theory of constraints

The theory of constraints (Dr. Eliyahu M. Goldratt, 1988) is a method of identifying the most important limiting factor hindering the achievement of a goal and then systematically improving that constraint until it is no longer a limiting factor. Companies, whether in the manufacturing or service sectors, should focus more on understanding their own structure in terms of processes in order to survive the global competition. In such a situation, TOC has become an important problem in structure and solution, changing the way managers think (Zeynep Tugce Simsit, Noyan Sebla Gunay, Ozalp Vayvay, 2014).

2.4. The Theory of Planned Behavior

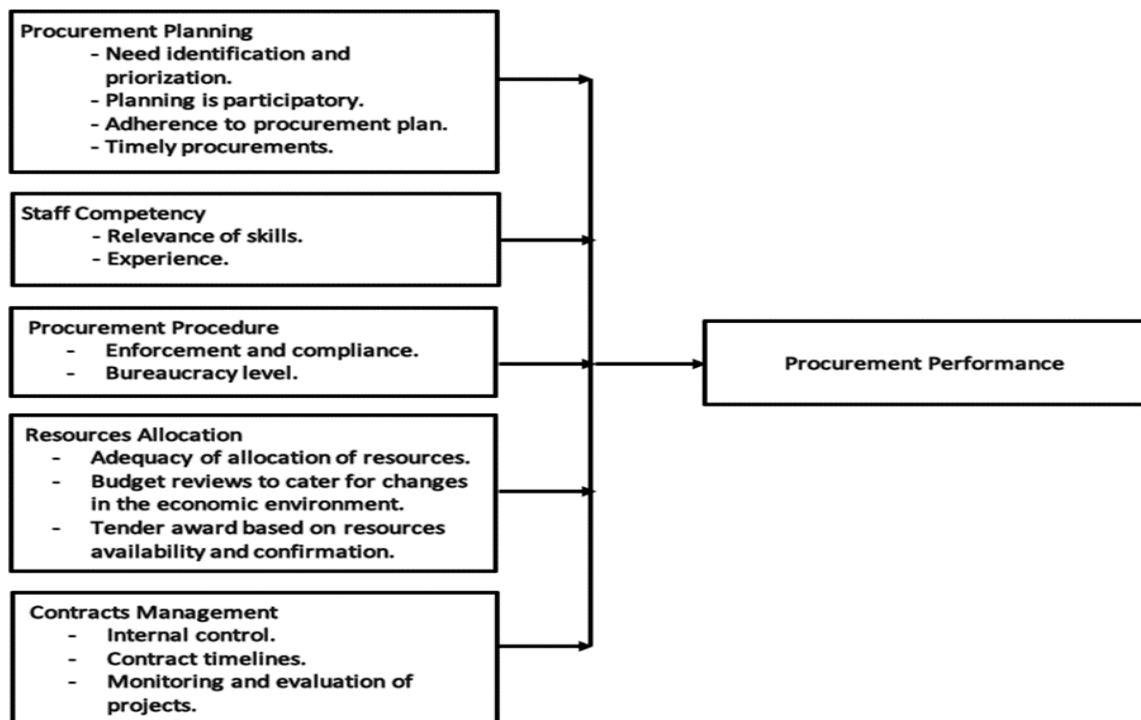
The Theory of Planned Behaviour (Ajzen, 1991) is the successor of the theory of reasoned action (Fishbein and Ajzen, 1975). The intention of an individual to perform a certain task is the central element in TPB. As a general rule, the more favorable the attitude towards the behavior and the subjective norm, and the easier the perceived behavioral control, the stronger the intention to engage in a behavior, and the more likely should be its performance, as Ajzen (1991) states. And if a degree of actual control over the behavior is large enough, they can execute the intent every chance they get. Three determinants formed the intention of an individual to perform a given behavior: attitude, subjective norm, and perceived behavioral control.

2.5. The Management Theory of Peter Drucker

The Management Theory of Peter Drucker shows the concepts of decentralization, knowledge work/knowledge worker, MBO and SMART model. According to Drucker, organizations need to focus on decentralizing or democratizing management in the

workplace that makes all employees feel valued and empowered and appreciated. Peter Drucker's second concept of the theory is knowledge work. Drucker wanted to foster a culture of working with employees who could not only provide labor, but also had insight and innovative ideas. In addition, his insistence on training and continuing education as the core of the workforce development philosophy is always mentioned. Drucker also argues that external training, such as through participation in industry seminars and exchange groups, is of particular value in workforce development.

From the study of Japheth Ocharo Kiage (2013) and the research of Senait Beyan Hamza, Asefa Gerbi & Seid Hussen Ali (2016), the research team proposes the following model:



2.6. Procurement planning

Procurement planning is the process used by companies or public institutions to plan purchasing activity for a specific period of time (Agaba and Shipman, 2007). Creating this plan helps entities avoid surprises and last-minute considerations. According to Burt et al (2004), procurement planning is the purchasing function through which an organization obtains products and services from external suppliers. An effective procurement plan needs to be created step by step. In each step, the procurement plan needs to provide detailed information and identify roles and responsibilities.

2.7. Resources allocation

Resource allocation is the process of choosing how to use the assets or resources that are now available to carry out a specific project. Companies use operational standards, strategic planning techniques, and the implementation of policies and procedures that advance the company toward the accomplishment of its goals in an effort to distribute

resources in a way that minimizes costs and maximizes profits (Shantanu et al, 2012). Ouma and Kilonzo (2014) found that the performance of the procurement process is impacted by resource allocation.

2.8. Staff competency

According to the Bidding textbook of National Economics University Publishing House (2018), the staff competency is one of the factors that directly affect the effectiveness of procurement activities. Research by Sultan Alkaabi (Mazoon University College) in 2018 with the topic "Internal Factors Affecting Procurement Process at Oman Airports Management Company in Oman" provides 6 criteria to evaluate the level of influence of internal factors. In which, there are 4 criteria within the scope of human resources, including: Accountability, accessibility to advanced technological equipment, competence and ethics.

2.9. Contract management

Liljegren argues that these constructs are interrelated and complex from an industrial network perspective (Liljegren 1988). Contract management is not an end in itself and it is important that all contracting decisions and actions focus on the outcomes that entities are seeking to achieve (Adrienne Watt, 2018) successful and efficient contract management practices are those that meet the needs of the company's stakeholders, achieve optimum conditions and value in regard to the allocation of scarce taxpayers resources (best value for money), ensure rational and efficient of funds available, (Benon C. Basheka, 2014).

2.10. Procurement procedures

According to Moncska et al (2010), procedures illustrate how the procurement job must work to accomplish planned objectives by providing guidance to employees on what to do in the implementation of operations, putting limitations on behavior and demonstrating how the procurement function would work. Procedural procurement ensures efficiency and order in any procurement department. Organizations need standard procurement procedures which cover all aspects of the procurement cycle, including supplier selection, contract negotiations, order placement and payment (Ouma and Jennifer, 2014).

2.11. Procurement performance

Procurement performance efficiency: According to Pfeffer and Salancik (1978), organizational efficiency is an internal performance criterion that is roughly a construct "for doing the right things." From the standpoint of resource reliance, efficiency is a separate metric for assessing organizational productivity: Production per used resource should equal 100% including losses.

Procurement performance effectiveness: Organizational effectiveness is defined as an external standard "of how well an organization is meeting the demands of the various groups and organizations that are concerned with its activities" (p. 11 Pfeffer and Salancik 1978) which approximately is a construct "for doing the right things" or having validity of outcome (Hines et al. 2000).

3. Method

Quantitative research method requires the researcher to make a survey (questionnaire) based on the research variable scale for each factor that has been mentioned in the model. Collected data will be through the use of digital software for scientific research.

For the purpose of conducting quantitative research, the research team conducted the following steps in turn:

Step 1: Based on an overview of previous national and international studies on the factors affecting public procurement efficiency, the research team provides theoretical concepts of variables including Procurement Planning, Staff Competency, Procurement Procedure, Resources Allcation, Contracts Management, Procurement Performance

Step 2: Build the Vietnamese version of the questionnaire from the original English version of the research variable scales that have been studied before. Add, adjust and supplement to suit the situation in Vietnam.

Step 3: Re-check the transparency, clarity and accuracy of the Vietnamese version, discuss in groups, then edit it accordingly and add observed variables.

The research team based on information gathered from documents including policies, laws, projects, and research reports related to public procurement activities in Hanoi over a period of time from 2018 to 2022. At the same time, the research team also collected information and statistics from the Ministry of Planning and Investment on the situation of public procurement in Hanoi. The collected data will be processed in a way that categorizes, synthesizes, and selects appropriate information to form a theoretical basis, making assessments and comments on the current situation of Hanoi in particular and Vietnam in general, thereby giving appropriate discussion points.

Primary data was collected by survey method by online questionnaire, thereby, giving an overview of the level of interest and status of public procurement activities in Hanoi. The questionnaire is designed with clear, easy-to-understand questions so that participants can answer by their thoughts and ensure acceptable reliability. The questionnaire will be sent online via Google Form to managers (mainly concentrated at People's Committees of Districts in Hanoi), procuring entities (state-owned enterprises), and bidders (private enterprises) during the period from November 2022 to February 2023.

The research team conducted preliminary quantitative research with 300 survey samples to test the model and standardize the questionnaire. During the survey collection process, the research team noticed shortcomings in the questionnaire and completed the complete questionnaire with the number of survey samples 300 samples, the number of valid votes collected was 243/300. Collected data will be processed by SPSS software with high accuracy.

4. Results

4.1 Reliability Analysis

The five constructs representing the independent variables recorded Cronbach's alpha statistics of more than 0.8. The reliability statistics are presented in below.

Table 1. Reliability Test

Independent variables	Cronbach's Alpha
1. Procurement planning	0.896
2. Staff competence	0.887
3. Procurement procedure	0.886
4. Resource allocation	0.894
5. Contract management	0.915

4.2. Exploratory factor analysis

Convergence of indicators: The average AVE is greater than 0.6, so the scales are all convergent. The convergence results of the variables are all qualified, demonstrating that the average parent latent variable will explain at least 60% of the variation of each child survey variable.

Table 2. Rotated Component Matrix

	Component					
	PP	SC	CM	PC	RA	PER
PP8	0.800					
PP9	0.781					
PP2	0.759					
PP7	0.749					
PP3	0.735					
PP6	0.708					
PP4	0.708					
PP1	0.670					
SC5		0.741				
SC6		0.731				
SC8		0.729				
SC7		0.703				
SC2		0.702				

	Component					
	PP	SC	CM	PC	RA	PER
SC3		0.696				
SC1		0.643				
SC9		0.640				
CM4			0.768			
CM6			0.760			
CM3			0.752			
CM5			0.749			
CM2			0.727			
CM1			0.716			
CM7			0.700			
PC6				0.771		
PC4				0.738		
PC8				0.733		
PC9				0.700		
PC5				0.677		
PC7				0.659		
PC2				0.650		
PC3				0.616		
RA6					0.842	
RA3					0.820	
RA5					0.798	
RA2					0.791	
RA4					0.775	
RA1					0.735	
PER1						0.838
PER2						0.836
PER3						0.827
PER4						0.724

4.3. Correlation Coefficient

The all research question sought to establish the effect of all factors on procurement performance in Hanoi. Pearson Correlation Coefficient computed and tested. The result implies a positive relationship between procurement performance and each factor procurement plan, staff competence, procurement procedures, resource allocation and contract management ($r=0.355$, $r=0.284$, $r=0.514$, $r=0.714$, $r= 0.525$ respectively). Moreover, the researcher found the relationship to be statistically significant at 1% level for all factors.

4.4. Regression Analysis

The study conducted a multiple regression analysis to determine the relationship between independent variables and the dependent variable.

The adjusted R-squared value is 0.458. Thus, the independent variables explain 45.8% of the variation of the dependent variable.

Table 3. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin - Watson
1	0.685 ^a	0.469	0.458	0.61852	1.744

The ANOVA table gives the results of the F-test to evaluate the hypothesis of model fit assessment. The F-test sig value is $0.000 < 0.05$ thus the model is statistically significant in predicting how the independent variables influence the procurement performance in Hanoi. The F calculated from the ANOVA table is 41.915, which is greater than the F critical (2.64). This shows that the overall model was significant.

The regression model was as follows:

$$PER = \beta_0 + \beta_1 PP + \beta_2 SC + \beta_3 PC + \beta_4 RA + \beta_5 CM + \varepsilon$$

Including:

PER is the dependent variable (Procurement performance),

β_0 is the regression coefficient/constant/Y-intercept,

$\beta_1, \beta_2, \beta_3, \beta_4$ are the slopes of the regression equation,

PP is the Procurement planning

SC is the Staff competence,

PC is the Procurement procedure

RA is the Resource allocation

CM is the Contract management while

ε is an error term at 95% confidence level.

Table 4. Factor coefficients Model

		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0.117	0.318		0.368	0.713		
	Procurement Planning	0.174	0.055	0.168	3.154	0.002	0.791	1.265
	Staff Competence	0.226	0.081	0.168	2.788	0.006	0.619	1.616
	Procurement Procedure	0.390	0.061	0.359	6.373	0.000	0.704	1.421
	Contract Management	-0.199	0.085	-0.148	-2.340	0.020	0.563	1.776
	Resource Allocation	0.351	0.047	0.372	7.386	0.000	0.882	1.134

The regression was:

$$PER = 0.174PP + 0.226SC + 0.390PC + 0.351RA - 0.199CM$$

The above equation established that taking all factors into account (procurement planning, staff competency, procurement procedures and resource allocation) constant at zero, procurement performance would be 0. The findings further indicate that taking all other independent variables constant, a unit increase in procurement planning, staff competence, procurement procedures, resources allocation, will lead to a 0.174, 0.226, 0.390, 0.351 increase in procurement performance respectively and a unit increase in contract management - 0.199 will lead to a decrease in procurement performance. The all factors are accepted because their sig < 0.05.

5. Discussion and Conclusion

5.1. Discussion

In general, through the survey and research on "Factors affecting public procurement performance in Hanoi", we found that the majority of investors and participants in public procurement in Hanoi have quite the same perception and opinion in determining the importance of each factor for procurement performance. Our research team has determined 5 factors that are likely to affect the effectiveness of public procurement in Hanoi, which are: Procurement Planning, Resource Allocation, Staff Competency, Contract Management and Procurement Procedures. In general, almost all the observed variables have a positive impact. Contract Management is the only factor that has a negative impact on Procurement Performance.

It can be affirmed that this is an indispensable element in the process of implementing a public procurement project. Through that, the investment owner can grasp the most basic needs of the project as well as predicting the required budget and costs of each stage.

Planning can also ensure investment owners stay up to date on the project. Through that plan, we can consider and evaluate the functions of each implementation unit. This is a necessary duty for successful implementation of future projects.

Staff Competency is also an important factor, because the more the staff's skills are improved and cultivated, the more elaborate, thorough and timely the jobs in the procurement project will be. The more competent employees are, the less likely mistakes they would make.

There is a note that competent leaders are not enough, but also need certain attention and sympathy to the staff in their work. It can be said that working in an environment with enough pressure to avoid the case of employees being negligent, but not too strict to avoid creating heavy pressure on employees can help the project to be well developed.

When human resources are allocated appropriately and professionally, and the budget is divided into stages and jobs appropriately, the project will also be maintained continuously. This will save time, successfully execute the project, and avoid the allocation of too much or too little of resource, which would lead to the need to constantly change resources in the project. The wrong selection of staff or lack of expertise can also lead to inefficient procurement performance.

It is obvious that when implementing a procurement project, it is essential to follow a certain order, to ensure order for the procurement process, to comply with government policies as well as to help employees easily track the project progress. This has a positive impact on procurement performance's efficiency and effectiveness.

In theory as well as through the experience of survey participants, contract management is a factor that has a positive impact on public procurement performance. However, contract management has an inverse relationship with the procurement performance, that is, the better the contract management, the lower the procurement performance.

In fact, the relationship between contract management and public procurement performance can be influenced by the quality of the contract. If the contract is not detailed and specific, it will have gaps due to lack of experience in setting up and completing. As can be seen, contract management is an important factor, but it is highly risky.

Sometimes the public procurement performance is not as expected because of mistakes in choosing the form of contract or the influence of the signatories.

Through the reasons mentioned above, we can see that although it is an important factor, which is highly appreciated in terms of potential, but with its riskiness, how to have effective, accurate and appropriate contract management for each specific project in practice is still a dilemma.

5.2. Recommendation

5.2.1. Recommendations for state management agencies

Firstly, recognize the benefits of procurement planning toward public projects. It is necessary to plan in detail and adhere to the Bidding Law.

Secondly, proactively allocate the resources in the project by the state management agency, regularly checked and reviewed to suit the situation.

Thirdly, strengthen training, cultivate professional knowledge, legal knowledge, develop skills for cadres and civil servants under state management agencies. Staff standards need to be raised.

Fourthly, be observant and have clear awareness in choosing type of contract, avoid making mistakes in choosing the type of contract. Agencies should ensure transparency, clarity and compliance in contract management.

Fifthly, comply with the procurement procedures prescribed by the State.

Sixthly, strengthen quality control of public procurement projects.

Seventhly, agencies should have a link with and regularly update the situation of the bidders.

5.2.2. Recommendations for procuring entities

Firstly, focus on conducting research on requirements to ensure the principles of competition, fairness, transparency, and effectiveness in public procurement activities and the selection of bidders. Investor owners must regularly update and carefully study the system of legal documents on public procurement;

Secondly, select a consultant or set up a team of procurement experts to ensure eligibility, capacity, and experience according to current regulations. The contract between the procurement entity, the bidder, and the consultant must clearly stipulate the responsibilities of the consultant, and the binding conditions when the consultant violates or fails to ensure quality requirements.

Thirdly, improve management responsibilities in public procurement activities. Promote the implementation of online procurement to increase competitiveness and improve efficiency in procurement. At the same time, continue to strictly implement the posting of information on the National Procurement Network System, the Procurement Newspaper.

5.2.3. Recommendations for bidders

Firstly, bidders need to develop a specific procurement plan and also should start the procurement planning process early to allow sufficient time for a needs assessment, budgeting, and developing a procurement strategy.

Secondly, bidders need to optimize resource allocation to increase efficiency and reduce time by finding ways to optimize processes, use innovative technology and improve workflow. In addition, bidders should plan for contingencies by allocating

resources for unexpected events or delays that may arise during the procurement process. Furthermore, using project management software and tools increases accuracy and efficiency in resource allocation.

Thirdly, the bidder's staff needs to be equipped with the necessary competencies. Besides, performance management systems also should be implemented to monitor and evaluate the performance of bidders' staff.

Fourthly, public procurement contracts should ensure transparency in the procurement process and cover all legal and financial provisions related to public procurement, including the payment of taxes and other fees.

Fifthly, bidders should use technology to streamline the procurement process and make it more efficient. Additionally, bidders should use a variety of procurement procedures to increase transparency and efficiency in the public procurement process.

Sixthly, bidders should continuously evaluate their performance and seek to improve their processes and products.

5.3. Conclusion

Through the research process on “Factors affecting public procurement performance in Hanoi”, we have conducted a survey throughout all the districts of Hanoi so that we could determine the importance of Procurement Planning, Resource Allocation, Staff Competency, Contract Management and Procurement Procedures in affecting procurement activities. We can obviously conclude that, when implementing a , in order to achieve the highest efficient and effective procurement performance, investors need to consider and be thorough in each factor, so that the project can turn out as good as possible.

Our research team hopes that this study can become a reference so that public procurement performance in Hanoi in particular and the country in general can be implemented successfully, with maximum efficiency and effectiveness.

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THE MECHANISM FOR ASSIGNING TASKS, ORDERING, BIDDING PROVISION OF PUBLIC SERVICES FUNDED BY STATE BUDGETS AT HIGHER EDUCATION INSTITUTIONS: OBSTACLES FROM THE SUPPLIER'S PERSPECTIVE

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Abstract

The mechanism for assigning tasks, ordering, and bidding for the provision of public services using the state budget for higher education institutions has been implemented since 2008 and continues to be improved and implemented. Many problems have arisen during the implementation process related to policies, implementation organization, inspection and supervision mechanisms and capacity and capabilities of higher education institutions assigned to tasks, receiving orders, and receiving orders. contractor. The results of the study indicate that there are still too many obstacles and bottlenecks in the implementation of the mechanism for assigning tasks, ordering, and bidding for the provision of public services using the state budget for higher education institutions. That requires urgent solutions from the state agencies to solve this situation.

Key words: *public services; public services using the state budget; assigning tasks, placing orders, bidding for the provision of public services; higher education institution.*

1. Introduction

In Resolution No. 05/2005/NQ-CP, the guidelines of policy reform and management mechanism was determined as: “Renovating the mechanism of using state budget in the fields of education, health, culture, physical training and sports”; “studying, developing and gradually implementing the policy of bidding for the provision of services ordered by the state”. Also, in 2005, Decree No. 31/2005/NĐ-CP stipulates the methods of product supply, public utility services include planning delivery, ordering, and bidding along with three categories of products and services A, B and C (Government, 2005). By 2006, regulations on bidding, ordering, and assigning plans for production and supply of public products and services were promulgated in Decision 256/2006/QĐ-TTg. Regulations on conducting methods of bidding, placing orders, and assigning plans for production and supply of public utility products and services are shown in specific articles and clauses of the Regulation.

Next, the Regulation on bidding, ordering, and assigning tasks to provide public non-business services using the state budget was promulgated by the Prime Minister by Decision No. 39/2008/QĐ-TTg. This is the first document detailing the subjects and lists of public non-business services funded by the state budget for bidding or ordering services. This

Regulation also specifies the planning, organization, implementation, and supervision of the process of bidding or ordering the provision of public non-business services using the state budget. To implement the Prime Minister's Decision 39/2008, the Ministry of Finance has issued Circular No. 105/2008/TT-BTC detailing the process and content of implementing the procurement method. public career services.

After implementing the Prime Minister's Decisions 256/2006/QĐ-TTg and 39/2008/QĐ-TTg, in 2013, Decree No. 130/2013/ NĐ-CP on production and supply public interest services were promulgated, which specifically stipulates three methods of providing public products and services, including bidding, ordering and delivery of plans. The Decree also stipulates the conditions, grounds, organization for bidding, ordering, and assigning plans for production and supply of public products and services. In Decision No. 186/QĐ-TTg issued on February 10, 2017 on the list of public non-business services funded by the state budget in the field of education and training, public non-business services in the higher education service is defined to include bachelor's level training in a number of fields; work-study and distance-learning; training at the master's level; doctoral training in a number of fields.

By April 2019, with the issuance of Decree 32/2019/ NĐ -CP, the three modes of providing public products and services, namely task assignment, ordering, and bidding, were unified in the same legal document regulations based on the principle of selective inheritance and meeting development requirements in the new context; thereby, overcome the shortcomings, limitations and overlaps in the provisions of Decree No. 130/2013/ NĐ -CP and Decision No. 39/2005/QĐ-TTg.

To implement Decree 32/2019/ NĐ-CP, MOET has issued Circular No. 14/2019/TT-BGDĐT dated August 30, 2019, guiding the build, appraisal, and issuance of economic - technical norms and methods of setting training service prices applied in the field of education and training.

Most recently, in Decree No. 116/2020/ NĐ-CP issued on September 25, 2020, the Government stipulates that “agencies assigning tasks, ordering, or bidding have the need to decide on the implementation of tasks and assignments. Service, order or bid for teacher training with a teacher training institution in one of the following forms: Assigning teacher training tasks to affiliated teacher training institutions; order teacher training for teacher training institutions; tendering for selection of teacher training institutions providing teacher training services.” In Decree 71/2020/ NĐ-CP dated June 30, 2020, the Government has issued regulations on training to raise standards for teachers at education and training institutions using the state budget according to the regulations. forms of assignment, ordering or bidding based on the local annual plan and the unit price determined by the level of tuition fee that support pedagogical students according to current regulations.

Although the mechanism for assigning tasks, ordering, or bidding for public service provision in higher education institutions has just been implemented and is being continued for two years, the implementation process has many problems arisen. The main difficulties and shortcomings can be mentioned. In particular, the implementation of Decree

116/2020/NĐ-CP in the past 2 years at higher education institutions has encountered many difficulties and inadequacies leading to the fact that many higher education institutions for teachers training have not been assigned, ordered or assigned tasks, ordered in very small quantities compared to the capacity and supply capacity of the higher education institution. To better understand the difficulties and inadequacies of higher education institutions as educational and training service providers using the state budget, this article focuses on analyzing and evaluating current obstacles from viewpoints of higher education institution as providers of public services funded by state. On that basis, some solutions will be proposed to solve this problem.

2. Theoretical Framework

Public services are services provided by the State to the people through state organizations or through financial support to private service providers. The concept of public services is based on the idea that certain services should be regarded as the minimum right to which all citizens are entitled, regardless of economic background, because those services are related to the human right to access and have direct consequences for social development and public interest. In Vietnam, the concept of public service has been mentioned by several authors. According to Dinh Van An & Hoang Thu Hoa (2006), public services are activities that serve the essential needs of society, for the common interests of the community and society, which are directly undertaken or authorized by the state. and enabling the private sector to do so. According to Le Chi Mai (2004), public services are activities that serve the essential common interests, basic rights and obligations of citizens and organizations, which are directly undertaken by State or are authorized for non-state organization, to ensure social order and justice. The important characteristics of public services are reflected in the following aspects:

(i) Public services exist for public policy reasons. In a broad sense, public services are provided for public policy reasons, intended not to meet the goals or preferences of consumers or producers, but further goals that desired by policy makers. Public services can be related to government activities, but they are not limited to government and government does not include all those activities (Spicker, 2009).

(ii) Public services are provided to the public. However, public service is different from social service. Public services are a model of so-called "institutional" welfare, in which the provision of socially recognized needs has been accepted as part institutions of social life (Titmuss, 1974), Reisman, 1977). All citizens have the right to join public service at minimum level, as a subject of government service.

(iii) Public services are redistributed. It is provided for non-commercial purposes or, in a sense, for non-commercial purposes. Financially, public services are not intended for sale (Flynn, 2007), the payers are not necessarily the recipients of the public service.

(iv) The public service acts as a trust. The nature of public services is that they are provided as a trust. The common model in public service delivery is that the State pays a

selected organization to provide a service to a group of service beneficiaries. In economic terms, it is the policymakers, not the consumers, who buy services.

(v) From an economics perspective, public services are activities that provide society with public goods. In a narrow sense, a public good is a good that, once created, can hardly be excluded from its use; each person's consumption does not reduce the consumption of others.

In Vietnam, based on the nature and effects of the services provided, public services can be divided into three basic groups: Public non-business services; public administrative services; public service.

Public non-business services are activities that provide basic services to the people associated with state management activities in an assigned field. The current trend in the world is that the state only performs public services that society cannot or does not want to do, transferring part of the provision of this type of public service to the private sector and social organizations.

Public administrative service is a service provided by functional agencies and organizations at all levels in the process of handling administrative procedures related to matters in the field of pharmacy assigned to manage, not for profit purposes. Public administrative service is a type of public service performed by state administrative agencies to serve the basic rights and obligations of organizations and citizens (Hoang Ngoc Hien, 2006).

Public interest services are activities that provide basic and essential goods and services for people and communities such as: environmental sanitation, waste treatment, clean water supply, urban public transport. Public interest services are related to basic technical infrastructure such as power supply, electricity supply water, gas supply, urban transport, urban environment... These are paid services, subject to strict management by the State, and the state will decide the cost and output of public services. The State can provide public services by itself but also authorize entities to provide public interest service. Entities performing public service provision activities also pursue profit goals to ensure balance with social security factors and accessibility for all people.

Regarding the mode of public service provision, there are four modes of public service provision, including: assigning tasks, ordering, bidding and autonomously conducting service provision activities (Nguyen Quang Vy, 2012 and Le Thi Huong, 2019) as follows:

(1) *Assigning tasks*: This method is often applied to organizations in special important fields (such as defense, security, etc.) or strongly associated with functions, responsibilities, or missions of the State to ensure the normal and stable development of social life. This is the form in which the State will allocate part or all the implementation funding from the state budget.

(2) *Ordering*: This method is usually applied in areas where the ordered provider has certain conditions and is reliable enough for the state or public service beneficiaries. Providers operating in this field can have different forms of ownership and are often pre-determined by the state or the beneficiary. This is the form in which the state budget will be allocated part or all the implementation budgets.

(3) *Bidding*: A form of identifying public service-providing organizations through bidding activities. Organizations to participate in the bidding can have different ownership forms and are usually determined by the State or the beneficiary after the bidding has been conducted. This is the method in which the state budget will be allocated part or all the implementation budgets.

(4) *Autonomous conduct of service provision*: This method is applied in several fields that are closely related to the market. In addition to completing activities serving the public interest, the organization also combines business to aim profit. Investment capital can be invested by the state, or other entities or both.

Over the last three decades, the massification of higher education, coupled with the rising costs of training and research, has resulted in the inevitable consequence that higher education is increasingly dependent on student fees to survive. The subsidy policy of the State was no longer appropriate. Implementing the policy of socializing public service provision in the field of higher education, at the same time implementing the financial autonomy mechanism of public non-business organization, higher education institutions in general are allowed to participate providing a variety of public services that meet the needs of the people and are compatible with the capacity and capabilities of the higher education institution. According to the mechanism of using budget to provide public services, it is possible to classify public services provided by higher education institutions into two types: public services funded by the state budget and public services that do not use the state budget.

Public services funded by the state budget are basic and essential public services and public non-business services with specific characteristics of sectors and fields promulgated by competent authorities and guaranteed by the State. According to Decision No. 186/QĐ-TTg dated February 10, 2017, the higher education system providing public services in the field of higher education is distinguished into two groups. The first group includes public services for which the state budget covers all costs of service performance. The second group includes public services for which the state budget covers the portion of the cost of the service that has not yet been included in the price of services according to the pricing roadmap.

Methods of providing public services using the state budget in the field of higher education are specified in Decree 32/2019/ NĐ -CP, Decree 116/2020/ND-CP, Decree 71/2020 / NĐ-CP and some related legal documents. Accordingly, these methods include assigning tasks, placing orders or bidding.

(1) Method of assigning tasks: assigning tasks to provide public non-business services funded by the state budget shall only be applied to public non-business organization affiliated to superior management agencies which are allocated funding public service provision. At the same time, these organizations must satisfy the following conditions: (i) have the functions and tasks of providing public non-business services in accordance with the public administrative service provision activities assigned under the decision of the administrative authority licensed by a competent authority in accordance with the State's regulations; (ii) have been granted financial autonomy by the competent authority according

to the autonomy mechanism of public non-business organization in each field; (iii) the provision of public non-business services is a regular annual task of the unit, which has been and is being assigned by the superior management agency; (iv) List of public non-business services for which economic-technical norms and unit prices have not yet been established, based on quantity, volume and reasonable costs according to estimates approved by competent authorities.

(2) Ordering method: applied to public non-business enterprises directly under the management agency superior to place orders. Ordered enterprises must first satisfy the conditions (i), (ii), (iii) in applying the task assignment method, and at the same time, the list of public non-business services must have technical economic norms and unit prices of public administrative services that promulgated by competent agencies as the basis for ordering.

For other public service providers to be ordered, the following conditions must be satisfied. Firstly, the enterprise has registered business lines suitable to the field of public non-business services ordered; have sufficient financial capacity, facilities, equipment, machinery, technical qualifications, production technology, management qualifications and a team of employees to meet the order requirements. Second, the enterprise must be a service provider licensed by a competent authority in accordance with specialized laws. Third, public non-business services are specific because it is related to intellectual property or only one provider registers to perform. The ordering could be made in the following forms: Decision of the superior management agency to order affiliated public non-business organization to provide public administrative services using state budget funds; orders for other public non-business service providers shall be made in the form of contracts for ordering public non-business services using state budget funds.

(3) Bidding method: contractors may participate in bidding for the provision of public administrative services in the form of open bidding for the provision of public non-business services according to the provisions of Article 20 of the Law on Bidding; limited bidding to provide public non-business services as prescribed in Article 21 of the Law on Bidding.

The bidding method is also applied to teacher training provided by higher education institutions as stipulated in Decree 116/2020/ NĐ-CP, whereby tuition fees and a part of students' living expenses are covered from the state budget. Based on the need to recruit teachers according to qualifications, training disciplines of the locality and social needs, quality assurance conditions and training capacity of teacher training institutions, MOET identify and notify the quota for teacher training institutions to conduct enrollment. Based on the announced quota of teacher training institutions and local teacher training needs, the competent authority will decide to assign tasks, order, or bid for service provision. training teachers in one of the following forms: assigning teacher training tasks to affiliated teacher training institutions; order teacher training for teacher training institutions; tendering for selection of teacher training institutions providing teacher training services.

Public services have the following important characteristics:

First, a public service provided by higher education institutions is a public service that is exclusive, but encouraged for use, as a “recommended good” even though its use will reduce the associations to use other people's services if they have a need. In terms of limited supply, one person's enjoyment of higher education services will exclude the benefit of another.

Second, public services provided by higher education institutions are not pure public goods, they are humane services.

Third, there are necessary conditions to use the service. Beneficiaries must meet the minimum standards of education, health and working time (in certain cases) and pass a satisfactory entrance exam and assessment.

Fourthly, public services are provided by higher education institutions with great differences in the level, ability, and capacity of public service provision of higher education institutions. That deepens the disparity in the quality of public services in the higher education sector.

Fifth, public services are provided by higher education institutions of different ownership sectors.

3. Method

The data required for the research purpose of this article include both primary and secondary data. In which, secondary data on the implementation of the mechanism for assigning tasks to ordering and bidding for the provision of public services using the state budget at higher education institutions over the past time has been collected from various reports of the Ministry of Education and Training (MOET).

Primary data was collected by using qualitative and quantitative research. In which, the in-depth interview was conducted with 21 representatives of higher education institutions. Quantitative research was conducted through face-to-face and online interviews with 102 leaders of higher education institutions and related departments and 153 lecturers at 51 higher education institutions nationwide. The sample was prepared according to the convenience method. Most of the interviewees are those who have seniority in working and teaching at higher education institutions. The number of people working for more than 15 years is over 66% in the sample. The 5-level Likert scale is used to evaluate the mechanism for assigning tasks, ordering, and bidding for public service provision using the state budget. The average score of the scale above 3.4 is considered as agree. Data were processed and analyzed with the help of Nvivo 11.0 and SPSS 22.0 software.

4. Results and Discussion

Evaluation of the task assignment mechanism

Assigning task of providing public services using the state budget is the method applied to higher education institutions. In this way, the ministries, management agencies and local people's committees (the tasking party) often give priority to assigning the task of providing public services using the state budget to educational institutions (the party of receiving the task) under their management. Only when the affiliated organizations are not

fully functional, capable of performing or providing service, it could be considered for the selection of ordering or bidding.

Assigning the task is a form of involving parties with vertical linkages - higher education institutions are directly under the management of the assigning unit, in general, cooperation and communication between the parties is quite common. The operation method as well as the status of the units are well understood. The exchange and cooperation in solving arising problems (if any) and controlling the implementation and performance of tasks can be easier than in the form of ordering and bidding. According to the assessment of representatives of higher education institutions, conditions for performing tasks assigned are quite suitable. In particular, the evaluation of the conditions for the public higher education institution to be assigned the task received much approval, especially the condition of being an affiliated unit. The condition of economic-technical norms and unit prices are also supported (the average rating score is greater than 3.4). The condition of autonomy and regular annual tasks received less support (the score for autonomy was only 2.36). These results are also quite like the results of in-depth interviews.

Table 1. Assessment of conditions for assigning tasks to provide public services using the state budget

	Leader		Officials, lecturers	
	Average rating score	Rating level	Average rating score	Rating level
The university assigned the task is a public university directly under the superior management agency that is assigned funding to provide public non-business services.	4.08	Fits	3.87	Fits
A university that is assigned the task of being a public university has the function and task of providing public non-business services in accordance with the task of providing public services under a decision of a competent management agency.	3.61	Fits	3.62	Fits
The assigned university must be a public institution that has been granted financial autonomy	2.36	Not fits	3.46	Fits
The university assigned the task must be a public institution that has been assigned the task by the superior management agency	3.53	Fits	3.48	Fits
Universities that have a list of public non-business services that have not yet established economic-technical norms and prices, shall comply with reasonable quantities, volumes, and costs according to estimates approved by competent authorities.	3.57	Fits	3.45	Fits

	Leader		Officials, lecturers	
	Average rating score	Rating level	Average rating score	Rating level
Public service prices and unit prices are determined on the basis of economic - technical norms and cost norms promulgated by competent agencies.	3,65	Fits	-	
The basis for assigning tasks is based on revenue and expenditure estimates assigned by competent authorities	3.60	Fits	3.46	Fits
Budget estimates of the task of providing public services in detail by sources: state budget, fees to be left to spend on service provision activities, collection of fees according to regulations, collection of public administrative services at prices services regulated by the State	4.17	Fits	3.48	Fits
Budget estimates of public non-business service provision tasks based on the quantity, volume, and tasks of public non-business services according to the current financial spending regime and approved by competent authorities	3.52	Fits	3.41	Fits
Regulations on payment and settlement	3.68	Fits	-	
Regulations on methods of product acceptance and handover	3.43	Fits	-	
Other regulations on administrative procedures	3.45	Fits	-	

Source: Summary of survey results, 2022

Evaluation of the ordering mechanism

Ordering is also a popular method deployed when providing public services using the state budget. The results of the survey on evaluation of the leaders of the higher education institutions and the department staff on the conditions and grounds for ordering the provision of higher education services using the state budget are shown in Table 2. Similar to the mechanism for assigning tasks, the conditions for ordering the provision of services using the state budget also received a lot of support from the respondents. Most of the scores for the evaluation of regulations and mechanisms are over 3.4 points. In addition to the criterion of financial autonomy, for the ordering method, another criterion that the leadership group considers inappropriate is the payment and settlement requirements. The evaluations through the survey are consistent with those in the in-depth interviews with the leaders of the higher education institution and relevant departmental representatives.

Table 2. Evaluation of conditions for ordering public services using the state budget

	Leader		Officials, lecturers	
	Average rating score	Rating level	Average rating score	Rating level
A public university is ordered as a university directly under a superior management agency that is assigned funding for the provision of public non-business services.	3.88	Fits	3.64	Fits
The university is ordered as a public university with the functions and tasks of providing public non-business services in accordance with the public career services ordered by decision of the competent authority.	3.58	Fits	3.62	Fits
The public university is ordered to be a self-financed university	2.26	Not fits	2.23	Not fits
An ordered public university is one that has been and is being ordered by a regulatory authority	2.01	Not fits	2.32	Not fits
The university to be ordered has a list of public non-business services with economic and technical norms and unit prices and prices for public administrative services promulgated by competent agencies as the basis for ordering.	3.51	Fits	3.77	Fits
A non-public university may be ordered if it meets the following conditions: having registered for an appropriate training discipline; sufficient financial capacity, facilities, equipment, machinery, and teaching staff to meet the requirements; licensed to operate in the area that requires a license	3.44	Fits	3.50	
Non-public universities are ordered to provide public services that are specific because they are related to intellectual property or have only one registered provider.	3.42	Fits	3.47	Fits
Regulations on payment and settlement	2.15	Not fits	-	
Regulations on methods of product acceptance and handover	3.41	Fits	-	
Other regulations on administrative procedures	3.47	Fits	-	

Source: Summary of survey results, 2022

Evaluation of the bidding mechanism

Regarding the method of bidding for the provision of public services using the state budget for higher education institutions, the number of schools participating in the bidding for the provision of services using the state budget accounted for 5.9% of the total number of higher education institutions surveyed.

However, according to the report on the survey results of higher education institutions by MOET (2021), higher education institutions think that it is difficult for local higher education institutions to implement bidding method because the bidding procedure is time consuming. Furthermore, the criteria for selection of contractors are unclear along with a lack of information on bidding and information on the needs of the local procuring entity. Newly established higher education institutions that do not have a reputation for providing services do not guarantee that the best quality training units are trained. The bidding method is a newly implemented method while higher education institutions have no experience in bidding and are confused in implementation. In addition, the management agencies have not set up a document system to guide the preparation of documents and specific implementation to higher education institutions.

Regarding the regulations related to the implementation of the bidding mechanism for the provision of public services using the state budget, the survey results show that there is high agreement in the regulations on the form of bidding, the independence of the public service provision. on the legal and financial aspects of the higher education institution with related parties, responsibility for providing information on the national bidding network of the bid solicitor, methods of acceptance and handover of products. On the contrary, many argue that the group of regulations on the planning and process of selecting contractors to provide public services, regulations on evaluation of bids, dossiers of proposals and bid-winning review and regulations on payment and settlement are not appropriate.

Table 3. Evaluation of the bidding mechanism for public service provision using the state budget

	Leader		Officials, lecturers	
	Average rating score	Rating level	Average rating score	Rating level
Both open bidding and limited bidding should be applied in bidding for public service provision using the state budget.	3.67	Agree	3.81	Agree
Do not apply the form of appointing contractors to provide public services using the state budget	3.88	Agree	4.22	Strong agree
The university participating in the tender must be legally and financially independent from the stakeholders	3.58	Agree	2.48	Do not agree

	Leader		Officials, lecturers	
	Average rating score	Rating level	Average rating score	Rating level
The bid solicitor is responsible for providing information on the national bidding network	4.24	Strong agree	2.52	Do not agree
Bidding universities provide and update capacity and experience information on the national bidding network	3.47	Agree	3.93	Agree
Regulations on forms and methods of contractor selection and organization of bidding for the provision of public services funded by the state budget are appropriate.	2.53	Do not agree	-	-
The plan and process for selecting public service providers using the state budget are appropriate	2.54	Do not agree	-	-
Regulations on evaluation of bids, proposals and consideration for winning bids are appropriate	2.48	Do not agree	-	-
Regulations on payment and settlement are appropriate	2.46	Do not agree	-	-
Regulations on methods of acceptance and product handover are appropriate	3.52	Agree	-	-
Other regulations on administrative procedures are appropriate	3.54	Agree	-	-

Source: Summary of survey results, 2022

The reality of implementation and evaluation shows that there are still obstacles and inadequacies in the implementation of the forms of task assignment, ordering and bidding for the provision of public services using the state budget for higher education institutions.

Firstly, many ministries, branches and provinces do not have or have low demand for assignment, ordering and bidding for the provision of higher education services. While the number of people assigned tasks and orders is not enough to open classes in some specific training programs and has low social needs, the funding provided is only based on the number of people, not the training class.

Second, many higher education institutions have not yet established economic-technical norms and the unit prices of public products and services provided while many universities are still unclear about economic-technical norms for a variety of reasons.

Third, for localities when assigning tasks and ordering teacher training, some problems arise such as: (i) difficulty in identifying training needs; (ii) many difficulties in arranging jobs for students after graduation due to the Government's policy of reducing payrolls and regulations on the number of people on the payroll of the Ministry/Department of Home Affairs; (iii) difficulties in recovering support funds if students violate their commitments due to lack of mechanisms to control and monitor learners and binding conditions for trainees (iv) difficulty in arranging financial student support fees.

Fourth, there are too many stakeholders such as: MOET, Ministry of Finance, localities and ministries, higher education institutions, students; localities have not implemented synchronously. In theory, a locality can order many higher education institutions. Many localities together with the Government order training with a higher education institution. Funds from the central budget allocated under Decree 116 are not clearly allocated for support, living expenses, and tuition fees for students registered according to social needs.

Fifth, unequal competition between local affiliated universities and non-local universities; ordered training quotas are reserved for local higher education institutions. In the case of orders from non-local higher education institutions, ordering information is not publicly available. Many enterprises enter a joint venture with a higher education institution to bid at a low price to win the bid, then resell it to other universities at a higher price; the bidding mechanism is implemented in a formal manner.

Sixth, the system of guiding documents is incomplete and asynchronous, leading to bottlenecks and delays in implementation.

5. Conclusion

The actual implementation of regulations related to the mechanism of task assignment, ordering and bidding for the provision of public services using the state budget for higher education institutions in Vietnam shows that although achieving certain results have been achieved, there are still many shortcomings in the regulations on task assignment, ordering and bidding for public service provision. Inadequacies are reflected in the conditions and grounds for implementation and implementation of the mechanism. These inadequacies are the main reasons leading to the goal of gradually reducing the application of the form of assignment of tasks to applying the form of ordering or bidding for the provision of public services using the state budget for educational institutions. universities cannot be done, on the contrary, the assignment method is applied more commonly. That fact requires the Government and ministries to have unified and synchronous solutions to help the participants solve problems and remove barriers in implementing the mechanism for assigning tasks, ordering, and bidding for public service provision using the state budget for higher education institutions in the coming time. Some specific recommendations are presented below.

Firstly, perfecting the system of documents guiding the implementation of Decree 32, Decree 116 and related legal documents on building a system of economic-technical

norms, setting unit prices and prices of product, services in the list of public products and services funded with the state budget provided by higher education institutions in the method of task assignment, ordering or bidding; concretize conditions related to financial autonomy of higher education institutions; identify the needs of teacher training at all levels in the localities; responsible for recovering funds for students who do not comply with their commitments.

Second, improve the financial mechanism, solve the problem of providing funding to support tuition fees and living expenses for pedagogical students; perfecting the recruitment and downsizing policies for the education sector in line with the real needs of the education sector; complete the procedures for payment of funds between the ordering party and the training orderee.

Thirdly, guide the implementation of the form of bidding for the provision of public services using the state budget, ensuring the bidding in a substantive manner; overcome the situation of "circumvention of the law" with forms of joint ventures in bidding.

However, this research, as other studies, has some limitations. Firstly, the results are based on opinions from representatives of a small number of higher education institutions and might be different in other higher education institutions. Secondly, the data is not well mined for research purposes. Future research should develop the model by collecting data from a big sample and applying more in-depth data analysis techniques.

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SOME ISSUES ABOUT VIETNAM'S REGULATIONS ON THE ESTABLISHMENT AND DEVELOPMENT OF ECO- INDUSTRIAL PARKS

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Abstract

This study focuses on the legal framework regulating the construction and development of eco-industrial parks as well as the evaluation of eco-industrial park practises in the application of these regulations. The research utilises qualitative research methods in conjunction with described statistical methods based on secondary data collected from current legal documents related to the establishment and development of eco-industrial parks, with a focus on Decree No. 35/2022/ND-CP and related Ministry of Planning and Investment research works and reports. The findings revealed a number of positive changes in the quantity and quality of eco-industrial parks, as well as some inaccessibility, such as: (1) some criteria are not yet quantitative; (2) compatibility with the Environmental Protection Law is not guaranteed; (3) preferential policies have not yet met the expectations of investors; and (4) administrative procedures are inaccessible. The study then suggests a number of settlement groups intended to overcome legal regulations' restrictions and incompatibilities, improve the effectiveness of law enforcement in establishment work, and build eco-industrial parks.

***Keywords:** Eco-Industrials Parks, Establishment and Development, Industrial park, Vietnam.*

1. Introduction

The eco-industrial park (EIP) is a new type of industrial park (IP). However, in the current economic context, it is viewed as targeted IP for planning and developing key IP. The development of the EIP was put forward to connect and collaborate in production to carry out industrial symbiosis operations. Furthermore, it not only promotes economic growth and attracts investment, but it also contributes to the planning and development of a cleaner industry, the most effective use and protection of natural resources, and natural resource conservation in order to protect and improve the environment, be suitable and meet the conditions for attracting investment, and develop IP in line with global trends.

The creation, operation, and development of the EIP are critical goals based on the roles and benefits that the EIP provides. To achieve this, national regulations and policies play a significant role in establishing a legal pathway for entities to follow. Decree No. 82/2018/ND-CP (Decree 82), dated 22 May 2018, is the first regulation on the EIP, together with the established activities, to develop this type of IP. Decree No. 35/2022/ND-CP (Decree 35), dated 28 May 2022, to ensure conformity with the overall development conditions of the country's economy and to satisfy the needs of international economic integration. However, during the implementation process, these regulations exposed numerous shortcomings, posing challenges for actors involved in the process of EIP transformation, planning, and development.

Therefore, in the context of globalization and international economics integration, the study and assessment of the content of regulations as well as analysis of the actual situation of the construction and development of industrial zones in order to propose a number of solutions to improve regulations and improve the efficiency of law enforcement, which are important in both theory and practice. With such an approach, the study not only perfects the legal system of Vietnam on the establishment and development of EIPs, but also ensures compliance with the spirit of sustainable development in international law, such as the Report “Our Common Future” in 1983 and the United Nations Conference on Environment and Development in Rio de Janeiro in 1992. It can be said that the study on the establishment and development of EIP closely links to the study of the growth of green industry, so that it helps save inputs of energy and materials, increase usage efficiency, reduce fuel industry imports while lifting the burden of the trade deficit for the economy, create more job opportunities in contribution to poverty, and assure the sustainability and well-being of the environment for future generations.

This study is structured into Seven parts: (i) introduction; (ii) literature review; (iii) method; (iv) some general issues about eco-industrial parks and the regulation of eco-industrial parks; (v) status of application of regulation in the establishment and development of eco-industrial parks; (vi) some solutions to improve regulation and enforcement efficiency in the establishment and development of eco-industrial parks ; and (vii) conclusion.

2. Literature review

Up to now, there have been a number of studies directly or indirectly related to the topic such as Nguyen Cao Lanh (2005) introduced the most fundamental notion of EIP. The author, however, does not discuss the establishment and growth of EIP in terms of legislative laws, instead focusing on offering basic recommendations and principles for the building and development of EIP in Vietnam. Pham Nguyen Ngoc Anh (2011), on the other hand, addressed the general theoretical difficulties of EIP and concentrated on examining EIP models from around the world. Following that, the author makes policy recommendations for Vietnam based on the experiences of other countries. Trinh Thi Tuyet Dung (2018) evaluated experiences in creating EIP in Korea and made some recommendations for the formation and development of EIP in Vietnam with the goal of achieving sustainable development. Or Tran Duy Dong (2020) has thoroughly examined the growth of EIP in

Vietnam; however, the author has yet to establish and visit the current legal restrictions connected to the establishment and development of EIP.

Regarding the legal aspect, Stucki Jérôme et al. (2019) referred to Decree 82 as a part of UNIDO's EIP Project (2014-2019). Instead of evaluating legislative laws, the writers focus on the issue of coordination and collaboration between UNIDO, the World Bank, and Vietnamese governmental institutions in order to execute the EIP legal framework. Guillaume Massard et al. (2018) provided legislation and policy to assess the standards requirements for developing EIP in Vietnam. Accordingly, those standards include: IP development, planning, and management (Decree 29/2008/ND-CP, Decree 164/2013/ND-CP, Decree 54/2015/ND-CP, Circular 35/2015/ TT-BTNMT); housing and well-being (Investment Law 2014, Decree 188/2013/ND-CP); cleaner production and resource efficiency (Decision 1419/QD-TTg in 2009, Decision 4135/QD-BTC in 2013); water management (Law on water resources 2012, Decree 67/2003/ND-CP, Circular 35/2015/TT-BTNMT); waste management (Decree 59/2007/ND-CP, Decree 38/2015/ND-CP, Decision 16/2015/QD-TTg, Circular 35/2015/TT-BTNMT); renewable energy (Decision 2068/QD-TTg). However, most of legal documents mentioned are no longer relevant to the present. Vu Thi Duyen Thuy (2021) assessed the reality of forming and implementing EIPs as well as Vietnam's regulations applied in this scenario and, at the same time, proposed several solutions to improve the related laws and improve the capacity for constructing and developing EIPs in Vietnam in the near future. Because the research was conducted when Decree 82 was still in effect and Decree 35 had not been issued yet, it is not suitable for the current situation.

The EIP model first appeared in Vietnam in 2014 as a result of collaboration between the Ministry of Planning and Investment and the United Nations Industrial Development Organisation (UNIDO) on the project "Implementation of an Ecological Industrial Park Initiative towards a Sustainable Industrial Park Model in Vietnam". However, Decrees 29/2008/ND-CP, 164/2013/ND-CP, and 114/2015/ND-CP are restricted and lack explicit EIP provisions. The concept and laws of EIP were first addressed in Decree 82 on the management of IP and economic zones. The decree defined EIP and industrial symbiosis, created criteria for establishing EIP, and encouraged and supported investors and businesses to use and develop the EIP model. However, after many years of implementation, the EIP legislation outlined in Decree 82 no longer reflects the current situation. As a result, Decree 35 superseded Decree 82, which continued to inherit and develop EIP adjustment regulations.

As can be seen, prior studies concentrated mostly on the analysis and evaluation of concepts, models, classifications, and basic characteristics of the EIP, with no special research works regulating the EIP's planning, building, operation, and development from a legal standpoint. Meanwhile, the authors observed that the law's provisions are critical for the transformation, formation, and development of EIP.

3. Method

This study utilises qualitative research methodology that combines descriptive statistical methodology based on secondary data from legal documents on the establishment and development of EIP, documents and resolutions of the Party, our State on policies and regulations on the establishment and development of EIP in Vietnam, Ministry of Planning and Investment reports, and related research works.

As a result, we may examine the state of domestic ecological development by utilising statistical approaches, comparative methods, and analytical and synthesis methods to analyse and clarify a number of legal concerns produced by the growth of EIP in the previous time. The assessments of the implementation of legal restrictions in the founding and development of EIP in the past were derived from there.

4. Some general issues on eco-industrial parks and the regulation of eco-industrial parks

4.1. Definition of the Eco-Industrial Parks

The EIP concept emerged as a model for inclusive and sustainable industrial development for existing parks and for planning new ones. The most common definition of an EIP was written by Lowe et al. in 1996: *“An eco-industrial park is a community of manufacturing and service businesses seeking enhanced environmental and economic performance through collaboration in managing environmental and resource issues including energy, water, and materials. By working together, the community of businesses seeks a collective benefit that is greater than the sum of the individual benefits each company would realise if it optimised its individual performance only”* (Côté and Cohen-Rosenthal, 1998; Lowe, 1997; Lowe et al., 1996). However, no standard definition exists. And according to Schalarb (2001), *“the construction of an eco-industrial park must be placed in a broader context, in which enterprises in the industrial park not only interact with each other but also with enterprises outside the industrial park as well as with the surrounding communities”*. On the other hand, in the EIP, industrial infrastructure is well-designed as the chain of ecosystems with harmonious compatibility with the contemporary natural ones, which minimise the amount of incurred pollutants while maximising the possibility of recycling materials and sources of energy. Additionally, the objective of EIP is to build industrial systems containing vast numbers of independent, self-sufficient factories, yet with voluntary cooperation, to form “symbiotic relationships” with each other and with the surrounding environment (Nguyen Cao Lanh, 2005).

In legal terms, EIP is defined in Decree 35: *“Eco-industrial park means an industrial park where industrial-park enterprises participate in cleaner production activities, efficiently use natural resources and cooperate with one another in production activities for industrial symbiosis; and satisfies the criteria specified in this Decree”* (Article 5.2).

From multiple perspectives, UNIDO gives a general definition that reflects the nature and meaning of this model as follows: *“An eco-industrial park is a community of businesses*

located on a common property in which businesses seek to achieve enhanced environmental, economic and social performance through collaboration in managing environmental and resource issues”.

In Vietnam, EIP development is based on industrial ecology theory and contributes directly to the national sustainable development strategy, which has three basic pillars: economic, social, and environmental. In particular, the development of EIP in Vietnam can address the current limited economic, social, and environmental benefits of IP development, meet the requirements of the country's overall sustainable development, and improve the economic and social effectiveness of enterprises. The development of EIP is a firm basis for the growth of IP, which is linked to maintaining sustainable efficiency and contributing to the implementation of the Vietnam Development Goals (VDG) and the National Strategy for Green Growth for the period 2011-2020, as well as the country's overall vision to 2050 (Tran Duy Dong, 2020).

4.2. Regulation of the Establishment and Development Eco-Industrial Parks

In terms of legal aspect, with the ongoing environmental problems caused by industrialisation, Vietnam has clarified the policies in sustainable industrial development toward the direction of greening the existing industries by laws. Accordingly, on 25/09/2012, the Prime Minister enacted 1393/QĐ-TTg to approve the national strategy on green growth, which considers green growth as one of the key points of sustainable development. In addition, the strategies for industrial development of Vietnam until 2025 and until 2035 are authorised by the Prime Minister (according to 879/QĐ - TTg on 09/06/2014), in which the importance of developing green industries sustainably and protecting the environment as well as focusing on promoting supporting ones are emphasised to help Vietnam join the Global Value Chain. Therefore, the model of EIP needs to be examined thoroughly and well-adjusted in order to better tackle environmental issues, to develop supporting industries, to play a role in realising the strategies of green growth and of industrial growth. However, implementation is facing the fact that regulations in Vietnam about operating and running IP are limited with rules on planning and on the system of policies on development. In fact, the lack of specific regulations on EIP has raised questions in the scenario that a few EIP are already put into work in several areas. On 02/11/2016, the Prime Minister assigned the tasks to the Ministry of Planning and Investment (written on the 9461/VPCP-KTN document), in which Decree No. 29/2008/NĐ-CP on IP, export processing, and economic zones are replaced; Decree No. 164/2013/NĐ-CP dated 12/11/2013 modified with additions the Decree No. 29/2008/NĐ-CP; Decree No. 114/2015/NĐ-CP dated 09/11/2015 improved parts of Decree No. 29/2008/NĐ-CP on IP, export processing, and economic zones. Accordingly, regulations on new model of IP including EIP would be taken into consideration.

As a result, on 22/05/2018, Decree No. 82/2018/NĐ-CP on managing industrial and economic zones was approved and announced. This event marked the crucial change in approaches of environmental laws in Vietnam about forming a connection between sustainable developments and greening industries. For the first time, problems related to EIP are officially addressed in a legal document. The aforementioned decree has clearly stated

three objectives in developing EIP: (1) improving the economic efficiency of businesses in the parks by applying clean methods of production, using resources with efficacy, and building the “industrial symbiotic relationships”; (2) improving the efficiency in protecting the internal and external environment regarding the parks by reducing the pollutants and waste, encouraging the use of clean technology and eco-friendly methods of production; (3) forming enterprise communities in the parks with fair competitiveness in the market, protecting and developing the living habitats for the surrounding communities, and putting the goals of sustainable development in practice.

However, after three years of implementation, several regulations are still far from reality, making it difficult or not facilitating the development of EIP in Vietnam (E-Journal of Business and Development, 2022). Some inaccessible points and basic obstacles need to be removed as they are not specified in the applicable criteria, design standards, or incentives for investors in the EIP (Hoang Quyen, 2019).

In response to Decree 82's limitations, the government published Decree 35 on May 28, 2022, restricting the operation of industrial and economic zones. Decree 35 is said to be more complete and preferential than Decree 82 when the provisions in the Decree's Articles are determined in accordance with reality, reducing administrative procedures for enterprises (E-Journal of Business and Development, 2022), adding provisions on policy support and development cooperation, criteria for determination, preferences, certification, sequence, and procedure for registration of certification of EIP (Bui Thi Kieu Phuong, 2022). Accordingly, Decree 35 regulates EIP, with contents such as:

First group: Regulations on Promoting the Development Eco-Industrial Parks

For the purpose of expanding the scale of EIP, the government of Vietnam has encouraged and supported organisations and individuals in investing in establishing and either wholly or partly converting the industrial parks approved by the competent authority into eco-industrial models. More specifically, investors who develop infrastructure, rent, and sublease the existing land in the parks are granted benefits on their future investments in IP, which include help with paperwork, technical consultation, investment promotion, and information on investment cooperation (Article 36).

The government of Vietnam also encourages the enhancement and completion of infrastructure, not only for the parks but also for the social and technical aspects, from the aforementioned investors. Besides, providing high-quality services and assisting enterprises in executing the “industrial symbiosis” for better conversion from traditional IP into EIP are also promoted. Additionally, companies in the IP are urged to improve management and operational systems while keeping the technological foundation up-to-date with cleaner practises, fewer pollutants, more efficient waste recycling, and more effective uses of resources. More than that, the enterprises are also encouraged to cooperate with each other and with third parties, not only for services but also for materials and other manufacturing inputs. Furthermore, each enterprise is allowed to recycle waste, scraps, and redundant energy to reduce the required costs while strengthening the operating efficacy as well as competitiveness (Article 36).

Second group: Regulations on Criteria of Eco-Industrial Parks

Similar to other enterprises, EIP requires not only strict compliance with laws in business, environmental protection, and labour but also thorough basic services as the first criterion. Additionally, several other specific criteria are laid out:

Regarding the investor implementing investment projects on the construction and commercial operation of infrastructure facilities in the IP: (i) complying with the laws in 3 years prior to the date of registration for certification of EIP; (ii) providing adequate basic services in the IP as specified by law, including: essential infrastructure services (electricity, water, communication, fire prevention and fighting, wastewater treatment, and other essential infrastructure services) and related services to support enterprises in the IP to implement industrial symbiosis; (iii) developing and implementing a mechanism on coordination in supervision of inputs and outputs with regard to the use of raw materials, materials, water, energy, chemicals, wastes and scraps in the IP; making and submitting to IP and Economic Zone Management Board annual reports on results achieved in efficient use of natural resources, cleaner production and emissions monitoring of the IP; (iv) annually, publicising a report on environmental protection and discharge of social responsibility toward the surrounding community and sending it to the IP and Economic Zone Management Board and posting it on the enterprise's website (Article 37).

Regarding the enterprises operating in the IP: (i) complying with the laws in 3 years prior to the date of registration for certification of EIP; (ii) implementing at least 1 industrial symbiosis and ensuring that enterprises participating in industrial symbioses in the IP apply the production and environment management system according to appropriate standards of the International Organisation for Standardisation (ISO); (iii) ensuring that at least 20% of enterprises operating in the industrial park apply solutions for efficient use of natural resources and cleaner production, resulting in conservation of raw materials, materials, water, energy, chemicals, wastes and scraps and reducing emissions to the environment (Article 37).

Regarding the industrial park: (i) the total land area of greenery, roads, technical facilities, and shared-use social infrastructure facilities of the industrial park accounts for at least 25% of the IP construction master plan approved by a competent state agency under the national technical regulation on construction master plans; (ii) having solutions to ensure housing, service, and public-utility facilities for workers in the IP (Article 37).

An investment project on the construction and commercial operation of infrastructure facilities in an EIP must meet the following conditions: (i) the investor implementing the investment project on construction and commercial operation of infrastructure facilities of the EIP registers industries and trades calling for investment in the IP; estimates the emission level for each industry or trade; determines the plan on industrial symbiosis in the IP, plan on formulation and implementation of a mechanism to monitor inputs and outputs of the industrial park regarding the use of raw materials, materials, water, energy, chemicals, wastes, and scraps, and plan on discharge of social responsibility towards the surrounding community in the project dossier; and commits to meeting the criteria for identification of

EIP for 8 years from the time the IP is established and clearly defines the implementation roadmap; (ii) the IP is identified by a competent authority as an EIP in the investment policy decision or investment registration certificate in accordance with the investment law, which shall serve as a basis for examination, inspection, and monitoring (Article 38).

The aforementioned criteria not only prove their importance in assisting investors and the government to have the necessary foundations to plan, invest in construction, and manage EIP but also serve as the basis to differentiate them from their existing traditional counterparts.

Third group: Regulations on Benefits for Enterprises in the Eco- Industrial Parks

The EIP is exposed to several incentives, such as priority in loaning capital from the Environmental Protection Fund of Vietnam, the Vietnam Development Bank, and other finance organisations, as well as from both foreign and domestic sponsors, for building technical infrastructure, implementing cleaner methods of production, using resources, and carrying out the idea of "industrial symbiosis" more efficiently. Furthermore, companies developing the infrastructure of the eco-industrial parks are prioritised in participating in programmes for technical support and investment promotions organised by the government. Additionally, enterprises in the EIP are also granted early access to information on the technology market and on the possibilities of cooperation to execute the plans of creating "industrial symbiotic relationships" (Article 39).

5. Status of Application of Regulation in the Establishment and Development of Eco-Industrial Parks

5.1. An overview of the Status of Eco-Industrial Parks in Vietnam in recent years

The EIP model was officially implemented by UNIDO and the Ministry of Planning and Investment in Vietnam in a number of provinces and cities in 2015, including Hai Phong, Dong Nai, Ho Chi Minh City, Da Nang, and Can Tho. According to the Preliminary Report of the Implementation of the Project Component of VNCPC at the Conference Development of Ecological Industrial Parks in Vietnam in the Direction of Approaching the Global Ecological Industrial Park Programme on September 15, 2022 in Ho Chi Minh City, 72 enterprises participating in the programme at three pilot industrial parks have adopted resource efficiency and cleaner production after three years of pilot implementation of the EIP model. Notably, this initiative saves 24.89 metric tonnes of CO₂ per year, 4 metric tonnes of chemicals, 3335 metric tonnes of solid waste, and 429 cubic metres of wastewater.

Since Decree 82 was issued with regulations on EIP, the 2022 Sustainable Development Goals (SDGs) of the Ministry of Planning and Investment were implemented in 2020, the Ministry of Planning and Investment has continued to coordinate with UNIDO to replicate the model of ecological industrial parks in localities such as Hai Phong, Dong Nai, and Ho Chi Minh City. As a result, 396 resource-efficient and cleaner production solutions have been proposed to 51 enterprises in the three IP, including Hiep Phuoc (HCM), Amata (Dong Nai), and Dinh Vu (Hai Phong).

With the benefits of EIP and the purpose of sustainable development, Vietnam has had industrial areas following the eco-industrial model, and here are the most noteworthy ones.

Nhon Trach 2 IP was established in 1997 in zone 2 of Hiep Phu and Phu Hoi communes with an area of 347 hectares and carries out several industrial fields in sewing, engineering, manufacturing construction materials and wooden products, food, chemicals and chemical cosmetics, household appliances, etc. Nhon Trach 2 has formed a system of using waste carton papers to make carton boxes, silks and scrap yarns to produce rags and cotton dust, etc. Aside from that, the external system is also built to recycle scrap plastic, papers, and cartons, while solid waste, toxic exhaust, and polluted water are processed to be reused in toilets for workers (240 cubic metres/day) and in watering plants (500 cubic meters/day), and the resulting liquid waste is estimated to be 7.500 cubic meters/day (Tien, 2014).

Bourbon An Hoa Industrial Garden was established on October 30th, 2009, and is considered the first IP in Vietnam that meets all the requirements of an EIP. The scale of this zone reaches up to 1.020 hectares in area, and it is able to hold hundreds of enterprises. In detail, industrial land only occupies approximately one-third of the total area, and 15% of the total area is strictly required for trees. Additionally, investors are forced to secure 30% of the land for planting grass and trees, which leads to increasing spaces of green grass. Besides, an A-tier centralised wastewater treatment plant is built with the obligation of processing partly-cleaned waste water from nearby manufacturers in the zone in order to dispose of it safely in the surrounding environment, with a total capacity of 30.000 cubic metres per full day (Nguyen, 2020).

Nam Cau Kien EIP was opened in Haiphong by Shinec JSC, currently being a highly-appreciated investor in the market. This zone follows the model of industrial area - park, which has proven to be eco-friendly. Not only that, the surrounding land is well-planned into a buffer zone and also serves the purpose of providing fresh food to the IP. With the remaining spaces after land acquisition, farmers are still well-off by receiving guidance from the investors in cultivation, cattle and poultry husbandry, fishery, etc. Furthermore, the resulting products are consumed by the IP at a stable rate (Vu Thi Duyen Thuy, 2021).

The above examples show that, until now, the number of EIPs in Vietnam is still insignificant compared to the total number of traditional ones, so, for the objective of exponentially scaling up the model, creating an appropriate legal system with details and consistency is highly recommended.

5.2. The Application of Regulations in the Establishment and Development of Eco-industrial Parks

Decree 35 provides the fundamental legislative foundation for implementing the EIP concept in Vietnam. Aside from the favourable aspects, the requirements of Decree 35 provide significant challenges for investors seeking to establish or convert to the EIP model. In particular, consider the following:

First, there are no clear guidelines for the criteria for eco-industrial parks. The EIP criterion system serves as the foundation for analysing, overseeing, and turning an existing IP into an EIP. As a result, Decree 35 merely halted the regulation of standards defining EIP in the absence of clear directions on guidelines, technical standards, or technical advice from national and international experts. Furthermore, in order to create a comprehensive index, a lot of indications must be broken down into qualitative indicators, particular quantitative indicators, important thresholds, and weightings for each indicator. (Tran Duy Dong, 2020). At the same time, in addition to the minimal criteria for EIP, awarding standards, such as levels of gold, silver, and copper for EIP that surpass the criteria and types of incentives for these EIP, must be defined (Central Economic Management Research Institute, 2018). EIP may be subject to some specified criteria, like as:

- More than half of industrial production facilities use cleaner production methods;
- EIP satisfy 70% of social housing demands for workers working in IP.

Second, Decree 35 is incompatible with the Law on Environmental Protection 2020. This is a general code for environmental protection in all fields, including all production-related activities, in order to accomplish sustainable development. Even though this law, which was recently amended in 2020 and went into effect in 2022, encouraged environmental protection activities, constructions and developments on the EIP are not included (Vu Thi Duyen Thuy, 2021).

Third, policies of support and incentives are insufficient to satisfy the needs of investors. Accordingly, government support programs and incentive policies focused at stimulating investment projects that build and transformation the eco-industrial park model are extremely confusing and of a too widely applicable character. For instance, the law does not contain clear provisions on exemptions, income tax reductions for IP and ecological firms, or promises of financial and technical assistance from the government as well as from development partners. The exemption policies, land lease reductions, and credit capital lending priority have not been precisely established or detailed but are nevertheless typically guided like other IP models. Without explicit, comprehensive pledges to beneficial financial policies, investors will have little motive to undertake building investments and transform the IP model to the EIP model.

In addition, the implementation process of implementing and applying the provisions of the law on EIP also encountered quite a lot of difficulties due to many other reasons, such as the fact that the administrative machinery and procedures in Vietnam are quite packed, with many steps and many procedures. This makes it difficult for investors to implement construction investments or transform EIP models.

6. Some solutions to improve regulation and enforcement efficiency in the establishment and development of eco-industrial parks

From the foregoing analysis, in order to ensure a precise, specified, and consistent legal structure for the formation and growth of the EIP in Vietnam, remedies to promptly solve the present issues are given forth below:

Firstly, it is necessary to give detailed instructions on the criteria for EIP. As mentioned above, these criteria should be expressed as indicators that are relevant, specific, quantitative, and a combination of three economic, social, environmental, and management aspects. In addition, political, technological, financial, informational, and connectivity mechanisms between domestic agencies and international organisations should be strengthened. Accordingly, further instructions on standards, technological standards of departments, and technical assistance from national and international specialists are essential, especially for industrial synchronous networks and circular economy solutions. This offers a stable base and the necessary information conduits for investors, notably international investors. Thereby, investors will be able to grasp state policies, particularly financial and technical policies for investment projects, construction, development, and expansion of EIP.

Secondly, complete the rules in the Law on Environmental Protection 2020 to stimulate the construction and development of the EIP. Adding new investment projects to promote the EIP as recipients of extra environmental incentives and assistance as outlined in the Law Environmental Protection 2020. Enacting supporting legislation on the search for and use of green technology systems, eco-friendly technological processes such as capital and technical help. This is a critical legal basis for adopting different types of incentives to help with construction as well as to promote EIP investment and development (Vu Thi Duyen Thuy, 2021).

Thirdly, specifying the forms and levels of incentives for activities of converting traditional IP into EIP. Therefore, the government must provide information on how businesses and land renters will be excused from paying land rent or paying it at a reduced rate when making investments in the development of EIP. Additionally, the government must specify in detail the conversion's form, degree of tax incentives, amount of capital, amount of land, and level of financial assistance. This is regarded as one of the key attractions for investors (Vu Thi Duyen Thuy, 2021).

Fourthly, simplifying the regulations on the orders of procedures will speed up the reform of administrative work. The development of the model of EIP requires the need to reform administrative procedures in the aspect of managing the country and the IP for a more favourable environment for businesses and investments, especially the application of the “inter-agency one-stop-shop mechanism” in the management board of the IP and the focal agencies in the provinces and city regions. At the present time, following the regulations, the management boards of the IP are authorised to implement specialised functions and tasks such as construction, labour, environment, and commerce. However, the authorisation processes in many local areas are not consistent, which poses many challenges in implementing state management towards the industrial parks as well as in assisting and handling obstacles for the investors. In light of the current authorization processes and the present administrative procedures in traditional IP, developing the EIP model likely faces many difficulties in attracting investors, for instance. Therefore, executing the administrative reforms in state management of the IP requires close cooperation among departments of all levels in order to generate promising results (Vu Thi Duyen Thuy, 2021).

7. Conclusion

It is clear that the EIP is a "community" of production firms working to preserve the environment and promote sustainable development, with economic and social interests inextricably linked. The evolution of the EIP model is no longer a suggested option; rather, it has become a must for those seeking high efficiency in recruiting investments, particularly from foreign investors. Thus, the refinement of the law's provisions pertaining to the EIP, particularly those relating to investment attraction, and the construction of the EIP will contribute to facilitating as well as enticing investors in order to target the popularity of the EIP model across the whole country.

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FACTORS DETERMINING THE CAPACITY OF HUMAN RESOURCES MANAGEMENT IN PUBLIC NON-BUSINESS UNITS: THE CASE OF VIETNAM MINISTRY OF FINANCE

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Abstract

This study aims to increase the understanding of capacity management within the public sector and how it can be used to cope with variations in demand. Determining a group of factors affecting management capacity at public non-business units under the Ministry of Finance in Vietnam. By comparing literature and the case presented in the study, the authors hope to achieve a contribution to the field of capacity management within the public sector and to identify managerial implications concerning capacity management for the specific case studied. Survey subjects are officials, management leaders, experts and employees at administrative and non-business units under the Ministry of Finance. The research model is in SEM form and measurement models are reflective scales, so this study applies SPSS 23.0 and AMOS 23.0 software. The author finds that two factors have a strong impact on human resource management capacity for the Ministry of Finance of Vietnam, including factors related to the working environment and development strategy factor in public organizations. The originality of this study is to provides an overview of human resource management capacity. Besides, the author also studies and points out the factors that have the greatest influence on management capacity for the public sector area in Vietnam.

Keywords: *Management capacity, human resource management, public sector, Vietnam*

1. Introduction

The great growth of the 21th century was the result of a new perspective on understanding the importance of investing in an organization's individuals and human resources, and implementing capacity building strategies in different organizations and societies. Human resources play a role and determine the existence and development of an organization in general or public organizations in particular. The quality of human resources is a decisive factor in the effectiveness of the work and operation of an organization. In the context of international integration, Vietnam faces many new challenges, especially in terms of human resource training for higher quality human resources.

Capacity can be defined as the ability of people, organizations and societies to successfully implement, define and achieve their goals, and change as necessary for the purposes of sustainability, and growth development and progress. Capacity development

is considered to be an endogenous dynamic process based on one's motivation, effort and persistence to learn and improve (Lopes & Theisohn, 2003) that enables organizations to change, grow, and thrive and develop. Some of the key competencies that enhance development include leadership development and knowledge networking (Lopes & Theisohn, 2003).

The European Center for Development Policy Management (ECDPM) explains its view of competencies based on five core competencies namely “ability to act and self-organize, ability to produce development results, capacity to ability to relate, adaptability and self-renewal, and ability to achieve coherence” (Ubels, Acquaye-Baddoo, & Fowler, 2010). Capacity development has a lot to do with the way the organization operates (Ubels et al., 2010). Culture represents an understanding of how an organization works, its procedures, beliefs and values; it is often influenced by the people working in it, past incidents, present influences and the type of work it has to undergo (Garratt, 1999). New skills, competencies and training are important characteristics required in an organization for capacity development; Physical resources such as equipment and capital assets are also needed for this purpose (Ubels et al., 2010). Capacity development and its impacts need to be continuously evaluated within an organization so that existing gaps can be filled to ensure continuous improvement. Neglecting capacity building programs can lead to a lack of growth and possibly failure.

The effectiveness, efficiency, and high-quality service provided by the public sector are still being debated. To improve their public image and reputation. "Historically, public sector organizations have been accused of bureaucracy, inefficiency and corruption. As a result of these glaring flaws, the public sector and citizens have a strained relationship."(Tangngisalu, Mappamiring, Andayani, Yusuf, & Putra, 2020). When compared to their private-sector counterparts, public-sector leaders encounter a number of distinct problems. Because citizens are typically opposed to additional taxation, public sector managers are expected to achieve ever-increasing performance without equivalent increases in revenues. As a result, it's critical to look into how government organizations build the leadership competencies and skills needed to deal with this and other complex issues. The purpose of this study is to give a quick overview of the complexities of public sector leadership in Vietnam. It explores how government organizations may develop leaders with the necessary communication skills and competences for long-term organizational efficiency and effectiveness.

This research relies heavily on the sociological survey approach, which includes questionnaires and in-depth interviews to gather primary data on leadership development. Officials, management leaders, professionals, and employees from the Ministry of Finance of Vietnam's administrative and non-business departments are among the survey's participants. As a result, the research employs an exploratory case study design (Teapitthay Amas, Sttipun, & Lakkanwanit, 2021; Venkatasubramanian, Rengaswamy, Yin, & Kavuri, 2003).

2. Literature Reviews and Theoretical Basis

2.1. Human Resource Management (NL)

Human resource management is a set of activities and methods aimed at managing people at all levels of a company in order to achieve organizational objectives (Byars & Rue, 2006). There has been a lot of discussion and writing on HRM, its content, practice, and application, and there has also been a lot of disputes recently about the responsibilities and tasks of Human Resource Management departments in organizations.

The management capacity of an individual in any organization is not only considered as a core factor to evaluate reward and empowerment, but also demonstrates the adaptability to changes in the context of international integration requires managers to have certain competencies (Levenson, Van der Stede, & Cohen, 2006; ZHOU, JIA, & YANG, 2022). Accordingly, administrators in the public sector often face challenges stemming from changes related to governance models, information technology, state legal institutions, etc. (Bhardwaj & Punia, 2013). Therefore, the administrative capacity of management in organizations has recently attracted attention not only to public organizations, but also exploited by human resource management researchers to contribute to diversity identification of the elements constituting managerial competence in human resource management theory (Lord, De Vader, & Alliger, 1986; McClelland & Steele, 1973). In Vietnam, there is research by (Khuong, Mai, & Phuong, 2020; Lê Quân & Khánh, 2012).

2.1.1. Knowledge Management (KT)

Rapid changes in technology and global competition require further innovation in organisations. This is based on strengthening employees' capacity and providing them with knowledge management support to accelerate the knowledge process and improve performance (Khawaldeh, 2020). Knowledge is defined as "a social invention that emerges from interactions between persons and information, particularly among groups engaged in communication, knowledge creation, sharing, and learning" (Gloet, 2006). HRM must be applied to managing human assets by developing organizational knowledge generation capabilities to improve operations and achieve competitive performance (Gope, Elia, & Passiante, 2018). Knowledge management based on their experiences and capacities, as well as their ability to adapt to the environment, is a vital source for promoting and developing performance (Zaim, Keceli, Jaradat, & Kastrati, 2018). As a result, the most important aspect in HRM is that people, their personal relationships, and their knowledge have all been recognized as valuable resources (Jung & Kang, 2016; Svetlik & Stavrou-Costea, 2007). The ability to leverage the invisible skills of individuals in an informal way, through cooperation, tacit knowledge, and informal learning, is critical to the success of human resource management in the knowledge economy (Thite, 2004).

2.1.2. Manager's Skills (KN)

Manager skills are interpersonal and behavioural abilities that are not related to a specific work function and are typically not learned through formal education (Weber, Lee,

& Crawford, 2020). "Soft talents are primarily ethereal, not related with a deliverable or a real outcome, and they are applied without the use of tools or templates," (Hendarman & Cantner, 2018) added. Character attributes that improve individual achievement are often known as soft skills (Robles, 2012). Soft talents, according to (Zhang et al., 2020), are generic skills "transferable to a wide range of tasks." Soft skills are vital for organizational performance and are required in interpersonal connections and work situations (AbuJbara & Worley, 2018). Although hard skills are essential to complete tasks, employers are more interested in employees who have a strong set of soft skills, as their value in the workplace grows (Cimatti, 2016). According to Cimatti (2016)'s research, hard skills account for only 25% of capacity of HRM, whereas soft skills account for 75%. Furthermore, IT managers regard soft skills higher than hard skills as a precondition for success in the IT business, according to a poll done by Aasheim, Williams, and Butler (2009).

2.1.3. Manager's Attitude (TD)

Manager attitude is critical to boosting performance and, as a result, putting businesses in the best possible position to compete and stay on top (Khan, Sarriff, Khan, & Mallhi, 2014). The development of organizations is demonstrated in the literature to be directly dependent on the performance of the human element as measured by the quantity, quality, and speed with which work is completed, which reflects the organization's overall performance. Manager attitude is a type of leadership style that belongs to the management series. It is a manager's capacity to influence subordinates to perform at their best. Aside from a slew of other factors, employee satisfaction with their manager's demeanour is regarded as the most crucial element that could influence employee performance (Alfandi, 2020)). Employee performance could be as low as zero or as high as maximum capacity, depending on the Manager attitude with them. Manager attitude has a significant impact on HRM capabilities, it also leads to increase productivity and output. Job productivity will increase if employees are stratified about their manager's attitude with them (Alfandi, 2020).

2.1.4. Standard Capabilities of Managers (NC)

By conducting the study in public organizations in Hoa Binh, Hung (2019) prove that the public administration area have some specific requirement, hence, there should be a standard competence framework for a strategic human resource management. Thoa (2020) pointed out that the moral and political awareness, attitude, and behaviour are essential factors as the requiring standard capabilities for the leaders. In her paper, Thoa (2020) demonstrated that the personal perspective and virtue of the leaders of public departments can intensively influence the subordinate's moral and political awareness, attitude, and behaviour which impact on the whole systems of public organization. According to the Ministry of Finance, Decision No: 2303/QD-BTC (2018); Ministry of Finance, Decision No: 789/QD-BTC (2019); Government, Decree No. 62/2020/ND-CP (2020), Vietnam Government also requires the workers in public sector to adhere the principles and discipline of the Party, State and public units and must have solidarity spirit in teamworking alongside

with proper manner and good political awareness, attitude, and behaviour. Based on that, building a standard competency framework for public administrators is necessary to have a well - developed human resource management abilities.

2.2. Management human resource development strategy (CL)

Becker and Gerhart (1996) asserted that organizational vision and objectives play an important role in human resource management especially in the system of public area. Their case study indicated the impact of vision and objectives on the development strategy of the whole organization in general, while in particular, it directly connects with the human resource development strategy. Quan (2009) proved that by researching the relationship between organizational common goals and the development of management strategy.

Besides, the market trend also has influence on the management strategy of public organization. Amit and Jean (2005) considered the alteration of market trend is a key which drive the process of performance evaluation and people development plan. Public departments must have adaptability to deal with the change of market trend and social demand (Wei and Lau, 2007). Therefore, the human resource manager are required to have high capability in handling the situation to implement proper strategy and development plan. Accordingly, the first hypothesis is proposed as follows:

Hypothesis 1 (H1): The impact of development strategy on HRM capabilities in public sector

2.3. Working environment (MT)

The working environment has extreme influence on the performance of employees as well as the management capabilities of the leader (Gunaseelan and Ollukkaran, 2012). It can impact on both positive and negative outcomes of employees' performance especially in the public organisations where full of law and regulations (Chandrasekar, 2001). According to Noble (2009), a toxic working environment can damage mental health of employees which caused anxiety and distressed leading to low working outcomes. A wholesome workplace environment includes the well - being of physical and mental conditions (Roelofsen, 2002). While physical condition derives from the demand of interior design, infrastructure, work equipment; mental condition derives from the demand of interaction and relationship among employees and employees, employees and manager, organizational regulations and rules or employees' entitlements, (Christabella Peter Bushiri, 2014). In short, to improve the performance of employees especially the public administrator in human resource management activity, organizations are required to have an ideal working environment. From here, the second hypothesis is proposed as follows:

Hypothesis 2 (H2): The impact of working environment on HRM capabilities in public sector

2.4. Human resource policy and remuneration (CS)

To build a strategic human resource development plan, it is indispensable to mention the crucial and critical impact of using people management policy and remuneration (Cardy

and Selvarajan, 2006). A proper policy and compensation can create higher working motivation for employees of public department. It is proven that creating work motivation will help employees to have their responsibility and obligation to fulfil organizational goals (Ryan and Connell, 1989, Ryan and Deci, 2000). This will improve the result of performance appraisal, leading to advanced human resource management capacities for public organisations. Moreover, it also helps retain old employees and attract newbies contributing on long - term development plan (Fry, 2003). Based on that, DeNisi and partners (2006) affirm that a well - developed human resource policy and proper performance - based reward are important factors which drive the success of human resource management plan as well as highlighting the capabilities in terms of people management of the public administrator. From the above analysis, the third hypotheses is proposed:

Hypothesis 3 (H3): The impact of human resource policy and remuneration regimes on HRM capabilities in public sector

2.5. Employee participation (TG)

Islam and Bin (2006) emphasized the importance of employee participation and engagement in the performance evaluation process in order to create human resource development plan. The results of the performance appraisal system can stimulate the working motivation by capturing the understanding and trust of employees. Sabrina, Derek and Patrick (2012) indicated that the subordinates are more likely to accept with the results of the performance evaluation even though it is not as good as they expect, thanks to the sympathy and trust from engaging on the evaluation process. Brad and partners (2014) explained that employees are tend to believe on the fair of the performance appraisal when they are enthusiasm in participating that they can consider it as a goals to achieve. As a result, the employees' engagement and participation especially the manager level have aggressive influence on the performance appraisal which is related to the context of human resource management capacities in public area. Based on this argument, the fourth hypotheses are proposed:

Hypothesis 4 (H4): The impact of employee participation on HRM capabilities in public sector

2.6. Organizational cultural environment (VH)

Boyatzis (2008) highlighted the impact of culture - related in organisational management especially the human resource development in public sector. The value of organisational culture will encourage employees to share their values, belief and working motivation to develop together in which same as the solidarity spirit of public sector. These values help the human resource manager to well - developed the management plan and strategic framework for standard quality of future managers. Moreover, by collecting the opinions about social - culture factors and practice such as gap of caste level, gender equality, gender discrimination, ...the human resource managers can deeply understand employees' perception, awareness, attitude and knowledge to contribute to the standard ability framework for well - developed human resource management plan (Quan, 2009). The value

of culture - related in public organization is undeniable that it can be considered as an orientation for the improvement of human resource management capabilities in terms of people appraisal and evaluation. From here, the following final hypothesis is added:

Hypothesis 5 (H5): The impact of organizational culture on HRM capabilities in public sector

3. Method

3.1. Data Collection Method

In this study, the sociological investigation method used surveys and in-depth interviews to collect primary data related to leadership development. The data were collected using a survey questionnaire. The survey is designed using a combination of closed and open questions, scales (identifier, interval and rate) and a 5-point Likert scale (1=Strongly Agree, 2= Agree, 3=Neutral, 4= Disagree and 5=Strongly Disagree). The survey subjects are officials, management leaders, and experts., employees at administrative and non-business units under the Ministry of Finance. According to Joe F Hair, Ringle, and Sarstedt (2011), as a rule of thumb, the sample size should be equal to or greater than 100 and the smallest sample should have the desired ratio of 5 observations for each variable ($n > 100$ samples and $n = 5k$, where k is the number of observed variables equivalent to the number of research questions). On the other hand, according to Bursi et al. (2006) the minimum sample size applicable in practical studies is greater 100 observations. With the author's research, there are 540 survey is suitable for a practical study.

The framework of this study applies to Vietnamese public sector. According to statistics released by the General Statistics Office of Vietnam in September (2018), Vietnam has nearly 70,700 public organizations. The objective of the study is to assess the impact of these factors on the human resource management capacity of public organizations in Vietnam. Survey subjects are officials, management leaders, experts and employees at administrative and non-business units under the Ministry of Finance with at least two years of experience to ensure that they fully understand enough about the research problem and the actual situation to fully understand the meaning of the questionnaire (Leech & Onwuegbuzie, 2007).

With 9 units with a total of 540 valid votes, the author gave statistics on research factors including: gender and age, marital status, education statistics, seniority position. and work and average income statistics. The results show that there are 230 female respondents (accounting for 42.6%) while the corresponding number and proportion of female are 310 (accounting for 57.4%), the proportion at undergraduate is 23 people, accounting for 4.3% and master, doctoral degree is 517 people, accounting for over 95%, over 60% of people in the survey hold management positions and the number of employees in the survey sample with a salary of more than 10 million dong accounts for the majority. The characteristics of respondents are described in Table 1.

Table 1. Description of respondents

	n	%
Sex		
Male	310	57.4
Female	230	54.0
Age		
35-40 years	65	12
40-45 years	107	19.8
>45 years	3668	68.1
Education		
Undergraduate	23	4.3
Master, doctoral degree	517	95.7
Working position		
Head, deputy of career unit	22	4.1
Leadership, management at department level	181	33.5
Team level management	337	62.4
Salary		
< 5 million VND	5	0.9
5 -7 million VND	59	10.9
7-10 million VND	185	34.3
>10 million VND	291	59.9

3.2. Data Analysis Method

After collecting data from the Ministry of Finance in Vietnam, the author cleaned the data, coded the necessary information in the investigation, entered and analyzed the data using SPSS 23 and AMOS 23 software. The imported data is analyzed according to EFA, CFA and analyse the linear structure model base on SEM structural model is widely used in the fields of psychological research (Anderson & Gerbing, 1988)), sociology (Lavee, 1988; Lorence & Mortimer, 1985), research child development (Biddle & Marlin, 1987) and extensively studied in the field of management (Tharenou, Latimer, & Conroy, 1994). After the model parameters have been estimated, the results of the implied model covariance matrix are then compared with an empirical covariance matrix or based on data. If the two matrices are unified, then the structural equation model can be considered as a plausible explanation for the relationship between factors (Hoyle, 1995).

4. Results

4.1. The Result of Exploratory Factor Analysis (EFA)

Methods of exploratory factor analysis (EFA) and multivariate regression were selected to analyze the data in the research. Coefficient KMO and Bartlett's Test are described in Table 2.

Table 2. Coefficient KMO and BT

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.786
Bartlett's Test of Sphericity	Approx. Chi-Square	7057.056
	df	703
	Sig.	.000

The Kaiser-Meyer-Olkin Test (KMO) as a Measure of Sampling Adequacy was used in the present study (Table 2) to detect multicollinearity in the data to verify the appropriateness of carrying out a factor analysis. For our data, KMO was $0.786 > 0.5$. The results of our analysis for the Bartlett's Test of Sphericity showed a significance level of 0.00. It can be concluded that the relationship among variables is strong. Because there is no change in the names of the factors, the hypotheses proposed to test the previous section are kept for testing in the next sections.

Table 3. Pattern Matrix^a

	Factor								
	1	2	3	4	5	6	7	8	9
KN4	.855								
KN1	.814								
KN2	.812								
KN6	.764								
KN5	.726								
KN3	.722								
TD2		.912							
TD5		.897							
TD4		.872							
TD3		.764							
TD1		.644							
NC2			.830						
NC3			.740						
NC1			.735						
NC4			.706						
NC5			.577						

	Factor								
	1	2	3	4	5	6	7	8	9
NC6			.507						
VH3				.856					
VH1				.812					
VH2				.803					
VH4				.767					
TG2					1.004				
TG4					.599				
TG3					.583				
TG1					.568				
MT3						.870			
MT2						.848			
MT1						.602			
KT2							.741		
KT1							.689		
KT3							.627		
KT4							.572		
CL3								.848	
CL2								.692	
CL1								.579	
CS2									.794
CS3									.646
CS1									.581

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization.

Rotation converged in 6 iterations.

According to Joseph F Hair (2009), *Multivariate Data Analysis*, 7th Edition:

- Factor Loading at ± 0.7 : The observed variable has a very good statistical significance.
- Factor Loading at ± 0.5 : The observed variable has a good statistical significance.
- Factor Loading at ± 0.3 : The minimum condition for the observed variable to be retained.

As we can see, all the factors in Table 2 are satisfactory because they are greater than 0.5. Not only that, but there are also 14/19 factors with factor loading greater than 0.7, so the factors have a very good statistical level and satisfy the requirements to go to CFA analysis step.

4.2. The result of Confirmation Factor Analysis (CFA)

After performing exploratory factor analysis, the author conducts confirmation factor analysis, and obtained the results of the model as follows:

The coefficients CFI = 0.913, TLI = 0.903 and GFI = 0.863 are all greater than 0.8, reaching good values. PCLOSE=000 < 0.1, CMIN/df = 1.913 < 3, RMSEA = 0.049 < 0.06 all have good values, so the model is considered to be suitable with market data and guarantee unidirectional. The regression coefficient table shows that the P-values are all less than 0.05 and the results from the normalized regression weight table show that the weights are all greater than 0.5, so the scales are all convergent. All scales have good general reliability (CR > 0.5); total extracted variance (VA) >0.5. From 9 factors with 40 initial scales, which were initially evaluated, EFA analysis, CFA analysis were reduced to 38 scales, the scale set was included in the SEM model analysis to test the hypotheses. related to the factors affecting the capacity of management human resources.

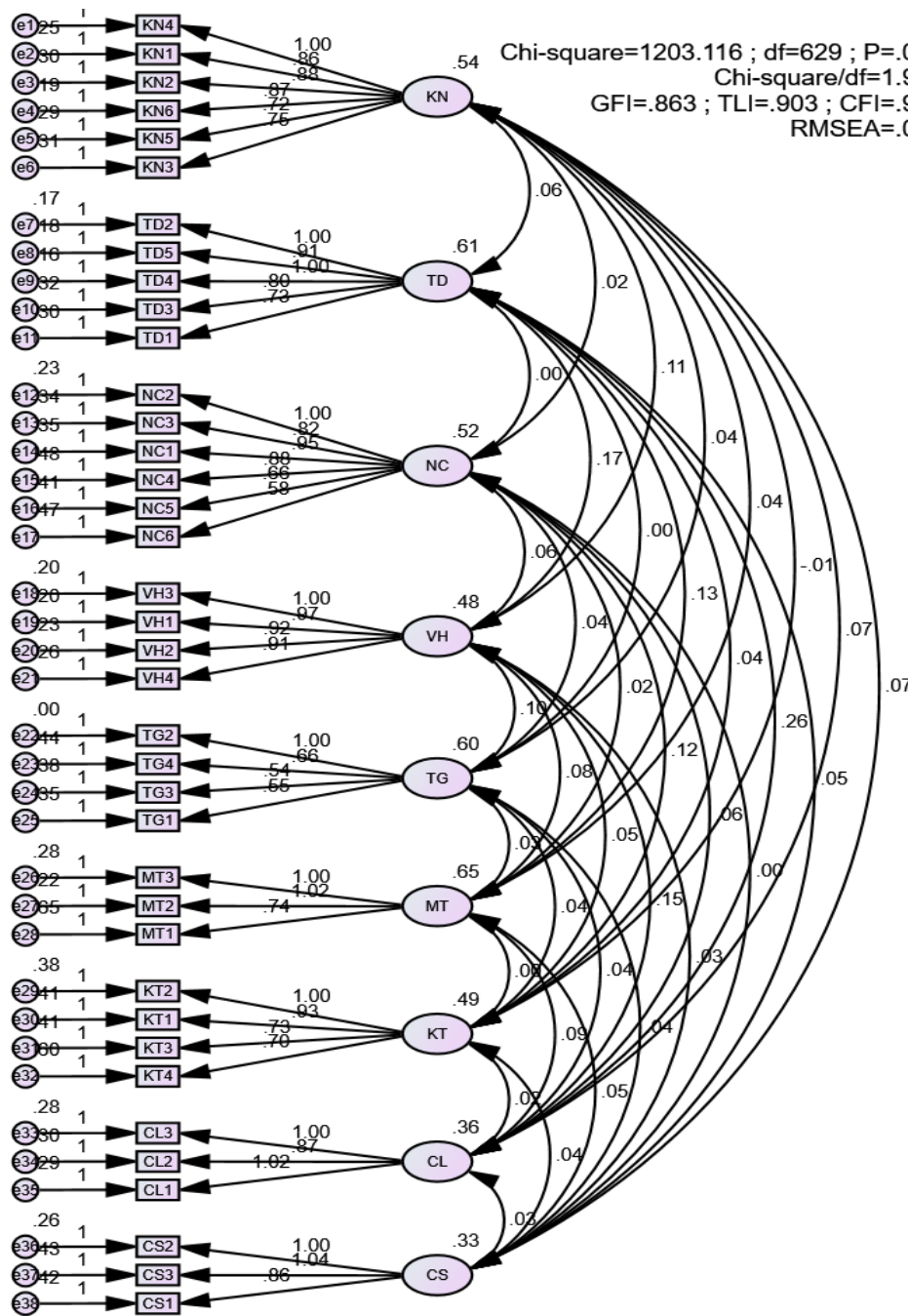


Figure 1. CFA Model

4.3. Structural Equation Modeling (SEM)

After finding the results of checking the suitability of the whole model, the author put all the observations and satisfied latent variables into the model to analyze SEM and test hypotheses. Analysis results of the linear structure model in the figure show that the values $Cmin / df = 1.918 < 3$, $TLI = 0.903$, $CFI = 0.912$ and $GFI = 0.860$ have achieved very good results because they are both greater than 0.8 and $RMSEA = 0.049 < 0.05$. As such the data is considered appropriate.

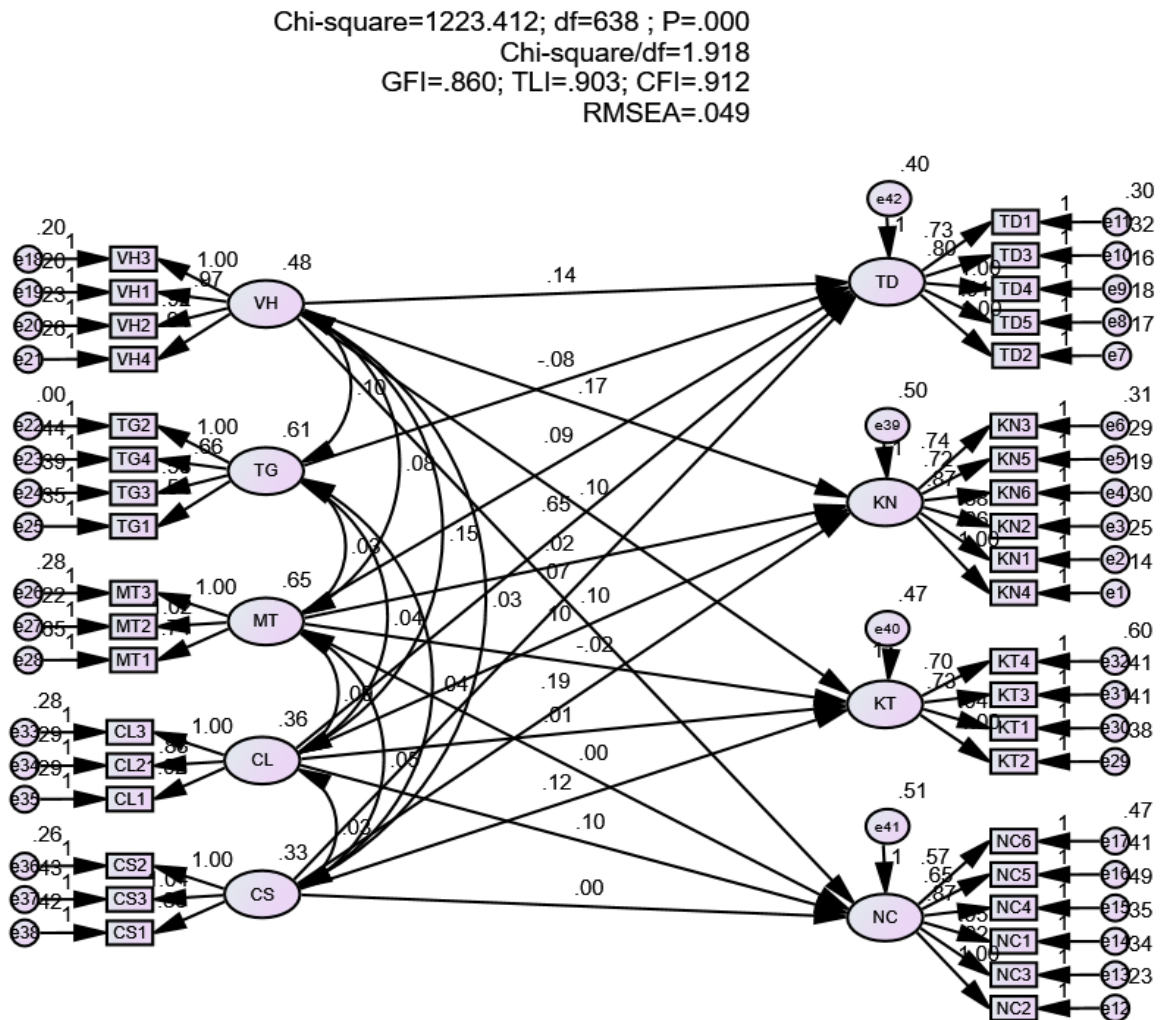


Figure 2. SEM Result

4.4. Results of Hypothesis Testing

4.4.1. Testing the Measurement Model

The reliability, convergence, and discriminant values are used in the test measurement model to evaluate the scales' value. The scales of the study concepts acquired a high value after two measurement model assessments. The measuring model's evaluation findings are reported in Table 3. When Cronbach's alpha greater than 0.6 and composite reliability agreed with 0.7, the scales' reliability achieved a high level. The AVE index is

accepted when all values are greater than 0.6 and satisfies the acceptable threshold of 0.5. The values of the two above indicators show that the scales of the research concepts reach a high convergence value. From the above results, it can be concluded that the scales of the research concepts have high values and can be used to test the structural model in the next step (Hair Jr, Sarstedt, Matthews, & Ringle, 2016).

4.4.2. The Result of Testing Mediate Variable

Structural modelling assessment is aimed at testing the predictability of the research model and testing the research hypotheses. The results of testing the direct relationships between the structures are presented in Table 4. The data shows that management capacity (NL: KT, NC, KN, TD) is significantly affected by five variables with significance less than 1% as follows: VH, TG, MT, CL, CS ($\beta = 0.307$; $p = 0.000$), TG ($\beta = 0.331$; $p = 0.000$), CL ($\beta = 0.302$; $p = 0.000$), VH ($\beta = 0.645$; $p = 0.000$) and MT ($\beta = 0.509$; $p = 0.000$) through the accepted hypotheses including H1, H2, H3, H4, H5.

Chi-square=224.875; df=174 ; P=.006
 Chi-square/df=1.292
 GFI=.947; TLI=.977; CFI=.981
 RMSEA=.028

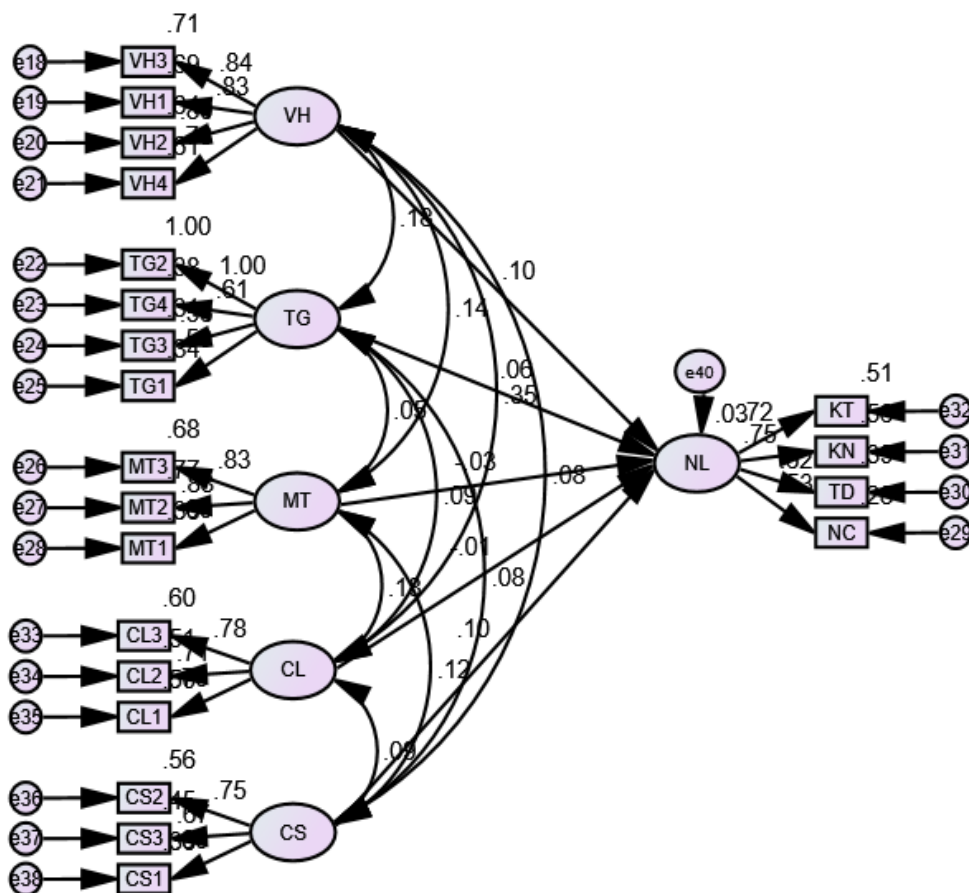


Figure 3. Results of Hypothesis Testing

Table 4. The result of testing mediate variable

Hypothesis	Direct relationship	Path coefficient (β)	Standard Deviation	<i>p</i> values	Significance
H5	NL<--- VH	.486	.050	9.634	***
H2	NL<--- MT	.601	.055	10.899	***
H1	NL<--- CL	.633	.075	8.457	***
H3	NL<--- CS	.388	.052	7.532	***
H4	NL<--- TG	.333	.053	6.332	***

5. Discussion and Conclusion

Hypothesis testing results are obtained: The management capacity is affected the most by the strategic factor (H1), then the factor of working environment (H2) and employee participation factor is the least influential factor for management capacity with weight is 0.333 (H4). The research in this study has made both theoretical and practical contributions. First, in practical terms, the research results are the basis for public organizations and the government to plan policies to improve human resource management capacity in the Vietnamese public sector. Leaders of organizations at Vietnam's Ministry of Finance need to focus more on at least two factors, strategy implementation and employee involvement, to help improve the capacity of management personnel. Next, the study also built and tested a research model on management capacity in the public sector under the Ministry of Finance of Vietnam.

However, to do well in human resource management, it not only comes from efforts of the human resource management team, but also needs proper attention from the Party and the State of Vietnam. The author hopes that with these research results, it will partly help the public sector sectors in Vietnam have a clearer view and have a more correct orientation and strategy for improving management capacity.

This study has some limitations. Although the data is quite diverse, the sample size (540) is still quite small compared to the sample frame. We suggest that future studies should expand the sample size and increase the number of public institutions besides the Ministry of Finance. Next, the study shows five factors that have an impact on human resource management capacity, therefore, the following studies can expand the variables to diversify and evaluate more effectively for human resource management human resource management to make more accurate recommendations on Vietnam's public sector capacity.

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APPLYING AND PROMOTING THE FOREIGN POLICY OF “BAMBOO DIPLOMACY” IN THE CURRENT CONTEXT OF VIETNAM’S INTERNATIONAL INTEGRATION

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Abstract

The Communist Party of Vietnam is constantly supplementing, developing, perfecting, and building a very unique and unique school of foreign affairs and diplomacy of the "Ho Chi Minh era", imbued with the identity of "Vietnamese bamboo". in the period of international integration. The study clarifies some contents of this "Bamboo diplomacy" bold foreign policy, analyzes achievements, and assesses some limitations in diplomatic activities, thereby proposing several tasks. services to be performed in the "bamboo diplomacy" to enhance its position and participate more and more deeply in the international integration process.

Keywords: *Diplomacy, Bamboo diplomacy, Communist Party of Vietnam*

1. Introduction

Diplomacy is the intersection of politics-security, economy, and culture-society, the link between the past and the present, between history and the future, and between the country and the world. Vietnam's diplomacy is now defined not only by Party diplomacy, State diplomacy but also by people's diplomacy, according to which all three pillars of diplomacy/foreign affairs above must be based on the people's culture. At any level, ethnicity and diplomacy/foreign affairs carry within themselves the connotation of national culture. In other words, the identity of Vietnam's diplomacy is a part of the national identity of Vietnam, forged through practice and the historical context of the ups and downs of the nation - nation, so that Vietnam can affirm its sovereignty. independent authority, increasingly prestigious, and deeply involved with key and important roles in regional and international organizations.

Inheriting and promoting the traditional foreign policy philosophies of our ancestors under the illumination of Ho Chi Minh's thought, along with the creative application of Marxism-Leninism, our Party has constantly supplemented and developed develop, perfect and build a very unique and unique school of foreign affairs and diplomacy of the "Ho Chi Minh era", imbued with the identity of "Vietnamese bamboo" in the period of international integration.

2. Method

To serve this article, the author uses the Marxist philosophical methodology, while also using the method of analyzing documents, observation methods, and logistic - logistic methods

3. Results

3.1. Foreign policy with bold "Bamboo diplomacy"

In the context of deepening integration and globalization, Vietnam's diplomacy continues to carry out new missions, contributing to creating and maintaining a peaceful and stable environment and firmly defending the Fatherland; at the same time, flexibly and creatively find new ways to promote international cooperation, create favorable conditions for economic construction and development, raise the country's position and increase potentials...

Throughout the history of the Vietnamese nation, foreign affairs have always played an extremely important role, not only contributing to firmly defending independence, sovereignty, unity, and territorial integrity; but also contributing greatly to the country's construction and development. Implementing the motto of being ready to be "friends with all democratic countries" (HoChiMinh, 2011) of President Ho Chi Minh given right from the early days of independence, Vietnam has been and is really "a friend, a partner". reliable partner of all countries and an active and responsible member of the international community" (Communist Party of Vietnam, 2021).

During the course of revolutionary activities, on the diplomatic front, President Ho Chi Minh always thoroughly grasped the guiding view that one "must look broadly, think carefully" to know oneself, know others, and always master the situation. position; clearly understand Vietnam's strategic position about other countries; always advocate respect and save "face" for big countries; always have to "know the time, know the situation" to build a very special and unique school of foreign affairs and diplomacy: "Slender body, fragile leaves, why should you be strong, you should be bamboo!".

Determining the importance of diplomacy in the current national construction and development, at the National Foreign Relations Conference on implementing the Resolution of the 13th National Party Congress on 14 December 12, 2021, General Secretary Nguyen Phu Trong emphasized: "Determined to build and develop a modern Vietnamese foreign policy and diplomacy imbued with national identity - the "Bamboo tree" diplomatic school Vietnam" (Nguyen Phu Trong, 2022)

Over the past 90 years, under the leadership of the Party, based on Ho Chi Minh's thought, we have built a very unique and unique school of foreign affairs and diplomacy imbued with the identity of the "Vietnamese bamboo tree". Vietnamese Bamboo has "solid roots, strong body, flexible branches", imbued with the soul, character, and mettle of the Vietnamese people; that is: "Soft, clever, but very resilient, fierce; flexible, creative but very brave, steadfast and courageous in the face of all challenges and difficulties for the sake of national independence, freedom and happiness of the people. Solidarity and compassion, but resolutely and persistently protecting the interests of the nation - nation. Know soft, know hard; know the time, know that; know yourself, know people; know how to advance, know how to withdraw, "accidentally improvise", "soft and fasten" (Nguyen Phu Trong, 2022)

General Secretary Nguyen Phu Trong borrowed the image of the bamboo tree - a very rustic and simple symbol that is familiar to Vietnamese people, to convey a very profound but very close philosophical message. practical for the foreign affairs and diplomacy of Vietnam. Bamboo has "solid roots, strong bodies, flexible branches"; soft but resilient; flexible but brave; ... to protect the country's Jiangshan, independence, and sovereignty. The diplomatic tradition that his father left behind is very unique and has its own identity. But in the end, it exudes the spirit: Full of courage, rich in humanity, filial piety, respect for justice, justice, and righteousness: "Bring great justice to overcome cruelty / Use kindness to replace tyranny"(Nguyen Phu Trong, 2022). Those are "the ideas and philosophies beyond his father's time, forever still valid".

It can be said that in Ho Chi Minh's era, inheriting the unique methods of his father, flexibly behaved during the revolutionary process, along with other fronts, the diplomatic front played an important role in the development of the country. revolutionary career, contributing to the great victories, and glorifying the nation's history.

3.2. Achievements in diplomatic activities

After more than 35 years of renovation, inheriting and promoting the glorious tradition of the nation, especially Ho Chi Minh's thought, while creatively applying the basic principles of Marxism-Leninism, selectively absorbing and Filtering the quintessence of world culture and progressive thought of mankind, foreign affairs with the identity of "Vietnamese bamboo" has achieved many good results and achievements. Detail:

Firstly, by breaking the siege and embargo, we have created and consolidated more and more firmly the external situation of openness, multi-lateralization, and diversification of relations, favorable for the renewal process. Currently, Vietnam has expanded and raised its diplomatic level with all its neighbors, major countries, and traditional friends. As a result, it is widely accepted and supported by the international community. Up to now, "our country has had diplomatic relations with 189 countries out of a total of 193 UN member states, of which 3 have "special relations", 17 are "strategic partners" and 13 The country is a “comprehensive partner” (Nguyen Phu Trong, 2022) and is an active and responsible member of more than 70 important international organizations and forums, such as the United Nations, ASEAN, APEC, ASEM, WTO, etc. The Party, State diplomacy, people-to-people diplomacy, and foreign affairs of branches, fields, localities, and enterprises are increasingly expanding, proactive, active, and in-depth, contributing to political and national consolidation. room, security; economy, culture - society is promoted, thereby enhancing political trust and interweaving interests with partners.

Second, create a favorable international environment and mobilize external resources to promote industrialization, modernization, and socio-economic development. After transforming to a socialist-oriented market economy, our country's economy has extensive international links with most of the important economies in the world. Currently, Vietnam has signed 15 free trade agreements (FTAs), including 3 new generation FTAs with very high standards. “If 30 years ago, we only had economic-trade relations with nearly 30

countries and territories, now we have economic-trade relations with 230 countries and territories; Total import-export turnover has reached about 600 billion USD so far, about 120 times higher than in the first years of the doi moi period”(Nguyen Phu Trong, 2022). On the other hand, in the context of the complicated development of the COVID-19 pandemic, Vietnam has actively contributed responsibly to the joint international effort in COVID-19 prevention and control, and at the same time enlisting support. great international support for vaccines, medical equipment, and therapeutic drugs, making an important contribution to the prevention and control of the COVID-19 epidemic and recovery and socio-economic development.

Third, foreign policy has played a pioneering role in maintaining a peaceful and stable environment, making an important contribution to firmly safeguarding the country's independence, sovereignty, unity, and territorial integrity. Border issues with relevant countries have been gradually resolved, creating favorable conditions to protect sovereignty and territory and contribute to consolidating peace and stability in the region.

Well-implemented bamboo diplomacy, combining "hard" and "soft", promoting peace: "We always raise the flag of peace, cooperation, actively exchange and negotiate with relevant countries to control disagreements, seek fundamental and long-term solutions to disputes by peaceful means based on international law” (Nguyen Phu Trong, 2022).

Fourth, our country's position and international prestige in the region and the world have been increasingly enhanced, actively and responsibly contributing to the maintenance of peace, development cooperation, and progress in the world. gender. In many important international issues, Vietnam's voice, initiatives, and solutions in the spirit of equality, harmony, and humanity have received the sympathy and support of the international community. Vietnam's position and prestige are increasingly enhanced in the international arena.

It can be said that efforts and results in foreign affairs have made a significant contribution to the history of our country after 35 years of renovation: "Our country has never had the opportunity or potential. power, position, and international prestige as today”.

Besides the above achievements, our country's foreign affairs also have limitations, "foreign affairs and international economic integration are sometimes not very proactive and not very effective"; lack of synchronous and effective solutions to minimize negative impacts in the process of promoting international integration; awareness and practical direction sometimes cannot keep up with the rapid and complicated changes of the situation; the coordination and cooperation between branches, levels, and localities are still lacking; strategic research, situation forecasting is not very methodical, the results are not as expected. To overcome the shortcomings and promote the diplomatic tradition of his father, the General Secretary requested to master 5 lessons learned from many congresses.

In the coming time, in the context of many favorable opportunities, difficulties, and intertwined challenges, "the forecast of the situation in the world and the region will continue to have many rapid, complicated, and unpredictable changes. Peace, cooperation, and development are still a big trend, but they also face many obstacles, difficulties, and

challenges. Globalization and international integration continue to progress but are also threatened by the rise of extreme nationalism, strategic competition, economic competition, and fierce trade war. Due to the impact of the COVID-19 pandemic, geopolitical tensions are increasing pressure on foreign relations as well as affecting the economic and political situation of each country, and climate change is becoming more and more important. a systemic challenge. Therefore, policymakers need to consider three major trends - rising nationalism, deteriorating geopolitics, and increasing digitalization, the world is in a serious multi-faceted crisis. The Fourth Industrial Revolution has developed strongly, creating breakthroughs in many fields, and bringing both opportunities and challenges to all countries. Countries adjust their development strategies and methods to adapt to the new situation. The Asia-Pacific region continues to have an increasingly important strategic position. In Southeast Asia, the security environment and sovereignty disputes in the East Sea are still complicated...” (Communist Party of Vietnam, 2021).

3.3. Tasks of foreign affairs in the period of international integration.

To contribute to the successful implementation of the Resolution of the 13th Party Congress, striving to 2025 - the 50th anniversary of the liberation of the South and reunification of the country, our country is a developing country with modern industry. beyond the low middle-income level; by 2030 - the 100th anniversary of the founding of the Party, our country is a developing country with modern industry, and high middle income; and by 2045 - the 100th anniversary of the founding of the Democratic Republic of Vietnam, now the Socialist Republic of Vietnam, our country will become a high-income, socialist-oriented developed country. We need to fully grasp the Party's guiding ideology, foreign policy principles, and foreign orientation.

Instilling and promoting bamboo diplomacy, mastering the principle of "always immutable, immutable"; always "knowing oneself, knowing others", "knowing the time, knowing the situation" to "resolutely combine" for the supreme benefit of the nation"(Nguyen Phu Trong, 2022), foreign affairs in the coming time need to be done. Good at the following tasks:

Firstly, upholding the principle of "bamboo diplomacy", foreign affairs need to renew thinking, boldly break through and be creative, find new ways of doing things, expand into new fields, and seek new partners. New work, new direction. Therefore, it is necessary to be proactive, regularly monitor, research, and firmly grasp developments in the region, the world, and international relations to promptly propose appropriate solutions. Emphasizing this requirement, it is required that diplomats "must be sharp, dare to think, dare to do, have the spirit of proactive attack, dare to go beyond the framework of old thinking and familiar fields to have new ideas and thoughts. think and act beyond the national level, reaching the regional and international level” (Nguyen Phu Trong, 2022). However, even with innovation, it is necessary to firmly grasp the principle of "always immutable, immutable", must be based on "staying principles, firmness, prudence, steadfastness in goals and sincerity and humility". , bearing the true identity of the Vietnamese bamboo tree "thin body, fragile leaves" but full of bravery, resilience, "soft and tight tie".

Second, continue to deeply grasp and properly implement the foreign policy of independence, self-reliance, peace, cooperation, multi-lateralization, and diversification of relations, and proactive and active international integration. wide; strengthen cooperation, continue to create interweaving strategic interests between our country and other countries, prevent conflicts, avoid confrontation, isolation, and dependence for the sake of the nation-nation.

The overarching goal of current foreign affairs is to maintain a peaceful and stable environment and; at the same time resolutely and firmly defend independence, sovereignty, sovereign rights, territorial integrity, and legitimate interests by international law. Always persistent, calm, lucid, wise, and properly handling foreign relations. This is a very important and challenging task, requiring the whole industry to make efforts and try to perform well.

Third, actively and actively participate in contributing to, building, and shaping multilateral mechanisms to raise the level of multilateral foreign affairs, considering this an important strategic orientation. Promote the important results of the multilateral forums that Vietnam has participated in, especially in coordination with partners to promote the implementation of the adopted initiatives of Vietnam. It is necessary to play a pivotal role in the process of building the ASEAN Community and continue to actively participate in the framework of the United Nations, especially in the implementation of the Sustainable Development Goals and participation in the conservation force. United Nations peacekeeping.

Fourthly, expand and further improve the effectiveness of external activities, especially economic and cultural cooperation, and cooperation in the fields of politics, security - defense with other countries; continue to bring relationships with partners, first of all, neighboring countries and big countries, into depth, stability and effectiveness; Prioritizing maintaining stability and momentum of relations, enhancing political trust, promoting cooperation in all fields, and at the same time dealing with differences and arising problems in the spirit of cooperation and friendship, manage disagreements, based on international law and regional practices”(Nguyen Phu Trong, 2022).

Fifth, attach importance to and further improve the quality of strategic research and forecasting, focusing on carefully assessing trends in policy and relations among major countries, neighboring countries, and regions, as political, economic, cultural, and social trends in the world and the region, especially in the face of the stormy impacts of the Fourth Industrial Revolution, digital transformation, digital economy, and society. number and dangers of disease and climate change.

4. Conclusion

In the new context, inheriting extremely valuable traditions and experiences from their forebears, imbued with the philosophy of diplomacy of bamboo, with a firm, confident and wise bravery, under the leadership of the Party. Vietnam's diplomacy will be "comparable with other countries and international friends; wholeheartedly, wholeheartedly serving the Fatherland, serving the people", contributing to promoting the country's rapid and sustainable development.

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COMPLETE COMPANY INCOME TAX POLICY: A POINT OF VIEW FROM SOCIAL RESPONSIBILITIES OF BUSINESSES IN THE CONTEXT OF INTEGRATION

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Abstract

The first requirements on tax commitments in the integration process are the gradual reduction of taxes, including corporate income tax (CIT). This is the general trend to attract international investment flows to Vietnam. However, from the perspective of national interests in the short term, the tariff reduction has had a significant impact on state budget revenue. To offset this revenue, in addition to reducing public expenditures or increasing property taxes, the most effective measure is to increase the social responsibility (CSR) of enterprises to offset the CIT amount. reduce. In the framework of the article, assess the current status of CSR implementation of FDI enterprises, on that basis, propose some solutions to enhance CSR implementation of these enterprises.

Keywords: *improvement, social responsibility, foreign direct investment, corporate income tax, international economic integration*

1. Introduction

When participating in international economic integration, it is required that the tax system in general and the CIT policy of each country in particular must be adjusted in accordance with international practices. In particular, protectionist barriers, such as tariffs and customs unions, need to be gradually removed and replaced by a variety of non-tariff barriers. Moreover, the deeper the integration process, the more interdependence between countries will increase. This raises the issue of double taxation between countries or tax competition between countries to attract foreign direct investment. In the competitive trend, all countries aim to reduce the CIT rate to attract foreign investments. Similar to the general trend of the world, recently in Vietnam, the CIT policy has undergone 4 stages of tax rate adjustment to enhance FDI attraction, specifically:

(i) Phase 1 (starting in the late 1980s), FDI enterprises are allowed to apply the common tax rate of income tax at 25%. Meanwhile, domestic enterprises apply income tax rates of 30%, 40% and 50% depending on business lines (Law on Income Tax 1990). In addition, FDI enterprises also enjoy preferential tax rates of 10%, 15% and 20% applied to projects encouraging investment; be exempt from income tax for up to 4 years from the beginning of the business, reduce 50% of the payable income tax for the next 4 years, depending on the investment industry or the area of operation.

(ii) Phase 2 (from 1995 to 2000), Vietnam implemented tax reform in the context of opening up its economy, with participation in a number of bilateral and multilateral free trade agreements. According to the 1997 Law on Corporate Income Tax, which took effect from January 1, 1999 to the end of 2003, FDI enterprises were entitled to the common tax rate of 25% while domestic enterprises applied the common tax rate of 32%. Regarding tax incentives, FDI enterprises are entitled to a 2-year tax exemption, a 50% reduction in tax payable for the next 2 years and up to 4 years if they meet many investment promotion criteria. For special cases of investment promotion, the tax exemption period for FDI enterprises is up to 8 years. In general, the level of CIT incentives for FDI enterprises in this period is higher than that of domestic enterprises.

(iii) Phase 3 (from 2001 to 2010), Vietnam implements tax reform in the context that the economy has made strong development steps after many years of attracting FDI and applying the Law on Investment Promotion. domestic private. During this period, Vietnam carried out tax reform with a focus on three objectives: simplicity, fairness and efficiency. This means that the attraction of investment capital in general and FDI capital in particular is not only based on tax incentives but also on the basis of comprehensive reform of the tax system to create a favorable business and investment environment. favorable and fair business. The 2003 Law on CIT, which took effect on January 1, 2004, has unified tax obligations and tax incentives between domestic enterprises and FDI enterprises. Accordingly, the common CIT rate applicable to all types of enterprises is 28%. This tax rate is adjusted down to 25% from January 1, 2009 according to the Law on CIT (amended) 2008.

(iv) Phase 4 (from 2011 to present). During this period, the domestic and international context had many changes. The application of a growth model based on exploitation of natural resources, low-quality and cheap capital and labor has made Vietnam's economic growth unsustainable. This requires Vietnam to change its growth model towards improving quality and ensuring sustainability. Accordingly, the tax system reform in this period is aimed at realizing the goal of changing the growth model. The most important change to increase tax competitiveness and attract investment is the policy of reducing the general corporate income tax rate. After the amendments and supplements in 2013 and 2014, the common CIT rate was reduced from 25% to 22% (from January 1, 2014) and to 20% (from January 1, 2016). The Law amending and supplementing a number of articles of the Law on Corporate Income Tax in 2013 has added incentives for investment in industrial parks (except for industrial parks in areas with favorable socio-economic conditions) and projects expansion investment.

Thus, in addition to creating an open investment environment, tax incentives and other incentives, foreign investment flows into Vietnam continuously increase. Accordingly, since joining the WTO in 2007, Vietnam has welcomed a large amount of FDI in 2008 with a registered capital of up to 64 billion USD, more than three times higher than 2007. However, due to the global economic and financial crisis in 2008 and the public debt crisis

in Europe in 2010 caused FDI into Vietnam in the period 2009 - 2012 to decrease significantly before recovering and stabilizing in the period of 2013. - 2019. Entering 2020, due to the impact of the Covid 19 Pandemic, the world economy as well as Vietnam were severely affected. Accordingly, investment capital flows abroad decreased sharply, especially FDI investment. The amount of FDI in 2020 into Vietnam reached 21 billion USD, down 6.7% compared to 2019 (Figure 1). The value of newly registered FDI capital in this period is always 2-3 times higher than the adjusted registered capital. In 2021, although the Covid-19 pandemic is still complicated, FDI into Vietnam will reach 31.15 billion USD, up 9.2% compared to 2020. New and adjusted registered investment capital both increased. compared to 2020, especially adjusted capital increased sharply to 40.5%. This result demonstrates Vietnam's remarkable efforts in FDI attraction policy, with the desire to improve productivity and improve economic growth.

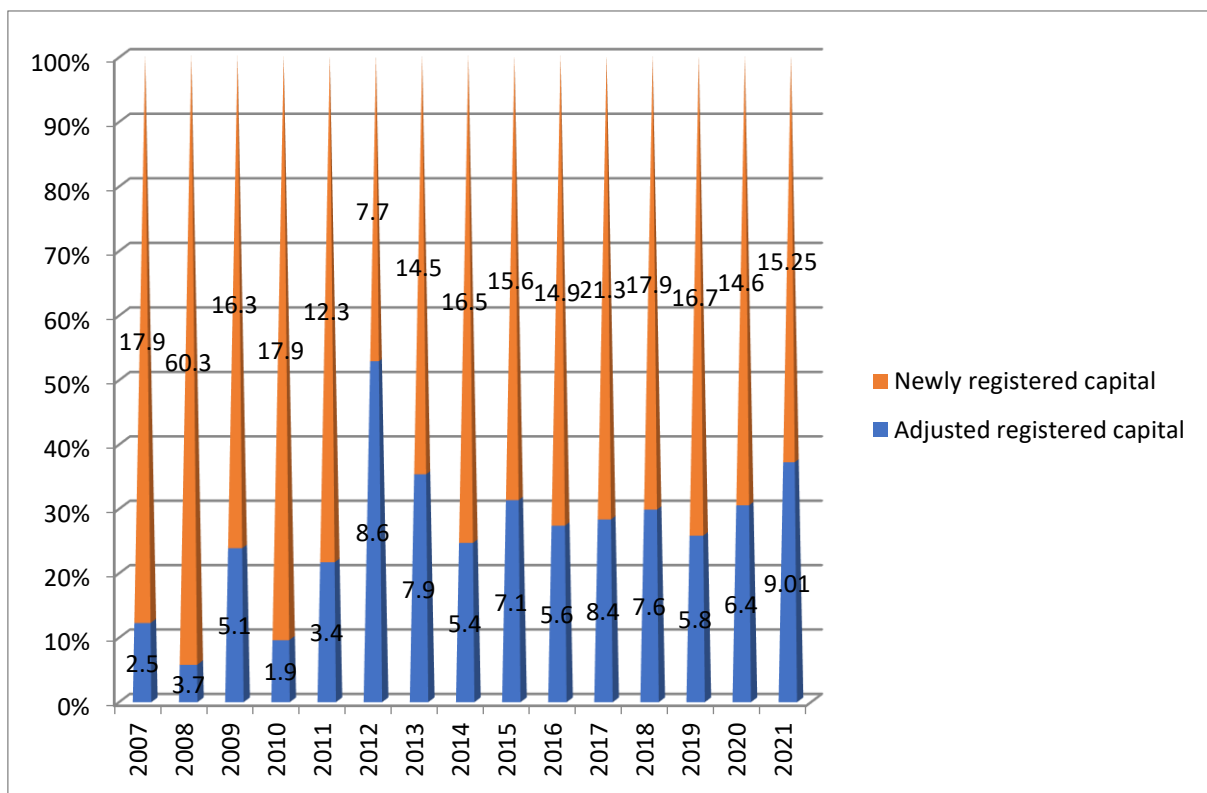


Figure 1. FDI into Vietnam in the period 2007-2022 (billion USD)

Source: General Statistics Office (2022)

It can be seen that, with the preferential CIT policy to attract foreign investment, in the short term, it will affect the state budget revenue. In addition, the fact that FDI enterprises are taking advantage of these incentives to reduce tax obligations is increasing. To overcome this situation, in addition to closely managing and monitoring business activities and tax compliance obligations of FDI enterprises, it is necessary to increase the contribution of these enterprises through raising social responsibility to compensate. partial loss of state budget revenue from corporate income tax.

2. Conceptual Framework

2.1. The social responsibility of FDI enterprises

The term "Corporate Social Responsibility" (CSR) first appeared officially in 1953 in the book "Social Responsibilities of the Businessmen" by author Howard Rothmann Bowen. Its purpose was to promote and urge asset managers not to harm the rights and interests of others and to encourage philanthropy to compensate for the damages caused by businesses to society. Bowen (1953) initially proposed the concept that the duty of businessmen is to pursue policies, make decisions, and take actions that align with the goals and values of society.

Since then, numerous different definitions of CSR have emerged. Each organization, company, and government perceives CSR from its own perspective and viewpoint, depending on its conditions, characteristics, and level of development.

Davis and Blomstron (1971) made a new breakthrough by defining social responsibility as the obligation of an individual to consider the impact of their decisions and actions on the entire social system. Companies also exercise social responsibility when they take into account the needs and interests of those affected by their business activities. This implies that companies should go beyond their narrow economic and technical interests.

In the report on CSR public policy, the World Bank (2003) defines that "the CSR of an enterprise and its commitment contribute to sustainable economic development through activities aimed at improving the quality of life for employees and their families, benefiting the surrounding community and society as a whole, in a way that is advantageous for both the enterprise itself and the overall societal development. The World Bank's perspective aligns with the concept of CSR put forth by I. Maignan, O.C. Ferrell (2004), and Rettab B, Brik AB, Mellahi K (2009) where CSR aims to generate and balance various benefits for individuals and related organizations, and enhance community welfare through voluntary business activities and contributions from enterprises. According to the European Union (2011), corporate social responsibility is defined as a process by which companies integrate social, environmental, and ethical concerns into their business operations and their interactions with stakeholders, beyond legal requirements and collective agreements.

In reality, CSR is a complex domain and is defined in various ways. However, despite different verbal expressions, the underlying essence of CSR fundamentally shares a common point: alongside the individual development benefits for each enterprise in accordance with existing laws, it must also be interconnected with the overall development interests of the societal community. The substance of CSR encompasses multiple aspects related to the conduct of the enterprise towards relevant stakeholders and entities throughout its operations. This includes producers, marketers, consumers, suppliers of raw materials and on-site materials, as well as the company's personnel, employees, and shareholders. It involves responsibilities towards the protection of resources and the environment, which essentially constitute shared responsibilities with the interests of the social community. This

includes humanitarian activities, charitable initiatives, and contributions to the overall development of the country. Thus, in a comprehensive sense, CSR of an *enterprise is a domain that reflects the awareness and actions towards the goal of societal benefits and values by the entity as a responsible member of society.*

Currently, research related to CSR of FDI enterprises is very limited. Among different groups of enterprises (domestic enterprises, joint ventures, FDI enterprises), there will exist specific differences in terms of scale, organization, and culture, which will lead to different approaches to the same specific issue, such as CSR. Considering social pressures, FDI enterprises often originate from developed countries investing in less developed countries, thus stakeholders in the host country usually have higher expectations and higher standards for the activities of FDI enterprises. In terms of economic pressures, FDI enterprises, with their cross-border operations and advanced scientific and technological capabilities, are expected to contribute more to the economic development of the host country. Thus, CSR of FDI enterprises can be understood as the FDI enterprise's implementation of activities to demonstrate responsibility towards stakeholders. These responsibilities *are entirely voluntary and encompass economic, legal, ethical, and philanthropic aspects. Implementing CSR not only brings benefits to society (through fulfilling responsibilities towards stakeholders) but also benefits the FDI enterprise itself (by enhancing its reputation). Therefore, FDI enterprises should proactively carry out CSR to balance the interests of both society and their own business. Only then can enterprises achieve sustainable development.*

2.2. The relationship between the responsibility of FDI enterprises and stakeholders

The theory of stakeholders associated with CSR provides a basis for identifying the most important stakeholders of an FDI enterprise and determining their concerns regarding the CSR of the company. Businesses, in the course of their operations, face various pressures from stakeholders such as shareholders, customers, employees, governments, etc. Particularly, for each stakeholder, the enterprise needs to have different responsibilities, including economic, legal, ethical, and humanitarian responsibilities. However, the resources of the enterprise are limited, and it is not possible to fulfill all responsibilities and satisfy all stakeholders simultaneously. Therefore, the implementation of CSR by the enterprise requires adjustment and changes based on prioritization, importance, and urgency determined by the subjective demands of each stakeholder. For example, at this time, the enterprise needs to carry out more CSR activities to satisfy the stakeholder group of employees, but at another time, the enterprise may need to focus on different CSR activities to meet the expectations of the community or shareholders. For FDI enterprises, which are foreign businesses investing and operating in the domestic market, their most important stakeholders are customers, employees, government, and the community. In summary, the stakeholders of FDI enterprises in implementing CSR are: Government, Employees, Customers, and the Community. The relationships in the implementation of CSR by FDI enterprises with stakeholders are illustrated in Figure 2 below.

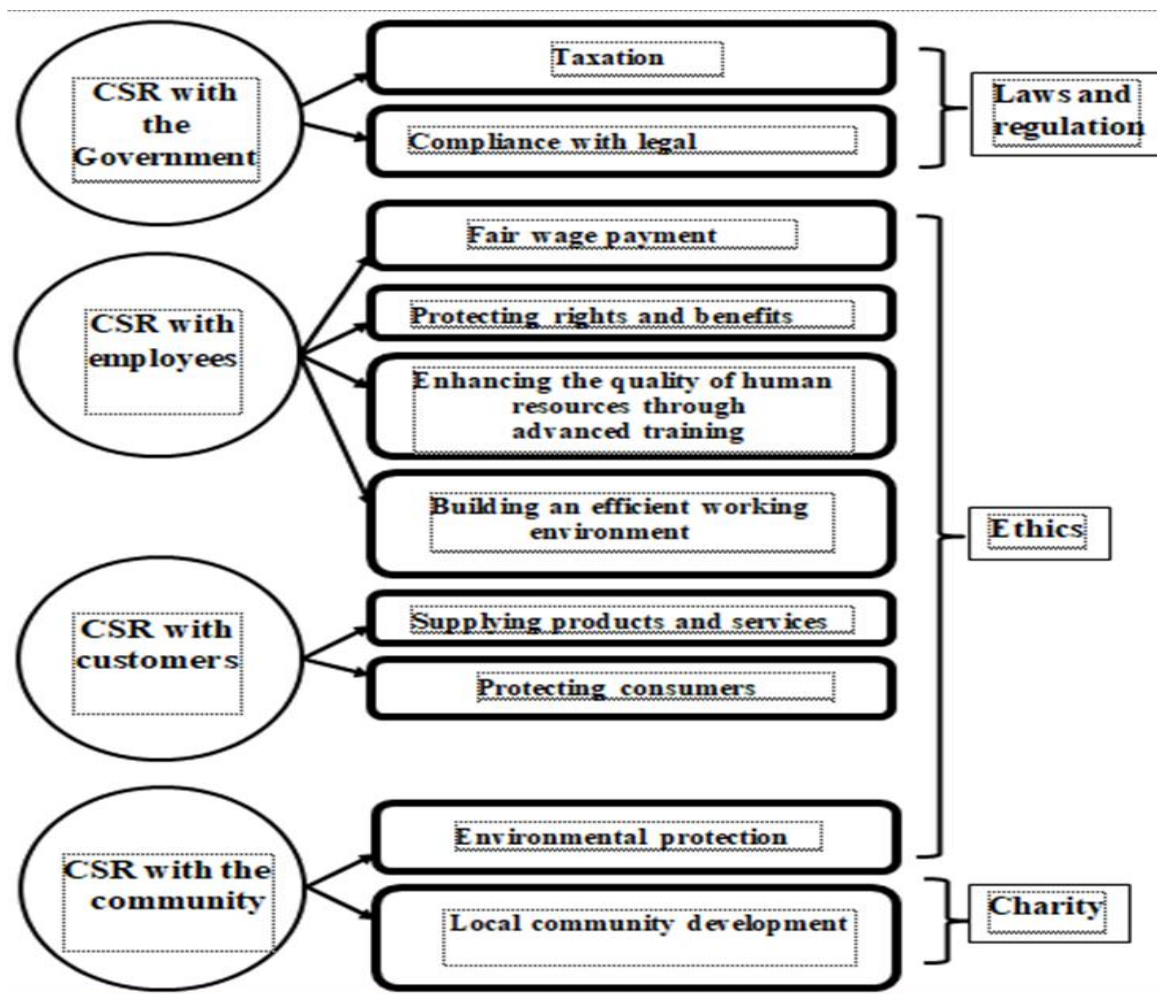


Figure 2: The relationship between CSR and stakeholders of FDI enterprises

Source: Compiled by the author

3. Results

3.1. Social responsibility of FDI enterprises in Vietnam

Social responsibility of FDI enterprises is implemented in 4 aspects, including:

3.1.1. Social responsibility towards the Government

This responsibility is expressed through the obligation to pay taxes and comply with legal regulations, specifically the legal regulations related to customers and employees.

For tax payment obligations. The increase in capital flows of FDI enterprises into Vietnam leads to an increase in tax obligations of enterprises. However, the phenomenon of FDI enterprises taking advantage of loopholes and incentives in Vietnam's CIT law to find ways to reduce tax obligations is on the rise. According to the report of the Ministry of Finance, in 2020, there are 10,125 FDI enterprises with full-year production and business results, accounting for 40.2% of reported enterprises. But there is a problem, despite the fact that production and business activities of FDI enterprises still maintain stable growth, the number of FDI enterprises declaring losses is higher than the national average. Specifically,

the total accumulated loss on the financial statements of FDI enterprises by the end of 2020 was recorded at 623,337 billion VND, equal to 44% of the owner's investment capital. This figure in 2020 increased by 12% in the number of FDI enterprises with accumulated losses and by 20.1% in total accumulated losses compared to 2019. Domestic revenue (excluding crude oil) of FDI enterprises sector 2020 is 206,088 billion dong, down 6,111 billion dong compared to 2019. This is the first year in the period 2016-2020 that the state budget revenue of FDI enterprises has decreased compared to previous years. Due to great incentives in terms of corporate income tax, land use levy, land rent and other incentives (excluding transfer pricing and tax avoidance), the proportion of FDI enterprises' contribution to the budget is still lower than that of FDI enterprises. contribute to GDP. Typically, the tax payment figures for 2020 of some large FDI enterprises, such as Samsung Electronics Vietnam (the largest FDI enterprise), are lower than that of Gia Lam Urban Development and Investment Company (Vin Group Gia. Lam), higher than Techcombank; tax of Honda Vietnam, HEINEKEN Vietnam is lower than that of Bank for Agriculture and Rural Development of Vietnam. Among the top 30 largest tax paying companies, there are 23 Vietnamese enterprises (76.67%) and 7 FDI enterprises (23.33%), the top 3 largest tax paying companies 100% are Vietnamese enterprises.

For the responsibility to comply with legal regulations during the implementation of investment projects in Vietnam, FDI enterprises also violate regulations on labor and environment. In general, the enforcement of labor contracts between employees and employers in FDI enterprises is quite good. However, there are still many FDI enterprises that have not taken seriously their commitments in the contract, violating workers' rights, leading to labor disputes or collective cessation of work. The violations mainly focused on the following issues: salary, bonus, attendance; excessive overtime, unsafe working conditions, no social insurance contributions, behavior and management of employees... Of the total number of labor contracts executed at FDI enterprises, the number of labor contracts with indefinite term accounted for only 33.4%; Number of labor contracts from 1 year to less than 3 years, accounting for 55%; the number of contracts from 3 months to less than 1 year accounted for 8.7% and under 3 months accounted for 1.4%; The remaining 1.5% is the number of employees working in FDI enterprises without labor contracts (Nguyen Thi Viet Nga, 2020). As reflected by employees, in order to avoid paying social insurance premiums, some employers have switched from signing labor contracts to signing service contracts, consulting, and collaborators for some employees. frequent job. Although, FDI enterprises all apply working time of 8 hours/day, 48 hours/week, however, the number of overtime hours is relatively large, on average each employee works overtime 275.8 hours/year. The number of overtime hours is especially high in textile, footwear and electronics enterprises. Many businesses have overtime hours of up to 500-600 hours/year/employee. Department of Labor, War Invalids and Social Affairs of Ho Chi Minh City. Statistics from Ho Chi Minh City: The average overtime of employees is 0.89 hours/day, 22 hours/month, 260 hours/year for 90% of employees. Thus, the number of workers who have to work overtime is very large. The average total overtime hours in the year is about 30% higher than the provisions of the Labor Code.

In addition to the positive contributions, the FDI sector has also been creating many negative impacts on the sustainable development of the country, namely negative impacts on the ecological environment causing great damage to the property and health of the community. The environmental violations of FDI enterprises that are often encountered during the inspection process are violations of environmental standards on emissions, wastewater, and solid waste. Some typical enterprises are not self-conscious in complying with regulations on environmental protection, so they have had negative impacts on the environment such as the waste discharge case of Vedan Company in Dong Nai, Tung Kuang Company in Hai Duong, Long Tech Company in Bac Ninh, Taiwan Fomosa Company in Ha Tinh... More and more FDI enterprises in the fields of environmental pollution expanding investment in Vietnam is also a worrying trend. These enterprises often have low technology, high energy consumption and high emission capacity. The most concentrated industries and fields are: textiles, chemicals, electronics, paper, cast iron - steel. This is completely contrary to the expectation as well as the statement of bringing advanced technologies and applications into production in Vietnam of FDI enterprises. In fact, many industrial parks have come into operation but have not yet implemented the construction of a local wastewater treatment system or have but do not operate or operate inefficiently or degraded. The number of FDI enterprises with advanced and modern technology is very low, only about 5%. Currently, FDI projects in Vietnam mainly have medium technology, about 80% of enterprises, of which 30-40% use technology of Chinese origin. Currently, the number of FDI enterprises using outdated technology accounts for about 15%, leading to risks and challenges of energy consumption and resource depletion. According to the inspection results of the General Department of Environment (Ministry of Natural Resources and Environment) in 28 northern provinces in 2017, 2018 and 2019, the rate of FDI enterprises violating regulations on environmental protection increased in years. Specifically, in 2017 there were 12/27 violating enterprises, accounting for 44.5%; In 2018, there were 14/25 violating enterprises, accounting for 56% and in 2019 there were 13/19 violating enterprises, accounting for 68% (Bui Hang, 2022)

3.1.2. Social responsibility for employees

Criteria for assessing the implementation of social responsibility for employees include fair wages, non-discrimination, good remuneration and training policies, and favorable working environment.

Basically, FDI enterprises have performed well on social responsibility in terms of paying fair wages to employees; the actual salary is 14 - 15% higher than the salary stated in the contract; the actual salary paid tends to increase from 10 - 25%/year; the difference between the actual wages paid to the laborers with the highest technical expertise and the unskilled workers is 3.5 times; the average income per employee in FDI enterprises is higher than that of state-owned enterprises and non-state enterprises; 95 - 96% of FDI enterprises participate in paying social insurance for employees; working conditions and occupational safety and health are relatively good because it is newly established and has modern equipment and machinery; 3/4 of surveyed enterprises have a trade union with 80% of

employees joining a union; 56% of enterprises have a collective labor agreement and 45% have a grassroots mediator (Ngo Thanh Loan, 2022). In addition, there are still some disputes about salary and bonus between employees and FDI enterprises on issues such as slow adjustment of wages when the State increases the minimum wage; wages between different types of labor are not clearly regulated, especially between simple and technical workers, between people who have worked for many years and those who are new to the profession, the difference is not significant; work overtime, overtime beyond the prescribed time but pay inadequate salary.

About protecting the rights of workers: Workers in many FDI enterprises are also increasingly interested in and protecting their interests. Typically, through the review and assessment of the Labor Confederation of Bac Giang province, up to 80% of agreements of FDI enterprises in the province are beneficial to employees, outside the mandatory provisions of the law. labor law. Some enterprises strictly implement new signing, re-signing or supplementing arising appendices with favorable terms for employees such as: Nichirin Vietnam Co., Ltd (Quang Chau industrial park) has a clause allowing workers to breaks between shifts to relieve stress; Viet Pan Pacific Co., Ltd (Bac Giang City) rewards active employees on a weekly and monthly basis; Haem Vina Co., Ltd (Song Khe Industrial Park - Noi Hoang) distributes vitamins to pregnant female workers and advances the salary for 6 months of maternity leave for female workers giving birth to ensure living expenses... In addition, some FDI enterprises still have some shortcomings in building relationships with employees, affecting the interests of employees. Many FDI projects still have social insurance debt, labor disputes, with thousands of strikes demanding benefits in terms of salary, bonus, overtime, breaks and welfare regimes. (low wages, unsecured housing, poor quality meals, travel expenses, child support allowance, seniority allowance ...) between employees and employers.

Regarding the issue of training to improve the quality of human resources, according to the survey results of VCCI in the PCI 2017 report, the cost of labor training of FDI enterprises has increased a lot since 2014. Specifically, the average cost of this activity accounted for only 3.6% of business expenses in 2013, but then spiked to 5.9% in 2014 and at 5.7% in 2020. The increase This training cost may be due to the enterprise's shift towards producing higher value-added products, requiring workers to receive more specialized training. This also shows that FDI enterprises are very interested in and spend a lot of money on training and building human resources in order to improve the quality of their labor, thereby improving productivity and product quality, and improving business efficiency.

On the issue of building a safe and effective working environment for employees. According to the assessment of the authorities, in ensuring labor safety at enterprises, FDI enterprises perform better than domestic enterprises. The reason is that these enterprises have better financial potential, so there is a greater investment in occupational safety. With multinational corporations, they always have a set of safety standards to perform at factories. However, in Vietnam, recently, there are still many serious occupational accidents and unsafety incidents at FDI enterprises. Typically, the accident caused by a scaffolding

collapse in March 2015 that killed 13 people and injured 29 people at the casting of sinking tanks, the construction site of production and installation of gravity tanks at the Formosa Project of the Company. Hung Nghiep Formosa Ha Tinh Iron and Steel Company Limited.

3.1.3. Social responsibility towards customers

Customers are the most important strategic business partners of enterprises in general and FDI enterprises in particular, determining the growth rate, revenue, profit and success of enterprises. Therefore, in the matter of providing products and services, most FDI enterprises have well done their distribution role, in order to bring products and services to customers, thereby bringing in revenue for the company. However, for the quality of products and services and ensuring the safety of customers, many FDI enterprises have let a series of events related to agricultural products and food not occur. ensure food hygiene and safety and cause negative consequences to customers. Cases of production of food containing substances harmful to human health, such as soy sauce containing the carcinogen 3-MCPD, phosmol-containing noodle soup, foods containing fenugreek, milk containing melamine, production and import of drugs fake,...The situation of fake goods, imitation goods, poor quality goods all prove that FDI enterprises that produce it do not strictly implement social responsibility for customers.

3.1.4. Social responsibility towards the environment

This responsibility is demonstrated through environmental protection and community development activities

Environment is also one of the most prominent and pressing issues in the society of FDI enterprises today. In fact, many FDI enterprises are considering social responsibility to the environment as a "burden" or just a way of marketing activities, creating an image to benefit businesses. Outdated technology transfer In more than 30 years of attracting FDI, it can be seen that 80% of the technologies of the FDI sector to Vietnam are still medium technologies that have a great impact on the environment, high technology accounts for only 6%. In addition, FDI enterprises' indiscriminate exploitation and lack of planning of mineral resources from oil and gas to coal, ore... have been causing great loss of Vietnam's non-renewable resources.

Community development. For the community in general, the first responsibility of an FDI enterprise is to protect the environment, and then to contribute to the development of the local community where the enterprise operates. In particular, doing charity is a honorable act of businesses to develop the community, help the poor, and build an image. Typical charitable activities through charity include granting scholarships, building charity houses, building schools, providing clean water, visiting and donating essential equipment and supplies, recruitment. periodically, providing free medical services, supporting and supporting areas affected by natural disasters or disasters, etc. Depending on each FDI enterprise, it has done well to different levels. However, one thing in common is that FDI enterprises often not only perform CSR as a simple volunteer activity, but they also regularly deploy these activities to be able to support more areas in need. through cooperation with

society and the locality. Korea and Japan are currently the two countries with the largest total investment capital among 115 countries investing in Vietnam, accounting for about 50% of total foreign investment in Vietnam. Korean and Japanese enterprises are also pioneers in charitable programs as well as contributing to the community.

3.2. Some raised issues

Firstly, there still exist many FDI enterprises that consistently report losses in their business operations and engage in transfer pricing practices, which regulatory authorities have not been able to detect, resulting in damage to the state budget and an unhealthy competition environment among enterprises.

Secondly, FDI enterprises continue to violate regulations on labor and environmental standards, while these regulations are relatively lower compared to the countries they originate from. These enterprises take advantage of the incomplete development of Vietnam's legal framework, intentionally evade compliance, employ cunning tactics, and lack self-awareness in adhering to labor and environmental regulations. Moreover, many enterprises still perceive CSR regarding labor and the environment as a burden or merely a marketing tool to create a favorable image for their own benefit.

Thirdly, there are still FDI enterprises that do not pay sufficient attention to protecting the rights of workers. Some of these enterprises focus on exploiting cheap labor with minimal training, even resorting to probationary periods to continuously replace workers. Many enterprises have a high proportion of female labor, but with low wages that may lead to occupational diseases. Furthermore, many FDI projects experience issues such as accumulated social insurance debts and labor disputes, with thousands of strikes demanding rights related to wages, bonuses, overtime, break times, and other welfare benefits between employees and employers.

Fourthly, environmental issues are also among the most prominent and concerning problems in the FDI enterprise's current society. A series of events related to the operation and production activities of these enterprises have had severe consequences on the environment, such as wastewater discharge causing water and air pollution, noise pollution, and soil contamination. Moreover, many FDI projects employ outdated technologies and lack self-awareness in complying with environmental protection regulations, resulting in negative impacts on the environment.

4. Discussion and conclusion

4.1. Discussion

Solutions to improve the implementation of social responsibility of FDI enterprises in Vietnam towards perfecting the corporate income tax policy in the context of integration

In order to improve the social responsibility of FDI enterprises, it is necessary to have synchronous solutions from the state management agencies in creating and perfecting the legal system and FDI enterprises themselves in developing specific action strategies. Accordingly, the following recommendations are made:

4.1.1. For state management agencies

Firstly, to develop a comprehensive and complete legal system to harmonize the interests of employees and enterprises, and national interests, in line with the international integration process in order to facilitate and encourage enterprises to integrate actively incorporate CSR programs into their business strategy. At the same time, it is necessary to soon complete legal policies, especially the Law on Environmental Protection; reviewing and amending inappropriate contents between the Law on Environmental Protection and other specialized laws in order to ensure the uniformity and consistency of the legal system, and promptly remove difficulties and obstacles in practice. Promulgate regulations on pollution prevention and reduction and environmental monitoring, regulations on emission limits; Enterprises must publicly disclose information about the environment and solutions to treat emissions.

Second, promulgating and implementing policies to support enterprises and encourage enterprises in the implementation of social responsibility. The Government needs to strengthen forms of encouragement, encouragement and reward for businesses that are self-conscious and well perform social responsibilities, such as social responsibility awards, "green" brands, and granting certificates to businesses to ensure they requirements related to CSR standards in the applicable codes of conduct... Besides, the Government can also issue policies to encourage and support enterprises to implement CSR.

Third, clearly delineate responsibilities and strengthen coordination among functional agencies. The coordination between the State management agencies and other relevant subjects also plays a very important role, because the social responsibility of enterprises is only valued and becomes urgent when there is a synchronous monitoring mechanism, there is a combination between the government and civil forces in society, especially associations, NGOs and the media and press. Thereby awakening the interest in CSR of enterprises, and thus through the market, encouraging enterprises to integrate social responsibility in parallel with business strategies, and at the same time commit to fulfill this responsibility properly and fully.

4.1.2. For FDI enterprises

Firstly, it is necessary to further improve and change the perception of FDI enterprises on social responsibility. Accordingly, the first is to change the perception of the implementation of social responsibility for the team of senior managers in the enterprise. The implementation of CSR is not simply a matter of business ethics or charitable activities in the traditional sense; are not activities that require businesses to spend costs without bringing economic benefits. On the contrary, implementing CSR will help businesses gain many advantages in competition in the market. Therefore, enterprises need to implement a training plan and disseminate understanding of CSR for employees and management team through courses and participation in practical experiences such as environmental protection programs to improve the quality of life. increase the awareness of enterprises on the issue of social responsibility.

Second, build and comply with the internal code of conduct. The internal code of conduct of enterprises is based on core values and includes universal principles in the United Nations Global Compact. Through this set of rules, enterprises can express their views on the definitions of social responsibility according to the policy of the collective interests of enterprises, must go hand in hand with the interests of society and towards long-term and sustainable development.

Third, develop a strategy to implement social responsibility. Enterprises need to have a long-term strategy in developing and implementing CSR standards. The implementation of social responsibility in the full and true sense is not a simple problem and lies within the immediate ability of most FDI enterprises in Vietnam, because of the limitation of awareness and of the source factors. resources, including financial, technical and human resources. Therefore, enterprises need to develop an appropriate roadmap in step by step implementation of CSR contents that are not only consistent with common standards, but also accepted by relevant stakeholders, actively contributing to the implementation of social responsibility activities. The development of Vietnam's economy is in the process of deeper and deeper integration into the regional and global economy.

4.2. Conclusion

In general, FDI enterprises operating in Vietnam in the past time have relatively fully implemented the CSR aspects in their business activities. However, there are many limitations to achieving real value, bringing sustainable development to the environment, society, workers and economy of the host country. In order to strengthen the implementation of social responsibility of FDI enterprises in Vietnam in order to perfect the CIT policy, it is necessary to have a synchronous solution from the state management agencies and FDI enterprises themselves in encouraging policies, voluntarily implementing and consider this as a focus towards sustainable development.

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COMMUNIST PARTY COMMITTEE OF THAI NGUYEN PROVINCE LEADS THE DIGITAL TRANSFORMATION AND FIRST EXPERIENCES

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Abstract

Implementing the Party's policy at the XIII Congress on digital transformation, the Party Committee of Thai Nguyen province has pioneered implementing digital transformation in the whole province. After more than 2 years of implementation, in Thai Nguyen province, there have been many changes in areas such as public services, agricultural economy, population management, etc. The results achieved in these fields are proving that implementing the policy of the Party Committee of Thai Nguyen province is correct. By the method of history, logic, analysis and evaluation, this article contributes to clarifying the results achieved in a number of fields from which to draw some initial experience in leadership and direction activities. Local economic development is associated with the implementation of digital transformation of the Party Committee of Thai Nguyen province.

Keywords: *digital transformation, the Party Committee of Thai Nguyen province, leadership, application, economy*

1. Introduction

Digital transformation is an inevitable and objective trend that plays a very important role for all countries, especially for developing countries that need to apply scientific and technological achievements in production. This is also a phrase that has been mentioned a lot in recent times in Vietnam, especially after the 13th Party Congress affirmed that it must "strongly promote national digital transformation, develop the digital economy and digital society to create breakthroughs in improving productivity, quality, efficiency and competitiveness of the economy" [6, p.46]. The Vietnamese government has promoted the application of digital technology in various fields of social life in order to strongly develop our economy in the coming years. Implementing the policy of the Central Committee, the Party Committee of Thai Nguyen province has urgently developed a plan to implement digital transformation in the whole province and become the leading province in implementing digital transformation in Vietnam. This is a new policy and is still in the process of implementing this policy, so there has been no research on the leadership of the Party Committee of Thai Nguyen province for digital transformation.

2. Conceptual framework

Thai Nguyen is an economic, political - social center of the Northern Midlands and Mountains, it has an important position in the country's socio-economic development strategy. In 2022, Thai Nguyen is the leading province in implementing digital transformation under the Prime Minister's Project 06 on "Development of population data, electronic identification and authentication for national digital transformation". period 2022 - 2025, vision to 2030".

Recognizing the importance of digital transformation for the socio-economic development of the province, starting from 2021, after the Provincial Party Committee issued Resolution No. 01-NQ/TU "On the program digital transformation of Thai Nguyen province, period 2021 - 2025 with orientation to 2030" on December 31, 2020. On the basis of assessing the current situation, situation as well as development trends of the country in the following years, the Provincial Party Committee has pointed out the importance of digital transformation for economic development. provincial society. From there, affirming the need to digitize all fields to bring about high efficiency in social management. Regarding the importance of digital transformation, the Provincial Party Committee commented: "Digital economy initially contributed to the economic development of the province; digital technology is being applied in industries, agriculture, healthcare, education and services; appeared many new forms of business and services, based on digital technology and the Internet, contributing to job creation, income improvement and people's quality of life" [2].

However, the digital transformation process in Thai Nguyen still faces many difficulties, revealing many limitations such as: Technical infrastructure has not been synchronously invested (in 2019, ranked 36th out of 63 provinces and cities); many enterprises in the province have not actively approached, applied and developed modern technology; digital economy scale is still small; Digital transformation poses many challenges both economically and socially, especially in disadvantaged areas, mountainous areas, highlands, ethnic minority areas...etc .The fight against crime in space network, ensuring network safety and security is still difficult and challenging.

The Party Committee's Executive Committee pointed out that the causes of these difficulties are: The awareness of digital transformation among cadres, civil servants, public employees, people and in social life is still incomplete; investment resources for information technology have not met development requirements; thinking in digital transformation is slow to innovate, has great inertia; State management of digital transformation has not kept pace with reality; The coordination between agencies, units and localities is not really close.

Since then, the Provincial Party Committee has set a general goal in Resolution No. 01-NQ/TU that is: To fundamentally and comprehensively renovate the management and administration of the State towards building a digital government; develop the digital economy and digital society, and promote production and business activities in the direction of digital technology application, forming digital technology enterprises that are competitive in the market; strive to turn Thai Nguyen into a digital transformation center of the Northern Midlands and Mountains, by 2025 in the group of 15 leading provinces and cities nationwide

in digital transformation, contributing to the successful implementation of the Great Resolution 20th Provincial Party Congress, term 2020-2025, creating a premise to 2030 in the group of 10 leading provinces/cities nationwide in digital transformation. On the basis of the overall goal, the Resolution has stated that the basic goal by 2025 is to develop digital government with over 90% of online public services at level 4, 100% of the reporting regime among the various levels of government is completed splicing; develop the digital economy in order to improve the competitiveness of the provincial economy; develop digital society to close the digital gap. The basic goal by 2030 is that over 90% of people and businesses are satisfied with the province's public services, the digital economy accounts for over 30% of GRDP, strive to have more than 3,000 digital businesses, universalize broadband internet services, widen fiber optic cables and universalizing 5G mobile networks.

On the basis of objectives, the Resolution has set out specific tasks and solutions to achieve the set targets, namely:

- Strengthen the leadership of Party committees at all levels, improve the effectiveness and efficiency of State management, raise awareness about digital transformation: Party committees and authorities at all levels strengthen leadership and practical direction. implement the directives and resolutions of the Central Government on digital transformation, especially: Resolution No. 52-NQ/TW dated September 27, 2019, of the Politburo on a number of guidelines and policies to actively participate in the Revolution fourth industrial network; Decision No. 749/QĐ-TTg dated June 3, 2020, of the Prime Minister approving and promulgating the National Digital Transformation Program to 2025, with a vision to 2030.

- Promote propaganda, mastery, study and raise awareness of all levels, sectors, officials, party members, business community and people about the necessity and urgency of digital transformation. The heads of party committees and administrations at all levels are directly responsible for digital transformation in their respective agencies, units, organizations, domains and localities; pioneering, taking the lead in digital transformation to improve the leadership, direction and administration capacity of their localities and units; consider the implementation of the Resolution as one of the criteria for evaluating the performance of tasks of heads of Party committees, authorities at all levels and departments, agencies and units.

- Develop mechanisms and policies to promote the digital transformation process of the province, promote the development of comprehensive, effective digital transformation enterprises that are suitable for the digital environment; create favorable environment and conditions to promote start-up and innovation activities; actively attract digital enterprises to invest in the province; develop human resources for the digital transformation process, focus on training, fostering and attracting high-quality information technology human resources ready to participate in the digital transformation process of the province.

- Focus on investing in technical infrastructure to meet digital transformation such as upgrading the internet, mobile networks, building digital government, developing digital economy and digital society, ensuring network safety and security.

The policy of digital transformation in Resolution No. 01 of the Party Committee of Thai Nguyen province shows the determination to deploy digital technology application in three basic areas: government, economy and society to create a change in development socio-economic development and improve management efficiency of all levels of government in the province.

3. Results

3.1. Digital transformation in agriculture

Digital transformation in agriculture has been identified by the Party Committee of Thai Nguyen province as having a particularly important role in the development of modern large commodity agriculture. Implementing Resolution No. 01-NQ/TU dated December 31, 2020, of the Executive Committee of the Provincial Party Committee, Thai Nguyen Department of Agriculture and Rural Development soon established a Steering Committee, developed a plan and coordinated with other departments, branches, and localities to organize implementation. In which, focus on a number of main contents: Applying Digital Transformation to serve administrative reform and improve the efficiency of state management of the industry; to step by step digitize and build a system of sectoral data on land, crops and livestock, and to plan concentrated production areas in service of state management and to attract investment in agriculture and rural areas; increase the posting and dissemination of information on agriculture and rural areas through the Department's website.

Implementing the goals and tasks set out, the Department of Agriculture and Rural Development has implemented online conferencing solutions, built a management and operating system to carry out the work. In 2021, the Department of Agriculture and Rural Development received and processed 13,819 level 4 dossiers out of a total of 29,945 dossiers, reaching 46.1%; In the first 6 months of 2022, 11,073 level 4 dossiers were received and processed out of a total of 11,771 dossiers, reaching the rate of 99.42% [3]. Tree management software "ThaiNguyen SmartTrees" continues to be managed and operated effectively with over 4.9 million trees attached with QR codes, fully updating tree information such as tree type, planting time, tree coordinates on a digital map, images of trees, etc. Application of specialized software for forestry activities such as Software to monitor changes in forest resources. Management software for wildlife farming with over 150 farms, 50 species, and 27,470 individuals. Effectively exploiting and using parameters at 29 automatic rain gauge stations and 06 online camera monitoring systems at some dikes and river basins in the province to coordinate and provide forecast bulletins, disaster warning for Thai Nguyen Intelligent Operation Center. From February 1, 2020, collecting rural water bills by electronic invoices on software helps save costs, time, and manage information and data.

Besides that, the Department of Agriculture and Rural Development is also developing data management software for more than 500 enterprises and cooperatives engaged in agro-forestry-fishery production and trading, including information on production scale, production process (VietGAP, organic), the process of harvesting, processing, packaging, self-declaration of products, documents proving that the

establishment is qualified for food safety, traceability of agricultural products; Training and guiding 50 enterprises and cooperatives to update information on smartphones themselves, the state management agency is responsible for monitoring and handling violations. Up to now, agricultural product production and trading establishments in the province have used over 4.5 million QRCode traceability stamps, helping consumers easily look up product records, thereby creating the trust for agricultural products of the province. In the province, there have been 250 pig and poultry farms that have partially or fully applied information technology in providing water and feed for livestock, automation in the supply of drinking water, feeding troughs..., monitor temperature and humidity in the livestock farm by smartphone, via internet-connected camera; Use solar energy to power the farm. There are about 72 agricultural cooperatives in the province that apply IT in management, administration, production and business activities such as using QR codes for traceability, some cooperatives are granted planting area codes to monitor and control controlling production situation, applying accounting software through MISA ASP service accounting platform, using electronic invoice software; digital conversion applications to sell goods through electronic exchanges such as postmart.vn, voso.vn, thainguyentrade.gov.vn, etc .Some typical cooperatives in IT application, digital transformation such as Hao tea cooperative Dat, Tam Tra Thai Cooperative, La Bang Tea Cooperative, Tan Cuong Midland Tea Cooperative. In order to promote the development of the agricultural and rural digital economy in the province, the Department of Agriculture and Rural Development has coordinated with the Department of Information and Communications, Thai Nguyen Post Office, Viettel Thai Nguyen, etc, agricultural production households on the e-commerce platform with more than 80,000 households having been guided and trained in digital skills; nearly 75,000 households can open booths on the e-commerce floor and are provided with digital payment accounts; nearly 2,000 agricultural products have been put on the e-commerce floor, along with organizing traditional trade promotion and promotion activities, the Department of Agriculture and Rural Development also supports and encourages OCOP subjects to promote activities. promote and introduce products on social networking sites (Facebook, fanpage, Zalo, e-commerce sites), the provincial portal, the website of the Department and its affiliated units. Up to now, most businesses and cooperatives have advertised, introduced and sold products on digital platforms and social networking sites. In 2021, guided to build scripts and livestream techniques to sell agricultural products on social networks directly to 500 people and thousands of people by online form; support product trademark registration; design packaging, labels, product catalogs; support registration of codes, barcodes and website to promote products for 132 businesses and cooperatives. There are 129 OCOP products of the province that have been introduced, promoted and sold on platforms such as C-Thai Nguyen, VnPost, Voso, Sendo, Lazada, Shopee, etc.

3.2. Developing a digital technology business

The policy of the Party Committee of Thai Nguyen province is to develop digital technology enterprises with modern digital technology products and services, forming competitive digital enterprises in the market to support the digital transformation process;

promoting the development of the information technology industry, making an important contribution to the development of the digital economy and the growth of the province's GRDP; strive to turn Thai Nguyen into a digital transformation center of the Northern Midlands and Mountains region. Therefore, the province has focused on developing digital businesses, in order to bring businesses in the province to catch up with large domestic and international enterprises.

Up to now, Thai Nguyen has 324 digital technology enterprises focusing on the following fields: Information Technology Services; trading and distributing information technology; digital content; manufacturing hardware, electronics, etc. The province's total digital economic revenue in 2022 is estimated at about \$26 billion. In which, there is the contribution of digital technology enterprises in the province. Thai Nguyen province's e-commerce trading floor integrated on CThaiNguyen platform has reached over 5 million visits with more than 2,200 products.

In addition to developing digital technology enterprises, the province also sets out policies and guidelines to focus on supporting businesses, especially small and medium enterprises, in digital transformation. Implement Plan No. 84/KH-UBND dated May 10, 2022 of the Committee of Thai Nguyen province on the implementation of the project to determine the index to assess the level of digital transformation of enterprises and support digital transformation enterprises in the locality of Thai Nguyen province. Department of Information and Communications cooperates with MISA Joint Stock Company to support businesses to experience and use digital platforms to develop the digital economy. Organized 33 training courses/classes, training skills in using and exploiting digital platforms through online and face-to-face conferences for 172 businesses/individuals with over 1,200 attendees; organized 02 seminars on solutions to digital transformation of enterprises, cooperatives, and business households for over 160 people; organizing 7 training courses, supporting the use of software for businesses and business households. Coordinating with the Association of Young Enterprises, Small and Medium Enterprises to pilot the assessment of the level of digital transformation of enterprises (DBI) for 06 enterprises, advising businesses to choose digital platforms in the SMEdx program to experience and implement digital transformation. The Department of Information and Communications has built a .vn domain name registration portal in Thai Nguyen province and supported the free deployment of 15 websites for businesses and cooperatives to promote the development of local digital businesses. The Department of Information and Communications held a business dialogue conference with enterprises representing the Union of Cooperatives, the Provincial Business Association; associations, business associations, entrepreneurs and over 80 enterprises operating in the field of Information and Communication, enterprises applying digital in production and business activities in the province.

3.3. Application of digital technology in population data management

As of 2022, the province has completed 11/11 public services (confirmation of ID number when issued with a citizen ID card, Level 3; Re-issuance and change of CCCD card, Level 3; Permanent residence registration, etc.) Registration of temporary residence, Level

3; Declaration of temporary absence, Level 4; Notice of residence, Level 4; Seal, Level 3; Registration and issuance of license plates for motorcycles and motorcycles level 3; Collection of fines for handling administrative violations in the field of road traffic through video recording devices (cold fines) level 4; Issue, re-issue, amend and supplement ordinary passports). 10/14 public services have been performed (birth registration, death registration, marriage registration; judicial records have been integrated with public services on the Thai Nguyen provincial public service portal and public services) new electricity supply from the low-voltage grid; procedures for changing the subject of power purchase and sale contracts through the national public service portal level 4; registration for the national high school graduation exam and university and college admissions; Registering for the first time, registering to change tax registration information with taxpayers who are households and individuals; Settlement of unemployment benefits; Integrated deduction of payment deductions in the renewal of health insurance cards per household). Regarding the progress of bringing public services to the national public service portal and the resident public service portal, Thai Nguyen has 1,231 administrative procedures at 3 levels at level 4, of which: At the provincial level, there are 1,072 administrative procedures under 18 fields; district level has 115 administrative procedures in 07 groups of fields; At the commune level, there are 44 administrative procedures in 04 groups of fields.

The province has completed the construction of the "Software to digitize and manage the results of administrative procedures", complete the integration of the function of digitizing records and guide units and localities to implement the digitization process records and results on the electronic Single Window Information System, software to digitize and manage results of administrative procedures; issue 6,450 government-specific personal digital signatures to state agencies of the province, in which 100% of officials, leaders, civil servants and public employees are directly involved in the process of handling administrative procedures. issued and guided to use digital signatures. Starting from June 1, 2022 at the Provincial Public Administration Service Center, digitization of records and papers in receiving and handling administrative procedures for people and businesses has been carried out. administrative.

For the group of utilities serving socio-economic development, Thai Nguyen's digital citizens have also performed well a number of key tasks such as:

- Integrating social insurance and health insurance information into chip-based citizen ID cards and VNEID application implemented by Vietnam Social Security and the Ministry of Public Security; Health insurance medical examination and treatment facilities in the province shall cooperate in welcoming patients for medical examination and treatment covered by health insurance with their citizen IDs with a chip or via the VNEID application (applicable to public employees). people have successfully registered an electronic identity account provided by the Ministry of Public Security).

As of June 27, 2022, in Thai Nguyen, there are:

- + Number of citizen IDs synchronized with valid health insurance cards for medical examination and treatment with citizen identification: 488,995/1,206,275 health insurance card.

+ Total number of searches: 1,519 times.

+ Total medical examination and treatment establishments that have received medical examination and treatment with health insurance by citizen identification: 110/223 establishments.

+ Issued: over 6,616 children's health insurance cards through data communication with the Ministry of Justice. Implement electronic identification accounts for citizens in the province according to Plan No. 2433/KH-CAT-PC06 dated March 17, 2022 of Thai Nguyen Provincial Police, until July 28, 2022. 58,816 accounts for citizens.

- As of July 28, 2022: Issued 982,460/1,039,299 CCCD with chip with 94.53% - Issued citizen identification for the age group 2004 - 2007 (time 17/3/2022 - 2/7// 2022): The Ministry of Public Security assigned the provincial police to issue 9,676, has granted 9,130 cases, reaching 94.4%, and 545 cases have not been issued.

3.4. Performing public services online

Providing high-level online public services is always a key task in e-government development towards digital government; improve the effectiveness, efficiency, publicity and transparency of activities of state agencies. From there, it will reduce time and costs for organizations and individuals when carrying out administrative procedures. To promote online public services, it is necessary to focus on innovative solutions and promote the application of information technology in state management, especially in handling administrative procedures. On July 20, 2022, the Provincial People's Council issued Resolution No.11/2022/NQ-HDND stipulating the rate of fee collection for level 4 online public service provision in Thai province. Accordingly, Thai Nguyen province will reduce 50% of the fee for 06 activities providing online public services at level 4 in the province. This is an important policy, encouraging and motivating people to use online public services; propagating and guiding to raise people's awareness and digital skills so that people can actively and actively use online public services for e-government in the process of digital government building.

In the past year, the Committee of Thai Nguyen province continued to grant new and amend information on specialized digital signatures for the Government for units and localities; deploying integrated remote digital signature solution on the online public service portal of the province for officials involved in handling administrative procedures and to facilitate people in using administrative procedures provided by agencies. provided by the state in the province, while ensuring the integrity and authenticity.

The province has completed providing 100% of administrative procedures (1,231 procedures) that are eligible to level 4 provided on the Thai Nguyen provincial public service portal, including 1,072 provincial-level public services, 115 district-level public services and 44 public services commune. Integrate and provide 1,036 information services in Thai Nguyen province to the National Public Service Portal at <http://dichvucong.gov.vn> to serve people and businesses. On August 19, 2022 received 627,616 dossiers; processed 612,911 records; the rate of dossiers resolved on time reached 99.82%. The rate of administrative

procedures files handled online at level 4 as of August 19, 2022 in the whole province reached 78.29%, an increase of 29.6% compared to April 2022 when the Committee of Thai Nguyen province had not yet issued decision 793/QĐ-UBND dated April 15, 2022 of the Committee of Thai Nguyen province.

It can be seen that the provision of electronic public services not only creates favorable conditions for people and businesses to receive information, provide faster and more convenient services, and less need to come in person state management agencies (saving time and costs) but also contributes to reducing the pressure of paperwork on the state management agencies themselves, increasing transparency in the operation of state agencies, limiting the phenomenon causing troubles for people and businesses, creating a positive influence on changes in the way local governments work, thereby improving the level of satisfaction of people and businesses, improving the quality indicators of local governance, etc, contributing to promoting socio-economic development of Thai Nguyen province.

4. Discussion and Conclusion

4.1. Some initial experience

Digital transformation is a major policy of the Government of Vietnam in order to build an integrity and constructive government. From 2021, Thai Nguyen province has focused on developing digital infrastructure to effectively implement the country's socio-economic development goals. Although it has only been deployed in the province for more than 2 years, it has transformed many aspects of social life in the province. From the leadership and direction of the Party Committee of Thai Nguyen province, some initial experiences can be drawn which are:

Firstly, always thoroughly grasp and strictly and fully implement the resolutions of the Provincial Party Committee. Departments and branches in the province must actively implement the guidelines of the Party Committee on digital transformation. Be consistent with the set goals and have a high degree of determination in implementing the resolution.

The strict implementation of the Party's policy is extremely important, so it is necessary to promote propaganda, study and raise awareness of all levels and branches, taking the implementation of the Resolution as a among the criteria to evaluate the performance of the leader's duties.

Secondly, implement digital transformation in a comprehensive, synchronous, and inherited manner in all fields of industry, agriculture, and services. Building a synchronous digital infrastructure in the whole province is an important issue for successful digital transformation. Attention should be paid to investment in developing technical infrastructure to meet the requirements of digital transformation.

Thirdly, promote the creative spirit and responsibility of departments, agencies and sectors throughout the province, recognizing new contributions to help the digital transformation process in the province achieve high efficiency. Promote the role of the Fatherland Front and socio-political organizations in mobilizing the masses to respond to the implementation of the Party's guidelines.

Finally, in the process of implementing digital transformation, it is necessary to have appropriate policies to help localities with difficulties access the achievements of digital technology, thereby creating a change in people's awareness and helping people benefit from the provincial policy.

4.2. Conclusion

From 2021 up to now, the implementation of Resolution No. 01 - NQ/TU "On the digital transformation program of Thai Nguyen province, the period of 2021 - 2025 with orientation to 2030" in Thai Nguyen province has had positive changes. in all spheres of social life. Digital technology is applied to help change the lives of people in the province, helping people to have equal opportunities to access services and social science advances to improve the quality of life. It can be seen that the policy of digital transformation of the Party Committee of Thai Nguyen province is being directed in the right direction and has achieved important initial achievements. Across the province, the fields of digital technology application have made positive changes, bringing economic and social efficiency. That has shown the great significance of digital transformation in today's era, especially in developing countries like Vietnam. In the following years, in order to fulfill the goals set out in Resolution No. 01, all levels and sectors in the province must further raise their determination to make Thai Nguyen one of the leading provinces in digital technology.

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CONTROL OF THE AGREEMENT ON VALUATION TO RESTRICT COMPETITION IN VIETNAM: VIEWED FROM EFFICIENCY STANDARDS OF ECONOMICS

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Abstract

The article presents in detail the basic theoretical contents of price-fixing agreement, provides analysis by drawings, graphs and specific examples, and discusses price-fixing agreement acts, including direct price-fixing agreement, indirect price-fixing agreement, price-using agreement to consolidate positions in the relevant market. From these theoretical contents and analysis, the author offers a number of assessments and proposes solutions to adjust Vietnam's competition laws in order to control price-fixing agreements to restrict competition, viewed from the efficiency standards of economics. Some of the issues discussed are: (1) Perfectly competitive market and monopoly market; (2) Direct price-fixing agreements to restrict competition from the viewpoint of economic efficiency; (3) Indirect price-fixing agreements to restrict competition; (4) Price-using agreements to consolidate its position in the relevant market. After offering analysis, discussion and research on issues of price fixing agreements, the article has made a number of author's recommendations on effect assessment content or the ability to cause significant anti-competitive effect of price fixing agreement to restraint competition in Vietnam.

Keywords: *Competition Law 2018, Vietnam competition law, price-fixing agreement, price-using agreement, competition restriction.*

1. Introduction

A price-fixing agreement is any agreement between competitors to increase, decrease, fix or maintain the prices of products, goods and services on the market. Price-fixing agreement is an agreement aimed at abolishing, eliminating or restricting price competition among enterprises. A price-fixing agreement may include implicit or public agreements to increase, decrease, or contain prices of products, goods and services on the market¹. Price-fixing agreement is one of the common types of anti-competitive agreements. The general character of these agreements is the eliminated price competition among the parties to the agreement that set by the parties through the setting of a common price or through indirect price fixing forms. The nature of agreements that use prices to restrict competition is to simulate the position of a monopolist and act in the manner of a monopolist. On the other hand, by adding up the market power of enterprises participating in the

¹ Duong Viet Phuong (2019), "Agreement on restraint of competition under Vietnam's Competition Law 2018".

agreement, anti-competition agreements have limited price competition among the participating enterprises. The agreements thereby distorted the inherent laws of movement of the market. The two objects directly and deeply affected by these agreements are consumers and competing businesses that are not one of the parties to the agreement.

A price-fixing agreement to restrict competition is a serious violation of competition law and on the top of the prohibited list of law in controlling anti-competitive agreements of countries, including Vietnam. In order to control price-using agreements to restraint competition, the scientific solution of this problem is to combine economic thinking and legal thinking closely. We can based on the efficiency standards of economics to assess the risk of the agreement. Only in this way, the objective of enhancing the effectiveness of competition law enforcement can be achieved. The author has studied from the opposing point of view of the perfectly competitive market and the monopoly market by using the methods of analysis, commentary, interpretation, systematization and synthesis, comparative juridical method in order to make a statement: monopolies set prices at the same time as select the quantity to supply in the market. When businesses conduct price-fixing agreements to restraint competition, they abolish and eliminate price competition among the negotiated enterprises. The economics view divides the price-fixing agreement into two groups: the direct price-fixing agreement group and the indirect price-fixing group. The article focuses on analyzing direct price-fixing agreements, indirect price fixing agreements and price-using agreements in order to consolidate its position in the relevant market. Thereby the author has commented, evaluated, proposed solutions to adjust the law, control this type of agreement by the relevant and effective competition laws in Vietnam. The issue of evaluation authority and the basis for assessing the anti-competitive effect or the ability to cause anti-competitive effect of price-fixing agreements has also been studied and proposed by the author to complete the research objectives and research tasks of the topic.

The article gives the following research questions:

First, what are the definition and characteristics of perfectly competitive markets and monopoly markets?

Second, What ara the definition, classification off direct price-fixing agreements in order to restrain competition from the viewpoint of economic efficiency and the nature of direct price-fixing agreements from a practical situation?

Third, what are the differences between agreement on price reduction and agreement on preventing, stopping, eliminating?

Fourth, the definition, classification and contents related to indirect price-fixing agreement?

Fifth, what are the definition, identification signs and legal content of the price-using agreements aimed at strengthening the position in the relevant market?

Sixth, the Competent Authority assesses the competition restriction effect, the basis of assessing the anti-competitive effect and some proposals related to the price-fixing agreements to restrain competition are considered as not causing or not being able to cause a significant anti-competitive effect?

2. Method

The research methods used to study the topic of controlling price-fixing agreements to restrict competition - are viewed from the economic efficiency criteria as follows:

- Method of interpretation

This method is applied to study the basic theoretical issues controlling the price-fixing agreements to restrict competition; to study the views of economics when considering price-using agreements.

- Methods of analysis, comment

This method is applied to present the specific provisions of the international legal system as well as the Vietnamese legal system on price-fixing agreements to restrict competition.

- Method of comparing jurisprudence

This method is also used to study the provisions of international law, to study international case law, the laws of different countries and to compare with the provisions of Vietnam's competition law in order to evaluate compatibility, thereby getting experience and specific solutions in the laws of countries. On that basis, the author proposes a solution to improve Vietnam's competition law in the control of price-fixing agreements to restrict competition.

- Systematization and synthesis method

This is the research method used to generalize and draw conclusions and basic proposals about the author's new contributions to the improvement of Vietnamese law on controlling price-using agreements to restrict competition.

3. Results

3.1. Perfectly competitive market and exclusive market

In business, enterprises are always interested in two factors: marginal revenue and marginal cost. But depending on the market model (perfect competition or monopoly), enterprises will have different profit maximizing points. For the State, the State's laws and regulations should ensure competition and restrict monopoly. One of the important principles when developing economic policies is to promote competition, increase opportunities for users to choose services or buy and sell goods and minimize the risk to generate monopoly².

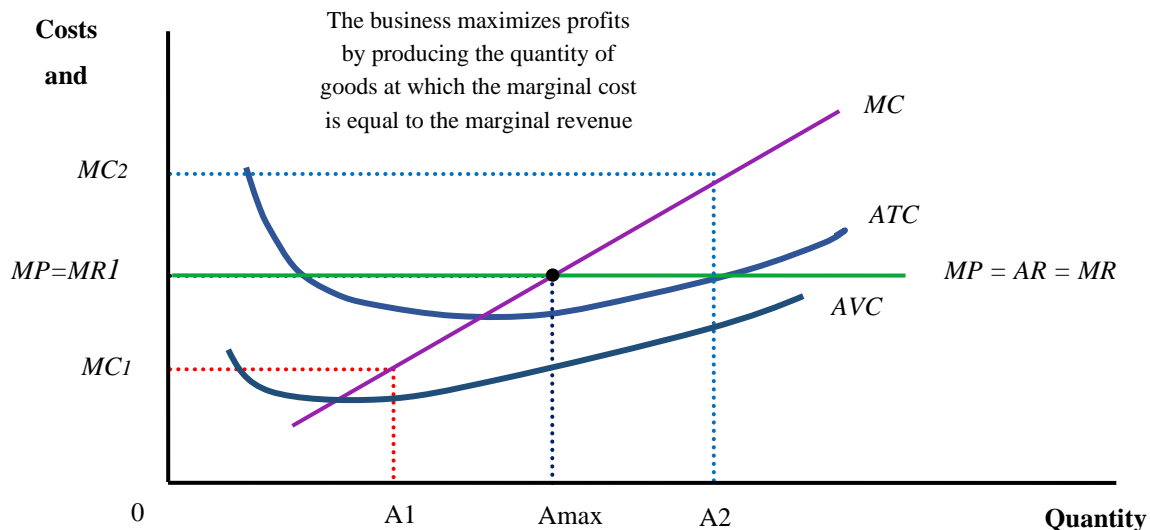
3.1.1. Perfectly competitive market

Competitive (perfect) market is a market with the following three basic characteristics:

- *There are many buyers and sellers in the market;*
- *Goods sold by these sellers are essentially the same;*
- *Enterprises are free to join and withdraw from the market.*

² Vietnam Chamber of Commerce and Industry - VCCI (2019), "Report on the flow of Business Law 2019", Hanoi, December 2019.

In the business process, enterprises are always interested in two factors: marginal revenue and marginal cost. However, depending on the market model (perfect competition or monopoly) that businesses will have different profit maximizing points. In a competitive market, one can look at how businesses determine their profit-maximizing points through the following diagram:



Accordingly, the cost curve of an enterprise will have three factors:

The marginal-cost curve (MC) is an upward sloping line. The average-total-cost curve (ATC) is an U-shaped line. The marginal cost curve will cross the average cost curve at the minimum point of ATC. The figure above also shows a horizontal line at the market price (MP). MP is a horizontal line because in a competitive market, businesses are price takers. The output price of the business will correspond to the total output that the enterprise decides to supply. Therefore, the price will be equal to the average revenue (AR) and its marginal revenue (MR).

Look at the image above to find the output to achieve maximum profits. Let's imagine that the business is producing at an output of A_1 . At this level of output, marginal revenue is greater than marginal cost. That is, if the business increases its output by 1 unit, then the additional revenue (MR1) will exceed the additional cost (MC1). Profits, equal to total revenue minus total costs. Therefore, if the marginal revenue once is greater than the marginal cost, as in point A_1 , then the enterprise can increase its profits by producing more.

The same principle applies when performing an analysis on point A_2 . At that time, the marginal cost is greater than the marginal revenue. If an enterprise reduces 1 unit of output, the saved cost (MC2) will be more than the lost revenue (MR2). Accordingly, if the marginal revenue is less than the marginal cost, as in A_2 , the enterprise can increase its profits by reducing production.

So, when does this production adjustment process end? Let's acknowledge businesses starting with low output (like A_1) or high output (like A_2), they will adjust output so that total output will reach A_{max} . This analysis draws three general rules for profit maximization:

- *If the marginal revenue is greater than the marginal cost, the business should increase output*

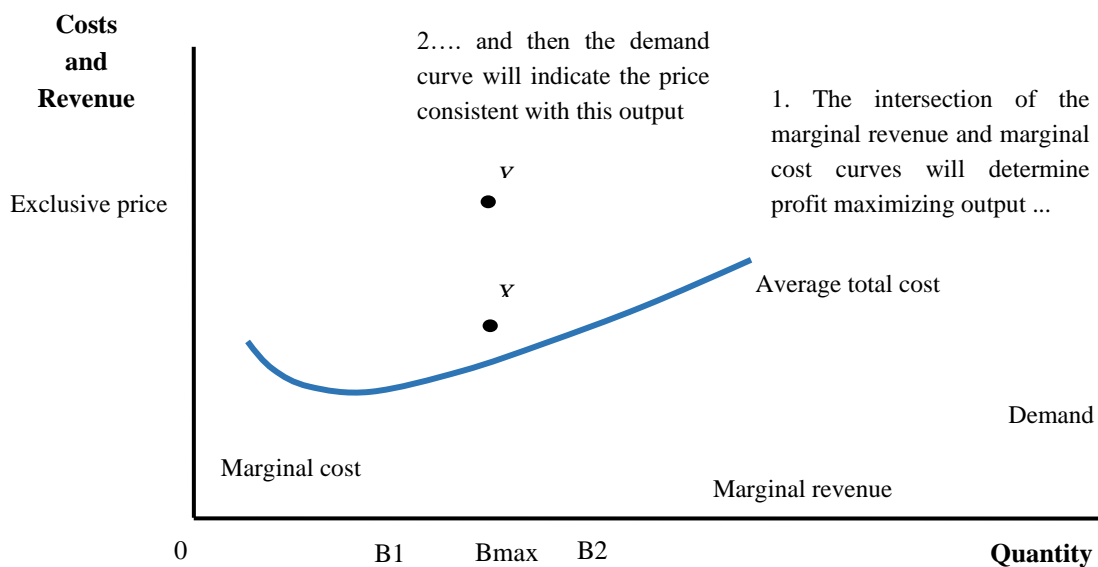
- *If the marginal cost is greater than the marginal revenue, the business should reduce output*

- *At the maximum profit output level, marginal revenue and marginal cost are equal.*

3.1.2. Monopoly market

Monopoly market is the market in which businesses do not have competitors. Monopolies will have an impact on the price of the products they produce. While enterprises in the competitive market are price takers, monopolies are price makers.

The main difference between a competing and a monopoly business is its ability to influence the price of goods. A competitive enterprise is too small in relation to the market it is operating in, and therefore does not have the capacity to influence prices. Businesses must accept prices that are determined by market conditions. In contrast, because the monopoly is the only producer in the market, it can change the price of goods by adjusting the quantity it provides to the market.



Imagine that the business is producing at an output of B1. In this case, the marginal cost is less than the marginal revenue. If the business increases an unit of product, the increase in revenue will be more than the additional cost that the business spends and thus the profit will increase. Thus, when the marginal cost is lower than the marginal revenue, the business can increase its profits by producing more.

The approach is similar, but starting from a high-yield place, like B2. In this case, the marginal cost is higher than the marginal revenue. If an enterprise cuts production by one unit, the cost reduction will be more than the lost revenue. So, in case the marginal cost is higher than the marginal revenue, the business can increase profits by reducing output.

Finally, the business can adjust its production scale when the quantity supplied reaches Qmax, where the marginal revenue is equal to the marginal cost. Thus, the level of

output at which the monopolist maximizes profit is determined by the intersection of the marginal revenue and marginal cost curves. In Figure 2, the intersection point is X.

As mentioned above, enterprises in the competitive market will also choose the total supply output to the market where the marginal revenue is equal to the marginal cost. To maximize profits, this principle applies to both businesses in competitive markets and monopoly markets. But there is a fundamental difference between two competing and monopoly market models: Marginal revenue in a competitive market is equal to price, while marginal revenue in an exclusive market is smaller than the price.

Competing Business	$P = MR = MC$
Monopoly Business	$P > MR = MC$
<i>In which:</i> <i>P: Price</i> <i>MR: Marginal Revenue</i> <i>MC: Marginal Cost</i>	

The problem is how can monopolies determine the price to maximize profits? The demand curve will answer this question, because the demand curve is related to the total output that consumers are willing to pay to buy the product. Thus, after the monopoly has determined that output is equal to marginal revenue and marginal cost, it will use the demand curve to determine the highest price that it can price for the output just determined. In Figure 2 above, the maximum profit price is Y.

In a monopoly market, the firm has no supply curve because the supply curve shows that the total output that businesses are willing to supply at any given price. In a competitive market, a business is a price taker, but as a monopoly it is a price maker. It makes little sense to ask for the total output produced by a monopolist at any price because the monopoly has set prices at the same time as selecting output to provide in the market.

3.2. Direct price-fixing agreements to restrict competition from the viewpoint of economic efficiency

3.2.1. Definition of direct price-fixing agreement

Direct price-fixing agreements are agreements that unify actions among competitors to eliminate price competition among enterprises participating in the agreement. An important feature of these agreements is that the parties have directly established a common price through the agreement, thereby eliminating the ability of customers and consumers to choose the price. The purpose of a direct price-fixing agreement is to increase the selling price of goods and products, in order to quickly and directly increase profits according to the price calculation of the enterprise participating in the agreement.

3.2.2. Classification of acts of direct price-fixing agreement

Acts of direct price-fixing include:

- Applying uniform prices to some or all customers.
- Increasing or decreasing prices at a specific level.
- Applying the formula of general price calculation.
- Maintaining a constant ratio of prices of related products.
- Using an uniform price at the time the price negotiations start.

In particular, the agreement on *uniform application of prices to some or all customers* is a typical agreement for the direct nature of the price-fixing agreement and clearly disclosing the nature of exploitation of customers. Accordingly, businesses conduct agreements to set uniform prices for customers. The difference between agreement on *uniform price application with some or all customers* and agreement on increasing or decreasing prices at specific level is: If agreement on uniform price application is an agreement aiming to stabilize at a price, an agreement on increasing or decreasing prices at a specific price direct towards prices change. But this prices change must be consistent, thereby eliminating unnecessary reactions that affect the agreement group's ability to increase profits.

3.2.3. Studying and analyzing typical case studies

The following case studies and analysis of typical price-fixing agreements in order to limit competition have deeply demonstrated the nature of exploiting customers in direct price-fixing agreements applying uniformly the prices with some or all customers. The nature of exploiting customers in the agreement on uniform application of prices to some or all customers is clearly shown in the situation of price-fixing agreements of 19 Insurance enterprises of Vietnam in 2008. Specifically, On September 15, 2008, the Vietnam Insurance Association organized the 6th Non-life General Directors Conference. At this conference, 15 non-life insurers signed a cooperation agreement between insurers in the field of motor vehicle insurance and the provision of auto insurance premiums for cars (Agreement). On September 18, 2008, four more Insurance enterprises also signed the Agreement, increasing the number of enterprises participating in this agreement to 19.

According to the Agreement, 19 Insurance enterprises agreed to apply a common charging formula with specific insurance premium rates in order to eliminate competition on insurance premiums among insurance enterprises participating the agreement. Specifically, the car physical insurance premium for a year (excluding VAT), according to the standard terms is calculated as follows:

<i>Standard cost</i>	=	$1,56\% \times \text{Sum Insured}$
<i>Insurance cost for freight cars</i>	=	$1,83\% \times \text{Sum Insured}$
<i>Insurance cost for intercity passenger transportation cars</i>	=	$2,07\% \times \text{Sum Insured}$
<i>Insurance cost for cars with refrigerated cargo</i>	=	$2,62\% \times \text{Sum Insured}$
<i>Premiums for tractors</i>	=	$2,84\% \times \text{Sum Insured}$
<i>Premiums for taxi</i>	=	$3,95\% \times \text{Sum Insured}$

Meanwhile, the agreement on increasing prices or decreasing prices at a specific level is considered to be a flexible agreement. This agreement includes two options: either to increase prices or to decrease prices. Especially this agreement not only includes prices increase but also the discount price at a specific level. Choosing to raise prices or reduce prices but still meet the increase of the profit objectives of the parties to the agreement, as analyzed above related to the elasticity of demand. At first glance, the discount deal will not be exploitative. However, when viewed from an economic perspective, it is easy to clearly identify this exploitation nature. Behavior can be visualized through the following diagram:

Suppose the market price of goods is at the price of P_1 as shown in the picture. Corresponding to that price level, the total output of the whole market is Q_1 . At this price, the total revenue of the businesses before joining the agreement will be equal to the price multiplied by the output: $P_1 \times Q_1$ (is the OP_1AQ_1 quadrilateral). Given the characteristics of goods with high price elasticity of demand, an increase in selling price will cause a decrease in buying. Therefore, businesses can increase production by reducing prices from P_1 to P_2 . Accordingly, when prices fall, consumers will be stimulated to buy more. As a result, demand increased from Q_1 to Q_2 . At this point, the revenue of the participating businesses will be equal to the new price multiplied by the new output: $P_2 \times Q_2$ (is the OP_2BQ_2 quadrilateral). The difference between the quadrilateral OP_2BQ_2 and the quadrilateral OP_1AQ_1 is the incremental revenue of businesses.

Therefore, lawmakers should take a reasonable approach when determining the economic nature of the agreement. With the same purpose of changing prices to exploit customers, but depending on the specific characteristics of goods, businesses will proceed to increase or decrease prices. Businesses will increase prices if they are trading goods that have low elasticity but they will not achieve the goal of increasing profits when applying the price increase for goods with high coefficient of elasticity. So, as analyzed, price-fixing agreements and output controlling agreements are closely related. And because of that, that is the exploitative nature of the discount agreement explained in terms of the economics of demand elasticity. This principle is similar to the monopoly business maximizing profits. Because the demand curve is related to the total output that consumers are willing to pay to buy a product. So, after the monopoly has determined that output is equal to marginal revenue and marginal cost, it will use the demand curve to determine the highest price that it can price on a given quantity of output.

3.2.4. Studying and analyzing the difference between agreement on fixing-price reduction with agreement on preventing, stopping, eliminating

The agreement on a specific price reduction and agreement to prevent, restrain or prevent other enterprises from participating in the market or developing business (hereinafter referred to as preventive agreement) and the agreement to exclude from the market enterprises which are not parties to the agreement (hereinafter referred to as the removal agreement) are also the same discount agreements, but they are completely different in terms of economic nature. Specifically, the containment agreement is divided into two groups as follows:

a) 1st Group:

* An agreement to prevent, restrain or prevent other enterprises from participating in the market is the unification of not conducting transactions with enterprises not participating in the agreement or acting in one of the following forms:

- Requesting, appealing, inducing their customers not to buy, sell goods or use services of enterprises not participating in the agreement;

- Buying and selling goods and services at a price sufficient for enterprises not participating in the agreement not to participate in the relevant market;

- An agreement to prevent, restrain or prevent another enterprise from developing its business is the unification of not doing business with an enterprise not participating in the agreement or acting in one of the following forms:

+ Requesting, appealing distributors and retailers who are dealing with them to discriminate when buying or selling goods of enterprises not participating in the agreement in a way that makes it difficult to sell goods of this business;

+ Buying and selling goods and services at a price sufficient for enterprises not participating in the agreement not to expand their business.

Logically, the nature of the preventive or eliminating price must be a price that is lower than the market price or even lower than the production cost. The nature of these two types of agreements aims to create a price race, thereby causing harm to rival businesses, so that they can not expand markets, develop business or even more harsh is forced to withdraw from the market.

b) 2nd Group:

The agreement applying the general pricing formula to maintain a fixed price ratio of the product concerned with a different economic aspect from the above two agreements. The economic aspect of the two agreements that apply the formula to calculate the overall price and maintain a fixed price ratio of the product is related to the individuality of the product and the difference in the production costs of enterprise. The individuality of the product is perceived in that although the businesses being considered in this case, are initially defined as being in the same relevant market, which means that the products of the businesses must be able to replace each other in terms of characteristics, purposes and prices.

However, this determination of fungibility is only relative. In order to compete, manufacturers always try to personalize their products. It is these certain differences that help businesses make a difference in prices compared to other businesses that sell similar products in the market. At the same time production costs of businesses will be different. Production cost is the value of everything a seller has to spend on the production of a good. The average production cost of each manufacturer will depend on the technology that the manufacturer owns and the cost of hiring and buying production factors such as labor and raw materials... For each manufacturer, these factors are different, leading to different

production costs of manufacturers. Consequences of different production costs will result in different prices on the relevant market. Therefore, if the agreement sets prices without taking this factor into account, businesses will be in a state of conflict over the benefit sharing aspect. Because of this, many scientists considered the product's homogeneity or uniform standard of products as one of the favorable conditions for anti-competitive agreements.

Therefore, from the perspective of businesses involved in the agreement, they will also make changes so that the pricing agreement becomes easier to implement and brings many benefits to participating businesses. Accordingly, the act of applying the general price formula to maintain a constant price ratio of related products is to solve these differences. Through agreements that do not specify prices but only determine the formula to calculate prices or maintain a fixed ratio, participating enterprises have agreed not to change the correlation of prices that the parties have set in advance in the relevant market, but merely adds a certain percentage to the price of the parties in order to make a higher profit.

3.3. Indirect price-fixing agreement to restrict competition

3.3.1. Indirect price-fixing agreements are understood as agreements that unify the actions of competing enterprises in the same relevant market, related to supporting factors of goods and services prices, through which impact to the price applied to customers, distributors, in order to increase profits.

3.3.2. Indirect price-fixing agreements include agreements such as no price discount or uniform price discount, credit limit for customers, and no discount if not notify to other members of the agreement.

The nature of the *discount* and *credit limit* factors for customers are considered to be complementary or related to the price of goods and services. Measures to use discounts or credit limits for customers are particularly useful in the context of publicly available commodity price information. It will be difficult for businesses to decrease or increase prices locally without affecting the rest. Therefore, the discount policy is understood as the discount based on the widely announced price.

Typically, discounts occur in the relationship between a manufacturer and a distributor. From the perspective of the production chain, goods are delivered to consumers through the stages: Manufacturing - Distribution - Final consumption. The cost of distribution is calculated as one of the production costs. Therefore, through the application or non-application of discount, businesses have a direct impact on costs. Therefore, although the price of goods is constant (applicable to final users), whether or not to benefit customers through the application or non-discount policy has indirectly affected to the actual price that customers have to pay for the products.

Meanwhile, *giving credit limits to customers* is understood as giving customers a certain amount of money for buying behavior. It can be simply understood that buyers will be deferred for a certain period of time when they buy a certain volume/value of goods. This deferred payment may apply to the entire shipment or part of the shipment, depending on

the policy that the business wants to apply to its customers. Credit is one of the types of production costs. Purchase with deferred payment is a financial incentive for customers. Therefore, even without a discount, the credit line is a benefit that customers enjoy.

In Vietnam, the final agreement in the group of price-fixing agreements is the non-discount agreement without notifying other members of the agreement. Accordingly, businesses negotiated that they will only reduce prices with conditions which they have notified other businesses in the agreement. The nature of this agreement is the price information exchange element.

This comes from the peculiarity of conventional price-fixing agreements that always sell at a higher price than the market price. When an anti-competitive agreement is made, the following two things are true. The first one is because agreements are always geared to cutting production, so businesses always sell less than they sell before the deal and perhaps less than their own production capacity. The second is that the selling prices in the deals are always profitable.

Meanwhile, businesses will have the incentive to sell off and sell more, thereby achieving higher profits. The nature of the act in this case is the act of betraying the agreement, the betraying enterprise will benefit from the damages of other businesses when selling at lower prices. To resolve this conflict, the solution is that businesses have the right to reduce prices, but only if the remaining enterprises in the agreement have to know in advance about this discount decision. Thereby, it will avoid damage to the remaining businesses and ensure consistent price action among businesses.

In Vietnam, the introduction of the Competition Law 2018 replacing the Vietnam Competition Law 2004 when the provisions on agreements to fix prices of goods and services directly or indirectly have changed in the approach. Accordingly, the Vietnam Competition Law 2018 has two important changes. The first change is that price-fixing agreements are not only agreements between enterprises in the same relevant market, but also include agreements between businesses operating at different stages in the same chain of production, distribution and supply for a certain type of goods or services (Clause 1, Clause 4, Article 12 of the Vietnam Competition Law 2018)³. The second change is that for direct or indirect price-fixing agreements of goods and services conducted by enterprises in the same relevant market, lawmakers have determined that this is a serious violation agreement and distorting the market so this agreement will be strictly banned without taking into account market share factors as defined in the Vietnam Competition Law 2004.

³ ***“Article 12. Anti-competitive agreement is prohibited***

1. Agreements on restraint of competition between enterprises on the same relevant market prescribed in Clauses 1, 2 and 3, Article 11 of this Law.

...

4. Agreement on restraint of competition between enterprises doing business in different stages of the same chain of production, distribution and supply for a certain type of goods or service specified in Clause 1, 2, 3, 7, 8, 9, 10 and 11 of Article 11 of this Law when such agreement exerts a significant impact or is likely to exert significant competitive restraint in the market.”

3.4. The agreement about using price aiming to consolidate its position in the relevant market

3.4.1. Viewed from the market structure of the price-using agreement among businesses

The long-term goal of the business is to increase profits. However, businesses only achieve this goal when there are necessary conditions in terms of market structure. A market with many businesses, the pressure of competition will prevent businesses from achieving high profits as expected. Therefore, in order to serve the purpose of increasing profits in the long term, enterprises in some cases will have to take actions to prevent other enterprises from participating in the market, developing business or removing competitors from the relevant market. Theoretically, there are two options for businesses to prevent market entry, expansion of business, or the elimination of other businesses from the market either individually or in parallel: (i) low-price sales strategy (ii) boycott strategy.

3.4.2. Price-fixing agreement aiming to consolidate its position in the relevant market

From the perspective of price theory, price-fixing agreements aimed at strengthening the position in the relevant market are understood as agreements in which enterprises use low-price selling methods to prevent other enterprises from expanding business scale, participating the market or removing competitors from the relevant market, thereby consolidating or expanding market share in the relevant market. Thereby, the price-using agreement can be identified for the purpose of strengthening the position in the relevant market through three signs. The first is that the subject of the agreement is enterprises in the same relevant market. The second is the tool used by businesses in low-price agreements in order to make it impossible for other businesses to get profits large enough to scale up, not attractive enough to enter the market or become more dire that are long-term losses and withdrawing from the market. Thirdly, the purpose of the businesses participating in the agreement is to consolidate their current position at the risk of losing market share by competitors in the relevant market or by entering the market of new businesses or increase profits through destroying competitors.

A price-using agreement aiming to prevent the market entry of a new competitor is understood as an agreement to agree on action among competitors, through a price reduction aimed at preventing the market entry of new competitors. In Vietnam, the agreement to prevent, inhibit or not to allow other enterprises from participating in the market is the agreement not to conduct transactions with enterprises not participating in the agreement or act together in one of the following forms: requesting, appealing or inducing their customers not to buy or sell goods or to use services of enterprises not participating in the agreement; purchase and sell goods and services at prices sufficient for enterprises not participating in the agreement not to participate in the relevant market.

The price-using agreement aimed at preventing, restraining or preventing other enterprises from developing their business is understood as the act of agreeing on actions between competitors enterprises in the relevant market, by using low-price sales strategy, making the business that is not a party to the agreement cannot develop or expand business activities.

In Vietnam, the agreement on preventing, restraining or not allowing other enterprises to develop their businesses is an agreement not to conduct transactions with enterprises not participating in the agreement or acting in one of the following forms: requesting, appealing, seducing distributors and retailers dealing with them to discriminate when buying or selling goods of the enterprises not joining the agreement in a way that makes it difficult to sell goods of this enterprise; Buying and selling goods and services at prices sufficient for enterprises not participating in the agreement not to expand their business.

In Vietnam, agreements prevent market entry and agreements prevent other enterprises from developing business have different subjects. If the agreement prevents the entry into the market of a potential competitor enterprise, which has not been established or has been established but has not operated in the relevant market, the object of the agreement preventing the other enterprises from developing business is the competitor businesses operating in the same market. However, from an using strategic perspective, both of these agreements use either of the two types of acts *Boycott* or *Low price sales*.

From the price perspective, the fixed price must be a price that is sufficient for an enterprise that is not a party to the agreement to enter the relevant market or at a price that is sufficient for a non-party entity to expand further business scale.

Price-using agreements aiming to remove from the market those enterprises which are not parties to the agreement are understood as agreements to agree on actions between competitors in the relevant market, by using use low-price sales strategy, aiming to eliminate competitors from the relevant market. The agreement to remove from the market enterprises which are not parties to the agreement is the agreement not to deal with enterprises not participating in the agreement and act in the form of asking, calling, seducing customers not to buy, sell goods, do not use services of enterprises not participating in the agreement.

Agreement to prevent, restrain or prevent other enterprises from developing their business is the agreement not to conduct transactions with enterprises not participating in the agreement or acting in one of the following forms:

- Requesting, appealing and enticing distributors and retailers dealing with them to discriminate when buying and selling goods of enterprises not participating in the agreement in a way that makes it difficult to sell goods of this business.

- Buying and selling goods and services at a price sufficient for an enterprise not being a party to the agreement to not expand its business, or buying and selling goods or services at a price sufficient for the enterprise not to participate in the agreement have to withdraw from the relevant market. *From this rule, there are a few things to clarify:*

First, the object of the agreement is a competitor enterprise that already exists in the relevant market.

Second, the strategy used in the deal is still a boycott and low-price sales strategy. However, compared with the agreement that prevented the development of business, the agreement to eliminate other enterprises was more fierce. In the agreement to prevent, only

one of the two strategies is implemented; in the elimination agreement, enterprises implement simultaneously both boycott strategy and low-price sales strategy.

Third, the selling price in this case is the low price. Selling goods or providing services below the total cost in order to eliminate competitors means the sale of goods or provision of services at prices lower than the total costs constituting the production of goods or services or the purchase prices of goods for resale; cost of circulation of goods and services.

In order to implement a comprehensive framework of neutral competition, Vietnam has made great progress in the transition from a developing country with a centrally planned, socialist economy to the economy. market economy which is rapidly industrializing. In the process of implementing the competitive evaluation mechanism, Viet Nam has made significant progress in significantly improving the quality of its legislative and legislative processes, including the questioning efficiency⁴. In the current economic and social context, the Vietnam Competition Law 2018 has clearly shown the viewpoints to improve the legal framework, create a fair and fair competitive environment for business entities. The great value of this law is that it was built in a way that combines economic thinking and legal thinking, emphasizing the effective growth goal for law enforcement, including laws governing price fixing-agreements to restrict competition⁵. The Vietnam Competition Law 2018 with respect to price-using agreements for the purpose of consolidating the position in the relevant market follows the same approach. The Vietnam Competition Law 2018 with respect to price-using agreements for the purpose of consolidating its position in the relevant market follows the same approach. Accordingly, Article 11 of the Vietnam Competition Law 2018⁶ also in turn stipulates two types of agreements: agreements preventing, restricting, not allowing other enterprises to participate in the market or developing business and agreements to remove from the market businesses that are not parties to the agreement. Thus, despite the different names, the price-using agreements aimed at strengthening the position in the relevant market are essentially agreements that sacrifice short-term benefits to prevent the

⁴ OECD (2018), OECD's review of Competition Law and Policy, <http://oe.cd/vtn>

⁵ Tran Thi Nguyet, "Discussing the core values of the Competition Law 2018", Journal of Human Resources and Social Sciences, No. 5/2020, 2020.

⁶ **"Article 11. Anti-competitive agreement**

1. Agreement on fixing prices of goods and services directly or indirectly.
2. Agreements on division of customers, division of consumption markets, supply of goods and provision of services.
3. Agreement to limit or control the quantity and volume of production, purchase, sale of goods or provision of services.
4. Agreeing to one or both parties to the agreement win the bid when participating in biddings in the supply of goods or provision of services.
5. Agreement to prevent, restrain or prevent other enterprises from participating in the market or developing business.
6. Agreement to remove from the market enterprises which are not parties to the agreement.
7. Agreement on restriction of technical and technological development, restriction of investment.
8. Agreement to impose or impose conditions on the signing of contracts to buy and sell goods or provide services to other enterprises or to agreements to force other enterprises to accept obligations not directly related to the subjects of contract.
9. Agreement does not deal with parties not party to the agreement.
10. Agreement to restrict the market of products, sources of goods and services provided by the parties not party to the agreement.
11. Other agreements that cause or are likely to cause anti-competitive effects. "

market entry, market expansion or even eliminating competitors from the relevant market. But as mentioned above, from an economic perspective, businesses have no incentive to agree on a unified sale of goods under the average variable cost to destroy their rivals. Instead of that, when they want to consolidate their position in the relevant market (preventing the entry of new competitors' market or preventing the development or elimination of existing competitors), businesses tend to use other tools instead of sacrificing benefits by reducing prices. US practice, as long as there is a price agreement, is considered as an act of price-fixing agreement, regardless of whether the price is high or low. Agreements between competitors are almost always illegal, regardless of whether the price is set to a minimum, maximum or a range of fluctuations. With the provisions of Clauses 5 and 6, Article 11 of the Vietnam Competition Law 2018⁷ in terms of language, it does not allow us to conclude whether the provisions on the agreement to prevent and eliminate competitors involve the use of low prices as in the Competition Law 2004 or not, these agreements are boycott agreements, thereby increasing the cost of production of competitors, which is a way that helps businesses to participate in restrictive agreements and compete for market dominance. However, from an economic perspective, the author supports the US approach, which means that price agreements, regardless of whether they are high or low, are included in the group of price-fixing agreements. The implications of agreements that prevent market entry, market expansion, or the agreement to remove other enterprises from the market only include strategies that are not related to price instruments.

3.5. Research proposal

The following are the studies and recommendations of the author on the content of effect assessment or the ability to cause significant anti-competitive effects of the price-fixing agreement to restrain competition in Vietnam. After obtaining research results on acts of direct price-fixing agreements, indirect price-fixing agreements, price-using agreements in order to consolidate the position in the relevant market, the proposals of author on ***the authority to assess and the basis for assessing*** the effect or the ability to cause significant anti-competitive effects of the price-fixing agreement in order to restrict competition focusing on important issues. as follows:

3.5.1. Competent authority assesses anti-competitive effects

In Vietnam, the authority that assesses the significant effect or likely to exert significant anti-competitive effects on price-fixing agreements to limit competition is the Vietnam National Competition Commission.

The Vietnam National Competition Commission is an authority competent to assess *the effect* or the ability to cause significant anti-competitive effects of anti-competitive agreements in cases where anti-competitive agreements **are prohibited** under the provisions

⁷ ***Article 11. Anti-competitive agreement***

5. *Agreement to prevent, restrain or prevent other enterprises from participating in the market or developing business.*

6. *Agreement to remove from the market enterprises which are not parties to the agreement. "*

of Clauses 3 and 4, Article 12 of the Vietnam Competition Law 2018⁸, including a price-fixing agreement to restrict competition.

3.5.2. Bases for evaluating anti-competitive effects

In Vietnam, the basis for the Vietnam National Competition Commission to assess the effect or the ability to cause significant anti-competitive effects of the price-fixing agreement in order to restrict competition

The evaluation of the effect or the ability to cause significant anti-competitive effects of the price-fixing agreement in order to restrict competition by the National Competition Commission of Vietnam is based on one or a number of factors as follows:

a) Developments and trends in changing the market share of enterprises participating in the agreement are evaluated in relation to other enterprises that are competitors not participating in the agreement;

b) Barriers to market entry and expansion are assessed to determine the effect or the ability to cause significant anti-competitive effects of the agreement based on factors affecting the decision of the enterprise upon accession., expanding markets, including:

b1) The legal barriers created by the laws and policies of the state include regulations on import duties and import restrictions; technical regulations; conditions and procedures for producing and trading in goods and services; regulations on use of goods and services; professional standards and other administrative decisions of state management agencies.

b2) Financial barriers include costs of investment in production and trading of goods and services, access to capital, credit and other financial sources of the enterprise.

b3) Initial costs of entering the market which enterprises cannot recover when withdrawing from the market.

b4) Barriers to access and hold supplies and essential infrastructure for production and business; distribution network, consumption of goods and services on the market.

b5) Consumer practices.

B6) Business practices.

b7) Barriers related to the exercise of intellectual property rights of individuals and organizations, including copyright and rights related to copyright, industrial property rights and rights to plant varieties as prescribed. of the law on intellectual property rights and other barriers to market entry and expansion.

⁸ ***Article 12. Anti-competitive agreement is prohibited***

3. Agreement on restraint of competition between enterprises on the same relevant market stipulated in clauses 7, 8, 9, 10 and 11 of Article 11 of this Law when such agreement exerts an impact or is likely to cause an impact limit competition significantly in the market.

4. Agreement on restraint of competition between enterprises doing business in different stages of the same production, distribution and supply chain for a certain type of goods or service specified in Clause 1, 2, 3, 7, 8, 9, 10 and 11 of Article 11 of this Law when such agreement exerts a significant impact or is likely to exert significant competitive restraint in the market.”

c) Restricting research, development, technological innovation or limiting technological capacity assessed to determine the impact or potential impact of anti-competitive agreements on research and development objectives. developing, renewing technologies or raising technological capabilities in the relevant branches and domains;

d) Decreasing accessibility and holding of essential infrastructure is assessed based on the critical level of infrastructure for production and business activities and costs and time for enterprises. A competitor who is not a party to the agreement can access, hold that infrastructure or similar infrastructure;

d) Increasing costs and time of customers in purchasing goods and services of enterprises participating in the agreement or when switching to buying other related goods and services determined by comparing expenses and time necessary time of customers when buying goods and services of enterprises participating in the agreement or when switching to buying goods and services of enterprises being competitors before and after such agreement;

e) Interfering with competition in the market through controlling specific factors in the industry or fields related to the enterprises participating in the agreement determined based on the level of dominance of such particular factors. for the competitive activities of enterprises in the market.

3.5.3. The author's proposal on price-fixing agreements in order to restrain competition is considered not causing or not likely to cause significant anti-competitive effects.

According to the study of price-fixing in order to restrain competition in terms of the effect of economics, by thinking of economic efficiency standards, if the price-fixing agreements are in one of the following cases, they will be considered not to cause or is unlikely to have the ability to cause significant anti-competitive effects:

a) For agreements restricting competition between enterprises in the relevant market, when the combined market share of enterprises participating in the agreement is less than 5%;

b) For agreements on restraint of competition between business enterprises and different stages in the same production, distribution and supply chain for a certain type of goods or service, when the market share of Each enterprise participating in the agreement is smaller than 15%.

Therefore, in the process of assessing the anti-competitive effects and the anti-competitive ability of the agreement, the National Competition Commission of Vietnam has the right to consult agencies, organizations, relevant individuals and request businesses to enter into agreements to provide necessary information and documents.

4. Discussion and Conclusion

Regarding the handling plan, Vietnam has quickly regulated the sanctioning of administrative violations in the field of competition by issuing Decree 75/2019/ND-CP of September 26, 2019. Accordingly, for acts of agreement on restraint of competition of enterprises in the relevant market, the measure of a fine of 1% to 10% of the total turnover

in the relevant market in the financial year preceding the year. committing acts of violation of each enterprise being the parties to the agreement for acts of agreeing to fix goods or service prices directly or indirectly⁹. The fine level is from 1% to 5% of the total revenue on the relevant market in the financial year preceding the year of committing acts of violation of each enterprise being the parties to the agreement for acts of price-fixing agreements on goods and services directly or indirectly, when such agreements affect or have the ability to cause significant anti-competitive effect in the market¹⁰. This is a fine for acts of restricting competition from businesses operating in different stages of the same production, distribution and supply chain for a certain type of goods or services. In addition to the policy of sanctioning administrative violations, Vietnam's criminal law also criminalized acts of anti-competitive agreements by fixing prices. The Vietnam Penal Code 2015 has set aside Article 217 to regulate this sanctions¹¹ With such a strict treatment, the punitive and deterrent nature, the crime prevention of price-fixing agreements to restrain competition has been guaranteed. But breaking the price-fixing agreements to restrain competition is the advantage of a leniency policy that was first initiated and regulated by the Vietnam

⁹ See: Article 6, Clause 1 of Decree No. 75/2019/ND-CP of the Vietnamese Government stipulating sanctions against administrative violations in the field of competition

¹⁰ See: Article 7, Clause 1 of Decree No. 75/2019/ND-CP of the Vietnamese Government stipulating sanctions against administrative violations in the field of competition

¹¹ “**Article 217. Crime of violating competition regulations**

1. Those who commit one of the following acts, causing damage to others from VND 1,000,000,000 to under VND 5,000,000,000 or gaining illicit profits from VND 500,000,000 to under VND 3,000,000,000, shall be sanctioned. a fine of from VND 200,000,000 to VND 1,000,000,000 shall be imposed for non-custodial reform for up to 02 years or imprisoned from 03 months to 02 years:

a) Agreement to prevent or restrain other enterprises from participating in the market or developing business;
b) Agreement to remove from the market of enterprises not the parties to the agreement;
c) Agreement on restraint of competition when the parties to the agreement have a combined market share of 30% or more in one of the following cases: agreements on fixing prices of goods and services directly or indirectly; agreements on dividing consumption markets, sources of supply of goods and services; Agreement to limit or control the quantity and volume of production, purchase and sale of goods and services; agreements restricting technical and technological development, limiting investment; Agreement to impose on other enterprises conditions for signing contracts for the purchase and sale of goods or services or forcing other enterprises to accept obligations not directly related to the subjects of the contract.

2. Committing the crime in one of the following circumstances, the offender shall be liable to a fine of from VND 1,000,000,000 to VND 3,000,000,000 or face a prison term of between 1 and 5 years:

a) Committing the crime 2 times or more;
b) Using sophisticated and cunning tricks;
c) Abuse of market dominance or monopoly position;
d) Gaining an illegal profit of VND 3,000,000,000;
d) Causing damage to another person of VND 5,000,000,000 or more. ”;

3. Offenders may also be imposed a fine of between VND 50,000,000 and VND 200,000,000, banned from holding certain posts, practicing certain occupations or doing certain jobs for between 1 and 5 years.

4. Commercial legal entities committing offenses specified in this Article, shall be sanctioned as follows:

a) Committing the crime as prescribed in Clause 1 of this Article, a fine of between VND 1,000,000,000 and 3,000,000,000;

b) Committing the crime as prescribed in Clause 2 of this Article, a fine of between VND 3,000,000 and VND 5,000,000,000 or suspend operation for a period of 06 months to 02 years;

c) Commercial legal entities may also be imposed a fine of from VND 100,000,000 to VND 500,000,000, be banned from operating in certain fields or raising capital for 01 - 03 years. ”

Competition Law 2018. This is the policy that the State of Vietnam has granted exemption to members participating in price-fixing agreements in order to restrict competition, which has proactively declared, provided documents and evidence proving the existence of price-fixing agreement and real cooperation with competition management agency. The subjects who are a party to this agreement, when receiving leniency, will be exempted from part or all of the administrative or criminal sanctions that they should have incurred¹². This is also the conclusion and value and suggestive meaning of the author for future studies.

In summary, like other anti-competitive phenomena, the agreement on fixing prices to restrict competition is a negative phenomenon but it exists as an indispensable part of Vietnam's economic life. From an economic perspective, the agreement on the use of prices in particular and the agreement on restraint of competition in general is the first step of businesspeople in the process of capital accumulation and concentration - requiring centralization and unifying action in the marketplace. From an economic perspective, agreements that unite actions between businesses eliminate independent action among businesses participating in the agreement. Vietnam's laws governing anti-competitive agreements have made progress when it is clear that the impact of agreements on the use of prices to restrict competition is clear. The Vietnam Competition Law 2018 is a new step in the legislative work in order to effectively adjust and control anti-competitive agreements, including price-fixing agreements. From the perspective of effective standards of economics, indeed, price-fixing agreements to restrict competition are serious violations of competition law, distorting the market and leading the banned list in Competition law of countries in general and Vietnam in particular.

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¹² "Article 112. Policies of leniency

1. Enterprises that voluntarily declare to assist the National Competition Commission in detecting, investigating and handling acts of prohibited competition restriction agreements prescribed in Article 12 of this Law are entitled to exemption or reduction of principal sanctions. books of mercy. "

ENHANCING ECONOMIC LEADERSHIP CAPABILITIES OF KEY DISTRICT-LEVEL OFFICIALS IN THE MARKET ECONOMY IN PRESENT-DAY VIETNAM

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Abstract

Nowadays, in the context of Vietnam transitioning from a centrally planned economy to a market-oriented economy, the role of key district-level officials becomes extremely important in guiding and managing the local economy. However, to meet the demands of a complex and challenging business environment, the economic leadership capabilities of key district-level officials need to be enhanced to meet the requirements of development and competition in an increasingly competitive market economy. Economic leadership capabilities require not only in-depth professional knowledge but also effective management skills, strategic orientation, creative thinking, and the ability to adapt flexibly to market changes. In this context, this article focuses on researching and proposing measures to enhance the economic leadership capabilities of key district-level officials in the current market economy in Vietnam.

Keywords: *Capability, officials, key, economic leadership, market economy.*

1. Introduction

Proud of notable achievements in driving the transition from a traditional economic model to a market-oriented one, Vietnam has witnessed outstanding growth and emerged as one of the fastest-developing economies in the Southeast Asian region. To continue achieving sustainable success and comprehensive development, the economic leadership capabilities of key officials at the district level play an indispensable role. These officials play a crucial role in managing and directing economic activities at the local level. Currently, the team of key district-level officials has matured in terms of professional expertise and qualifications. However, to meet the increasingly high demands of the economic environment, particularly in the field of economic management, enhancing management capabilities is a crucial requirement. Key district-level officials need to continuously improve their economic leadership capabilities.

2. Method

The object of the research is the economic leadership capacity of key officials at district level in the market economy. The study mainly examines the contingent of economic leaders at the strategic level in Vietnam.

Research tools ensure scientific principles. Thoroughly researching theoretical perspectives associated with practice, viewed from the perspective of economic philosophy to serve the construction of Vietnam today.

Collecting and analyzing data from specific research methods are: comparative research method, specific historical synthesis, field survey and systematic method.

Methods of researching documents and texts; observation method; methods of processing data collected by mathematical statistics. Observational and interview methods are used to detect research problems.

3. Results

3.1. Some Fundamental Concepts

3.1.1. Officials, Key District-Level Officials

Cadres are Vietnamese citizens, elected, approved and appointed to hold positions and titles according to terms in agencies of the Communist Party of Vietnam, the State, and central socio-political organizations. in provinces and centrally run cities (hereinafter referred to as provincial level), in districts, urban districts, towns and provincial cities (hereinafter referred to as district level), in the payroll and salary from the state budget. State (Law on cadres and civil servants, 2019).

Key officials at the district level are the heads and deputy heads of political and social organizations, departments, divisions, etc. of the district. They are the ones who directly lead and manage the implementation of the Party's guidelines and guidelines, the State's policies and laws; at the same time, is responsible for setting and organizing the implementation of development guidelines, programs and plans of the unit and locality under his/her charge.

3.1.2. Concept of Capacity, Leadership, and Economic Leadership Capacity

The terms "capacity" or "work capacity" are increasingly used in various fields, and there are different definitions depending on the research purposes and specific fields. According to authors Bernard Wynne and David Stringer (1998), capacity to perform includes all the accumulated skills, knowledge, behavior, and attitudes that an individual applies to complete tasks. According to Bernard Wynne (1997), capacity is the skills, knowledge, behavior, and attitudes accumulated by an individual to achieve desired work outcomes. According to the research conducted by author Tran Van Thanh (2019), capacity consists of three fundamental characteristics: knowledge, skills, and attitude/behavior.

Thus, we can understand that capacity is the combination of unique psychological attributes or qualities of each individual that act as internal conditions facilitating the effective integration with the knowledge and skills of individuals to perform a specific type of activity successfully.

Leadership:

According to the Vietnamese dictionary (Hoàng Phê, editor-in-chief, 2000), "Lãnh đạo" is defined as "setting directions and organizing motivation for implementation."

According to the Chinese dictionary, "Lãnh đạo" means "to guide and lead in a specific direction" (as quoted by Trần Thị Vân Hoa, 2011).

There are multiple definitions of the concept of leadership. Leadership is a process in which an individual takes on a leading role and guides individuals within a group to do the right things, build a cohesive team, and operate smoothly in order to achieve common goals.

The concept of leadership capability can be defined as the ability of an individual or a group to guide, motivate, and manage resources to achieve common goals. Leadership capability encompasses the integration of knowledge, skills, and personal qualities to shape and facilitate effective leadership. It not only enables the direction and management of a group, but also drives change, development, and success within an organization or community.

Economic leadership capability is the ability of an individual or a group to manage, oversee, and guide economic activities. It includes the ability to apply economic knowledge to analyze market conditions, make strategic decisions, manage finances and resources, drive economic development, and address economic challenges and risks. Economic leadership capability requires an understanding of economic principles, economic management processes, and market trends. It also calls for management skills such as resource management, strategic planning, communication, negotiation, and performance evaluation. Thus, economic leadership capability is the ability of leaders to shape and promote economic development, foster competitiveness, and achieve success in the business and market environment.

The economic leadership capability of district-level key officials is the ability to execute and manage the implementation of decisions and directives from higher authorities, while organizing and ensuring the implementation of programs and development plans for their respective units and localities. The economic leadership capability of district-level officials including knowledge of economics, economic management skills, communication skills to foster collaboration and economic development, and strategic thinking in local economic development issues.

3.2. The role of key district-level officials in economic leadership in Vietnam's market economy today

Key district-level officials are the leaders and deputy leaders of political and social organizations, departments, and committees at the district level. They directly lead, manage, and implement the Party's guidelines, state policies, and laws. They are also responsible for formulating and implementing strategies, programs, and development plans for the units and localities under their jurisdiction.

In the context of Vietnam's transition from a centrally planned economy to a market-oriented economy, the role of key district-level officials has become extremely important in guiding and managing the local economy. This role is manifested in the following ways:

Firstly, economic development orientation. Key district-level officials have the task of directing the economic development of the locality based on their understanding of the economic situation and development potential. They need to identify the sectors and

economic areas in which the locality has competitive advantages and create policies and programs to encourage and support the development of these sectors.

Secondly, economic management and operation. Key district-level officials are responsible for managing and operating economic activities in the locality. They need to monitor and evaluate the effectiveness of economic projects and programs, ensure the implementation of economic policies and decisions that yield results, and address issues and difficulties that arise during the implementation process.

Thirdly, creating a favorable business environment. Key district-level officials have the task of creating a favorable business environment for enterprises. They must promote administrative reforms, reduce procedural barriers, and create favorable conditions for business activities and investments in the locality. They need to demonstrate strong leadership abilities, provide motivation for economic development, and promote the improvement of the quality of life for local residents.

Fourthly, building partnerships and cooperative relationships. Key district-level officials establish and maintain partnerships and cooperative relationships with businesses, local communities, non-governmental organizations, and other entities. They establish partnership relations to attract investment, seek resources, and support the economic development of the locality. This is an essential factor in managing and developing the local economy.

3.3. The current status of economic leadership capabilities of key district-level officials in the market economy in Vietnam

According to the report on the implementation of the 8th Central Committee's Resolution on cadres' strategy, the cadre team at all levels has made progress and development in various aspects, with improving quality, gradually meeting the requirements of the period of industrialization and modernization of the country. The cadre team demonstrates firm ideological positions, political courage, moral integrity, simple lifestyles, exemplary behavior, organizational discipline awareness, and continuous self-improvement and capacity enhancement to strive and fulfill assigned tasks. Many cadres are dynamic, creative, adaptable to the trends of integration, and capable of working in an international environment. The majority of Party, State, and Front leaders at all levels possess competency, good qualities, and credibility. Strategic-level cadres have political courage, steadfastness in Marxism-Leninism, Ho Chi Minh's ideology, goals, ideals of national independence and socialism, innovative thinking, and the ability to formulate direction, policies, and provide leadership and guidance for implementation. Most of the leaders of the armed forces have been trained and tested through practical experience, remain loyal to the Party, and are ready to fight and sacrifice for the nation and people. Many scientific cadres are dedicated and enthusiastic in research, making positive contributions to the country. Some leaders and managers of state-owned enterprises quickly adapt to market mechanisms, organize efficient production and business (Resolution of the 7th plenum of the 12th Central Committee). These achievements apply to the general cadre team in our country, including key district-level officials.

However, there are currently several challenges to the economic leadership capacity of key district-level officials. These include the complexity and diversity of the business environment, rapid technological changes, globalization trends, as well as intense competition from other localities and international economic rivals. The economic management capacity of key district-level officials has not met the requirements. They are lacking in economic management capacity:

First, there is a lack of economic knowledge. Some key district-level officials have received training in economics, possess basic knowledge of economic management and economic policies, and are able to apply economic knowledge to their leadership duties. They understand fundamental economic concepts and principles, can analyze markets, assess economic potential and risks, and accordingly make appropriate economic decisions and policies. This enables them to provide direction, promote and create favorable conditions for businesses, and drive local economic development.

However, there are still some key district-level officials who have not attained the necessary level of knowledge to meet the requirements of modern economic leadership. They lack comprehensive knowledge and expertise in economics and management, practical experience, and updates on economic knowledge. This affects their ability to make informed decisions and address complex economic issues.

Second, there is a lack of economic management capability. In reality, although some key district-level officials have good management skills and possess basic knowledge of planning, implementation, and evaluation of economic activities, there are still difficulties in applying modern management methods and shaping economic development strategies.

One of the main challenges is shaping the local economic development strategy. This requires consensus and the ability to accurately identify development priorities based on thorough analysis and evaluation of the locality's potential and limitations. However, some key district-level officials may encounter difficulties in identifying and shaping appropriate strategies, as well as a lack of ability to generate innovative and creative solutions to promote economic development.

Furthermore, in the application of modern management methods, some key district-level officials also face challenges. They may lack the necessary knowledge and skills to apply advanced management methods such as quality management, risk management, project management, and strategic management. This can affect the effectiveness and sustainability of local economic activities.

Third, some key district-level officials lack the ability to provide direction and innovation in economic management. While some officials have the ability to identify potential industries and sectors and propose solutions and policies to encourage their development, many officials are not confident and flexible in directing and promoting economic development. When key district-level officials lack confidence and flexibility in economic development direction, the process of decision-making and policy implementation can become slow, leading to missed opportunities and loss of competitiveness with other

localities. Additionally, these officials may not fully leverage the potential of the locality, which can impact investors and businesses.

Thus, the limitations in the economic management capacity of key district-level officials can affect the economic development of the locality. Enhancing the economic leadership capacity of these officials becomes an urgent task. Weak economic management capacity can create uncertainty and lack of reliability for investors and businesses. Without accurate direction and the ability to leverage the potential of the locality, investors and businesses may lack trust and willingness to invest. Furthermore, when key district-level officials lack the necessary capacity and knowledge to provide direction and promote economic development, the locality may miss important development opportunities. Potential projects and industries may not be fully exploited and developed according to their potential.

The limitations in the economic management capacity of key district-level officials can be attributed to several main reasons: lack of specialized knowledge, insufficient training courses and programs on economic management and economic policies, and inadequate investment resources for training and capacity development. These reasons mentioned can contribute to the limitations in the economic management capacity of key district-level officials.

3.4. Solutions to enhance the economic leadership capacity of key district-level officials in the current market economy in Vietnam

To address the limitations and ensure the economic development of the locality, key officials need to enhance their economic leadership capacity. Here are some solutions:

First, invest in training and development.

Organize training courses and programs related to economic management, economic policies, and economic leadership. These training courses can include both basic and in-depth knowledge of economics, financial management, enterprise management, accounting, and business strategy. Ensure that the training courses are designed to be relevant to the reality and needs of the locality. Particularly, emphasize the cultivation of historical and cultural knowledge, professional expertise, and practical skills in economic management, state management, social management, science and technology, foreign languages, and computer literacy. The training and development should be closely linked to the functions and tasks of key district-level officials, enabling them to have the competence, knowledge, experience, and problem-solving skills to fulfill their assigned tasks and meet the economic and social development requirements of the locality.

Second, build networks and exchange experiences.

Promote the establishment of networks and the exchange of experiences among key district-level officials, as well as with other levels of management, businesses, research organizations, and experts. This can be done through organizing seminars, conferences, regular meetings, or establishing working groups to discuss and share experiences. This may involve sharing successes, failures, and lessons learned from practical cases, valuable insights, and effective management methods. Through these activities, the capacity to manage and plan the economy at the local level can be enhanced.

Third, harness self-motivation in enhancing economic management capacity

When key officials recognize the importance of economic management capacity, they tend to proactively enhance their own capabilities. Key officials should acquire knowledge, skills, and modern management tools. This will strengthen their ability to plan, implement, and evaluate local economic activities, thereby improving efficiency and productivity. At the same time, an appropriate mechanism should be in place to encourage continuous learning, self-improvement, and knowledge accumulation.

4. Conclusion

In the context of the strong development of the market economy in Vietnam, enhancing the economic leadership capacity of key district-level officials is an urgent requirement. While the team of key district-level officials is growing, there is still a need to strengthen their management capacity to meet the increasingly high demands of economic and social realities. Through measures such as investing in training and development, building networks and exchanging experiences, and harnessing self-motivation in enhancing economic management capacity, key district-level officials can become outstanding leaders capable of adapting to changes, making intelligent decisions, and providing strategic direction for the comprehensive development of the market economy in Vietnam. Only through relentless efforts and collective solidarity can we build a strong and sustainable market economy that contributes to the prosperity of the country.

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COMPLETE VALUE-ADDED TAX POLICY FOR E-TRADE ACTIVITIES TO INCREASE TAX COMPLIANCE ACTIVITIES OF TAXPAYERS

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Abstract

E-commerce transactions are taking place in an increasing number and increasingly complex, using intensive information technology (IT) applications, resulting in fraudulent acts. The payment of value added tax (VAT) of taxpayers (NNT) has created significant challenges for state management agencies, especially tax agencies. The framework of the article studies the factors affecting the VAT compliance behavior of taxpayers, thereby completing the VAT policy for e-commerce activities in order to create a favorable environment for this activity to develop and promote the trend. towards digital consumption in the economy and increase taxpayers' compliance with tax obligations.

Keywords: *e-commerce, policy, taxpayers, tax compliance behavior, value-added tax*

1. Introduction

In Vietnam, e-commerce activities have made strong progress with many models, participants and supply chains. Accordingly, e-commerce activities have contributed significantly to the commercial sector in particular and the economy in general. E-commerce increasingly asserts its role in promoting the digital economy, creating a favorable environment for the application of business models and becoming a new development trend in the future. Besides the benefits of e-commerce contributing to the economy, this activity also entails many challenges for state management agencies, including tax authorities. In all e-commerce transactions, VAT arises and this is considered the most difficult tax to manage because it arises between many participants, such as: state agencies, goods and service suppliers (HHDV) and consumers. Although in the initial stage, the tax authority has made certain moves in implementing management such as adjusting and supplementing a number of current tax laws as well as detailing in circulars and resolutions. specified in the VAT policy. However, these initial moves of the tax authorities have not yet met the strong development of e-commerce activities, the loss of VAT revenue in this business is still increasing continuously. There are many reasons leading to this situation and prominent among them is the sense of tax compliance of taxpayers. Thus, studying taxpayers' compliance with tax obligations to proactively improve VAT policies towards promoting e-commerce development and generating revenue for the state budget is essential in the current context.

2. Theoretical basis and research model

VAT management for e-commerce activities is influenced by many internal and external factors, which are:

(i) *Management of tax registration, declaration and collection.* Tax authorities manage tax registration, determine tax payable and tax collection of enterprises (tax declaration, tax payment, tax assessment, tax refund, tax exemption, tax reduction and other contents related to tax collection). The better and more efficient management of tax registration, declaration and collection, the better the quality of tax services. Therefore, the study hypothesized the following:

Hypothesis H1: Tax registration, declaration and collection management has a positive impact on tax service quality.

(ii) *Technology application in VAT management for e-commerce activities.* E-tax will support tax authorities' management processes, including system workflow and electronic information recording management, information management, and automatic risk analysis to assess the level of risk. reliability of tax returns (Makolm and Orthofer, 2007). The application of technology in tax administration brings many important benefits such as reducing administrative costs and tax compliance costs, increasing service quality for taxpayers and preventing corruption (OECD, 2010). The application of technology in the tax industry can also reduce taxpayer resistance to the tax system and can increase their tax compliance (Schaupp et al., 2010). Research results of Gerger et al (2014) show that taxpayers believe that applying technology will help reduce errors in tax administration and improve the quality of tax services. From that, it can be understood that the more effective the application of technology in tax administration, the more convenient it will be for taxpayers in complying with tax procedures, as well as enhancing the ability to manage taxes, limiting the taxpayers' risk of non-compliance. Therefore, on that basis and inheriting previous research results, the research hypothesizes:

Hypothesis H2: Technology application in VAT management has a positive impact on tax service quality

(iii) *Tax inspection and examination.* There are many studies on the influence of factors related to tax inspection and examination on the quality of tax services and the effectiveness of tax administration. Research results of Kamdar (1997) show that tax compliance of enterprises has a positive relationship with the rate of likelihood of being subject to tax inspection. Studies by Marrelli and Martina (1988), Gordon (1990), Cremer and Gahvari (1993), and Joulfaian (2000) show that the ability to be tested is negatively related to tax evasion. According to Marrelli and Martina (1988) and Gordon (1990), firms evade taxes less if the rate of tax audit is high. The research model of Wang and Conant (1988) gives the results that a high rate of tax inspection reduces the level of tax evasion of enterprises. On the other hand, some studies show that the level of tax compliance decreases immediately after the taxpayer is first inspected, and then the level of compliance increases again (Guala and Mittone, 2005). In general, many previous research results show that the

increased likelihood of tax inspection will increase the quality of tax services, thereby increasing the awareness of enterprises (Kirchler, 2007). Inheriting from previous research results, the study builds the following hypothesis:

Hypothesis H3: Tax inspection and examination have a positive impact on tax service quality

(iv) *VAT payment support services.* Support is when an organization or individual helps to add to another organization or individual a certain amount of resources so that the organization or individual receiving the support can achieve the desired results. In tax collection management activities, tax collection management agencies support taxpayers, which is understood as additional help for taxpayers to properly understand, fully understand and timely understand the provisions of tax law; at the same time, helping taxpayers master the skills of tax calculation, tax declaration and procedures related to tax payment and tax finalization. In other words, supporting taxpayers is the task of providing specific guidance on Tax Laws, providing and answering questions about the procedures and contents of taxes for taxpayers so that they can comply and perform well. tax policy of the State in each period. On that basis, the author proposes the following hypothesis:

Hypothesis H4: Support to pay VAT has a positive impact on tax service quality

(v) *Tax service quality.* Ott (1998) argues that tax administration in modern society needs to provide services to citizens and the process is increasingly specialized. Ott (1998) also concludes that the goal of any tax administration system is to provide better services to taxpayers. According to research by author Parasuraman (1988, 1991) shows that: service quality includes 05 components: empathy, reliability, tangible means, service capacity, responsiveness; and all these five components have a direct impact on service quality. According to Bird (2003), an effective tax management system should consider taxpayers as “customers”. Tax administration makes it easy for taxpayers to comply with taxes including factors such as improving service to taxpayers by providing clear instructions, providing easy-to-understand return forms, and providing information report, help them when needed. OECD (2004) identifies common services that tax authorities provide that can be classified into three categories, including informational, interactive, and transactional. In which transaction is considered the most important service, information and interaction services are only used to support transaction services. According to research by Feld and Frey (2006), the way tax authorities provide services to taxpayers affects their sense of tax compliance. Torgler (2007) argues that the willingness of taxpayers to cooperate with tax authorities will increase if tax authorities consider themselves to be service providers, providing quality services and treating them as service providers. with taxpayers as its partner. The OECD (2010) has a similar view. Tax authorities in many countries such as Australia, France, Switzerland, the United Kingdom and the United States have restructured their approach to taxpayers by paying more attention to their tax service needs and viewing them as customers (Kirchler, 2007). Therefore, on that basis and inheriting previous research results, the author develops the hypothesis:

Hypothesis H5: Tax service quality has a positive impact on corporate consciousness

(vi) *Communication on VAT collection for business activities generating e-commerce revenue.* Communication is one of the important factors contributing to the quality of tax services. The more attention is paid to communication, the higher the quality of tax services will be. In addition, tax communication is the content of Tax Administration, which is prescribed in the Law on Tax Administration of Vietnam. Tax offices are responsible for propagating, disseminating and guiding tax laws; publicize tax procedures at the head office, the website of the tax authority and on the mass media; responsible for explaining and providing information related to the determination of tax obligations to taxpayers. Especially in e-commerce activities, there are many peculiarities. Therefore, the more the tax authorities diversify forms of propaganda, the higher the tax compliance awareness of enterprises. On that basis, the author proposes the following hypothesis:

Hypothesis H5a: Communication on VAT collection has a positive impact on tax service quality

Hypothesis H5b: Communication about VAT collection has a positive impact on corporate consciousness

(vii) *Characteristics of VAT collection for e-commerce activities.* Factor Tax collection characteristics have been used in many research models on factors affecting taxpayer's consciousness. Research results of OECD (2004), Nguyen Thi Le Thuy (2009), Noor et al (2014) show that tax collection characteristics have a positive influence on the consciousness of taxpayers. E-commerce activities take place in cyberspace, so the management of tax collection for this activity is more complicated than in traditional business forms. Therefore, based on the characteristics of tax collection management for e-commerce, it helps tax authorities not only control revenue sources but also create conditions to support businesses with revenue from e-commerce activities to have a development environment, improve their sense of tax compliance. The research hypothesis is put forward as follows:

Hypothesis H6: The characteristics of VAT collection for e-commerce activities have a positive influence on the awareness of enterprises

(viii) *Handling of violations of the VAT law for e-commerce business activities.*

There are many researchers who have conducted research on the relationship between the level of tax compliance of enterprises and the level of penalties for tax violations. However, the research results on the relationship between fines and tax awareness are not always the same. According to Marrelli and Martina (1988), Wang and Conant (1988), Gordon (1990), firms evade taxes less if the fines for compliance violations are high. Some studies show that fines have little impact on tax compliance consciousness (Friedland et al., 1978; Park and Hyun, 2003). However, the research results of Virmani (1989) show that the rate of tax evasion can increase as the penalty for tax violations increases. Virmani (1989) argues that businesses deal with the penalty for violations by declaring a decrease in taxable revenue, in order to reduce the possibility of tax inspection, that is, increasing the level of penalty for violation makes the level of tax evasion more difficult, more tax fraud. Meanwhile, research

by Kamdar (1997) did not find evidence to show a relationship or impact between the level of fines and the sense of tax compliance of business subjects. Several studies confirm the view that fines have a stronger impact on tax compliance awareness if combined with a high rate of tax audits (Alm et al., 1995). Therefore, on that basis and partially inheriting previous research results, the hypothesis is put forward as follows:

Hypothesis H7a: Handling of violations of the law on VAT has a positive impact on the consciousness of enterprises with e-commerce revenue.

Hypothesis H7b: Handling violations of the law on VAT has a positive impact on the tax compliance behavior of enterprises with e-commerce revenue.

(ix) *Consciousness of enterprises.* The awareness factor of enterprises is also a factor used in many research models on factors affecting tax compliance of taxpayers. Research results of Bordignon (1993), Falkinger (1995), OECD (2004), Kanybek (2008), Nguyen Thi Le Thuy (2009), Dang Thi Bach Van (2014), Noor et al (2014), Bui Ngoc Toan (2017) shows that corporate awareness has a positive influence on tax compliance of taxpayers. On the basis of inheriting previous research results, the author develops the hypothesis:

Hypothesis H9: Enterprise awareness has a positive influence on tax compliance behavior of enterprises with e-commerce revenue.

On the basis of inheriting theories, empirical studies, results of interviews with experts and representatives of enterprises, and the research objective is to determine the factors affecting tax compliance behavior of enterprises with high tax compliance. In e-commerce business, the proposed research model is as follows:

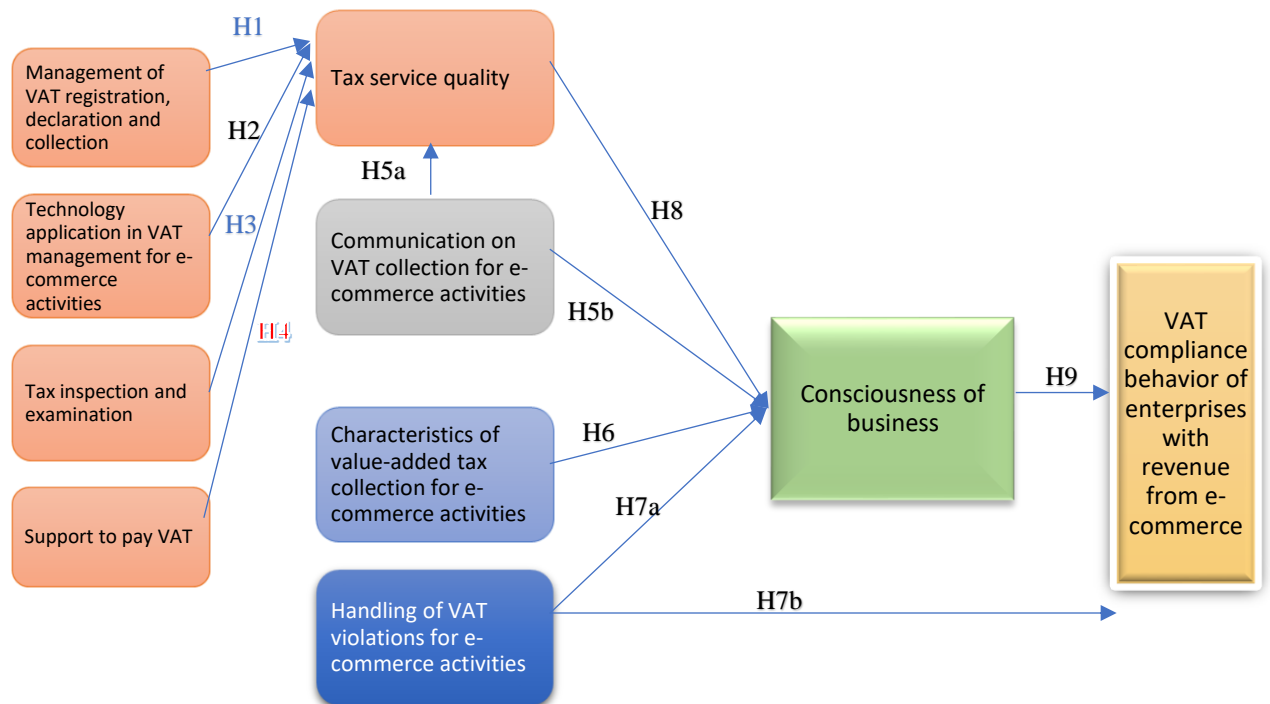


Figure 1. Proposed research model

Source: Study author's proposal

3. Method

This study consisted of two main steps: (1) preliminary research and (2) formal research. Preliminary research using qualitative and quantitative methods. The study formally used a quantitative method. The unit of analysis is the corporate taxpayer. The object of the study is an enterprise that generates e-commerce revenue in Hanoi and Ho Chi Minh City. To ensure the effectiveness of the questionnaire, the author conducts a test by sending the questionnaire to experts who specialize in tax research, including scientists and tax officials (10 specialists). countries) and e-commerce businesses with large turnover in Hanoi (10 enterprises). The main purpose of the pilot study is to ask respondents how well they understand the questions, and at the same time ask for their opinions on the content of the questionnaire and other comments to revise and improve the questionnaire in order to improve the quality of the questionnaire. survey efficiency. After the pilot test, the author made necessary adjustments and modifications to ensure the meaning of the question. At the official research stage, the author uses google form and mail tools to send survey questions to e-commerce businesses in Hanoi and Ho Chi Minh City.

Sample selection is very important in determining the quality of a scientific study. According to author Yates et al. (2003), the research sample is a collection of members representing a population obtained through different selection methods for the purpose of collecting scientific research information. According to author Smith (1993), sample surveys are often asynchronous, but researchers still have to choose a suitable and large enough sample size for the study to be representative of the population. According to Hair et al. (1998), the minimum sample size given is 5 times the total number of observed variables. In this study, we have 58 observed variables, so if we use the exploratory factor analysis (EFA) method, calculated according to the 5-fold principle according to Hair et al (1998), the minimum sample size is 290 factors. According to authors Tabachnick and Fidell (1996) the minimum sample size for multivariate regression is $50 + 8 \times m$ (m is the total number of independent factors), so based on this formula we have $50 + 8 \times 7$ (7 independent factors) = 106 observations. According to authors Hoang Trong and Chu Nguyen Mong Ngoc (2008), the minimum sample rate in the study is 4 to 5 times higher than the total observed variables. According to the research of Cormrey and Lee (1992), there are some views corresponding to the sample size in the study as follows: From 1,000 samples or more is excellent; 500 samples is great; 300 samples is good, 200 samples is rather good. Therefore, for a questionnaire with 58 observations, the sample size is 577.

However, due to time and budget limitations when implementing the research topic, the author followed the convenient sampling method by directly interviewing the survey subjects with the official questionnaire and sending the questionnaire to the respondents. Survey questions via email, Google form tool. In order to increase the generality of the research results, before selecting a random sample, the author selects a sample list based on the percentage of state budget contributions of e-commerce businesses in Hanoi and Ho Chi Minh City. After 6 months of survey, with 650 votes distributed, after screening, cleaning and eliminating, the author obtained 577 survey questionnaires corresponding to 88.8% qualified for analysis and valid questionnaires reach the required sample size for the study.

4. Results

a. Check the reliability of the scale

In the research, the author has built scales that reflect the factors. Re-checking the reliability of the scale to remove the indicators that are not really consistent with reality. The results are shown in Table 1 below:

Table 1. Results of testing the reliability of the scale

Symbol	Variable - Sum correlation	Cronbach's Alpha if no variable
Management of VAT registration, declaration and collection $\alpha = 0,886$, N = 4		
QLT1	0,799	0,837
QLT2	0,829	0,823
QLT3	0,617	0,906
QLT4	0,774	0,844
Technology application in VAT management for e-commerce activities $\alpha = 0,952$, N = 5		
UDCN1	0,835	0,946
UDCN2	0,898	0,935
UDCN3	0,864	0,941
UDCN4	0,879	0,939
UDCN5	0,860	0,942
Tax inspection and examination $\alpha = 0,946$, N = 4		
TTKT1	0,885	0,925
TTKT2	0,881	0,926
TTKT3	0,857	0,935
TTKT4	0,864	0,932
Support to pay VAT $\alpha = 0,872$, N = 5		
HTNT1	0,771	0,829
HTNT2	0,815	0,817
HTNT3	0,501	0,900
HTNT4	0,708	0,843
HTNT5	0,750	0,832
Communication on VAT collection for e-commerce activities $\alpha = 0,918$, N = 4		
TTTT1	0,821	0,890
TTTT2	0,851	0,879
TTTT3	0,779	0,904
TTTT4	0,795	0,899

Symbol	Variable - Sum correlation	Cronbach's Alpha if no variable
Characteristics of value-added tax collection for e-commerce activities $\alpha = 0,886$, N = 5		
DDTT1	0,686	0,870
DDTT2	0,739	0,858
DDTT3	0,754	0,854
DDTT4	0,681	0,871
DDTT5	0,760	0,853
Handling of VAT violations for e-commerce activities $\alpha = 0,927$, N = 6		
XLVP1	0,679	0,927
XLVP2	0,826	0,908
XLVP3	0,807	0,910
XLVP4	0,858	0,903
XLVP5	0,842	0,906
XLVP6	0,713	0,923
Tax service quality $\alpha = 0,953$, N = 5		
CLDV1	0,869	0,942
CLDV2	0,874	0,941
CLDV3	0,892	0,938
CLDV4	0,838	0,947
CLDV5	0,874	0,941
Consciousness of business $\alpha = 0,933$, N = 5		
YTDN1	0,791	0,925
YTDN2	0,790	0,926
YTDN3	0,823	0,918
YTDN4	0,879	0,909
YTDN5	0,848	0,914
VAT compliance behavior of enterprises with revenue from e-commerce $\alpha = 0,922$, N = 5		
TTT1	0,823	0,899
TTT2	0,733	0,917
TTT3	0,832	0,897
TTT4	0,869	0,890
TTT5	0,740	0,917

Source: The author checked the data using SPSS software

Thus, the results of testing the reliability of the factor scale show that the conditions of a good scale are satisfied. Cronbach's Alpha coefficient is greater than 0.7, all observed variables have a total correlation coefficient greater than 0.3. In other words, the observed variables are used to measure the necessary reliability scales for use in the research.

b. Exploratory factor analysis

The analysis results after excluding observed variables that converge to other theoretical factors but are not appropriate (QLT4, HTNT3) in terms of internal values show that observed variables converge into 9 main components as shown in Fig. theoretical model. KMO coefficient > 0.5 (0.932), explanatory variance is greater than 50% (78.918%), the factor loading coefficients of the main components are all greater than 0.5. This shows that using exploratory factor analysis is appropriate. The measurement structure of the factors established from the observed variables is the same as the theoretical model without adjustment.

The analysis results with the dependent variable VAT compliance behavior of enterprises with e-commerce revenue show that the KMO coefficient > 0.5 (0.876), Bartlett test has statistical significance (p-value < 0.05), observed variables have factor loading coefficient greater than 0.5, explanatory variance greater than 50% (76.484%). The observed variables converge to a single factor. This shows that using exploratory factor analysis is appropriate.

Observed variables	Main factor
	Factor loading coefficient
TTT4	0,922
TTT3	0,897
TTT1	0,892
TTT5	0,830
TTT2	0,828
KMO	0,876
TVE (%)	76,484
p-value	< 0,001

c. The analysis results confirm the factor

The data is further tested by confirmatory factor analysis to assess the appropriateness of the model with experimental data. Confirmatory factor analysis with measurement models was used to assess the appropriateness between the theoretical model and the collected data. The results of the model analysis are presented below:

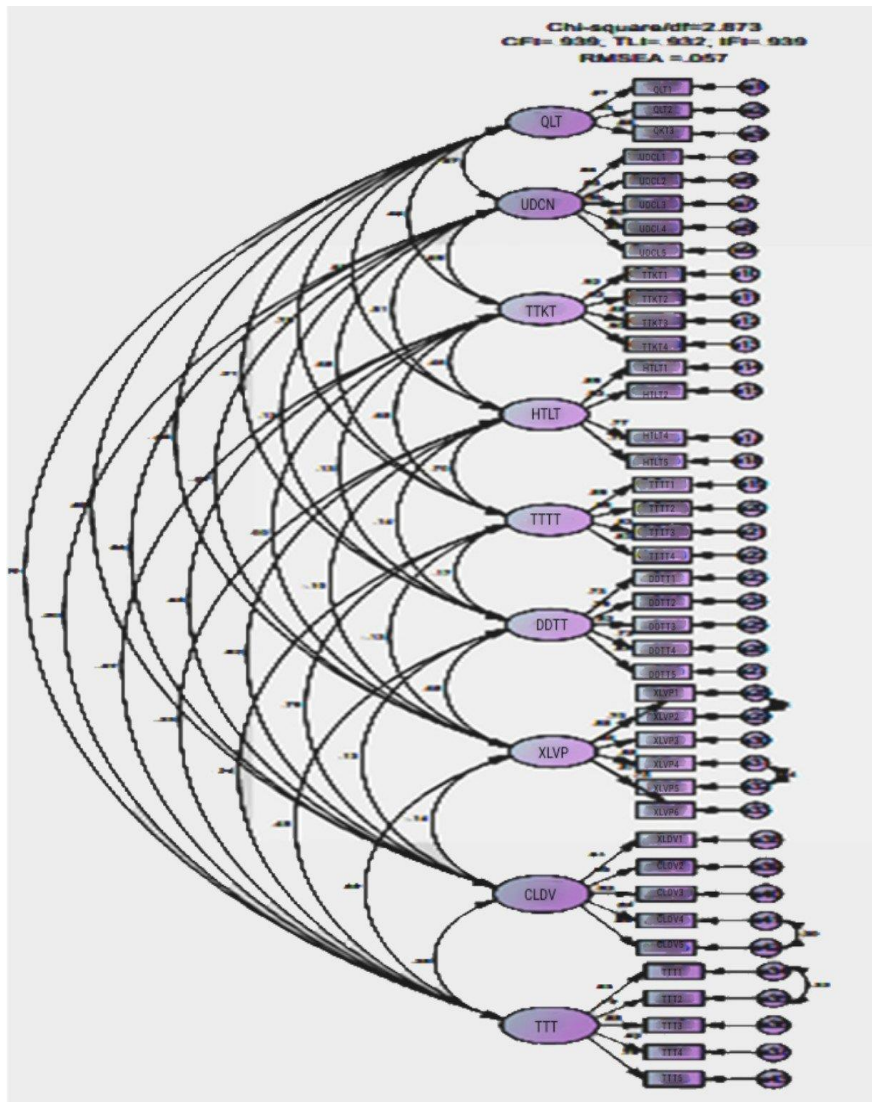


Figure 2. Results of confirmatory factor analysis with variables

Source: Author's calculations with the support of AMOS software

The results of confirmatory factor analysis with variables show that the model is compatible with actual data: Chi-square/df = 2.873 < 3, CFI = 0.939, TLI = 0.932, IFI = 0.939 are all greater than 0.9, and RMSEA = 0.057 (Figure 2)

The analysis results also show that the factor weights of the observed variables in each research concept are greater than 0.6, showing that the scales reach the convergent value. The combined reliability coefficients greater than 0.7 and the mean extracted variance greater than 0.5 show that the research concepts in the model have the necessary reliability (table 3).

d. Structural model and testing of research hypotheses

To test the research hypotheses, the thesis uses analysis by linear structural model (SEM). The analysis results show that the proposed research model is compatible with actual data: Chi-square/df = 2.879 is less than 3, CFI = 0.922; TLI = 0.917; IFI = 0.923 are all greater than 0.9, RMSEA = 0.057 is less than 0.08 (Figure 3)

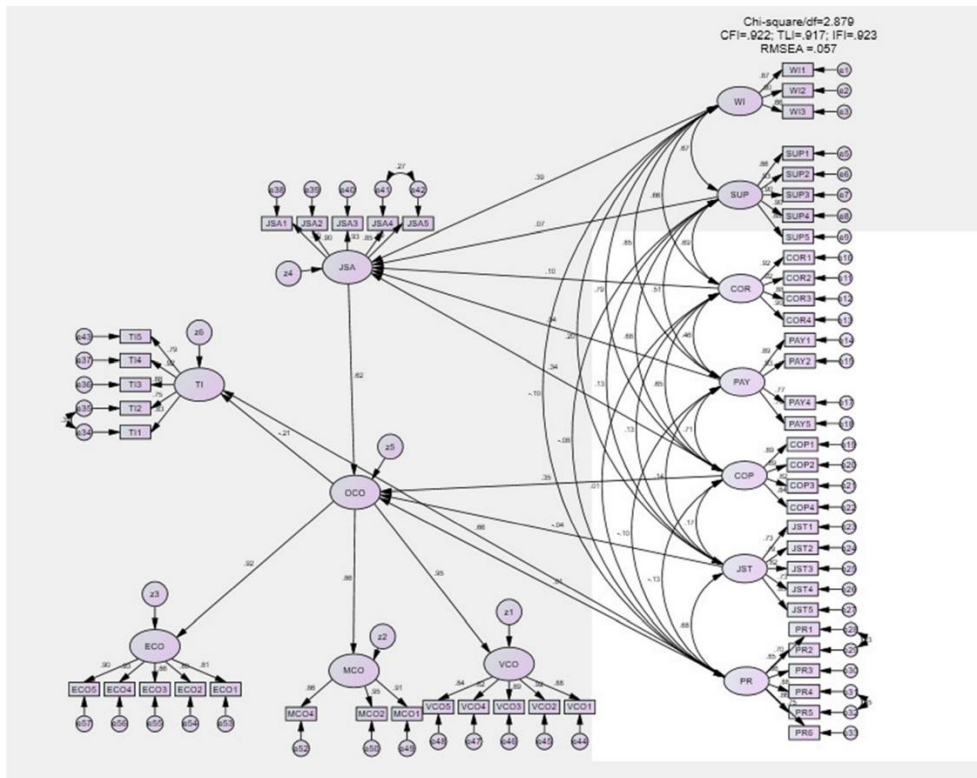


Figure 3. The analysis results of SEM model

Source: Author's calculations with the support of AMOS software

The estimated results show that the relationship that is not supported in the model is the relationship between the characteristics of VAT collection on e-commerce activities and the awareness of enterprises (p-value = 0.168 > 0.05). 5). Thus, hypotheses H1, H2, H3, H4, H5b, H7b, H8, H9, H5a, H7a are accepted and hypothesis H6 is rejected.

Table 2. Estimation results by linear structural equation

Relations between variables			Standardized Beta coefficient	S.E.	C.R.	p-value
QLT	----->	CLDV	0,125	0,066	2,107	0,035
UDCN	----->	CLDV	0,147	0,033	3,867	< 0,001
TTKT	----->	CLDV	0,142	0,042	3,38	< 0,001
HTNT	----->	CLDV	0,119	0,042	2,821	0,005
TTTT	----->	YTDN	0,344	0,036	9,308	< 0,001
TTTT	----->	CLDV	0,024	0,048	2,589	0,01
DDTT	----->	YTDN	-0,033	0,024	-1,38	0,168
CLDV	----->	YTDN	0,630	0,041	15,771	< 0,001
XLVP	----->	TTT	0,660	0,062	13,534	< 0,001
XLVP	----->	YTDN	0,383	0,055	6,991	< 0,001
YTDN	----->	TTT	0,546	0,056	10,376	< 0,001

Source: Author's calculations with the support of AMOS software

5. Discussion and conclusion

- The sanctioning factor for VAT law violations for e-commerce activities has the greatest influence on the VAT compliance behavior of e-commerce enterprises with a standardized Beta coefficient of 0.660. That means that if the management and sanctioning of violations of the VAT law is strengthened and improved, the VAT compliance behavior of enterprises will also be correspondingly improved. In order to strengthen the sanctioning of tax law violations, a number of policy implications can be made, including: (i) the need for clear guidance on the assessment of circumstances to apply reasonable fines ; (ii) it is necessary to handle or coordinate to completely and comprehensively handle related tax issues, limit the handling of many times, many times, which is ineffective and psychological and takes time for enterprises. ; (iii) it is necessary to take advantage of technology applications (management software, electronic tax data,...) to promptly detect violations and improve objectivity in handling violations.; (iv) monitoring and statistics on the compliance status of enterprises that have been sanctioned, the possibility of recidivism and the level of compliance with tax laws of enterprises to serve as a basis for reference to the next management steps to be appropriate. fit.

- The factor of tax service quality affects the awareness of e-commerce enterprises with a standardized Beta coefficient of 0.630. This factor has the same effect and the second largest influence in the research model. When the quality of tax services is more appreciated by enterprises, the sense of compliance with tax obligations of enterprises will increase accordingly. In order to improve the quality of tax services, tax authorities need to: (i) focus on building and renovating their offices and working equipment to be advanced, modern and synchronous; (ii) conduct specific research, regularly survey and discuss with enterprises to understand their needs, especially newly established enterprises.

- Factor's awareness affects the VAT compliance behavior of e-commerce businesses with the third largest standardized Beta coefficient of 0.546. This shows that when the awareness of enterprises increases, their VAT compliance behavior also increases. In order to increase the awareness of businesses, it is necessary to improve the quality of tax services, especially propaganda to support taxpayers to grasp and understand new tax laws, circulars and decrees, simplify tax procedures.

- Media factor of VAT collection affects the consciousness of e-commerce enterprises with the fourth largest standardized Beta coefficient of 0.344. This factor has the same effect as the awareness of enterprises, that is, when the communication of tax collection increases, the awareness of enterprises is also raised. From there, the policy implications of improving the communication factor for VAT collection are proposed, including: (i) diversifying forms of propaganda, suitable for each group of taxpayers; (ii) it is necessary to add detailed instructions, explanations, specific regulations, reference situations so that enterprises can better understand the regulations and know how to apply them appropriately; (iii) develop business support services through cooperation mechanisms with organizations and individuals outside the tax authority, the tax intermediary system, especially tax agents; (iv) Tax officers need to have solid tax law knowledge, experience in tax law enforcement, a complete reference library system to promptly support businesses when they encounter problems.

- The factor of technology application in tax administration affects the quality of tax services with a standardized Beta coefficient of 0.147. This is the 5th most influential factor and has the same direction as the quality of tax services. When increasing the application of technology in VAT management, the quality of tax services will also be improved. Tax authorities need to build a complete, accurate, centralized and unified taxpayer database nationwide; Developing IT applications in tax administration activities with high integration and automation, closely associated with the process of reforming tax administrative procedures and applying electronic tax; building IT technical infrastructure, advanced, modern and synchronous equipment.

- Tax inspection and examination factors affect the quality of tax services with a standardized Beta coefficient of 0.142. This is the sixth most influential factor in the same direction as the quality of tax services. When tax inspection and examination work is enhanced, the quality of tax services will also be improved. Issues that need to be focused on to strengthen tax inspection and examination for enterprises include: (i) improving the quality and sense of responsibility and professional ethics of the contingent of inspection and audit civil servants. tax investigation; (ii) apply risk management methods in all stages of inspection and inspection; (iii) comprehensively renovate inspection and examination activities in the direction of uniformity, modernity and regularity; (iv) it is necessary to have alignment and unification, to avoid the cases of inspection and examination with the same age and content.

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DISCUSSING ABOUT THE LEGISLATION ON PERFORMANCE OF CONTRACT WHEN THE CIRCUMSTANCES BASICLY CHANGE IN VIETNAM

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Abstract

This article analyzes the characteristics of the changing circumstances and clarifies this concept, showing that it is an important legal-economic phenomenon that needs to be thoroughly adjusted in the contract law in Vietnam. The conditions for determining the circumstances of fundamental change are also discussed. Thanks to the comparative jurisprudence method, the evaluation of the contractual legal framework on this issue is also analyzed. The article analyzes the provisions of The Civil Code 2015 on contract performance when the circumstances change fundamentally. The condition determines the fundamental change of circumstances with the causes and timing of the change of circumstances; unpredictability of changing circumstances; circumstances change dramatically; The obligation to repair damage is carefully analyzed and evaluated. Besides, the issue of renegotiation and dispute settlement authority and consequences of unsuccessful negotiation are also carefully studied. On the basis of comparison with the Unidroit Principles on international commercial contracts, the European Code of Contract Law and the regulations of some typical countries, the author draws valuable comments about The current legal situation of Vietnam serves as the basis and foundation for the improvement of the law.

Keywords: *legal status, basic changing circumstances; contract performance, contract*

1. Introduction

Contracts are always the central institution in the civil legal system in general and commercial business in particular. The purpose of contract law is to protect the free of the parties. A legally concluded contract is binding on the parties, and the parties must respect and perform it. However, in the process of implementing contracts, especially long-term contracts, traders may cope with unusual risks from nature, society, economy, politics, and people... which can make the performance of obligations extremely difficult, even

impossible. In such events, not all events are force majeure events for which the aggrieved party can be discharged from obligations or terminate the contract, but are subject to a fundamental change of circumstances for the purpose of the party modifies the contract so that the contract can be continued and tries to maintain a balance of interests for both parties.

Performance of a contract when there is a fundamental change in circumstances is first explicitly recorded in The Civil Code 2015. In legal practice, there have also been disputes regarding the requirement to adjust the contract when circumstances change but the lack of legal provisions has caused many difficulties in the settlement process. In international commercial practices and the laws of certain countries, there are provisions on contract adjustment when the circumstances change fundamentally. However, this provision is also not understood and applied in the same way in different countries, so it becomes even more urgent to learn about this provision to learn from experience for Vietnam.

2. Method

This study used descriptive, analytical, commentary and comparative jurisprudence methods.

3. Results

3.1. Circumstances have changed fundamentally

A fundamental change in circumstances is an objective event that occurs beyond the expectations of the parties when entering into a contract, which makes the performance of the contract extremely difficult or seriously unbalances the interests of one party. or the contract is no longer meaningful if the contract continues to perform as originally committed. The changing circumstances have the following characteristics:

First, the contract is materially affected by a substantially or substantially changed circumstances. Because, the principle of pacta sunt servanda (immutable validity) is one of the basic principles of contract law. Respect for the agreement entered into as a supreme principle. Only when a very substantial change in circumstances occurs, which could be a change in circumstances that would seriously unbalance the interests of the parties to the contract or make the performance of the contract too difficult, only then will the contract be considered for adjustment.

Second, the event creating the changed circumstances must have occurred or become known only after the conclusion of the contract. If the event has happened or is known in advance, it means that the parties have accepted the possible consequences and must accept the disadvantages brought about by the circumstances.

Third, the parties cannot reasonably anticipate the change of circumstances at the time of entering into the contract. That is, the event that changes the circumstances affecting this contract is not recognized by the parties in the contract or expected by the parties at the time of signing. This event was unexpected for both sides. Unforeseeable must be reasonable because there are contracts that by its nature have inherent risks that cannot be said to be unforeseen, such as participating in trading on the stock market, entering into contracts with other investors. co-insurance...

Fourth, the disadvantaged party does not deserve to suffer such heavy losses. Or it can be said that the consequences are so great that, if known in advance, the contract has not been concluded or will be concluded with completely different content.

3.2. Conditions for determining the circumstances of fundamental change

The application of the variable circumstances clause is very limited because its application is an “exception” to the principle of binding validity of the contract. When circumstances change, the Court will first consider the “traditional” provisions, such as the force majeure clause, consider the fault of the parties, consider the interpretation of the contract... to apply. And only when none of the “traditional” terms are satisfied does the “exceptional” clause be considered as the circumstances of a fundamental change. Therefore, the conditions for determining the situation of fundamental change are also very strict. Accordingly, the basic conditions for identifying changing circumstances include: the cause and timing of the change in circumstances, the unpredictability, the extent of the change, and the affected party's willingness to remedy the consequences. benefits, particularly:

3.2.1. Causes and timing of changing circumstances

Point a, Clause 1, Article 420 of The Civil Code 2015 stipulates: “The change of circumstances due to objective causes occurs after the conclusion of the contract”. Circumstance change is essentially a flexible legal term because it occurs in different forms, so it is not possible to list all the situations that are said to be changed circumstances. Anyway, the circumstances considered difficult are usually: performance of the contract would jeopardize the safety of persons or property; increased risk of financial ruin of the debtor; opportunity costs; windfall gains; the futility of purpose¹. Some of the facts listed by the International Chamber of Commerce (ICC) in the model terms of the substantive change of circumstances can be referenced²:

War (whether declared or not), military conflict or threat of similar occurrence (including but not limited to counterattack, siege, military embargo), hostilities, invasion, hostile action, total military mobilization;

Civil war, rebellion, military force or appropriation, rebellion, chaos or civil disorder, violence, acts of civil disobedience.

Acts of terrorism, vandalism or robbery.

The act of a competent authority, whether legal or not, law or order, rule, regulation, government directive, curfew, expropriation, requisition, nationalization;

Acts of God, plagues, natural disasters such as hurricanes, tornadoes, hurricanes, tornadoes, blizzards, earthquakes, volcanic activity, landslides, tidal waves, tsunamis, floods, damage or destruction by lightning, drought;

¹ Daniel Girsberger and Paulius Zapolskis (2012), “Fundamental alteration of the contractual equilibrium under hardship exemption”, https://www.mruni.eu/upload/iblock/434/7_Girsberger.pdf, accessed 28/02/2021

² ICC Force Majeure Clause 2003/ICC Hardship Clause 2003, *ICC - International Chamber of Commerce (blog)*, accessed August 29, 2018, <https://iccwbo.org/publication/icc-force-majeure-clause-2003icc-hardship-clause-2003/>.

Explosion, fire, destruction of machinery, equipment, plants or any type of installation, prolongation of transit time, telecommunications or electrical currents;

General labor disturbances such as boycotts, strikes, factory closures, labor strikes, occupation of factories and facilities. The events listed above are not only economic fluctuations but also include political and legal factors...

The change of circumstances must be due to objective reasons. The Civil Code does not stipulate how objective causes are to be understood, but usually, *“this objective factor is assessed in relation to the contract performer. In order to be considered an objectively occurring event, it must pass the control of the party that has to perform the contract and as such it can be a natural event such as a natural disaster but can also be caused by humans. perpetrated by the act of a third person”*³. For the parties in the contract, objective causes are causes beyond the awareness of the parties when entering into the contract, such as natural disasters, wars, great fluctuations in the socio-economic situation, etc. determining whether those causes are objective or not need to stand on the point of view of an ordinary person in that situation being aware of a certain event that will happen or not. If the answer is no, the fact is considered objective to the parties to the contract.

In most countries, the conditions for identifying the changing circumstances are basically objective. If the parties are aware, it is no longer considered objective. Because, if aware, the parties have foreseen in the contract or will agree with other terms or the law on errors is also prescribed. Therefore, only when circumstances are due to objective causes can this condition be taken into account. Particularly for Germany, this cause includes both objective circumstances and subjective factors (see Article 313)⁴. To explain this, it can be explained that the German civil law only regulates confusion caused by one party's fault, but there is no law on confusion of both parties when entering into a contract. So maybe this is a supplement to that absence⁵.

The time when such objective circumstances must occur after the conclusion of the contract is considered as the fundamental change of circumstances. This is explained in the same way as above, the applicable law will be the law of fault because the affected parties or parties have "ignored" it, so it will not be determined as a fundamental change in circumstances. In The 2015 Scientific Comment on Civil Code, the author said that *“the time of the change of circumstances is after the parties have entered into the contract, because if it happens before or at the time of entering into the contract, it is mandatory for the parties to enter into the contract. must be aware to agree on the content of the contract or not to establish a contract to ensure each other's interests”*⁶. The question is, if the changed

³ Do Van Dai (2017), *Law on Contracts of Vietnam and Judgment Comments*, Part 2, Hong Duc Publishing House - Vietnam Bar Association, p.517-518.

⁴ The Civil Code of Germany 2002 (modify), <http://www.fd.ulisboa.pt/wp-content/uploads/2014/12/Codigo-Civil-Alemao-BGB-German-Civil-Code-BGB-english-version.pdf>, accessed 12/07/2021.

⁵ Hondius Ewoud (2011), *Unexpected Circumstances in European Contract Law*, Cambridge University Press, p.651.

⁶ Nguyen Van Cu, Tran Thi Hue (2017), *The 2015 Scientific Comment on Civil Code of Vietnam*, People's Public Security Publishing House, p.635.

circumstances happened before the parties entered into the contract but both parties did not know, is it considered that the circumstances occurred after the contract was concluded? If the event has happened and the parties are still in agreement, can it be considered a mistake/mistake of one or both parties.

Referring to the PICC, according to comment at Point a, Paragraph 1, Article 6.2.2 of the PICC⁷ on “*events occurring or known after the conclusion of the contract*”, “*events causing hardship must have occurred or been caused by the affected party.*” *known disadvantage after the conclusion of the contract. If the disadvantaged party had known of the above facts at the conclusion of the contract, they could have reviewed the contract at the time of conclusion and then they could no longer invoke hardship.*” Thus, the PICC determines not only the time “after the conclusion of the contract” but also the time “known after the conclusion of the contract”. Similarly, the law of North America, England⁸ also follows this view while the law of Italy, the event must not exist at the time of conclusion even if the circumstances occurred at the time of conclusion but the parties do not know. German law like Vietnam only recognizes changing circumstances that occur after the conclusion of the contract. The Law does not refer to the time, but only to “unforeseen at the time of the contract” (Article 1195). As such, different countries also have different regulations, fundamentally changing circumstances may occur before, during or after the conclusion but the parties do not know or cannot know⁹. Unlike the provisions of some other laws, Vietnam stipulates that the cause must be objective and the time when the change of circumstances occurs is after the conclusion of the contract. French law does not refer to the time, but only to “unforeseen at the time of conclusion”¹⁰ (Article 1195). As such, different countries also have different regulations, fundamentally changing circumstances may occur before, during or after the conclusion but the parties do not know or cannot know. Unlike the provisions of some other laws, Vietnam stipulates that the cause must be objective and the time when the change of circumstances occurs is after the conclusion of the contract.

3.2.2. Unpredictability of changing circumstances

Unpredictability is a prerequisite but perhaps the most difficult determining factor, because it is an internal subjective factor derived from the perception of the subject in the contract. According to Point b, Clause 1, Article 420 of the 2015 Civil Code, it is stated that “*at the time of entering into the contract, the parties cannot foresee the change of circumstances*”. Unforeseeability, or in other words, they cannot reasonably be accounted for or anticipated by the affected party. Unpredictability includes two aspects, that is, the unforeseeability of the event that will happen, and the unforeseeable consequences. Here,

⁷ Unidroit Principle of International commercial contract (2016), *International Institutes for the Unification of Private law (Unidroit)*, Rome, p.220

⁸ Mustapha Mekki, *Hardship and modification (or “revision”) of the contract*, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1542511 accessed 12/07/2021.

⁹ R.A Momberg Uribe (2011) “*The effect of a change of circumstances on the binding force of contracts - Comparative perspectives*”, truy cập tại <https://dspace.library.uu.nl/handle/1874/204792>, accessed 05/03/2021

¹⁰ French Civil Code (2006), https://www.trans-lex.org/601101/_/french-civil-code-2016/

unpredictability is understood as the parties could not have anticipated or could not have known about the changing circumstances at the time of entering into the contract. According to the above regulation, there are two things that need to be considered: what is unforeseeable and neither party nor parties can be unforeseeable.

Firstly, the unpredictability at the time of contract

Article 400 of The Civil Code 2015 stipulates that the contract is concluded at the time the offeror receives the acceptance to enter into the contract. The time of accepting the contract depends on the form of a verbal, written contract or a silent agreement as a response to the acceptance of the contract. Specifically, in case the parties have agreed that silence is the answer to accept the conclusion of the contract within a time limit, the time of entering into the contract is the last time of that time limit. The time of entering into a verbal contract is the time when the parties have agreed on the content of the contract. The time of entering into a written contract is the time when the last party signs the document or by another form of acceptance shown in the document. Where a contract is entered into orally and then in writing, the time of contract conclusion is the time when the parties have agreed on the contents of the contract. Disputes that require the application of changing circumstances are usually long-term and high-value contracts, so the parties will choose a written contract. It will be difficult to find oral contracts or silent agreements in these types of contracts because the provability of such forms of contracts is very weak.

The law stipulates that at the time of entering into a contract, the parties cannot anticipate changing circumstances. This can be understood that at the time of concluding the situation may not have happened or has happened but the parties could not have foreseen it. Circumstances that have not occurred are not difficult to prove, but events that have occurred that the parties did not anticipate in many cases are not easy to produce proofs. Predictability needs to be considered in the particular situation that a person in a similar situation would perceive. The assessment of the change of unforeseen circumstances should be considered based on the nature of the circumstances, the cognitive ability of the parties in the contract and in the absence of grounds to assess the perceptions of the parties, it is still must be based on the perception of an ordinary person in a similar situation.

So how to determine the predictability or unpredictability in a reasonable way. Although predictability is subjective, the assessment cannot be based on the opinion of the affected party. To assess whether the parties anticipate or not need to be based on many factors, such as the "quality of the subject, the type of contract, the nature of the contract, the market conditions surrounding it and the standards other similar standards." Accordingly, events under normal conditions must be excluded.¹¹ For example, contracts for buying and selling shares on the stock market, contracts for payment in foreign currencies (the exchange rate may change unpredictably)... The parties are forced to anticipate possible changes or in other words, foreseen but the disadvantaged party did not consider them so must be

¹¹ Nong Quoc Binh (2012), *Some theoretical and practical issues for force majeure clauses in international sale and purchase contracts*, Jurisprudence Journal No. 5/2012.

responsible for its own negligence. In many cases, even though the contract is volatile, it means that the parties must anticipate change. But not in all cases is not considered, because the change is unusual compared to the ability to predict. Therefore, when considering, it is also necessary to determine the contractual circumstances to determine the predictability. Foresight is not about anything that can be found but what is reasonable in the circumstances.

Unpredictability is one of the requirements encountered in most provisions of national and international law regarding the underlying circumstances. Unforeseeable can be understood as under the actual conditions at the time of signing the contract, the parties' inability to predict the circumstances will be changed. The point of note is that Point b, Clause 1 of Article 420 does not clarify whether the unforeseen but unreasonable is accepted as unforeseen or not. In order to evaluate the reasonableness of the unforeseen factor, it is necessary to base on the characteristics of the changed element, the nature of each type of contractual relationship, the contract's circumstances, etc. For example, often the main change is policies, laws of the state, or natural disasters such as tsunamis, earthquakes are unpredictable. However, fluctuations in exchange rates or inflation rates are not always considered to be unjustifiably unpredictable but depend on the characteristics of each type of contract. Thus, to determine whether a change is foreseeable or not needs to be based on many factors, not only the magnitude of the effect but also the circumstances at the time the parties signed the contract. to assess the reasonable extent to which the parties can anticipate.

Second, about the unpredictable subject

Another question is, is it not possible for the parties to the contract to anticipate the changing circumstances or is it just that one party does not anticipate? The author believes that it is reasonable to stipulate that the parties are not a party because if one party knows and still intentionally enters into a contract to the detriment of the other party, the applicable consequences may be that the contract is void. due to deception, not the underlying change of circumstances. Article 6.2.2 of the PICC holds that “*the disadvantaged party did not reasonably take such facts into account when entering into the contract*” refers to the fact that the disadvantaged party did not anticipate the changing circumstances. While PECL does not explicitly stipulate that one or the parties do not anticipate “*the possibility of a change in circumstances that cannot be reasonably foreseen at the time of entering into the contract*”. The same provision of The German Civil Law “*...the parties would not have entered into a contract or otherwise had entered into it if they had known of the change in advance*” also refers to the parties and The French Civil Law hidden subject “*if there is a change of circumstances that cannot be foreseen at the time of signing the contract...*”. In the UK, only one of the parties needs to anticipate. Referring to the above regulations, there are regulations specifying parties, regulations specifying disadvantageous parties, and regulations hiding the subject of unpredictability. But the common point is all about "unpredictability".

Vietnamese law only recognizes that unpredictability must come from both sides. “Impossible” here is understood to be unable to know and not obligated to know about the circumstances of the fundamental change. Because if it can be known or forced to know, this

situation is not called unforeseen. And if foreseen, the parties will have to foresee in the contract the changing circumstances or suffer the consequences due to the breach of contractual obligations prescribed by law. As such, unpredictability is an important condition for determining whether an event is a changing circumstance. Unforeseen must not be specified in the contract or expected by both parties. In order to evaluate the reasonableness of the unforeseen factor, it is necessary to base on the characteristics of the changing factor, the nature of each type of contractual relationship, the contract signing circumstances, etc. Normally, people will evaluate the validity of the contract. unforeseeable by listing events that can be considered unforeseeable or excluding cases that cannot be considered unforeseeable. Unpredictability must come from both parties to the contract and at the time of entering into it neither of the parties could have foreseen the changing circumstances. It can be seen that Vietnamese law does not have regulations or criteria on what is predictable or unpredictable.

3.2.3. *Circumstances changed dramatically*

Points c and Points d have the same criteria for assessing whether the situation is fundamentally changed or it can be said that the situation has changed significantly. Score c refers to the degree of change in circumstances and point d refers to the extent of damage. This change must be at what level to be considered a condition for identifying the situation of fundamental change. Point c, Clause 1, Article 420 of The Civil Code 2015 stipulates: *Circumstances have changed so much that if the parties had known in advance, the contract would not have been concluded or was concluded but with completely different contents.* The threshold of major change is defined quite abstractly as *"if it was known in advance, the contract would not have been concluded or was entered into but with completely different content"*. This condition is based on the will of the parties by making an "if" presumption. And the circumstances must be so "big" that the parties will not enter into or enter into other content. "In order to confirm whether the degree of change in circumstances is "big" enough, it is necessary to put the conclusion of the contract in a new context with the assumption that: with the changed circumstances, the parties will not enter into the contract because it is not to gain benefits, or to have benefits, the parties must agree on a completely different contract content; In addition, if the contract is continued to perform without any suitable modification of the contents, the party affected by the change of circumstances will suffer serious damage."¹²

Substantial change is not only reflected in the "significant" magnitude of the damage, but also in the extent of the damage that a party should not have suffered. What must be the extent of the damage to be able to be identified as an identifying factor in a fundamental change of circumstances? Point d, Article 420 of The Civil Code 2015 stipulates that *"Continuing to perform a contract without changing the contract content will cause serious damage to one party"*. Serious damage is also difficult to assess, because each case is

¹² Le Minh Hung (2010), *Validity of the contract in accordance with Vietnamese law*, Doctoral thesis in jurisprudence, Ho Chi Minh City Law University.

different, the extent is different, each type of damage is different, or each different subject is not the same. Usually, the way to assess damages is that the parties compare the results of performance under the contract and the results after changing circumstances if the performance of the contract continues. From there will consider the extent of damage for each party. It must also be added that serious damage does not mean that the benefits desired by the parties are not achieved when entering into a contract. For example, when entering into a contract, A expects a 20% difference in profit, but in fact, due to market price changes, A only makes a profit of 5% or even no profit, then A cannot say that the loss is serious because of the failure to meet the demand. get benefits. But if the market price fluctuates by half, if continuing to perform the contract will cause great disadvantage to the obligor, this case is considered as serious damage. However, to consider how serious the damage is, it is necessary to consider many factors, not just by a certain quantity. For example, the severity of the damage may be related to an economic factor such as a significant increase in the cost of performing the obligation, a large unanticipated drop in profits at the conclusion of the contract, or can be damages related to people, business reputation in the market, long-term development strategy of the business... The assessment of damage instead of fixing price fluctuations, the assessment should be based on the impact and consequences of that change, such as the duration of the contract, the purpose, experience, and financial ability of the parties to the contract.

Points c and d are currently two independent conditions for identifying a fundamentally changing situation. This is an inadequacy of the law because, these two conditions have the same criteria when talking about the "significant" of the damage. Furthermore, point c, clause 1, Article 420 of The Civil Code 2015 determines the extent of damage, but does not show the relationship between the changing circumstances and the contract content. Therefore, it only needs to be specified that the circumstances change significantly to satisfy this factor. Furthermore, stipulating the two conditions would also make it more difficult to prove the changed circumstances and it would not be necessary to separate them into two separate clauses. Thus, if according to the legal rules or the parties have agreed in the contract on the assignment of risks in a particular case, it will not be allowed to invoke the provision of fundamental change of circumstances to request a replacement. change or terminate the contract. Circumstances change dramatically when it comes to the "magnitude" of the change and how severe the damage is. However, determining the extent of change and the extent of damage is difficult to give a certain threshold that depends on each specific case.

3.2.4. Obligation to repair damage

This is also a condition that determines the changing circumstances in order to limit the abuse of this provision to request modification or termination of the contract to avoid performance of obligations. Point dd, Clause 1, Article 420 of The Civil Code 2015 stipulates: *"The affected party has applied all necessary measures within its ability to permit, in accordance with the nature of the contract, but cannot prevent or minimize it. the extent to which benefits are affected"*. Stemming from the principle of goodwill and honesty

during the performance of the contract, in the event of an unexpected event affecting its interests, the aggrieved party must make every effort to minimize the damage. The aggrieved party must demonstrate that it has made every effort in its ability and condition to prevent and minimize the damage. In case the party with influential interests, although having the ability to prevent or minimize the level of influence, does not make efforts to do so, it must bear the risks itself. This provision is also intended to prevent abuse of fundamental change circumstances to request an amendment or termination of a contract. Refer to the regulations on the principle of compensation for damage outside the contract, "the party whose rights and interests are infringed shall not be compensated if the damage occurs due to the failure to apply necessary and reasonable measures to prevent or limit damage to yourself".¹³ In short, the principle of immutable validity of the contract is the basic principle in the process of contract performance. The parties must respect and commit to perform their agreement even in case the contract purpose is not as desired. Only when the "rigorous" conditions of the substantive change are satisfied, will the contract be considered for modification or termination.

3.3. Renegotiate

When a contract is determined to be subject to a fundamental change in circumstances, one party has the right to request the other party to renegotiate the contract, and in case no agreement is reached, one of the parties may request the Court to amend the contract. or terminate the contract. Clause 2, Article 420 of the Civil Code 2015 of Viet Nam stipulates: "*in case of a fundamental change in circumstances, the party with affected interests has the right to request the other party to renegotiate the contract within a reasonable time*". During the contract performance, both parties have the right to renegotiate the contract on the basis of good faith and honesty, without having to wait until there are fundamental changes to have a reason to request negotiation. Regulations on renegotiation when circumstances fundamentally change have some specific contents as follows:

3.3.1. The other party's right to request negotiations or the other party's obligation to participate in negotiations

Vietnamese law reserves the right to request renegotiation to the party affected by the fundamentally changed circumstances. This is also easy to explain because the affected party is usually the one who needs to change the contract to reduce or eliminate the damage. The question, however, is, is the other party obligated to participate in the negotiations? Vietnamese law also does not have clear provisions.

There is a view that the parties should not be forced to renegotiate because it can waste time and effort, concerned that one party is easily put at a disadvantage in the renegotiation process. The inefficiency of the renegotiation process is justified from the perspective of behavioral economics, which assumes that renegotiating terms in the face of adverse circumstances is less likely to succeed because at that time , the will of the parties is highly likely to be nailed by the inherent agreements of the contract and has the mentality of

¹³ Clause 5, Article 585 of The 2015 Civil Code.

avoiding losses. Human behavior studies also show that bargain over losses is less likely to succeed than bargain over gains because of the side will make less concessions. There are two main reasons why the requested person does not accept to participate in the negotiation because firstly, they think that no changing circumstances have occurred, or even when they think that there is a change in circumstances, they are also concerned. that accepting renegotiation could lead to difficulty defending before the Court if negotiations fail. Therefore, if the parties want to terminate the contract, they should not provide for the obligation to renegotiate to reduce costs, instead they should be terminated, then freely renegotiate or find another suitable partner. new circumstances to maximize benefits.

3.3.2. Time limit for requesting renegotiation

Article 420 of the Civil Code 2015 of Viet Nam stipulates the right to request the renegotiation of the contract "within a reasonable time", but the civil law does not provide any explanation or regulation on what is a reasonable time or how long is a reasonable time. Find out other provisions in the Civil Code 2015 of Viet Nam, there are also other laws that also mention the reasonable time limit, which are Articles 142, 143, 249, 300, 394, 424, 443. For example, Article 394: "*When the claimant party If the request does not specify the time limit for reply, the reply of acceptance shall only be valid if it is made within a reasonable time*". Article 424: "*Where the obligor fails to properly perform an obligation and the obligee requests performance within a reasonable period of time but the obligor fails to perform, the obligee may cancel the contract.*" "...

The unclear regulation of the time limit for requesting renegotiation when the circumstances change fundamentally can easily lead to abuse of the changed circumstances, or create difficulties for the later settlement process, or lead to disagreements even under similar circumstances. The negotiation time is the time within the contract's term, but not too long to avoid more serious damage.

3.3.3. Content of renegotiation

According to Clause 3, Article 420, "*in case the parties cannot reach an agreement on the modification of the contract within a reasonable time...*". The content of the amendment can be understood without limitation, the requesting party can ask to negotiate about anything. This means that the parties can renegotiate all content as long as it does not violate the prohibition or violate social ethics. Such unrestricted and generic regulation can make negotiations more difficult or at least more time consuming. Because, the disadvantaged party wants to minimize the damage while the other party wants the contract to be performed as originally agreed. Whether the limits of the content of the edits are the factors that influence the circumstances of the fundamental change. Moreover, if there are no provisions limiting the content of the agreement, the parties can completely terminate the signed contract and sign a new contract to replace the old one.

Can the parties agree to terminate the contract? According to Article 422 of the 2015 Civil Code, the contract terminates in the following cases: "2. As agreed by the parties; 6. The contract is terminated according to the provisions of Article 420 of this Code".

Therefore, the parties are completely entitled to terminate the contract according to the agreement without being limited by the scope of renegotiation.

3.3.4. Obligation to provide evidence

In addition to the limitation of a reasonable period of time for making a request for renegotiation, it also does not imply that the party requesting the renegotiation is obligated to provide grounds to demonstrate a fundamental change in circumstances. The current provisions of the Civil Code 2015 of Viet Nam do not provide for the case where the disadvantaged party only makes a request without stating any grounds, which easily leads to the abuse of difficult circumstances to delay the performance of the obligation, and at the same time causes difficulties for the client. requested party.

3.4. Authorize to settle disputes and consequences when negotiations fail

Clauses 3 and 4, Article 420 of Civil Code 215 provide as follows:

“3. Where the parties cannot agree on the modification of the contract within a reasonable time, one of the parties may request the Court:

a) Termination of the contract at a definite time;

b) Modify the contract to balance the legitimate rights and interests of the parties due to the fundamental change in circumstances.

The court may only decide to amend the contract in cases where the termination of the contract will cause more damage than the costs to perform the contract if it is amended.

4. In the course of negotiation, amendment and termination of the contract, and the court settles the case, the parties must continue to perform their obligations under the contract, unless otherwise agreed.

According that, if the parties cannot agree on the modification of the contract within a reasonable time, one of the parties may request the Court to terminate the contract at a specified time or amend the contract. Although the law only mentions the jurisdiction of the Court, it should be understood that the Court includes the Arbitrator. The Civil Code 2015 of Viet Nam, Article 14 stipulates that *“where civil rights are infringed or disputed, the protection of rights shall comply with procedural law at Court or Arbitration”*.

Both parties have the right to ask the Court to resolve the dispute, however, provided that "it is not possible to agree on the modification of the contract within a reasonable time". This provision can lead to the understanding that only in case it is not possible to agree on the amendment of the contract, the parties have the right to request the Court to settle. If the parties cannot agree on the termination of the contract or reach an agreement on termination but cannot agree on the time of termination, one of the parties has the right to ask the Court to settle or not. The above provisions can also be understood that the parties are forced to negotiate before asking the Court to settle. So, if the non-disadvantaged party does not accept the request for contract renegotiation, does the disadvantaged party have the right to request the Court to settle it? The *Undroit Principles* stipulate that *“if the parties **cannot reach an***

agreement within a reasonable period of time, each party has the right to request the Court to settle it” (Art 6.2.3 (3))¹⁴. This provision also includes that if the parties fail to negotiate or one party does not accept to renegotiate the contract, one of the parties has the right to request the Court to settle.

Regarding the consequences, in case circumstances change, one of two outcomes will occur: the parties continue to perform the contract with some modifications to suit the new circumstances or the parties are released from their rights and obligations. by termination of the contract.

First, about the Court's authority to amend or terminate the contract

According to the provisions of Clause 3, Article 420 of the 2015 Civil Code on the Court's jurisdiction, the Court has the right to terminate or amend the contract. However, this regulation has 5 issues to consider:

Firstly, Clause 3, Article 420 of the Civil Code 2015 of Viet Nam allows the Court to have the right to amend or terminate the contract. Specifically, *"The Court may only amend the contract in the event that the termination of the contract will cause more damage than the costs to perform the contract if it is amended"*.

Accordingly, the condition to amend the contract is only if the performance of the contract after the modification has a smaller cost than the termination of the contract. From that, it can be understood that in all cases where the contract termination causes damage less than the contract performance cost, if it is amended, the Court must choose the contract termination option. This regulation is similar to the approach of the Civil Code of the Russian Federation. Clause 4, Article 451 of the Civil Code of the Russian Federation 2003 states: *"A modification of the contract in the event of a significant change in circumstances will be made by decision of the court in exceptional cases, when the termination of the contract contract is contrary to the public interest, or to the detriment of the parties, substantially exceeding the costs, performance of the contract on terms as amended by the court is necessary."* When commenting on the provisions of the Civil Code of the Russian Federation, some scholars argue that this rigid regulation limits the initiative of the court in choosing the most suitable solution, either terminating or changing the contract, for each case¹⁵.

Thus, the Court can only base on comparing the cost of performing the contract to choose to amend or terminate the contract while many other factors can be considered such as the parties' desire to maintain the contract. maintain contracts to protect interests other than economic ones, even though the modification results in greater damage than the termination costs. Therefore, if the Court rules only on costs to decide to terminate or amend the contract, it does not guarantee flexibility and flexibility in each case¹⁶.

¹⁴ Uindroit Code of International Commercial Contracts, (PICC)

<https://www.unidroit.org/instruments/commercial-contracts/unidroit-principles-201617>.

¹⁵ G. Doudko Alexei, "Hardship in Contract: The Approach of the UNIDROIT Principles and Legal Developments in Russia", *Uniform Law Review*, số p.h 5 (2000): 504.

¹⁶ Dam Thi Diem Hanh, Le Thi Kim Oanh (2018), Some comments on Article 420 of the Civil Code 2015: Contract performance when circumstances change fundamentally, *Journal of the State and Law*, No. 7(363) 2018.

Second, it is stipulated that “*The Court may only decide to amend the contract in the event that the termination of the contract will cause more damage than the costs to perform the contract if it is amended*” (Clause 3, Article 420).). Such a provision leads to the understanding that the Court gives preference to contract termination over contract modification. It can also be understood that “*the Court can **only** decide...*” means that the Court can only declare either to amend the contract or to terminate the contract without having the right to offer another option.

Considering by reference to the provisions of the PICC¹⁷, the Court has the option of termination or modification without the preferential conditions applicable. The Court will consider the application of consequences that are most effective and reasonable. Comment No. 7 of Article 6.2.3 emphasizes that if both of the above options are unreasonable, there will be a situation where the court does not terminate or amend the contract but chooses one of two ways: Either require the parties to restart the negotiation process on the revision of the contract; or acknowledge the inherent terms of the contract. Asking the parties to renegotiate when the court cannot terminate or change the contract is a solution that allows the court to act as an arbitrator to help the parties in the negotiation process to come to a common solution, especially when the self-negotiation process of the parties becomes deadlocked.¹⁸ Compared with the provisions of the Civil Code of Vietnam, the PICC's regulations are more flexible, allowing the court to apply more flexibly the right of self-determination to apply one of the solutions. This shows that the Judges have great power in deciding the fate of the contract. However, the Judge must be responsible for making decisions on the basis of an objective and fair assessment of the consequences. Although the law allows for a choice, judges must still act according to the principles of the law plus professional ethics.

In the Netherlands, the 1992 Civil Code (Article 6.258) allows the Court to adjust the validity of a contract or to terminate part or the whole of a contract when the circumstances have changed so substantially that it is no longer possible for a party to continue performing the current contract. The Peruvian Civil Code of 1984 (Article 1432 and the following ones) prioritized contract adjustments instead. The termination of the contract is only acceptable when it is impossible to continue performing the contract, and also provides that the termination does not affect the obligations that have been fulfilled.¹⁹

Third, still related to the right to request the Court to settle in case the negotiation fails, Clause 3, Article 420 of the Civil Code 2015 of Viet Nam allows one of the parties to have the right to request the Court to terminate the contract or amend the contract. This means, the requesting party has the right to ask the Court to either terminate the contract or

¹⁷ *Uindroit Code of International Commercial Contracts, (PICC)*

<https://www.unidroit.org/instruments/commercial-contracts/unidroit-principles-201617>.

¹⁸ Alexei, “*Hardship in Contract: The Approach of the UNIDROIT Principles and Legal Developments in Russia*”, trang 503.

¹⁹ Ngo Quoc Chien (2015), *Adjusting contracts when circumstances change fundamentally and amending the Civil Code 2005*, Journal of Legislative Research No. 15 (295), August 2015.

amend the contract. The question here is, if one party makes a request to terminate the contract but the Court finds it necessary to amend the contract, can the Court amend the contract? If the answer is yes, the Court again violates the right to decide and self-determination of the involved parties specified in Article 5 of the Civil Procedure Code 2015, specifically that the Court "*only deals within the range of lawsuit petition*"²⁰. If the answer is no, it is not guaranteed that the role of the Court is to protect citizens' rights, bring about the principle of fairness in trial and the purpose of Article 420 of the Civil Code 2015 of Viet Nam is to re-establish the balance of the contracts. agreement and ensure fairness for the parties. If so, it will no longer make sense to make a request to the Court.²¹

Fourth, the Court can terminate the contract at a definite time. there is no specific guidance about when is the definite time. The following times can be considered: the time of entering into the contract (similar to the consequences of contract cancellation); the time when the circumstances of fundamental change began to appear; the time to request renegotiation; the time of unsuccessful negotiation; the time of requesting the Court to settle; the time the judgment takes effect... This is a very important content that needs guidance because the time of contract termination will affect the interests of the parties.

Fifth, the purpose of the contract amendment is "to balance the legitimate rights and interests of the parties due to the fundamental change in circumstances". This paragraph does not mention how to "balance the legitimate rights and interests of the parties". When entering into a contract, both parties want to achieve certain benefits. Due to unexpected objective circumstances, the original goal was not achieved. Therefore, in principle, only those aspects of the contract that affect the failure to achieve that purpose, which make the contract unreasonably unreasonable, and cause serious damage to one party, should be brought to the notice of termination. out to negotiate amendments. It is recommended to amend only the terms affected by a change in circumstances, such as price terms, term terms, etc. Thus, not every change of circumstances has the right to request a contract modification with those completely new content, unrelated to the previous contract.

Second, about the obligation to continue to perform the contract

Clause 4, Article 420 of the Civil Code 2015 stipulates: "*During the course of negotiation, amendment and termination of the contract, the Court settles the case, the parties must continue to perform their obligations under the contract, except for cases where otherwise agreed.*" The rationale here is the unique nature of the circumstances of the underlying change and the potential for abuse.²² This provision is construed, unless

²⁰ National Assembly of Vietnam (2015), *Civil Procedure Code of the Socialist Republic of Vietnam 2015*, National Political Publishing House - Truth, Hanoi, 2015.

²¹ Dam Thi Diem Hanh, Le Thi Kim Oanh (2019), "*Regulations on changing circumstances from the perspective of comparing Vietnamese and French laws - Some proposals and recommendations*", Proceedings of the international conference "Civil liability and contracts: Experiences of Vietnam and the European Union, University of Law, Hue University", June 27, 2019, http://hul.edu.vn/hop-tac-quoc-te/ky-yeu-hoi-thao-quoc-te-trach-nhiem-dan-su-va-hop-dong-king-king-hiem-cua-viet-nam-valien-minh-chau-au_4315.html.

²² Unidroit Principle of International commercial contract (2016), International Institutes for the Unification of Private law (Unidroit), Rome, p 225.

otherwise agreed by the parties, in all cases the parties are still required to perform their contractual obligations. This regulation is quite rigid in that it does not introduce the same exceptions as the PICC. Accordingly, comment 4 to Article 6.2.3 of the PICC states that suspension of performance is only acceptable in exceptional cases. Although this provision shows the limitation of allowing temporary suspension of obligations, at least it still creates an open direction for the Court and not only depends on the agreement of the parties.²³

The expression of the principle of good faith is also quite clear in that, the requesting party must not take advantage of the circumstances to prolong the time limit for performance of the obligation, nor can the requested party find a reason to delay. The renegotiation and extension of time may cause further damage to the other party. Both sides have a good faith will make the settlement easier and minimize the potential damage. Therefore, the principle of good faith must always be the top priority of the parties in the entire contract performance process. However, this clause should still supplement the obligation to participate in negotiations and the obligation to compensate for damage if delay or abuse of the changed circumstances causes damage to the other party.

In conclusion, the provisions of Article 420 have some shortcomings that while giving the affected party the right to request renegotiation, it does not mention the obligation of the requested party to participate in renegotiation. Besides, Article 420 only stipulates that if the parties cannot agree on the modification of the contract within a reasonable period of time, one of the parties may request the court to resolve without specifying the case. If the parties cannot agree on the termination of the contract or if the requested party refuses to negotiate, one of the parties may ask the court to resolve the dispute. Article 420 of the Civil Code 2015 allows the parties to renegotiate the contract by themselves or ask the court to resolve it in case circumstances change so dramatically that implementation becomes too difficult. However, this law has many shortcomings, which are reflected in the lack of clear and rigid regulations. Analysis of Article 420 of the 2015 Civil Code shows that Vietnam follows the German doctrine of "Geschäftsgrundlage", that is, changes the basic circumstances of the contract but has not yet had a specific explanation. The core element of the changing circumstances is that the basic foundation upon which the parties entered into the contract is broken. This provision is also the concretization of the principle of fairness and goodwill in civil law. Article 313 of the German Civil Code amended in 2002 has inspired the contract law of many countries around the world, including Vietnam.

4. Discussion and Conclusion

The analysis and assessment of the law on contract performance when conditions are fundamentally changed in Vietnam at present, effectively contribute to the improvement of civil and commercial law in the coming time. By method of description, analysis and comparison of jurisprudence, the article has solved the following problems: clarifying what

²³ Dam Thi Diem Hanh, Le Thi Kim Oanh (2018), *Some comments on Article 420 of the Civil Code 2015: Contract performance when circumstances change fundamentally*, Journal of the State and Law, No. 7(363)/2018, page 23.

is contract performance when the circumstances change fundamentally. The article analyzes the provisions of the Civil Code 2015 of Viet Nam on contract performance when circumstances change fundamentally on the basis of comparison with the Unidroit Principles on international commercial contracts, the European Code of Contract Law and regulations of some typical countries. In general, the provisions of Vietnamese law are quite similar to those of "soft laws" as well as advanced countries in the world, which are mainly countries in the civil law tradition. Accordingly, regulations on contract performance when circumstances change fundamentally include the following conditions: In addition, the article also points out the limitations and inadequacies in the legal regulations such as not making clear what the circumstances of the contract are, what the circumstances are fundamentally changed; the basic conditions for determining the changing circumstances are still general and difficult to determine because the regulations are qualitative and need to be explained and guided for consistency in perception; regulations on renegotiation are not clear; Regulations on consequences when negotiations fail cause many different interpretations.

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DISCUSSION OF LAW ENFORCEMENT ON EDUCATION AT VIETNAM PEOPLE'S ARMY ACADEMIES UNDER PRESENT CONDITIONS

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Abstract

In the present day of international integration, education in our nation must assure long-term development and continually enhance its quality to meet the demand for high-quality human resources for the country's industrialization and modernization. Efficient law enforcement in the sphere of learning in Vietnam in general, and at People's Army institutions, is the main answer for improving educational quality. Due to this, the author evaluates the significance of law enforcement in education at military academies in this essay, contributing to the development of perspectives and comprehension regarding the application of the law in education. In addition, the author makes several suggestions for enhancing the effectiveness of the law on education at military institutions with the goal to protect the rights and interests of participants, promote the training of high-quality officers, and fulfilling the army's new tasks in an era of international integration.

Keywords: *academies, education legislation, education law implementation, Vietnam People's Army.*

1. Introduction

Education has an essential function in the growth of every nation. This is the vital and determining factor in the development of the country throughout history. "Educational development is the primary national policy," is our Party's guiding principle, which is enshrined in the 2013 Constitution¹ and the 2019 Education Law² to foster the general growth of the Vietnamese people, by nurturing human resources, promoting talents, and serving as a foundation for national construction and defense.

The system of military schools and academies in the People's Army is where for instruction, training, develop, and providing officers and executives for the whole army. Facing the challenges of army development, defense consolidation, and national defense in the present setting, the quality and abilities of cadres and commanders have been exceedingly critical. As a result, military organizations in general, and academies, are taking steps towards enhancing educational and training quality. One of the steps taken is to

¹ National Assembly (2013), Constitution 2013, National Political Publishing House of Truth, Hanoi, Clause 1, Article 60, p.5

² National Assembly (2020), Education Law 2019, National Political Publishing House of Truth, Hanoi, Clause 1, Article 4, p.1

accelerate the enforcement of the education legislation to protect the needs of subjects related to educational activities. This group of educational administrators, professors, and students.

Affirming and raising awareness about the significance of education law implementation in military academies in present times will contribute to bringing legal constraints on education into life, carrying the value of education law into full effect in enhancing the quality of academies and providing as a source of high-quality human resources for the Vietnam People's Army throughout the period of international integration. This is the foundation for resolutely forwarding the cause of education, achieving the goal of increasing people's understanding, educating human resources, cultivating talents, and fulfilling the demands of national development and defense in today's circumstances.

2. Method

The article uses the dialectical materialism and historical materialism methodology, in addition to interpretative and inductive methodologies to evaluate and explain the notion of applying educational law at the Vietnam People's Army Academy; analysis and synthesis methods for examining the features and duties of execution at military academies; logical approach to guarantee the logic of the contents in the research subject matter.

3. Results

3.1. The concept and features of educational regulations application at Vietnam People's Army academies

Law implementation is a key step in the legal regulating procedure due to how it enables the State's regulations to be put into action. This is the stage following the promulgation of legislation by authorized state officials that regulate social connections that arise in daily life. This phase is represented in the legal subjects' deliberate actions in line with the requirements of legislation, for the purpose to carry out the regulations.

Education and education in Vietnam People's Army academies are the foundations for advancement, confronting the difficulties of the 4.0 revolutions and integrating into the world. Enhancing the standards of human resources and human development is an essential aim for education in our country in the future years as we prepare for the fourth industrial revolution and globalization. This is also the purpose of the Vietnam People's Army Academy's educational and training reform. One of the main approaches to achieving the goal of increasing and updating education and training activities at military academies will be a full and synchronized legal system of education. The law is an essential instrument for the state to control social connections beginning from academic endeavors at military academies, establishing a legal corridor in the acknowledgment and assurance of students' rights and duties. It also specifies the functions and responsibilities of state management organizations and individuals in the implementation of the legislation on education in Vietnam's People's Army academies.

However, for the demands of the Education Law to be implemented rapidly, properly, and comprehensively, the Vietnam People's Army Academy must participate effectively in

the implementation of the Education Law. This is the basis for the legislation to promote its standing as a driving force for educational growth; fulfill the Party's, the Central Military Commission's, and the Ministry of National Defense's perspectives on the growth of education in the present situation.

This means the application of the education legislation at academies in the Vietnam People's Army is a set of actions intended for putting the requirements of the education law into practice. It expresses itself in the real and legal activities of legal subjects throughout the process of organizing and operating military academies. Assisting in the training of a detachment of cadres and officers to fulfill the fresh requirements and responsibilities of army building.

Law enforcement operations on education at Vietnam People's Army academies can variously forms. It is the adherence, usage, and implementation of educational laws. The process of implementing the education laws has the following features due to the peculiarities of the Academy structure in the Vietnam People's Army:

To begin with, regarding the implementation of the law on education at military institutions

Individuals (educational administrators, lecturers, students) and organizations immersed in educational activities are among the subjects applying the law on education at military academies, according to the provisions of Article 1 of the Education Law 2019 and Article 1 of the Law on Higher Education 2012, amended and supplemented in 2018.

Men and women involved in the execution of the laws on education at academies function in a complicated and demanding military educational environment and participate in direct army warfare. The group of instructors and educational administrators is comprised of well-trained military professionals who receive ongoing training in political traits as well as their work manner. The instructional interaction between lecturers and students, on the other hand, has its own peculiarities. It is a teacher-student relationship, a comrade friendship, and a superior-subordinate relationship simultaneously. Consequently, an instructor is a teacher, a teammate, and a pupil's leader. For this reason, they must always provide an example in terms of teaching, working, and living for learners to emulate. It has since helped to nurture and promote the traits and personality of Uncle Ho's force for military cadres.

Additionally, law enforcement students at academies primarily consist of officer training learners, master's students, and graduate students. Further, certain institutions include pupils who are high-ranking military officers. Students at the Academy fulfill the criteria of health, politics, ethics, and education through carefully selected input. They are all boarding schools that spend their time in a consolidated and unified manner and are tightly regulated in line with army management laws. Because of this, during their education, students are continuously educated in the awareness and habit of respecting the rules of the government as well as the discipline of the army. Students' sense of self-discipline and law adherence to education is progressively recognized, produced, developed, and smoothed by the implementation of education and training activities, together with the practice of maintaining the prescribed regimens on study and living. They understand and are conscious of their educational rights and duties, along with the societal ideals enshrined in the

legislation. Since then, there have been constructive behaviors, including comprehending how to apply the law to preserve legitimate rights and interests and combat misconduct and violations of the law within the context of education.

Organizations as the topic of enforcement on education at academies in the entire army are as distinct and rich as individuals. Aside from the state, other subjects including party organizations, socio-political groups, economic organizations, and press agencies are all subjects of this activity. Party organizations play an essential function in driving the execution with the goal to accomplish the Party's overall and direct leadership in all parts of the Army and law enforcement actions in the Academies. Furthermore, there is an association between the Ministries of National Defense and Education and Training in guiding the consistent, precise, and thorough execution of the regulations on education at military academies.

Secondly, the features of the setting in which the education legislation is applied.

The author examines the execution of educational regulations at the Vietnam People's Army Academy in this research. The Central Military Commission and the Ministry of National Defense administer this educational system, which is professionally directed by the Ministry of Education and Training. The military academies system presently contains six large academies under the Ministry of Defense (National Defense Academy; National Academy of Politics; Army Academy; Military Technical Academy; Military Academy of Logistics; Military Medical Academy) and several academies were assigned to the General Departments, Army, and Vietnam Border Guard, The Government Cipher Committee (Military Science Academy; Naval Academy; Air Defense - Air Force Academy. ; Academy of Cryptography Techniques). Military Medical Academy and Military Technical Academy are two of the nation's finest universities. The Academy's training purpose is to offer excellent staff members for the army in a variety of fields such as command and administration, politics, military medical, logistics, engineering, and so on. The provided items are selected according to criteria and situations, and the process is scheduled according to a program. Trainees receive instruction to satisfy the needs of the army, and following completion, they will be deployed to units across the army, according to a predetermined plan.

Moreover, the education process at the Academies is performed not only in the lecture hall but also in the field, and the training ground, using practice materials that are comparable to the realities of training and combat preparation. In addition to fundamental scientific information and specialized facilities, the training curriculum incorporates military, political, and legal expertise following the Ministry of National Defense's instructions, goals, projects, and plans. The state budget, through the defense budget, entirely guarantees funding for education at academies. Students do not have to pay tuition, receive guarantees on the costs of clothing, food, housing, and study materials, and have the right to tiered allowances and other predetermined regulations. Academies, on the other hand, continually concentrate on developing regular and excellent units. Therefore, the training process is always accompanied by strict discipline, and all activities, from study to daily living, belong to the military disciplinary leadership. This feature has facilitated the adoption of the law on education at military training centers.

3.2. The impact of law enforcement on education in Vietnam People's Army academies

The implementation of the education laws at military academies is essential to strengthening the role of social relations management in educational and training operations at academies. Contributing to the preservation of order, discipline, and the rights and interests of both groups and individuals. The following factors demonstrate the influence of law enforcement on education at military academies:

Firstly, the execution of the legislation on education at military institutions has put into reality the Party's, Central Military Commission's, and Ministry of National Defense's educational development instructions and policies.

Over the years, the Party's resolutions have continuously highlighted the significance of investing in education. Demonstrating an ongoing policy of perceiving education and training as an important national objective and a crucial driving factor in the country's growth. The Party continues to underline the place and significance of education and academic development goals in the years to come in the Document of the 13th Party Congress to develop the Vietnamese comprehensively and to generate outstanding human resources to accomplish the tasks of national building, protection, and development.

Military, defense, and homeland defense missions of the Vietnam People's Army force have established new and higher standards for Vietnamese military personnel with education and training in the face of challenging world circumstances and challenges of international integration. Since then, the Central Military Commission and the Ministry of National Defense have continually fully grasped the spirit of fundamental and comprehensive innovation in education and training in military schools, adhering to Resolution No. 29-NQ/TW dated November 4, 2013, of the 8th Plenum of the 11th Central Committee on fundamental and comprehensive reform of education and training and the Resolution of the XIII Party Congress on army construction: "By 2025, it is necessary to fundamentally build an elite, neat, and powerful army with the objective to establish a solid premise and strive to establish an Army that is not only revolutionary, standard, but also sophisticated, intelligent and modern from 2030"³. Including Central Military Commission Resolution No. 109-NQ/QUTW dated February 11, 2019, regarding establishing a force of Army officers to satisfy needs and duties in the present scenario; Strategy on Education and Training Development in the Army for the period 2011-2020, featuring a Vision to 2045; A project on building a force of teachers and educational leaders to fulfill the demands of the fundamental and comprehensive reconstruction of training and education in the Army for officers at the campaign and strategic positions in the period 2020- 2030. The Central Military Commission's Resolution No. 1657 - NQ/QUTW, dated December 20, 2022, established the primary goals and solutions in the fields of education and training reform, along with the recruiting, usage, and treatment method. The collection of abilities is the foundation for creating a cadre and officer force to carry out the mission of rebuilding the

³ Communist Party of Vietnam (2021), Document of the 13th National Congress of Deputies, volume 1, National Political Publishing House of Truth, Hanoi, p. 158

army in the present scenario. Resolution 1657 highlighted that "Education and training in the armed force are one of the essential and crucial political tasks of the Party Committees and leaders at all levels; is one of the key, breakthrough, and significant stages in the procedure of establishing a force of professional and technical officers and employees to contribute to the revolutionary, standard, and elite of a Vietnamese People's Army, that will modernize, strengthen national defense, and should be emphasized in collecting and allocating resources for development one step ahead."⁴

The Party's education standards and policies, in addition to those of the Central Military Commission and the Ministry of National Defense, have been formalized in legal documents. The legal activities of subjects will contribute to the execution of the regulations on general education through the process of utilizing law at the Military Academy. It will guarantee the Party's, the Central Military Commission's, and the Ministry of National Defense's leadership in the field of Army education. Simultaneously, the demands of the law in this sphere are precisely and comprehensively executed, giving circumstances for legal relations to evolve in the intended trajectory of the State and society.

Secondly, the execution of the legislation on education at Army academies promotes the protection of participating subjects' lawful rights and interests. Particularly for instructors and students

The subjects engaged in the utilization of educational laws at the Military Academy are groups and individuals engaged in social connections controlled by education law. Subjects participating in the execution of the legislation on education at the Military Academy are highly diversified, according to the provisions of Article 1 of the Education legislation in 2019, Article 1 of the Law on Higher Education in 2012, updated and supplemented in 2018, and Article 1 of the Law on Higher Education in 2012. Individuals (administrators, professors, students) and organizations are included. In which instructors and pupils are the main subjects of the educational process, and the primary factor defining the reputation and quality of education at Army academies. Lecturers play a key part in imparting information, and practical experience, and promoting growth in capacity to trainees, thereby assisting the military's mission in today's scenario. To encourage the active involvement of professors, duties in the new period include safeguarding their lawful rights and interests, in addition to raising awareness of the need of creating competent and talented lecturers within Party committees as well as at academies. This team must follow the laws of the nation on standards, duties, and basic rights. The strategy of training and retraining to increase political, professional, and professional qualifications, in addition to the teacher compensation policy, are critical answers to improving the quality of lecturers for academies.

Aside from academics, students are the Army's primary manpower resource after graduation. Attracting, training, and valuing talents in the army is urgent and crucial in the cause of force construction, defense consolidation, and defense of the Socialist Republic of

⁴ Central Military Party Committee (2022), Resolution No. 1657 - NQ/QUTW dated December 21, 2022, of the Central Military Party Committee, Ministry of National Defense on education and training work to fulfill army building tasks team requirements in a new situation, Hanoi, p.2

Vietnam in the framework of the Fourth Industrial Revolution. The solid collaboration between enhancing student quality and utilizing their abilities will be an essential component in expanding the army and the Academy's reputation. Excellent policy and regulatory execution on learner rights and duties will contribute to establishing an incentive to recruit high-quality pupils. Due to this, the Army and academies' education and training possess higher quality.

The application of the legislation on education at the Military Academy is a deliberate activity of the subjects that carry out the requirements of the rules for the benefit of the State, the Army, and the subjects took part in this activity. As an outcome of the implementation, the subjects' legal rights and interests are protected. This directly affects motivating people to take an active role in and further the advancement of training and educational innovation in the Army in the modern era.

Thirdly, through arranging the execution of educational legislation at academies through legal instruction and dissemination activities, students will develop a legal conscience.

A component of the process of organizing and implementing the law at academies is propaganda and teaching on the content and spirit of legal documents. From here, those participated in legal education interactions will have the circumstances to comprehend, accurately, and fully understand the provisions of education law. Knowing what acts should be taken, must be taken, may be taken, and cannot be taken... As a result of this, the subject will be self-aware and handle his conduct, and perform properly. This is both a requirement and a criterion for assessing the efficacy of the law's implementation in academies.

Cadets and lecturers are the subjects who are directly connected to the process of establishing programs, content, forms, and means of dissemination that are appropriate for each student. Educational activities in academies, on the other hand, differ from those in non-military universities. This is a military-specific exercise that requires a lot of hard effort and mental and physical strain intending to develop political and military abilities. From there a strong defense personnel resource is being created. To achieve this educational purpose, individuals, particularly students, must be informed and taught about the People's Army's State laws, orders, charters, and regulations of Vietnam, the fundamental elements of individuals' rights and duties regarding national defense tasks, including the establishment of a revolutionary, regular, and modern army. This will contribute to the formation and enhancement of self-discipline in following the law, improve political bravery, and contribute to the effective implementation of the Party and State's guidelines and policies on the task of building national security and protecting the Fatherland, as well as the development of education in the new situation.

Fourthly, the implementation of the education law at military academies has the responsibility of preventing, restricting, and rapidly dealing with infractions of the education law, and of strengthening communist legislation.

Everyone is equal under the law in a socialist society. Therefore, organizations and individuals engaged in legally regulated social relations are required to implement legal

provisions enforced by the State. That is also the spirit of socialist legality; in addition to a comprehensive legal system, everyone in society, including the State, state agencies, economic and social groupings, units, armed forces, and individuals, uphold and fully employ the law. Acts that contravene the law and harm the interests of the State, collectives, and citizens are identified and dealt with in line with the law.

As previously discussed, the distribution and education of the regulations in the application of the legislation on education lead to enhancing topic self-discipline, particularly for students at Vietnam's Army Academies. It has the effect of deterring and minimizing infractions of the law and military discipline from there. Including breaches of educational legislation. Meanwhile, oversights in the process will be detected and handled promptly throughout regular activities of inspection, examination, and supervision by competent agencies and individuals, ensuring that the law is implemented efficiently and consistently in the procedure for organization and implementation.

On the other hand, by study, practical evaluation, process review, and experiences gained, the legislation on education could potentially be improved. It provides essential details for the future development and enhancement of the law's impact on education at once.

4. Discussion and Conclusion

Based on evaluating the purpose and significance of enforcing the law on education at military academies, strengthening the efficacy of the law enforcement activities is *đội* is one of one of the most important and pressing issues. Education law must be followed to establish circumstances for subjects to take an active role in educational activities to develop and enhance education and training in line to construct "Smart schools to prepare for the fourth industrial revolution" in the armed forces. This is the foundation for developing a force of military personnel with adequate virtue and abilities to handle the demands of responsibilities in the new situation. Therefore, in the current era, the execution of education legislation is an urgent demand, and it must concentrate on performing several basic items specified as follows:

To start with, advance the leadership and direction of all levels of party committees, organizations, and commanders. Promote awareness about the law's application in military academies simultaneously. This is prerequisite solution to subject unity in activity implementation, ensuring the right direction, guidelines, and policies of the Party and State, the Central Military Commission, and the Ministry of National Defense on educational development. Only when the Party committees and commanders at every level are adequately led will the participants comprehend the position, role, and significance of the law on education. Since then, this effort has proven highly successful since the subjects are aware of their responsibilities and rights and actively engage in education and training. Simultaneously, it will limit law violations, strengthen socialist legislation in the field of education, and contribute to the spread of law enforcement and discipline education in academies as well as throughout the army.

Secondly, improving educational legal provisions. This will be the foundation for implementation at military academies. A whole, finished, unified, and highly practicable

legal framework will be simple to apply in daily life. As an outcome, it is vital to overcome our country's existing constraints, particularly higher education legislation. In which the competent authorities should concentrate on early policy promulgation that is realistic; re-review the normative documents in every unit of the army and academies to swiftly eliminate those that lack potential and are not practicable and recommend to the State and competent agencies to modify and perfect laws and regulations accordingly.

Furthermore, improve the credentials, capacity, and quality of the Academy's management and lecturers. They are the primary focus of educational law enforcement behaviors, and they are the determining factor in the quality and effectiveness of this activity. Academies are required to concentrate on choosing and organizing the hiring of leadership personnel and lecturers to enhance quality and comply with the demands of current activities. In which, frequently pay attention to their physical and mental behavior, ensuring that they have adequate working and housing situations. In particular: "Focusing on cultivating and enhancing political bravery and revolutionary morality; developing the quality and tradition of "Uncle Ho's troops"; strongly against individualism for teachers, educational administrators, and students".⁵

Fourthly, broadening the range of legal education propaganda in academies. The influence of law enforcement on education at military academies is significantly affected by legal propaganda and legal instruction. This serves as an important solution for subjects to raise consciousness, generate awareness, and develop the habit of learning and respecting the law. Thus, academies must proactively identify important resources, select relevant propaganda options, and prioritize mastering subjects' knowledge regarding the importance and worth of the law in the sphere of education in line with the unit's practice. Apply Party, State, Central Military Commission, and Ministry of National Defense educational development guidelines and policies; broaden common methods of legal education; successfully encourage the function of key participants in the aforementioned activities, consider legal education as political agencies, law lecturers, officials performing the task of law dissemination and education... Promote the use of technological advances in legal education in particular, and collaborate with organizations and forces within and outside the military to foster the cooperation of society as a whole in legal education propaganda.

Lastly, the Academy's financial resources should be reinforced to investing in facilities and supplies for law enforcement activities. Infrastructure is important for increasing the success of law enforcement in general and educational law execution at academies. So, academies must be built in a smart, contemporary manner that is appropriate for the country's economy. Academies must invest in building a structure of lecture halls, laboratories, training grounds, procurement of equipment, practical and effective teaching equipment and means, preventing waste and negativity, and so on to allow for participants to take an active role in activities and exercise their rights and obligations.

⁵ Central Military Party Committee (2022), Resolution No. 1657 - NQ/QUTW dated December 21, 2022, of the Central Military Party Committee, Ministry of National Defense on education and training work to fulfill army building tasks team requirements in a new situation, Hanoi, p.7

The basis for bringing educational laws into practice will be synchronous and effective solutions in the application of the law on education at the Academies. The objective of increasing the quality of education and training, cultivating cadres, setting up a regular and modern army, and satisfying the obligations of national construction and defense in the present situation will be noticed in conjunction with solutions for building military institutions.

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IDENTIFICATION AND CONTROL OF AGREEMENTS TO LIMIT COMPETITION IN THE FIELD OF BIDDING

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Abstract

Bidding is a highly competitive commercial activity that has been recognized in the Commercial Law 2005 and the Law on Bidding 2013. The legal nature of bidding is to select a partner by a competition, the very field of bidding is fertile ground for agreements to limit competition in order to suppress this competition. Agreements restricting competition in the field of bidding are controlled and regulated in accordance with the Competition Law and the Law on Bidding. The article focuses on analyzing the legal characteristics of bidding activities; identification of agreements limiting competition in the field of bidding in accordance with the provisions of law and international recommendations; analyzing and commenting on the law controlling agreements to limit competition in the field of bidding in Vietnam today. From there, the author proposes a number of ideas on the improvement of the law in both aspects: the direction of completion and specific solutions to improve the effectiveness of the law to control agreements limiting competition in the field of bidding.

Keywords: *Bidding, agreements to limit competition in bidding, collusion in bidding, Law on Bidding.*

1. Introduction

Bidding is known as a method of selecting partners to provide goods and services that brings great economic benefits. However, the reality of bidding in recent years has generated a lot of negative issues such as selling bids, fake bidding, collusion, devaluation of bids, bias in evaluating bids... has reduced competition among contractors, making bidding activities ineffective. The act of collusion in bidding or agreement to limit competition in the field of bidding is an act that always has a limited nature of competition, disrupts competition in bidding activities, causing great damage to the economy. Many countries have banned this type of behavior in legal documents. Some countries even use strict sanctions, including the use of criminal sanctions to deal with subjects who commit acts of collusion in bidding. In Vietnam, the act of collusion in bidding is regulated and controlled by the Competition Law 2018 and the Law on Bidding 2013. However, up to now, the competition management

agency has not detected and investigated a single case related to collusion in bidding, although this phenomenon has been common in bidding in Vietnam.

This study used descriptive, analytical, commentary and comparative jurisprudence methods.

2. Results

2.1. Bidding: legal concept and characteristics

The concept of bidding has been recognized in two legal documents: The Commercial Law 2005 and the Law on Bidding 2013. Accordingly, the Law on Bidding 2013 acts as a legal tool for state management of bidding for projects related to spending activities, use of State capital in the procurement of goods, provision of consulting services and construction and installation. Bidding is the process of selecting contractors to sign and perform contracts for the provision of consulting services, non-consulting services, procurement of goods, construction and installation; select investors to sign and implement investment project contracts in the form of public-private partnerships, investment projects with land use on the basis of ensuring competition, fairness, transparency and economic efficiency¹.

The 2005 Commercial Law governs the management of bidding for goods and services in trade. Accordingly, bidding for goods and services is a commercial activity whereby a party purchases goods and services through tendering (called the tenderer) in order to choose from among the traders participating in the bidding (called bidders) traders who best meet the requirements set by the tenderer and are selected to sign and perform the contract (called the winning bidder)². The 2013 Law on Bidding and the 2005 Commercial Law both stipulate that bidding is the process by which the tenderer selects a contractor (bidder) who satisfies its requirements to sign and perform a contract. Therefore, bidding is a race, competing between bidders to win bids, to be signed and to perform contracts with tenderers. Contract freedom has given people the right to choose partners in the relationships they want to establish. It is also a premise for promoting and leading people to methods of finding partners using competition and competition between business entities. One of the methods chosen by business entities and evaluated effectively is bidding as defined in the above two statutes. In essence, bidding activities have the following basic characteristics:

Firstly, bidding is always associated with the relationship of buying, selling goods and providing services.

Bidding is only held when entities wish to purchase goods or use services for the purpose of selecting the best suppliers of goods and services. In essence, bidding is only a pre-contract period for the provision of goods and services between the parties to the contract. The bidding results are the basis for the parties to negotiate the contract for sale and purchase of goods, provide services and the details of the bid dossier will be included in

¹. Clause 12 Article 4 of the 2013 Law on Bidding.

². Article 214 of the 2005 Commercial Law.

the contract content (at the end of the bidding process, the winning bidder and the tenderer must sign the contract for sale and purchase of goods, services).

Second, bidding is a multi-subject process.

In the bidding process, there are always two parties, the tenderer and the bidder. The tenderer is the party (which may be a trader, may not) wish to procure goods and use services, while the bidder is a trader capable of providing goods and services for the bidding package. In principle, the number of contractors attending a tender should always be more than one. According to this principle, tender designation is an exception to bidding. In the bidding relationship the third subject often appears to be consultants - they are present as a factor in ensuring that the bidding process is taken seriously. In addition to the above subjects, there are additional entities and individuals competent to appraise and approve bidding results to ensure that the bidding process takes place in accordance with the order and procedures, quickly detect and correct errors in the entire process and check for the last time before entering the signing and execution stage.

Third, bidding is a fair, open and transparent competitive process.

When participating in bidding activities, the bid solicitor shall put forward his requirements in advance so that the bidders can base on that to set prices for the provision of goods and services. Therefore, bidding is a competition between bidders. And the competition between the bidders must comply with certain principles and requirements, ensuring fair competition among the bidders: there are many bidders; bidders must be independent of each other and the bid solicitor; at the same time, the bidders must enjoy equal conditions and opportunities in the bidding process, without creating any discrimination; there is no agreement between the bidders that leads to the falsification of the bidding results. All of this has created transparency in the whole bidding process - the lack of the above conditions will disable the competition mechanism. When the competitive mechanism in the bidding is invalidated or not properly operated, the original purpose of the bid solicitor is not achieved, the bidding becomes meaningless, even leaving many consequences for the economy, socio-economically; especially when the capital used to buy goods and services is State capital, ODA capital, etc.

Thus, before going to the stage of negotiation and signing of the contract, the contractors must go through a period of considering the ability, experience, finance and technology to meet the requirements of the bid solicitor, whether the project is feasible or not. To prove their ability, contractors wishing to implement the project must go through the bidding phase. Through fair, open and transparent competition in bidding, the bid solicitor will better understand the capacity of each contractor and select suitable partners for cooperation. However, considering the legal nature of bidding is to select partners by competition, it is the bidding field that is fertile ground for anti-competitive agreements to eliminate this competition. And they are often implicit agreements, very difficult to detect, investigate and handle.

2.2. Identification of agreements limiting competition in the field of bidding and the legal situation

Typical of negative acts in bidding activities is collusion in bidding. Collusive tendering is an illegal agreement. In which competitors link together to raise the price of goods and services offered in the bidding with potential customers. It may also include the sharing of business opportunities among agreement participants. This can also be called the act of suppressing (obstructing) bidding. Accordingly, the act of collusion in bidding is limited to subjects who are competitors of each other, with the content being the association between these competitors in order to raise the prices of goods and services in the auction, and share bidding packages... (*Business Dictionary*).

According to the Organization for Economic Co-operation and Development (OECD)'s "*Guidelines for the detection and handling of collusion in public procurement*", bid fraud (contracting in tendering) occurs when companies that should be competing against each other occur. compete with each other, but secretly agree to raise the price or reduce the quality of goods or services for the buyer (the buyer wants to buy goods or services through bidding). In addition, the OECD also recognizes that procurement collusion can be particularly harmful if it affects public procurement with the intention of depriving buyers and taxpayers of resources, undermining the confidence of businesses in public procurement. competitive process and undermine the benefits of a competitive market. Collusion in tenders is illegal in all OECD member countries. Thus, the OECD has indirectly recognized collusion in bidding as acts carried out between competitors.

In Vietnam at present, the prohibition of anti-competitive agreements is regulated in the direction of prohibiting on the principle of implicit violation of serious anti-competitive agreements. And prohibiting according to the principle of reasonable impact assessment for other forms of agreement behavior³ (including bidding). The Competition Law 2018 as well as the Law on Bidding 2013 only stop at listing the acts that are considered as collusion without giving a specific concept of this behavior. However, if analyzing Clause 4 "agreement for one or the parties to agree to win the bid when participating in the bidding for the supply of goods and services"⁴ of Article 11 of the 2018 Competition Law, the collusion in Bidding is understood as the fact that the bidders arrange and agree to act together so that one or more of them wins the bid in the provision of goods or services. Thus, in terms of the nature of an agreement to limit competition in the field of bidding, it is an agreement between the bidders, whereby the parties agree to arrange for one or more contractors to participate in the agreement. winning bids, in order to eliminate or impede the competitive mechanism in the bidding.

According to the provisions of the current competition law, the subject of collusion in bidding must be the bidding enterprises. They have agreed upon the will when performing the act. This agreement of will can manifest itself in the form of a tacit or public agreement

³. Tran Thi Nguyet (2020), *Discuss the core values of the Competition Law 2018*, Journal of Human Resources and Social Sciences, Issue 5, 2020.

⁴. Clauses 4 Article 11 of the Competition Law 2018.

(usually tacit agreements), it can be orally, by action or in writing... but arranged to one or another number of bidders participating in the winning contract. Next, the behavior of the bidders leads to the consequences of hindering and distorting the competitive mechanism that the bid solicitor wishes to create.

Acts of agreement to limit competition in the field of bidding always occur between bidders. The content of the agreement is that the enterprises participating in the bidding agree to one or several enterprises participating in the agreement to win the bid in the provision of goods or provision of services. When the content of the agreement is implemented, the bid winner is not selected by the competition mechanism but by the subjective will of the bidders. Co-contractors withdraw from or do not participate in the bidding to give the remaining bidder a chance to win, and they may receive subcontracts or supply contracts from their nominated winning bidder for distribution. divide the proceeds from the illegal settlement.

From the perspective of competition theory, the anti-competitive agreement in bidding has nullified the goal that the bid solicitor has made efforts to create. The purpose of the competitive bidding process is that the buyer can select a contractor to provide goods and services at lower prices, with better quality and innovative techniques only if the bidders are truly competitive together. Agreement to restrict competition in bidding is illegal.

The legal regulations on bidding were created to build and protect the competition mechanism in bidding, to ensure that the bidding taking place is substantive and true to its nature, thereby protecting the public. investors when they spend money to buy goods and use services through bidding. Therefore, the act of negotiating to limit competition in bidding with the nature of an agreement to break the competition mechanism in bidding is always considered illegal in many countries.

Paragraph 1 of Article 81 of the Agreement Establishing the European Community⁵ considers this agreement to have anti-competitive purposes and is outright prohibited. Depending on the assessment of the seriousness of the behavior, national laws will have certain sanctions for this type of dangerous behavior.

For countries that have not yet promulgated the Competition Law, the act of "collusion in bidding" is also prohibited in other legal documents, even many countries consider this act to be a criminal law violation. and the subjects participating in bidding collusion must bear quite heavy penalties.

Agreements to restrict competition in bidding are often secret, difficult to control and cause great consequences. Agreements to restrict competition in bidding often take place in the form of implicit agreements, which exist secretly between the parties to the agreement, so it is difficult to find evidence.

An agreement to restrict competition in the procurement sector is not a vertical anticompetitive agreement. Because vertical agreements are agreements related to the resale of products from manufacturers or suppliers, so it takes place between businesses at different

⁵. Agreement establishing the European Community.

stages in the production and distribution process. products as agreed between the manufacturer and the distributor. Vertical agreements do not create the ability to dominate the market. Vertical dissemination agreements often have the following contents: exclusive territory distribution, exclusive transactions, forcing businesses to join the manufacturer's distribution network, fixing resale prices. Therefore, the agreement to restrict vertical competition does not apply in the field of bidding.

In essence, this is an agreement to limit horizontal competition. Because a horizontal agreement is an agreement between enterprises of the same line of work operating in the same relevant market, such as an agreement between manufacturers or between wholesalers or between retailers of different industries selling similar products. The content of the agreement related to fixing prices for goods and services, dividing the market, colluding in bidding, limiting or controlling the quantity and volume of production, purchase and sale of goods and services, or an agreement to coordinate certain actions for a certain period of time to prevent competition from other enterprises. Horizontal anti-competitive agreements are defined by three characteristics: restrict the freedom of competition of other enterprises in the relevant market according to one or more different parameters; there is a written or non-written agreement (coordination of action) between enterprises that are competing (or will compete) in the market; the enterprises participating in the agreement operate independently of each other.

Bidding collusion is part of horizontal agreements and is considered an act that causes or is likely to have a material adverse effect on competition. Collusion in bidding means any agreement between individuals and businesses engaged in the production or sale of the same or similar products or services, which affects the exclusion of eliminate or reduce competition for tenders or adversely affect or manipulate the procurement process. It is a form of unification of prices and market allocations, often done when contracts are decided to invite bids, for example, in government construction contracts. Common forms of bid collusion are as follows:

- Subcontracting collusion occurs when several parties agree not to submit bids, or formally submit bids so as not to win, provided that certain items of the contract of the other party The winning bidder will subcontract to them. In this way, they share benefits with each other.

- Bidding occurs when some participants agree not to submit bids in order to help other bidders win the bid.

- Complementary bidding, also known as covert bidding or courtship bidding, occurs when some bidders bid too high or have conditions they know the solicitor will not accept or find agreeable.

- Rotating bidding occurs when the bidder becomes the predetermined winner in turn. Each participant is predetermined to be the winner for certain contracts, while the other parties are predetermined to win in other contracts. This is a form of market division, when collaborators allocate or divide markets, products, customers or geographic areas so that each party will get an equal share of the total business market, without really competing in that business. These forms of bid collusion are not mutually exclusive, and two or more of

them can occur at the same time. For example, if a participant in a bid collusion is destined to win a certain contract, provided that the other parties will not win the bid by not participating (bid), or by submitting a bid with a higher price (formal tender). From the above analysis and commentary, we have a comprehensive view of the correct legal nature of the agreement to limit competition in the field of bidding. Removing them from the market is essential by means of legislation and enforcement mechanisms.

2.3. Perfecting the law on competition - restricted agreements in the field of bidding

2.3.1. The improvement of the law to improve the effectiveness of the competition agreement in the field of bidding

The law amending the competition agreement in the bidding sector must conform to the characteristics of the economy. Suitable to the characteristics of the economy is one of the requirements for improving the effectiveness of the competition agreement in the field of bidding. The issue of competition and monopoly control is extremely important for any country with a market economy and especially for developing countries such as Viet Nam. When there is no equality, there will be no principle of ensuring honest competition, fair, competitive mechanism and the positive surface of the market economy cannot be developed.

The law amending the competition agreement in the field of bidding must conform to international practices. Most international treaties to which we conclude or be a member of Viet Nam require the general Vietnamese law and the law on the competitiveness of the vi and the healthy business environment in the middle of the country and the healthy business and business environment in the country and the healthy business environment between countries. Therefore, the construction and enforcement of competition legislation should be placed within the vision and thinking of the integration process, only when the domestic market is secure, then we can attract more domestic and foreign investment sources for the industrialization of the country.

The law on the adjustment of the competition agreement in the field of bidding must prevent the agreement from bidding. Bidding is the commercial operation, the special transaction method. Bidding for two main goals is to ensure competitiveness and profit. The law amending the competition agreement in bidding should supplement the basis of the experience of a number of countries in the world to ensure the objectives of the bidding, preventing the competition agreement in the field.

To supplement the subjects of the competition agreement in the field of bidding. Now, according to the law, only the collusion between the tenderers has narrowed a lot of the holders to each other. Accordingly, the competition agreement in bidding outside the bidder may also occur among other entities involved or involved in the bidding process. There is a collusion link between consultants - contractors, or projects using private capital with collusion between investors - contractors. The agreement between hosts is badly detrimental to the competitive environment, as well as causing large consequences to the economy, even

the impact of the competition, and impact on greater bidding. For example, in the process of participating in consultants' participation in a different manner. If there is a collision between the contractor or the investor and the investor, the consulting position shall be in the position of the investor in the direction of the investor. However, the consultants in many cases may agree with the bid enterprise by committing different acts of violation such as the information for bidders, to falsify the bidding results to deceive the investor.

2.3.2. Proposed solutions for improving the law on adjustment of the competition agreement in Vietnam currently

First, need to supplement the concept of competition agreement in bidding in the competition law

Because the introduction of a unified concept of the act of agreement limiting competition in bidding in a legal document serves as a premise, the basis for other legal provisions that can be enforced. In particular, we need to regulate in the direction of targeting the anti-competitive nature as well as covering the general characteristics of the types of agreements limiting competition in bidding so that when acts of agreement to limit competition appear, there is still a legal basis to handle. If it is only stopped at the scattered listing of some acts of tendering as in the provisions of the Competition Law and the Law on Bidding, it will lead to the omission of other acts that are also of the nature of "tendering" in practice but are not regulated by law. For example, it may be stipulated that an agreement to limit competition in the field of bidding is an agreement that takes place in any form between the entities participating in the bidding process with each other in which the parties agree to arrange for one or more bidders to enter into a winning agreement in order to eliminate or impede the competition mechanism in the bidding.

Second, the Competition law and the Law on bidding should be consistent with the form of expression of behavior

Concretize the acts of tendering and expand the subjects governed by the law controlling agreements to limit competition in the field of bidding. First of all, Clause 3, Article 89 of the 2013 Law on Bidding should provide additional forms of collusion in bidding in accordance with the provisions of the Competition Law.

Non-compete in the field of bidding is often difficult to detect because they are secretly implemented. Therefore, according to experience in the long-term, competitive countries such as the United States, Japan, or European Union (EU), building a strict system of sanctions is not sufficient to succeed in adjusting competitive agreements. The biggest problem with competition management agencies when dealing with limited competition agreements agreed to deal with competition. The biggest problem with competition management agencies is dealing with the general collection of evidence and information necessary to serve as a basis for the investigation of limited competitions.

Vietnamese law has rules about the form of agreements restricting competition in the field of procurement, but these rules are not really complete, the acts of collusion in bidding

in fact. Especially when comparing Competition Laws in Vietnam, with Competition Laws of a number of countries in the world such as Japan, the United States, European Union, South Korea... we see behavior that this regulation is the act of collusion in bidding, but Competition Law in Vietnam is not specified. For example, acts of collusion to divide the bid according to geographical area. So, first of all on competition law in Vietnam as well as tender laws, need additional forms of agreement to divide the package according to the geographical areas to avoid omission of acts of collusion in bidding, and in accordance with international practices. At the same time competition law in Vietnam needs to have rules to be more specific about defining behavior that impedes competition, breaking the competitive environment...These acts make the competition mechanism not operating normally, all must be subject to adjustments of this Law. Competition law 2018 is now just adjusting the behavior of agreements restricting competition in bidding between the contractor with each other then this is missing the point. Competition Law in Vietnam needs additional adjustments all the acts of collusion between consultants - contractors, tender side - contractors for compliance with theoretical and practical control law agreements restrict competition in bidding.

Thirdly, building law enforcement behavior control agreements restrict competition in bidding in an efficient manner.

In the construction of mechanisms to enforce the law, then those issues need to be solved dissection as follows:

- Transfer bidding to specialized agencies for implementation

The current bidding in Vietnam is still a large part of two-way or 2.5-party bidding, one-party investor, one-party contractor, or one-party investor plus consultant and contractors to one side.

According to the experience of countries around the world, forms such as bidding service centers, bidding transaction offices, and bidding management companies are very popular. If the Bidding Law is still only around two-party or 2.5-party bidding, it is not possible to completely deal with negatives such as collusion in bidding, green troops, red troops, embezzlement, bribery...The irresponsibility of the investor is not the real owners of investment projects is also a fact exists. Why are bidding activities at groups, agencies, state organizations, and projects using state budget is still not effective? In the group of private capital, the opposite is true, after all, it is also from the investor's benefits and the investor's responsibility for the capital invested. Therefore, the author thinks that the Law on Bidding needs to be regulated in the direction of only stipulating the basic principles, along with expanding authority, increasing responsibility for investors, and strengthening post-audit work. The investor has the right to actively decide on the form of contractor selection, provided that such contractor is judged to be the most optimal at the time of selection. Along with that Competition Law should be prescribed to handle heavy the behavior of agreements restricting competition in bidding loss of state assets.

- It is necessary to strengthen the implementation of online bidding in a systematic and large-scale manner

The national bidding network system needs to ensure publicity, without restricting access to and access to information. Building a system to ensure continuous, stable and secure operation of information. At the same time the regulation of bidding the current should be modified in the direction of creating the legal framework for the operation bidding via the network to reduce time, save cost, while enhancing transparency, competition in bidding, contributing to the prevention of corruption, waste, control agreements restricting competition in bidding and improving the efficiency of use of funds of the state. Because online bidding will almost reduce and eliminate the meeting between the parties involved in the bidding process, so that the opportunity to collude and negotiate agreements between the parties also becomes more difficult.

- Transparency and publicity of bidding information activities

The authorities need more interested in posting the information on bidding particular is a violation of tender, the contractor violations dealt with... to education, effective contractors from the actual work service, at the same time, once all of the information about the tender from the actual work service, at the same time, once all bidding information (plan a tender notice inviting pre-qualification, tender notice, bidders list to be invited to participate in the tender; the results of selection of contractor; information processing in violation of the tender is invited to participate in the tender; the results of selection of contractor; information processing in violation bidding...) be made public on the means of mass information, the tacit agreement in bid also has little chance to survive more. Mrs. Lindset Marchessault, parts contracts, public Service Management, The world Bank stated point of view: to effectively prevent fraud and corruption in the investment project, the need to perform the contract public, to strengthen the publicity and participation in the contract at all stages of the process the contract and the type of contract from the planning, formation, awarded the contract, deployment and termination of the project⁶.

4. Discussion and conclusion

The Competition Law needs to stipulate to deal severely with the acts of anti-competitive agreements in bidding that cause loss of state property, so the amendment of the Competition Law in this direction should closely follow the objectives, using Which sanctions are strong enough to deter, prevent as well as suppress the most dangerous and harmful acts for this competitive environment?

One of those elements to achieve the effect of the tender is to ensure the rule is competitive according to market mechanisms. The laws of the market economy can operate effectively, commercial activities take place in an orderly manner, the state should design and build the system of legal documents complete and a mechanism to ensure enforcement, especially the writing system the laws that regulate bidding activity in general as

⁶ . <https://muasamcong.mpi.gov.vn/>

procurement Law, commercial Law, Competition Law... Doing this requires the competent authorities need to revise, review and summary of theory as well as practice of the work of building control legislation, acts of agreements restricting competition in bidding, in particular, to improve the legal framework in a synchronous manner, complete with the strict rules, avoid the negative happens, create conditions for active bidding healthy development.

On the basis of analysis of the legal characteristics of the tender, clearly see the nature of commercial activities or happen agreements restricting competition, this recognition agreements that restrict competition in the field of procurement and real estate law, the commentaries and suggestions towards improving the law to regulate this area is useful and urgent. The author wishes to receive comments and valuable contributions of scientists and entrepreneurs.

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THE ECONOMIC FUNCTIONS OF THE GOVERNMENT FROM THE POINT OF VIEW OF PAUL ANTONY SAMUELSON AND RECOMMENDATIONS IN VIETNAM

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Abstract

The article briefly mentions the role of the Government in the mixed economy from the point of view of Paul Antony Samuelson; from which it points out the remaining problems in the process of implementing the economic role of the Government, and proposes solutions to complete the economic functions of the Government in the socialist-oriented market economy.

Keywords: *the role of the Government, the economic role of the Government, Samuelson, the socialist-oriented market economy.*

1. Introduction

In the history of economic theories, when it comes to the role of the Government in the market economy, there are two major schools of economic thought: one side emphasizing the role of the market (the Trong-Nong school, the Kinh-Nong school), and another side emphasizing the role of the State (Mercantilists, Keynesian school...). In the 60s and 70s of the 20th century, the Modern Main school appeared as a compromise between the two previous trends.

In this article, the authors briefly mention the economic role of the Government in the mixed economy from the point of view of P.A. Samuelson.

Paul Anthony Samuelson (1915-2009) was the first American to win the Nobel Memorial Prize (1970) in Economic Sciences. He is one of the most famous economists of the 20th century. Ben Bernanke, who served as the 14th chairman of the Federal Reserve from 2006 to 2014, praised this former professor of Massachusetts Institute of Technology as "an extraordinary intellect in economics".

P.A. Samuelson is the author of the most unique and widely used economic textbook "Economics", which was first published in 1948, and has been the best-selling book in American history throughout 30 years.

According to P.A. Samuelson, when discussing the role of government, we often take for granted that government is the one who makes the "rules of the road". But

government has three distinctive functions including efficiency, equity, and stability. Samuelson analyzed the functions of the state (government), economic goals, and methods of achieving those goals.

Government action in terms of *efficiency* is trying to correct market failures. Government programs to promote *equity* take measures to reflect society's concern for the poor and disadvantaged. *The stabilization policy* is aimed at smoothing the business cycle, which is fraught with ups and downs, reducing unemployment and inflation and boosting economic growth.

Efficiency

Under the condition of natural monopoly, the government has many strategies including taxation, price control and nationalization which are the three strategies rarely used nowadays; “the two main tools are regulation and anti-trust laws” (p. 196, vol.2). To increase the effectiveness of the imperfectly competitive market system, the government introduced antitrust and economic laws.

According to P. A. Samuelson, it is necessary to prevent negative external influences; but to orient towards and encourage the production of public goods.

The state budget is one of the most important leverages to improve the efficiency of the national economy. The most important elements of the state budget are financial, fiscal and monetary policies.

Equity

Even if the market system works perfectly, it is not ideal:

First, it should be recognized that an efficient market system can cause great inequality. In order to reduce income inequality, progressive taxation can be used, in which the rich are imposed higher tax rate on their higher taxable incomes than the poor.

Second, the Government can build an income support system for the elderly, the disabled, and those who have to raise children, as well as provides unemployment insurance for the unemployed. The Government sometimes subsidizes consumption for low-income groups by handing out food stamps, providing medical aid programs and cheap housing.

The main programs for poverty alleviation are welfare benefit, food stamps, medical aid, and a number of smaller or less focused programs. To establish a more efficient and equitable program, economists have proposed a “negative income tax” that provides a basic subsidy and then imposes a tiny fraction of every types of income.

Stability

In addition to its role in promoting efficiency and equity, the Government also has the macroeconomic function of promoting economic stability during the cyclical ups and downs of inflation (price rise) and recession (very high unemployment rate).

Since a general economic equilibrium is possible even when the labor force does not have a job, the Government needs to encourage production growth to maintain “social

stability”, in which P.A. Samuelson mainly concentrate the attention on the stabilization (mechanism) adjustment.

Thanks to the intellectual contributions of John Maynard Keynes, his followers and even his critics, we have a much better understanding of how to manage the ups and downs of the business cycle. We understand that prudent use of the monetary and financial power of the government can affect output, employment and inflation. The government's financial power is the power to tax and spend. The monetary power involves regulating the currency and banking system to determine interest rates and credit conditions. By these two central tools of macroeconomic policy, the government can have influence on an economy's output, employment, and prices.

The economic theory model of P.A. Samuelson is a combination of two categories "economic efficiency" and "fairness". He believed that economic efficiency could not be boasted unless it was supplemented by a balanced distribution of society's income. He advocated a market economy that solves social problems and ensures the welfare of all workers. The theory which was composed on the basis of careful calculation plan at the macro and micro levels has a great practical significance.

By examining the three roles above of government, which promote efficiency, equity, and stability, it can be seen that the market mechanism determines prices and output in many areas, while the government regulates market by tax, spending and regulatory programs. Both market and government are essential. Running an economy without a government and a market is like trying to clap with one hand.

2. Method

The authors have collected the data and information on the remaining problems in the process of implementing the role of the Vietnamese Government, then have used statistical analysis methods combined with data analysis and processing to propose solutions and recommendations to complete the economic functions of the Government in the socialist-oriented market economy.

3. Results

Remaining problems in the process of implementing the economic role of the Vietnamese Government

3.1. In establishing legal frameworks

Since 2013, many basic laws and other important legal documents have institutionalized the basic principles of rule of law and democracy of the 2013 Constitution. The economic legal system has contributed to creating a favorable legal environment for the private economy sector to grow and mobilize FDI capital; and to recognizing the diversity of property rights. Vietnam has established legal frameworks for the application of international institutions and standards on safe business, currency, credit to encourage business and healthy credit activities. Obviously, the economic legal system creates a legal environment for business freedom, a fair and equal competition mechanism in compliance

with WTO's criteria. Especially it creates a common legal ground for domestic and foreign investment. Vietnam has been recognized by ASEAN countries and other countries in the world as having a market economy.

However, the establishment of a legal environment for business activities is still inadequate. The legal system is not really synchronous, the consistency is not high, especially in the conditions of investment, business and planning. Besides, it is still cumbersome with many forms of documents issued by many competent agencies with conflicting contents, for example, among the Electricity Law, the Investment Law and the Construction Law; Petroleum Law with Construction Law, Investment Law, Public Investment Law, and Law on management and use of state capital to invest in manufacture and business at enterprises in electricity, oil and gas sectors...

3.2. In remedy function for the efficient operation of market and for ensuring the social justice, and macro-economy stabilization

Several remarkable achievements:

In general, the economic growth rate has been continuously improved. The average GDP growth rates reached as follows: 4.5% per year in the period 1986 - 1990; 7% per year in the period 1996 - 2000; and 7.5% per year in the period 2001 - 2005. In the context that the world economy is facing great challenges, rapid and unpredictable fluctuations; inflation at a multi-decade high; strategic and geopolitical competition between major countries; military conflicts between Russia and Ukraine...however, Vietnam still achieved a high GDP growth rate in 2022 at 8.02% over the previous year, which is the highest increase of years in the period 2011-2022.

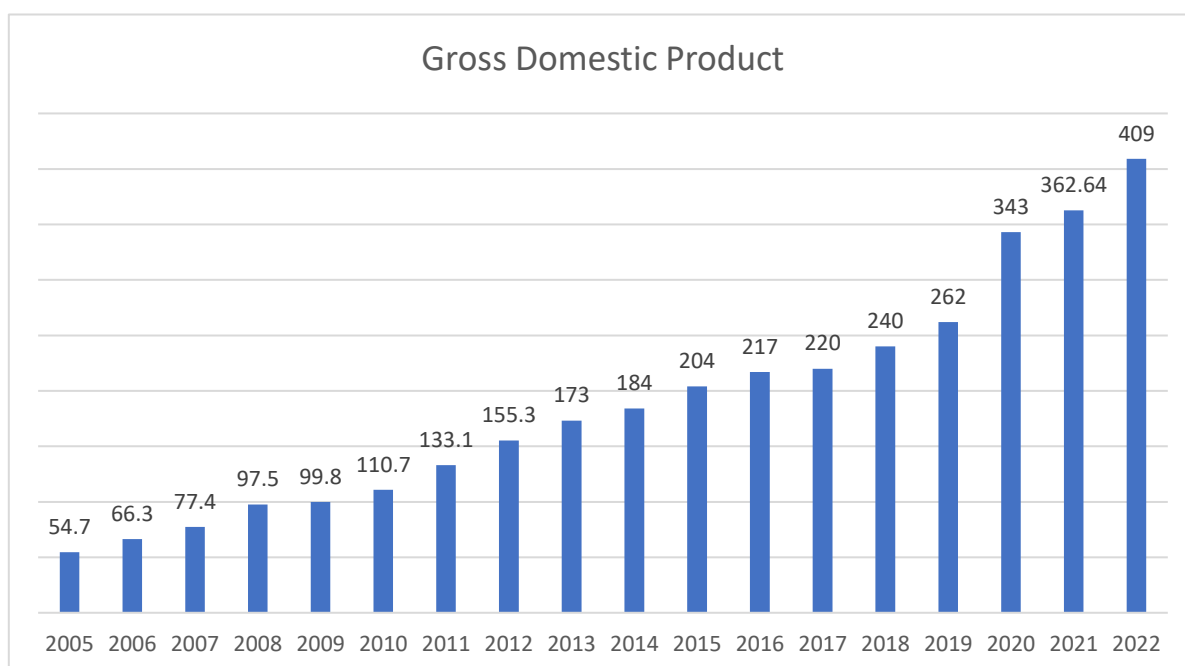


Figure 1. Vietnam’s economic growth 2005-2022 (Unit: billion USD)

Source: General Statistics Office of Vietnam

An important criterion showing the socialist orientation of the market economy is to direct its development towards improving people's living standards. After over 35 years of renovation, Vietnamese people's income has improved significantly. In the early 1990s, Vietnam was still a poor country with its per capita income in 1992 at 140 USD. However, in 2008, it reached over 1,000 USD. At this income level, Vietnam has surpassed the threshold of a low-income country and has become a middle-income country. By 2022, the per capita income at current market prices was about 95.6 million VND per person, equivalent to more than 4,100 USD, increasing by nearly 400 USD compared to 2021; 29 times higher than in 1992.

The social security and social welfare in the period 2001 - 2010 was better and better guaranteed, making an important contribution to the improvement of the Vietnamese people's material and spiritual life, stabilizing and developing the economy - society of the country. The system of social security and social welfare policies has been increasingly synchronized and completed in hunger eradication and poverty reduction, job creation, development of the insurance system, and incentives for people with meritorious services to the country, social assistance, public social service expansion, enabling people to enjoy more culture, health and education.

The most obvious difference between the period before 2011 (from 2007 to 2010) and after 2011 is that the macro-economy in Vietnam is gradually stabilizing. The role of the Government in the economy is increasingly evident in the promulgation and implementation of policies. Despite being strongly affected by the COVID-19 pandemic in 2020, the macro-economy is more stable; inflation is controlled at a low level; the economic growth is quite close to growth quality; and the major balances of the economy are improved. GDP growth for the whole Socio-Economic Development Strategy period 2011-2020 reached 5.9% per year, belonging to the group of high-growth countries in the region and in the world; in which the average growth rates reached as follows: 5.9% per year in the period 2011 - 2015, and 6.8% per year in period 2016 - 2019.

Existing problems

The assurance of social security and social welfare is still inadequate. The living of a part of the population, especially in the highland and remote areas, is still difficult with the large income gap between classes. Resources for social security and social welfare mainly depend on the state budget; but its coverage and support allowance are still low. The forms of insurance have not met the diverse needs of the people. The service quality is still low with many negative troubles.

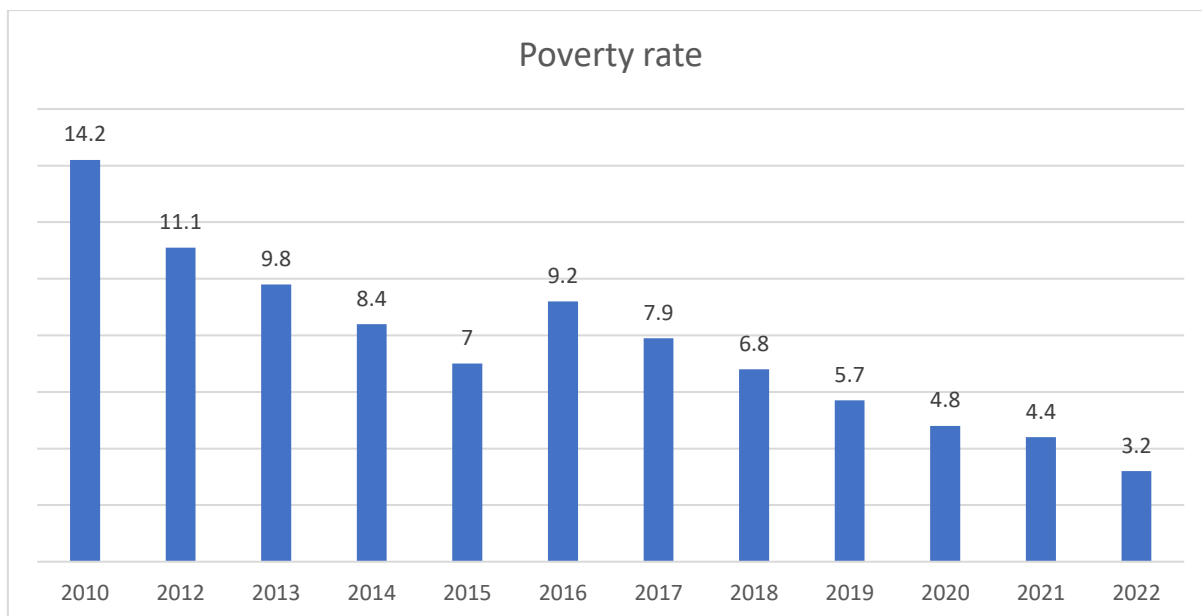


Figure 2. Poverty Rate in Vietnam 2010-2022 (Unit: %)

Source: General Statistics Office of Vietnam, Statistical Yearbooks of several years

In addition to the achievements, it is obvious that the results of poverty reduction are not sustainable, the re-emergence or emergence of poverty is still high, especially in mountainous areas, ethnic minority and areas often suffering from natural disasters. The average rate of poverty re-emergence for 4 years (2016 - 2019) was 4.09% per year compared to the total number of households escaping from poverty (the poverty re-emergence rate of the previous period had been about 12% per year). The average rate of poverty emergence was relatively large, accounting for 21.8% of the total number of households escaping from poverty in the period of 2016-2019. The underemployment rate in rural and urbanized areas, and the unemployment rate in urban areas are still large.

Table 1. Unemployment and underemployment rates of labour force by age group (Unit: %)

	Unemployment rate				Underemployment rate			
	General	15-24	25-49	50+	General	15-24	25-49	50+
2013	2.18				2.75			
2014	2.10	6.26	1.18	3.52	2.35	3.18	2.22	1.76
2015	2.33	7.03	1.49	0.86	1.89	3.05	1.72	1.46
2016	2.30	7.43	1.46	0.84	1.66	2.57	1.58	1.21
2017	2.24	7.50	1.36	0.86	1.62	2.12	1.57	1.38
2018	2.19	6.92	1.49	0.99	1.4	2.23	1.27	1.26
2019	2.17	6.51	1.59	0.70	1.27	2.19	1.19	0.82
2020	2.48	7.21	1.99	0.99	2.52	4.05	2.41	1.86
2021	3.20	8.55	2.66	1.86	3.10	3.89	3.10	2.61
2022	2.32				2.21			

Source: General Statistics Office of Vietnam, Statistical Yearbooks of several years

Due to negative impacts of the Covid-19 pandemic, millions of Vietnamese workers have lost their jobs, taking a layoff, and quit jobs or have to reduce their working hours, reduce their income, ... It is the first time in the past 10 years, the economy Vietnam witnessed a serious decline in the number of people participating in the labor market and the number of people having jobs. Therefore, the average income of employees also has a deficit. The indicators of unemployment and underemployment rates have increased, contrary to the trend of decline in recent years.

The progress of restructuring the economy in general and restructuring the banking system in particular is still slow compared to the set plan. In both short term and long term, there are still many issues that have not reached expectations and requires handling in the near future.

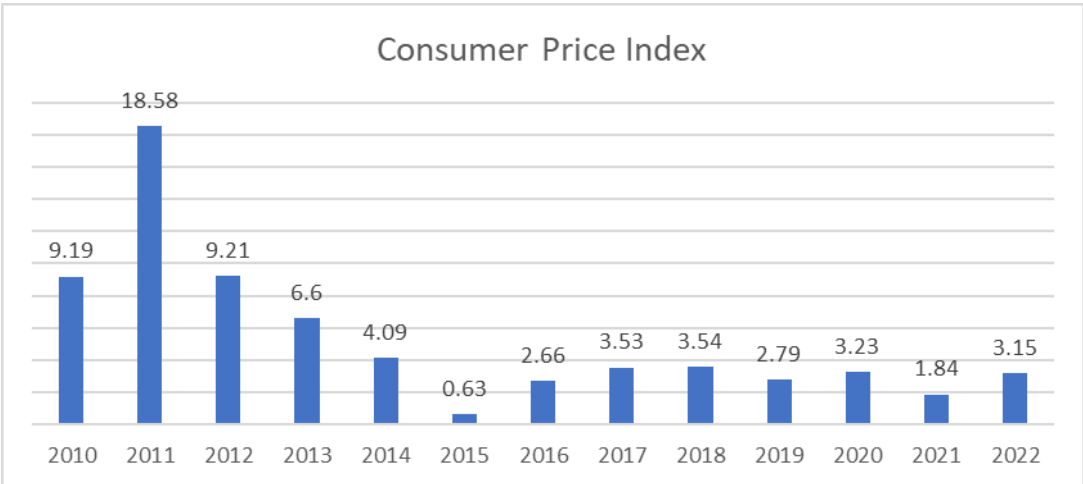


Figure 3. CPI Growth Rate of 2016-2022 (Unit: %)

Source: General Statistics Office of Vietnam, Statistical Yearbooks of several years

According to IMF, the global inflation reached the peak in 2022, increasing from 4.7% in 2021 to 8.8% in 2022. The average consumer price index of Vietnam in 2022 increased by 3.15% compared to 2021.

The published figures by the State Bank of Vietnam shows that the internal bad debt ratio at banks increased from 1.4% at the end of March 2022 to 1.9% in August 2022; and by the end of 2022, this figure was 1.92%. Deputy Governor of the State Bank of Vietnam (SBV) Dao Minh Tu said that bad the debt ratio of credit institutions - or the bad debt ratio of the economy tended to increase at this time. The difficulties of the economy as well as of the enterprises, and the people may be shown more clearly in the coming time. Then, the internal bad debt ratio at banks is forecast to increase continuously. Dr. Can Van Luc, Chief Economist of BIDV and Head of BIDV Training and Research Institute forecast that the bad debt ratio of the economy in 2023 will increase along with the prudent monetary policy of the State Bank. The internal bad debt ratio may reach over 2%, and the total bad debt rate may be about 4%.

Furthermore, the relationship between economic growth and environmental protection has not been resolved well. Experts say that if the environment is not protected,

“the price” that Vietnam will have to pay for the destroyed and polluted environment will account for 6% -7% of GDP. If the medical costs for disease treatments are included, the total amount will be up to 8% -10% of GDP.

3.3. Causes

Firstly, the awareness of the economic role and function of the socialist government has not kept up with the development of the country. We have paid more concentration on high and fast growth goals; have given priority to the quantity in attracting foreign investment. Guidelines and policies for managing the state economic groups; land policies; science and technology policies are still limited and inadequate.

Secondly, the socialist-oriented market economy institution has not yet been completed in the direction of modernity, synchronization and integration. Priorities in performing the government's economic functions according to each period of economic development have not been set.

In case of limited resources, first of all, the role of creating a stable environment for subjects in the economy must be prioritized; then the function ‘efficiency’ need to be done; and the last thing is equity or justice. Inequality must be accepted in a certain period; then when the economy has developed to a certain extent, social justice can be taken into account.

Thirdly, the organization of the state management apparatus is still cumbersome and overlapping; its effectiveness and efficiency are not high. Besides, the capacity to direct, administer and the qualification of civil servants have not yet met the practical requirements.

4. Discussion and Conclusion

Solutions to improve the role of the Vietnamese Government in the socialist-oriented market economy

4.1. Clear awareness of the role and economic function of the Government in the new period

Developing the socialist-oriented market economy is one of the fundamental issues of development philosophy in Vietnam. From a very early age, we have affirmed that the economy we are building *must be administered by the Government*. In Vietnam, the role of the Government in the economy not only comes from the common requirements of the development of the market economy, but also comes from *the specificity* of the social-oriented market economy. In order for the Vietnamese Communist Party's guidelines, viewpoints and guiding ideas to turn into reality of economic movement; they must be institutionalized into a legal system, socio-economic development programs and plans; approved, implemented and administered by the Government. The laws, programs and plans for socio-economic development of the Government are only correct when they accurately reflect the objective development requirements of the market, *taking market laws as the basis*. This needs to be reflected in all three areas: ownership, administration and distribution.

The existence of three basic forms of ownership including the entire people ownership, the collective ownership, and the private ownership; is an objective requirement of the market economy; but needs to be specifically regulated, especially for land.

In administration, the Government *creates a legal framework for efficient production and business activities*. Only the Government has and can do this function. The more synchronous, correct, consistent and punctual the economic legal system of the government is, the more positive impacts it will have on the economy operation. It is necessary to define the administration mechanism for economic groups; and to avoid the government directly doing business, or managing the business activities of state enterprises, interfering the business autonomy of enterprises including transformed state-owned enterprises, directly deciding on investment projects and then assigning them to state-owned enterprises to implement; causing scattered, inefficient investment, and basic capital debt...

The functions and tasks between the central government and the local government must be defined clearly in the management of natural resources and national resources in the following direction: The central government focuses on building and completing economic institutions, building and organizing the implementation of strategies, master plans and plans for general socio-economic development of the whole country, implementing macro-regulatory measures for the entire economy. The local governments need to be more fully decentralized with powers and responsibilities in the implementation of economic laws promulgated by the Central Government, in developing and implementing strategies, master plans and plans for socio-economic development of their respective localities, also supporting and facilitating the production and business activities of people and enterprises in the area.

It is necessary to build and form a thinking system on socialist orientation in economic development as a basis for further improvement of economic and civil policies and laws. Moreover, it is important to eliminate discrimination between economic sectors; to distribute benefits fairly, to implement social security well; to constantly renew thinking in state administration of the economy; and to establish a basis for controlling the interests of different groups of people in the legislative process.

Based on the correct awareness of the requirements of the rules in the market economy, the Government needs to turn those requirements into laws, policies and plans for socio-economic development, and to determine the right steps to actualize them. This is a factor that has a direct impact on promoting the movement of the market economy in compliance with its internal rules.

4.2. Consistently prioritizing macroeconomic stability, speeding up economic restructuring in the new context

The Government has well implemented Resolution No. 31/2021/QH15 dated November 12, 2021 of the National Assembly on the Economic Restructuring Plan for the 2021-2025 period with the main tasks and solutions focusing on completing the objectives of restructuring public investment, the state budget, the system of credit institutions and public non-business units; developing different types of markets, improving the efficiency of resource usage and allocation; developing enterprise force; promoting connections between enterprises of all economic sectors; innovating and developing collective economy, cooperatives.

Vietnam is restructuring its economy in the context of the fourth industrial revolution. After more than two years of Covid-19, at the beginning of 2023, most of the studies considered that it is inappropriate to mention herd immunity to the COVID-19, and it is not possible to determine the eradication or elimination of this pandemic. The Russia-Ukraine war has accelerated the global energy crisis and the skyrocketing global inflation. Therefore, the global economy faces the risk of recession. Many countries are launching economic stimulus packages to increase aggregate demand, causing higher price, which may affect inflation in the near future. Therefore, the economy restructuring should be associated with the Master Program on economic recovery and development.

4.3. The Government needs to complete and use the system of macro-regulation tools efficiently

The macro-regulatory objective and its overall requirements identified in the development plan must be the main basis for the regulation of financial and monetary policies in order to promote economic growth, to stabilize the domestic currency value, to optimize and regulate income, and to implement poverty alleviation...

The primary focuses of economic reform for the period 2022-2025 are as follow: improving elements of the business environment in the direction of reducing the number of bureaucracy procedures, time, costs and risks for enterprises; cutting down the list of conditional investment and business lines and reforming the conditions of doing business in Vietnam; removing barriers for investment and business activities due to overlapping, contradictory, unreasonable and different legal regulations; continuing to promote the reform of specialized administration and inspection of imported and exported goods; speeding up the reform of land registration and renewal of land administration; promoting digital transformation in sync with administrative reform; promoting decentralization and empowerment to local governments, and supervision of this activity; focusing on solutions to support people and enterprises to recover production and business and to overcome the negative impacts of the COVID-19 epidemic; creating institutions to encourage innovation and creativity.

Besides, the government should pay attention on promoting the reform of civil service and improving the qualification of civil servants; strongly implementing the construction and development of e-government and digital government; continuing to promote reform of administrative procedures, applying digital technology to improve all processes and procedures of administrative and public agencies.

4.4. Remedies for defects of the market economy

Firstly, it is necessary to promote the implementation of socio-economic development programs associated with job creation. Encouraging all economic sectors and all types of enterprises to strongly develop their manufacture and business to create more jobs, and at the same time enabling people to have jobs and increase incomes are solutions for hunger eradication and poverty reduction and ensuring the social security positively, efficiently and sustainably.

Secondly, the Government should develop synchronously, diversify and improve the quality of the insurance system, and at the same time should have appropriate support policies for people to actively participate in the system under negative impacts of the market economy, climate change, natural disasters, epidemics, which tend to increase.

Thirdly, in order to effectively implement the sustainable poverty reduction program, it is necessary to accelerate the implementation of socio-economic development programs, in which the focus is on the efficient implementation of the National Target Program on sustainable poverty reduction in the period of 2021 - 2025; and to continue mobilizing the support of the business community and the whole society, encouraging the poor people and poor areas to make an effort to get out of poverty sustainably and to get rich.

Fourthly, it is important to well implement preferential policies for people with meritorious services and social assistance policies for social protection beneficiaries.

It is necessary to continue to complete policies and improve the preferential regime for people with meritorious services, in line with the economic development; at the same time, support families with meritorious services to develop production and business to increase their income; mobilize the whole society to participate in the movement of "reciprocating gratitude", ensuring that people with meritorious services have a higher standard of living than the average standard of the population in the same area. Besides, the Government should complete the policies and develop a flexible social assistance system to effectively respond to risks and catastrophes along with increasing regular and unexpected assistance from the state budget. We also must promote socialization, diversify channels and forms of social assistance and voluntary and humanitarian social relief based on the community with the large participation of enterprises, society and our overseas compatriots in foreign countries; and also enlist the help of the international community.

4.5. Ensuring equity and justice through a variety of public services and improving social welfare

Ensuring better and better social security and social welfare is an urgent requirement of the rapid and sustainable development process. The Government needs to increase resources and play a leading role to improve social welfare and develop a diversified system of basic social services.

In the coming time, ensuring social welfare in association with promoting the development of social services must both help all people to have access to minimum basic social services and meet the diversified and increasing needs of the population for these services. It is necessary to promote the development of social welfare funds at all three levels as follows: centralized funds of the State; funds of enterprises and business units; funds of collectives and communities. The Government should continue to improve mechanisms and policies to expand the participation of all subjects in providing more and better quality public services; effectively develop and implement national programs on development of education, health, culture, information, sports, population, family and children.

Conclusion

After generalizing the economic role of the Government in the mixed economy from the point of view of P.A. Samuelson, the author points out the remaining problems in the process of implementing the economic role of the Government of Vietnam and reason. According to the author, in order to perfect the role of the Vietnamese Government in the socialist-oriented market economy, it is necessary to clear awareness of the role and economic function of the Government in the new period; consistently prioritizing macroeconomic stability, speeding up economic restructuring in the new context economic recovery and development; complete and use the system of macro-regulation tools efficiently; remedies for defects of the market economy; ensuring equity and justice through a variety of public services and improving social welfare.

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CONSTRUCTING DEVELOPMENTAL STATE IN VIETNAM TODAY: THEORETICAL AND PRACTICAL PROBLEMS

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Abstract

Developmental state is no longer a strange topic to the world in terms of both theory and practice. Vietnam in recent years is also aiming to build a developmental state. The XIII Congress (2021) of the Communist Party of Vietnam has identified three strategic breakthroughs in which the development institution is synchronously completed... Renovation of national governance towards modernity and effective competition result... is the first breakthrough. This article focuses on analyzing the characteristics, opportunities, advantages as well as difficulties, and challenges of the process of building a developmental state in Vietnam today. From there, the article makes some recommendations to improve the efficiency in building a developmental state in Vietnam to meet the requirements of sustainable development of the country, contributing to realizing the aspiration to develop a prosperous and happy country.

Keywords: *developmental states; practical; sustainable development; theoretical; Vietnam.*

1. Introduction

The development state has been widely recognized as the most important factor behind the postwar "miraculous development" in East Asia. It is considered part of helping to shift the economic focus to the Eastern region. The recent rapid transformation of several emerging economies, particularly China and Vietnam, suggests that this model of economic development can remain important even in the age of globalization. Taking Vietnam as a case study, this article argues that despite significant differences in actions, capacities, and ideological orientations between the Vietnamese state and other countries in the region. Vietnam's political leaders have followed the interventionist, state-led development model. Vietnam's goal is sustainable development.

East Asia has earned a reputation for its quick, steady economic growth. It is widely believed that the entire economic center, which is becoming more internationally connected, is moving from Western Europe to North America and then toward East Asia (Berger, 1998; Gilpin, 1995). This is not simply one of the most significant recent advances, but it also

challenges the way many people, particularly in the "West," think about economic development. However, peripheral development persists, and East Asian nations continue to make efforts to influence it. In the case of China, this possibility is corollary and clear (Bagchi, 2000; 2004; 2006; Riskin, 2008).

The central role of the state is one of the most obvious and pervasive aspects of the rapidly spreading development process throughout East Asia. The idea that East Asian development might be negatively impacted by nations' "interference" in economic processes is difficult for many outside observers to accept because it runs counter to much of the liberal economic orthodoxy associated with the so-called "Washington consensus" with a focus on regulations. Responsible and market-focused policymaking (Williamson, 1990; 1994). And it appears that's exactly what happened. Many academics contend that without appreciating the significant role that many nations play in regional planning or efforts to coordinate economic growth, it is hard to comprehend the full East Asian development story (Johnson, 1982; Wade, 1990; Amsden, 1989; Haggard, 2004).

Numerous academics have researched the subject of the developmental state in wealthy nations like the United States as well as in recently industrialized nations like Korea, Taiwan, Singapore, China, India, Finland, Brazil, and Congo. Every country whose state is regarded as being in a developmental stage exhibits the practical outcome of becoming wealthy and powerful, having socioeconomic problems that are successfully resolved, and having their international standing strengthened. This fact may be what motivates Vietnam's current understanding of the developmental state and its efforts to build them.

2. Literature Review and Theoretical Basis

2.1. Literature Review

a. Research on the developmental states

According to C.Johnson (1982), a state that wants to implement the model of the developmental states needs the following four factors: (1) The state civil servants do not need to be large in scale (so that the salary fund is not too large) but need elite and talented management; (2) Political institutions must ensure the civil servants have enough political space to effectively implement them the state policies; (3) The state needs to provide favorable economic intervention in response to the market; (4) There must be a leading organization, oriented to economic development similar to the "navigator organization".

Through theoretical proposals as well as practical experiences in some countries, Quan L.M. (2020) can initially generalize the main characteristics of the constructivist state as follows: (1) The State develops strategies, and creates environments and conditions for social development; (2) The State forecasts, shares and guides in social development; (3) The State saves and brings entrepreneurship in development management; (4) The State is lean, transparent and effective for development; (5) The State develops and employs talents. The characteristics of the developmental constructivist state presented may have their differences, but some of its common characteristics can be stated as having elite leadership

and elites supporting the state; the state has independence, the ability to impose in the face of the pressures of social classes, not to be manipulated; commit to economic growth; economic coordination is carried out by specialized institutions with real power and capacity... (Thu V., 2020).

Developmental states have been "highly selective in their liberalization and export-oriented strategies, often ensuring the development of a competitive region before opening up" (Wade, 2003; Akyuz et al., 1998). They "create winners", not "choose winners" (UNCTAD, 2007). Along with economic causes, the underlying reasons for the success or failure of state interventions are a combination of political and social factors. As Khan and other authors have noted, the difference between successful and failed attempts at state-oriented development does not seem to be primarily related to corruption, which often appears in both respects, but rather to the problem of state takeover (L. Hellman, 2000; O Khan, 2005).

Peter Evans (1995) argues that the construction of a developed state depends on "specific historical assets and characteristics of the surrounding social structure" (Evans, 1995) which are unique characteristics of each country. The construction of the administrative apparatus of the developmental states is also of interest to many researchers. The public bureaucracy has always included the nation's brightest and most talented figures and its appointment is based on merit, rather than politics (Johnson, 1982; Williams, 1985, 1994; Wade, 1990; White, 1988). A special organization in the civil service puts the achievement of the stated development goals and the service of the country above personal and political interests.

Studies have also shown that developmental states need an effective coordination center to manage development. Most successfully developed countries have a central coordination center that promotes economic transformation. This center is not only determined to promote the economy to high growth rates but also works towards eliminating the weaknesses of the economy and making the economy competitive, by diversifying and identifying new niche production products (Woo-Cumings, 1999). From this coordination center, the state directly coordinates industrial investment, actively directs macroeconomic policy according to development goals, and protects and promotes national interests as defined by the government (Schneider, 1999). It sets national objectives, leverages markets, and monitors whether policies are implemented.

Huan D.V. (2015) analyzed and pointed out the differences between the constructivist state and the mining state in several points: (1) The constructivist state is based on a political institution in which power is not concentrated in a part of the state but has relative dispersion and balance; (2) The State shall ensure that all individuals and business organizations can participate in production and business fairly without being affected by policy barriers and monopolies; (3) The State shall ensure the relatively equitable distribution of the fruits of socio-economic development.

Case in point in China. Yasheng Huang (2008) has shown that economic growth in China does not increase due to authoritarianism, but rather because the period of the relative

political opening is 'ahead or accompanied'. In periods of increased relative political repression in China, growth has declined. China's real miracle dates back to the 1980s when Chinese politics was at its freest. Personal income growth exceeds GDP growth; the share of labor in GDP is growing, and income distribution initially improved. China made even more achievements in poverty alleviation in the 1980s without any of the factors (such as foreign direct investment) now considered essential elements of the China model. In 4 short years (1980-84), China lifted more rural people out of poverty than combined in the 15 years from 1990 to 2005 (Huang, 2008).

However, more and more researchers are arguing the case for a democratically developed state. Patrick Heller (1999) rightly points out that there is a precise case for the argument that developed nations can successfully manage the balance between economic growth and social development while building democratic institutions. Of course, Amartya Sen has been making the case for both development and democracy - one indispensable for the other - for some time. Sen (1999) argues eloquently that development 'is a process of expanding the real freedoms that everyone enjoys' and that 'development requires the elimination of the main sources of non-freedom: poverty as well as tyranny, poor economic opportunity as well as social deprivation, abandoned. of public institutions as well as intolerance or excessive activity of repressive states.

b. Research on developmental state in Vietnam

During his 24 years as President of the Democratic Republic of Vietnam, President Ho Chi Minh has had philosophies on government building that are worth the ideological foundation for building a developmental government in our country. In the current context, continuing to study and thoroughly understand the philosophy of building a constructive government according to Ho Chi Minh's thought is a practical job, contributing to raising the awareness of cadres and Party members in building a constructive government in Vietnam (Thang N.T., 2020). The term "constructivist state" has not been mentioned by President Ho Chi Minh at the time of his birth. However, the issue of constructing the development of the country has been mentioned a lot in different aspects of his writings, writings, and speeches. The creation of national development or "nation building", or building a developed nation, building a new and good society, and building and developing the country sustainably are the goals that he has identified and resolved to implement throughout his revolutionary life.

In Vietnam, referring to the state of development creation is referring to the central role of the State in creating an environment and conditions for all individuals and people of all classes in society to promote their capacity and creativity for their benefit and the whole nation. According to President Ho Chi Minh, the development-creating State in Vietnam has the following main characteristics: (1) The State must be a state that "serves the people"; (2) In the state apparatus, the Government must be "integrity", "the whole people are united", "know how to work"; (3) In the State - the country needs to have a Party leader, a contingent of cadres who "know how to lead".

In his inaugural address to the National Assembly in 2016, Prime Minister Nguyen Xuan Phuc affirmed that Vietnam needs to "build a government that creates development, integrity, drastic action, and serves the people." This is fully in line with the practical requirements of the country and receives the concurrence of the whole Party and the whole people. The developmental state refers to the model of the state that makes a reasonable intervention in the economic sphere of social life. This model is applied with different characteristics in many countries but has made the economy have outstanding development. In our country, studies in recent years have clarified many theoretical and practical aspects of the developmental state. And to a certain extent, researchers have also pointed out the possibilities, advantages, limitations, requirements, and conditions when applying it in Vietnam.

Thu V. (2020) outlines the basic contents of the construction and operation of the developmental state in our country expressed on the following points: (1) There is a need for political determination and high unity of senior leaders of the Party and the State on the construction of developmental states, thereby spreading to cadres and civil servants in the Party and State system; (2) Carry out methodical and serious research on developmental states; (3) A developmental state is a state sometimes referred to as an interventionist state to distinguish it from the regulatory state; (4) Developmental states have high demands on vision and capacity for governance and management; (5) Ensuring democracy; (6) The issue of institutionalization of the developmental states.

Building a developmental state is an urgent current issue in our country today. To contribute to the successful construction of the developmental state model, Thuy D.V. (2020) proposes several directions: (1) Closely combining the construction of a developmental state with the process of building and completing a socialist rule-of-law state (2) Building a developmental state must be synchronous across three legislative areas, executive and judicial; (3) Building a developmental state associated with the process of streamlining the state apparatus; (4) improve the efficiency of market-led regulation of the state apparatus; (5) Improve the efficiency and quality of social function performance in the economic field; (6) Building developmental state should selectively inherit the contemporary value of developmental state models in the world (Thuy D.V., 2020).

2.2. Theoretical basis

a. The concept of the developmental state

The term "Developmental State" was first coined by C.Johnson (1982) when he systematically studied the state through a survey of state models of some countries that had succeeded in rapid industrialization such as Japan, South Korea, etc... Initially, the developmental state is a model of state management, in which the state sets development-oriented policies, creates an environment and conditions for economic sectors to realize their full potential in the environment of competition and international integration; strengthens supervision to detect possible imbalances, ensuring macroeconomic stability (Johnson, 1982).

So far, there has been a lot of research on supply chains in many different approaches and there are many different definitions of the term "Development Creation State". Some

views include "market fit" in Japan (Johnson, 1982); "Market-oriented economies" in Taiwan and South Korea (White and Wade, 1985); "Market Strengthening" in Korea (Amsden, 1989); or "managed markets" in Taiwan (Wade, 1990).

Unlike the traditional state - the state mainly adjusts and overcomes market failures, adjusts to ensure social justice, the State creates development more proactively, not only by adjusting and overcoming market failures but also focuses on creating markets according to the vision of the whole country and taking advantage of the advantages on both economically and politically. In particular, focusing on the design of specific guidelines and orientations, and along with that, policies to focus resources, creating priority mechanisms in focus areas (for example, Japan focused on the automotive industry in the 1970s, Malaysia later focused on the electronics industry, India focuses on the software industry, etc.), particularly in its industrial and commercial policies.

According to Marx and Engels, the state has class and social functions. The class function manifests in the protection of the interests and dominant status of the ruling class. Social functions ensure social stability and development, meeting the needs of members of society, and first of all the needs of economic development. Thus, the developmental state is inclined to perform social functions and enhance the efficiency and quality of social functions. The function of the developmental state differs from the "command state" and the "regulatory state" in that it must be effective in leading, promoting, and maintaining economic development at a higher rate (Thuy D.V., 2020).

Fritz and Menocal argue that "while the idea of the "developmental state" emphasizes the efficiency of the state, the conception of "governance" emphasizes the need for state control" (V. Fritz and A. Rocha Menocal, 2006). Amartya Sen writes: "Development is the process of extending real freedom to the people", according to which "the goal of the current developmental state is not only economic growth but also concerned with improving the quality of life and political legitimacy". Vartiainen, J. (1999) notes that the developmental state can be understood as the "welfare state of development" or the "state of the creation of democratic development". UNDP defines: "a developmental state as a state that participates strongly in the national economy to promote development" (UNDP, 2021).

Vinh B.Q (2015) argues that the essence of the state is that it does not manage but serves. The common characteristics of countries, according to him, are: (i) Creating a good political and policy environment to serve businesses and people effectively, without much involvement in the work of enterprises; (ii) Recruitment of civil servants who are competitive, fair, transparent and arbitral; (iii) Close public-private cooperation - cohesion; (iv) The rules of the game in the market are clear and strict.

The idea of "a centralized state interacting with the private sector from a preeminent position to ensure development goals" (Wade, 1990) is often referred to as the "developmental state" theory (Johnson, 1982; White, 1988). Authoritarian and collectivist political regimes around the world have driven markets by "increasing the provision of investable resources, dispersing or "socializing" the risks associated with long-term

investment and directing investment allocation in methods that combine government and entrepreneurial incentives" (Wade, 1990).

According to Dung N.S. (2020), the developmental state is the state that promotes the positive side, overcoming the limitations of the "command state" and "regulatory state" models. This state does not stay out of the market but also does not change the market, but actively intervenes in the market at a reasonable level to promote development and realize the set goals. The term developmental state is substantive and focused on the role of the state's active intervention in the economic sphere. This intervention implies comparing the developmental state with the "regulatory state" in which the state plays a passive role, giving way to the self-regulating mechanism of the market (Thu V., 2020). The developmental state with this characteristic is a development service apparatus instead of a dominant and ruling apparatus; there is a fundamental change in the position and role in the relationship between the state and the development subjects of society, first of all, the economic development subjects (Quan L.M., 2020).

b. The role of the developmental state in the sustainable development strategy

In simple terms, sustainable development means integrating the target economic, social, and environmental factors of society to maximize human well-being in the present without compromising future generations' "ability to meet future generation" needs when possible and making trade-offs when necessary. The pursuit of sustainable development, therefore, requires improving the consistency and complementarity of policies across multiple sectors, in response to the complex development challenges ahead (OECD, 2001). The Rio Declaration explains that "people are at the heart of the concern for sustainable development. They are entitled to a healthy and productive life in harmony with nature" (UNCED 1992).

Sustainable development strategies are socially, economically, and environmentally integrated, taking explanations of their impacts on different socioeconomic groups and for future generations. This, in turn, poses many technical and political difficulties. Countries also need multi-stakeholder forums (including representatives of government, business, labor, and civil society) to examine optional existing policies and translate visibility into specific short- and long-term goals at the national and local levels. The developmental state can promote its characteristics toward sustainable development (OECD, 2001).

Tuan N.V. (2020) assesses the role of the State in sustainable economic development: (1) the State also has a role in setting up a strategic system and building a legal system for sustainable development; (2) The role of organizing and implementing sustainable development: organizing the management apparatus, building a contingent of staff, mobilizing resources; (3) Create social consensus, enhance the social responsibility of individuals to realize sustainable economic development.

Despite many differences in individual economies and economic development approaches, developed East Asian countries have shared some common approaches. The most fundamental element of the development state is that its main concern is to ensure

sustainable growth and development based on high rates of accumulation, industrialization, and structural change (UNCTAD, 2007). These countries are driven by the "urgent need to promote economic growth and industrialization" (Leftwich, 1996) to "catch up" with the West or its industrialized neighbors. This may be to protect oneself from global or regional threats or to gain legitimacy by bringing about a stable improvement in the material and social lives of citizens. The developing state directly and positively influences the direction, pace, and objectives of development, rather than leaving it to uncoordinated market forces or an "invisible hand" that allocates resources in the economy (Johnson, 1982).

Studies on the developmental state show that the developmental state is not opposed to theories or models of the progressive state such as good state governance, developed administration, the role of government in the modern world..., market economy conditions, industrial revolution 4.0... there is a connection between them. These new elements work together toward sustainable development (Khoi D.M., 2017).

Developing countries, where most efforts are made to develop their economies and improve living standards (Beeson, 2006), have tried to find ways to deal with global challenges, toward sustainable development. The fact that some countries operate successfully still appears in some parts of the world suggests that the new emergence of developed nations in catching up with developing economies is still possible and creating sustainability (Hundt, 2009).

Beeson (2006) questioned whether the developmental state has an impact on sustainable development. Even if the developmental state succeeded, the Japanese state always faced the real risk of being captured by the benefits conferred and becoming an obstacle to further necessary reforms. In addition, when the boundaries of technology and knowledge are reached, state planners are not always better than business managers at predicting the future development of technology (Beeson, 2003). As a result, after completing "catch-up" tasks, developmental states either move into the "upgrade" stage on their own or else, can become obstacles to further reforms (Beeson, 2006). This echoes the work of many researchers on the current nature of developmental states in Taiwan and South Korea, such as Cherry (2007), Hundt's (2009), Dent's (2003) Minns's (2001), and in particular a violation of an earlier generalized conclusion by Leftwich (2000) stating that instead of being static, a developmental state is a transitional form of the modern state.

3. Results

3.1. Basic characteristics of the developmental state in Vietnam

Through the theoretical study of a developmental state, it is possible to generalize the basic characteristics of the developmental state in Vietnam as follows:

First, the developmental state in Vietnam puts development goals, synchronously builds institutions to create a driving force for rapid and sustainable development, escapes from the "middle-income trap", and withdraws shortens the development gap with advanced countries.

Second, a strong state with a focus on a strong, wise government, with high political determination, a vision ahead, and proactive and active innovation to meet the high requirements of national development.

Third, the state operates based on the rule of law, effectively combining the rule of law, observing the rules and regulations of the country, and strongly promoting democracy. The State must demonstrate integrity and public service to the people and society as a whole, and promote innovation and creative development of all subjects in all aspects of social life.

Fourth, focus on economic development in the orientation of "inclusive development", sustainable in terms of economy, culture, society, and environment, "leaving no one behind".

Fifth, effectively handle the relationship between the state and the market in the direction of a strong state-efficient market - an active and creative society (people and businesses).

Sixth, shifting from the state of "ruling", commanding - administrative bureaucratic management to the socialist rule of law state, focusing on development management - development administration - serving the state. The law is paramount, the state is both a social management institution and a development partner, an equal and responsible companion for all subjects in society; effectively combining the public and private sectors. The state, especially the government, must act decisively in the management and administration of "speaking and doing".

3.2. Advantages and challenges in constructing developmental state in Vietnam

The goal of building a Vietnam with "rich people, strong country, democracy, justice and civilization" (sustainable development), should be based on three basic pillars: a modern rule of law state, a market economy that develops effectively and a democratic society develops at a high level, in which the rule of law is the main principle governing interactions in society. To realize this goal, it is required to build a developmental state, seize and take advantage of opportunities, overcome difficulties and challenges, create a strong development motivation for our country to develop rapidly, gradually shorten the gap with advanced countries, and realize the goal of sustainable development.

Opportunities and advantages:

The industrial revolution 4.0 with the development trend based on system integration, digital-physical-biological connection with the breakthrough of the internet of things and artificial intelligence is fundamentally changing world production. Accordingly, information will be transparent and public, people can easily access information in society and the world, and at the same time, the leadership and management of the country have to fundamentally innovate.

With industrial revolution 4.0, the State will possess the power of technology to strengthen leadership over the people based on extensive monitoring systems and the ability to control digital infrastructure; The State apparatus and leading agencies are also organized compactly and simply. Previously, due to poor infrastructure and low technology, it was

difficult to get information and timely direction, when there is industrial revolution 4.0, information will certainly be faster, solving jobs more timely.

Improve technology level, improve production capacity and compete in the product chain; creating a big change in the form of service business; create many opportunities for innovative start-ups; significantly reduce transaction and transportation costs; creating attractive and potential investment opportunities in the fields of digital technology and the internet, and also a great opportunity for industrial production with advanced science and technology (Nhut, N.V., 2018).

The goal of building a developmental state has been highly supported by the public. Building a developmental state in the favorable context of the country is that the contingent of cadres and civil servants is fairly basically trained, has appropriate capacity and qualifications, and can adapt to innovation. In particular, the necessary and sufficient conditions for the construction of a tectonic state are being formed and gradually shaped.

Building a tectonic State in the context of the country's deeper international integration, many economic, cultural, scientific, technological, educational, and defense and security activities have been co-operated. Many comprehensive strategic and strategic partnership agreements have been signed with our country. With a flat world and the industrial revolution 4.0, a lot of knowledge and experience of mankind, the knowledge of government administration, corporate governance, and effective social management in the world are having a positive impact on Vietnam.

The 2013 Constitution was promulgated with the overarching goal of building a socialist rule of law state, which is the legal framework for building a developmental state.

The spirit of determination to build a developmental state is widely accepted and supported by all social classes, all of whom have the desire and aspiration for the country to develop quickly and sustainably.

Developing countries like Vietnam will learn many lessons from the successes and failures of previous countries in building a developmental state.

Challenges and difficulties

Firstly, Vietnam's rule of law system is still in the process of being built and has not yet been completed.

The Communist Party of Vietnam has been oriented to build a socialist rule-of-law state since 1991. In particular, from the XI Congress of the Party and the 2013 Constitution, the principle of control between the three legislative, executive, and judicial powers has been mentioned and gradually detailed. The role of Congress is increased. However, the quality of law promulgation is still low due to the small number of full-time National Assembly deputies, most of the laws are prepared and submitted by different Government agencies. The legal system lacks independence, so it is very difficult to prevent abuse of power by state officials. This is reflected in the measurement results of the World Justice Project's Rule of Law Index, according to which Vietnam's index in 2021 will reach a total score of 0.49,

ranking 11th out of 15 countries. in the region, and 88/139 countries around the world. It is noteworthy that of the eight factors used to evaluate the rule of law index, Vietnam has a relatively low score in the factor limiting state power, with a score below the average (0.45), in which The component scores on the restriction of judicial power (0.39) and test of government performance (0.40) are among the lowest in Asia (World Justice Project, 2021).

Moreover, the judicial apparatus lacks relative independence, leading to the inability to control the abuse of power by state agencies. State power control is mainly legislative and judicial control over the executive. However, in Vietnam, the judiciary is still subject to various power relationships, so it is very difficult to prevent abuse of power by state officials. Although the principle of judicial independence has been officially recognized in the Constitution and many other legal documents, it has not been fully respected and followed by Party and State agencies. Interference in judicial activities by courts and judges still occurs at many levels and in many forms, making it impossible for courts and judges in many cases to decide objectively. This is the reason why international independent organizations have assessed that the level of corruption in Vietnam is still quite serious and shows little sign of improvement in the past 10 years (2012 - 2021). According to Transparency International, although the corruption situation in Vietnam has improved somewhat recently, increasing from 30 points to 39 points in the period 2012-2021, overall, this indicator shows that people's concerns about corruption are still very high.

Second, the state administrative apparatus has not been professionalized

Vietnam is in the third stage of administrative reform, each reform period lasts 10 years, starting in 1990. Reform determination was further strengthened after the XII and XIII Party Congress, the government with the determination to build an apparatus of "creating development", creating motivation for individuals and businesses. However, in Vietnam, the use of people is still highly dependent on degrees in a mechanical way. The thinking on staff planning in Vietnam still has some points that are not suitable with the practical environment, the nature of human development goals, it is far from good international practices, and it is easy to encourage interest groups from an early age. , has weakened the sense of commitment to new, breakthrough ideas, and at the same time encouraged prudence, excessive withdrawal, etc., which leads to not fully realizing human potential. There are unclear standards that are basic standards for introducing, nominating, and appointing important positions. This has not encouraged Vietnamese talents domestically as well as internationally in building an administration that gathers elites and talents. In the survey serving the Vietnam Provincial Governance and Public Administration Performance Index (PAPI) 2021, 54% of the interviewees said that they must pay to be employed in the organization. government agencies and nearly 40% say more money is needed for better public services, such as education and health care. It seems that the more you go down to the lower level, the more the enthusiasm for a "development" machine gets colder (Quang N.V., 2019).

Third, the state apparatus intervenes without principles and inconsistently in the activities of the market (both redundant but also lacking).

In Vietnam today, the role of the State cannot be denied in: stabilizing the macro-economy through financial and monetary policy; strengthening national security; providing public goods; fighting against environmental pollution; developing education to increase income and improve social welfare, and creating a social framework governed by law, etc. State management of the economy has fundamentally changed to the main management method. by-laws, mechanisms, policies, strategies, master plans, plans, and economic resources; to maintain macroeconomic stability, create and develop fully and synchronously all elements of the market economy. However, Vietnam's legal system for managing the market economy is still incomplete. The effectiveness and efficiency of state management of the economy are still low, on the one hand, because the intervention of the State is not suitable for the movement of the market. On the other hand, the State lacks tools and mechanisms to monitor and sanction to ensure that actors participating in market relations comply with the set "rules of the game". The planning and planning of the State in many fields are still inadequate and not consistent with reality. In addition, there is confusion between the functions of the state and the market. There are many things that the State needs to do, but it does not or does not do enough. Summing up 35 years of innovation and development in Vietnam, it is clear that the limitations of the relationship between the state and the market are: The role of the State in the market economy has not been clarified because the role has not been clearly defined between the State and the Market. The State still defends many functions that the market performs more effectively (capital allocation, corporate governance, etc.) while not paying enough attention to the functions that the State must complete (building and implementation of the state management framework "administrative-legal framework", provision of public goods and services, development assistance,...).

Fourth, the accountability of state agencies, especially of local authorities, is still weak.

The results of the PAPI survey in 2021 and practical observations show that the accountability of local authorities in some issues in Vietnam is not high at present. Specifically, according to the general survey results on this issue, only 15 provinces achieved the highest index and accounted for 25.4% of the total 63 provinces and cities nationwide. What is ominous is that this index has not increased, even decreased when in 2013 there were 17 provinces achieving this index, accounting for 27%, higher than in 2016. The level of interaction between people and government rights is low. The main forms of accountability of local government today are mainly through newspapers, local radio stations, and websites. At the grassroots level, mainly through loudspeaker systems and message boards. But the efficiency of using these means is low, the content of explanations is not rich and the way of operation is not yet guaranteed to be scientific, does not attract the attention of the people, and is even counterproductive. Many agencies and units apply forms of information explanation through agency websites, intranets, or electronic devices, but the content is extensive and does not go right to the questions of the people. Even many explanatory documents try to complicate them with many technical and scientific terms that are difficult to access to the general public. This has made the activity of formal accountability exist, but it has not brought about the desired effect on society.

In addition, there are some other difficulties such as Creative development thinking in the leadership and management of the country has not kept pace with the development requirements of the country and the rapid and strong development and changes of the country. world. There has not been a strong and synchronous change in awareness in the whole political system about building a developmental state. The heavy influence of the development model - growth in breadth, creating inertia that is not easy to innovate; The inertia towards reforming the political system in general and the reform of the State, in particular, is a major obstacle to the construction of a developmental state; The contingent of cadres and civil servants has not completely met the requirements of the developmental state.

4. Discussion and Conclusion

4.1. Discussion

Some recommendations to improve the efficiency of developmental state construction in the coming time.

4.1.1. Building a professional and capable state administrative management apparatus in the direction of development creation

The administrative apparatus, including administrative institutions and administrative staff, of Vietnam, currently has many outstanding problems, which are a big factor hindering and inhibiting the development of the economy in particular and of the country. To solve the above existing limitations, the administrative reform needs to be implemented more strongly and drastically to achieve some goals such as: creating an equal competitive environment under the market mechanism; strictly controlling and eliminating business monopolies as well as mechanisms and policies that lead to inequality in competition. Laws and mechanisms and policies must create the most favorable conditions for all people and businesses to develop production and business. National resources and resources must be allocated to those who can use them in the most effective way for the country. Build an appropriate institutional framework and create necessary conditions for people to develop their capacities and creativity for their benefit and contribute to society. Fundamentally changing the position of the state towards the people, in the traditional management model, power is concentrated in the hands of the state, the state controls all activities of the society, and the relationship with the people brings about a change in the state of society. more dispensation than service. The new concept of the state apparatus is to decentralize power, focus on output, and consider taxpayers as customers to serve. Building a streamlined, compact but effective administrative apparatus to reduce the burden on the state budget. Regarding the administrative management apparatus, this is an important factor and has a decisive influence on the success of the developmental state model, because in the end, even if it is institutional reform, the strategies to develop the economy or improve political accountability, are also implemented by an administrative apparatus, if this apparatus does not meet the requirements of qualifications and professionalism, the other factors that contribute to the success of the developmental state cannot be realized.

4.1.2. Ensuring consistency between central and local governments in proactively leading and implementing development strategies

In the classical developmental state models, the leading strategies and policies have a "priority focus" on a few specific spearhead industries or a few "leading" localities". In the current period, the developmental strategy needs to change due to the changing context. The state's proactive construction will need to focus on prioritizing investments in research and development of knowledge and innovation. Regardless of which field is focused on, there needs to be an agreement between the central and local governments on the priority sectors and supportive solutions to eliminate the case of lack of consistency, leading to difficulties in the implementation of the economic development strategy.

4.1.3. Correctly identify the role of the state and the market in the socialist-oriented market economy

As the central institution of the political system, the state is not only "engaged", and "participated", but also an equal economic "subject" with political power. Thus, the state, as a special economic entity, is a constitutive content of the market economy. The state ensures public services, which are areas that only the state can solve because it is an area that creates the basis for development in general but is an area of large investment and profitability. low profit. The following areas can be mentioned: 1) Education and training to prepare social capital and human capital; 2) National defense and public security; 3) Organize arbitration and verification agencies; 4) Overcome the gap between rich and poor.

In addition, the state must also ensure economic development associated with the sustainable development of the ecological environment. This is an area of market failure that many countries around the world are unable to address. Environmental security is becoming one of the global issues. Solving environmental problems effectively must involve businesses, civil society, and the state, in which the state has a decisive role.

4.1.4. To build a society that operates based on law, the law must become a decisive means of managing a social life

Establishing a law-based society, making law the most decisive means of managing a social life, will ensure fairness and transparency in social activities. People as well as economic entities rely on the current legal system to live and operate without worrying about being harassed, causing difficulties and troubles because of pressures outside the law caused by individuals above the law. created by law. The reason for establishing a rule of law with the rule of law is because the institutional design in Vietnam has many shortcomings such as cumbersome administrative apparatus, many layers, and many processes, leading to the operation slow action when there is a mistake, it is difficult to find and handle because it involves many ministries and agencies. The quality of the contingent of cadres, civil servants, and public employees has not yet met the requirements of national development.

Thus, to ensure the supremacy of the law, the important thing to do is to reform the institution, because power is always corruptible, so the design of agencies in the state administrative apparatus must ensure the supervision and control of each other's power.

4.1.5. Strengthen the accountability of the state to the people

To ensure the people's right to access information, create conditions for people to participate more in the construction of society. To strengthen the accountability of the state to the people, it is necessary to give more rights to the people so that the people can supervise the activities of the state. To do this you need:

Firstly, raising awareness about the role of citizens in the process of building a state of creation and development, in which it is necessary to focus on increasing awareness for cadres, civil servants, and public employees and strengthening the political activism of the people.

Second, perfect the system of regulations to promote the forms of citizen participation, ensuring the right of citizens to participate. The people's right to participate in state management activities has been recognized in the Constitution and is associated with the State's responsibility to ensure it. These legal provisions are adequate but still need to be improved to ensure people's right to participate.

Third, ensure to provide sufficient information to the people. Citizens' participation in institutional formation and monitoring of state agencies and public officials depends on the quantity and quality of information they obtain. This information needs to be made public and transparent by the state in its activities and accountability.

4.2. Conclusion

Through the analysis of the above theoretical and practical issues, it is shown that building a developmental state in Vietnam is a long-term approach. Since the 6th National Congress of the Party, when recognizing the market economy, Vietnam has abandoned the centrally planned state model and followed closely the model of a developmental state. The process of globalization, strong integration, industrial revolution 4.0, and the recent Covid-19 pandemic create many opportunities but pose many difficulties for this choice. Therefore, Vietnam needs to well implement the strategic breakthrough in completing synchronous development institutions with drastic practical solutions.

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BUILDING THE THEORETICAL FRAMEWORK FOR CREATING STAFF'S WORK MOTIVATION IN GENERAL DEPARTMENT OF VIET NAM CUSTOMS

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Abstract

In this article, the author built a theoretical framework for the purpose of discovering the key factors affecting the work motivation of officers in General Department of Viet Nam customs. The author used analytical research - synthesized methods to evaluate the valuable findings from previous studies. The theoretical framework proposed by the author is based on the succession of previous studies as Herzberg (1959) but has been adjusted and supplemented to suit the research subjects who are officers in Viet Nam General Department of Viet Nam customs. Research results show that the theoretical model proposed by the author consists of 8 scales and is measured through all 36 component variables.

Keywords: *work motivation, human resource, Vietnam customs.*

1. Introduction

Work motivation is one of the most crucial issues in the field of human resource management because the motivation to work is the desire and willingness to perform the tasks of officers in order to achieve organizations' goals. Once having work motivation, the officers themselves will love the job and always try their best to fulfill their assigned tasks. Therefore, the issues relating to work motivation has received a lot of attention from local and international researchers.

Many different theories trying to explain work motivation as well as related factors have been developed over the years. These include Maslow's Hierarchy of Need (1954), Herzberg's Two-factor Theory (1959), John Stacy Adam's Equity Theory (1863), Victor Vroom's Expectancy Theory (1964), Porter and Lawler's Expectancy Theory (1968) and Alderfer's ERG Theory (1969). On the basis of these theories, researchers proposed factors influencing work motivation based on different subjects and scales.

In Vietnam, there are some studies regarding employee motivation. One of such studies is "Factors affecting the motivation of direct production officers in Vietnam Assembly Corporation (LILAMA)" by Bui Thi Minh Thu and Le Nguyen Doan Khoi (2014). This research analyzed and outlined seven factors that affect the motivation of direct production officers at the company: corporate culture, work, opportunity for training and development, working conditions, wages and welfare regime, relationships with colleagues, relationships with the leaders. In of which, wages and welfare regime with the corporate culture are the most powerful factor. In the research "Employee's Motivation Scale", Tran

Kim Dung and Nguyen Ngoc Lan Vy (2011) developed a framework for researching and testing factors through the survey of full-time officers in Ho Chi Minh city. Based on this research, Nguyen Thi Phuong Dung (2012) also had a paper “Building scales to motivate office workers in Can Tho city”. Besides that, there are some other researches such as “Developing the framework for motivation in public sector in Vietnam” by Hoang Thi Hong Loc and Nguyen Quoc Nghi (2014) and research “Factors affecting motivation of officers in foreign invested enterprises in Dong Nai” by Nguyen Van Hiep and Nguyen Thi Quynh (2014).

In this article, the author built a theoretical framework for the purpose of discovering the key factors affecting the work motivation of officers in General Department of Viet Nam customs.

2. Conceptual Framework and Literature review

2.1. Conceptual Framework

Motivation: It is the subjective purpose in human activities (community, collective, society) that motivates people to work to meet and satisfy the set needs. Motivation is an abstract concept and is difficult to define because firstly, it is often hidden by its true nature and for many different reasons such as: psychological factors, social views, background, and human outlook of each person. Secondly, motivation always changes over time. At each moment, people will have different needs and motivations. Therefore, an HR manager must know exactly the types of motivations and know how to modify them for each specific employee to match the standards and responsiveness of the organization (Anh et al, 2021, 2021a).

Work motivation: The desire and willingness of an individual to increase efforts towards the achievement of a certain result or goal. Personal motivation is the result of many resources operating simultaneously in the environment in which people live and work. Motivation must be associated with the job, the organization and the working environment. In the condition that other factors do not change, motivation will lead to higher productivity and work efficiency. But this also does not mean that being motivated will inevitably lead to high job performance. Overall, job performance depends on the ability, the training and development of each employee (Anh & Tien, 2019, 2019a, 2019b).

Creating work motivation

Motivation is a system and management policies, measures and tips that affect officers in order to make them motivated at work. Thus, motivating officers is the responsibility and goal of the organization as it expects officers to devote their abilities, qualifications and experience to serve the development needs of all. On the contrary, officers expect to receive material and spiritual benefits, helping them find the joy in their work (Dana, 2020).

The purpose of creating work motivation is to contribute to improving work efficiency for officers. Work motivation measures help stimulate officers' working ability, as well as maximize their work productivity towards the mission that is to complete the assigned work in the best way that contributes to the realization of the short-term and long-term goals set by the organization (Dana, 2020a).

Motivation is the key to improving work results. People only work when they want or are motivated to work. Even when trying to excel at work, people only act because they are driven or motivated by themselves or external factors. Motivation is a skill that has and needs to be learned and is indispensable for managers if the business wants to survive and succeed. Job performance can be seen as a function of competence and work motivation. Work capacity depends on factors such as education, experience, and training. Performance improvement usually occurs slowly over a sufficiently long period of time. In contrast, work motivation can improve very quickly.

Because it affects the attitude and behavior of officers helping officers work more enthusiastically, have a greater sense of responsibility for work and of course that will lead to higher work efficiency and making officers more attached to the organization considering as their second family, so officers will have a sense of loyalty to the organization (Grzeszczyk & Tien, 2019; Long, 2019). It is not only at work that people really need motivation, but even in daily life, people need motivation to live. A person without the motivation to live will not be able to survive. Natural selection is the greatest life force for human being. Not only humans but also animals and plants, in order to maintain existence, they must change to easily adapt when the living conditions change (Anh & Tien, 2018). In the economy, the state wants to attract foreign investors by creating an open investment environment. That is also one of the driving forces to attract foreign investment.

In business, managers motivate officers to work harder, devote themselves, and stick with the company for a long time. The existence and development of the company depends greatly on the working efforts of the staff members, their dedication, devotion and contributions for the company. No company can survive and develop with people who are superficial, mentally depressed and bored at work. Therefore, company needs to create motivation for officers (Dinh et al, 2020). Creating labor motivation for officers not only stimulates high efficiency working psychology for officers, but it also increases labor efficiency and business efficiency, builds a professional staff team to increase competition in the market (Minh & Tien, 2019; Tien et al, 2020, 2021).

2.2. Literature review

Motivation is one of the most comprehensively analysed and tested aspects of human life. Between 1950 and now, the phrase “motivation” was used in the titles of over 50,000 texts (Landy, Conte, 2007). In order to recognise the key factors of motivation, it is necessary to understand the ground theories and to critically evaluate and compare the most common findings. It is important to mention that in many General Department of Viet Nam customs the concepts discovered decades ago are still operated without any adjustments (Marciano, 2010).

There are many theories about work motivation due to different approaches to motivation. However, it can be said that all the theories come to a general conclusion that increasing motivation for officers will lead to improved labor performance and achieving organizational goals.

In 1946, the first system of motivational factors published in the Foreman Facts by the Labor Relations Institute of New York with nine motivating components, including: interesting work; achievement recognition; autonomy in work; fine job; high salary; promotion; good working condition; relationship with superiors. After that, this model has been widely disseminated and researched by many researchers and organizations in different industries and fields as Kennett S. Kovach (1987) but he added other elements: discipline

After publishing, motivation model of Kovach (1987) has been recognized by many scientists and widely applied in many different fields, used in many studies such as Simons & Enz (1995) "study factors affecting staff motivation in the hotels"; Siu, Tsang and Wong (1997) "study the factors affecting officers' motivation in the hotel in Hong Kong"; Charles and Marshall (1992) "study the motivation of officers in the hotel in the Caribbean", Hemdi and Nasurdin, (2003); Silverthorne (1992). In Vietnam, there are also authors using Kovach's research model as Le Thi Thuy Uyen (2007); Nguyen Ngoc Lan Vy (2010) carried out the research topic "Researching factors affecting the level of employee encouragement in work at enterprises in HCM city". Besides, according to many researchers such as C. Carolyn Thiedke (2004), James R. Linde (1998), motivation model in Kovach's research (1987) are consistent with some famous motivational theories like Maslow's theory of needs and Herzberg's two-factors theory.

After that, there are many authors who apply Herzberg's theory in their researches. In 2007, Boeve carried out the topic: study motivational factors for faculty at US medical universities based on Herzberg's two-factor theory and job description index (JDJ) of Smith, Kendall and Hulin (1969). Research results show that motivational factors include two groups: internal factors: Nature of work, training and promotion opportunities and external factors including: salary, support of superior and relationship with colleagues.

Shaemi Barzoki et al. (2012) conducted an analysis of the factors affecting the motivation of doctrine based on Herzberg. Seven factors affecting the motivation of the staff proposed by the author include: Safety at work, company's policy, relationships with colleagues and relationships with superiors, working conditions, personal life, salary and bonus. The advantages of the above research models have clearly shown each factor affecting labor dynamics, measuring their impact. This model is also very relevant and is in line with the famous motivational theories, which have been popularized in many countries such as Maslow's theory of needs and Herzberg's two-factor theory. Therefore, the research results are highly reliable. Disadvantages of the above models are not interested in corporate brand elements and corporate culture. These are two important factors in managing and developing the human resources of an organization, especially in multinational and transnational General Department of Viet Nam customs.

Teck-Hong and Waheed (2011) studied the factors affecting work motivation with salers in Malaysia. In this work, the theoretical framework proposed by the author is base on Frederick Herzberg's two-factors theory from 1959. From the data collected from 152 questionnaires, they demonstrated the importance of "working conditions" and "recognition"

that affect officers' work motivation. Besides, they found that the "maintenance" factors are more effective than the "motivating" factors in motivating officers.

Barzoki et al (2012) conducted research on factors affecting officers' work motivation on the basis of the two-factor theory by Herzberg (1959). The study used the stratified random sampling method, surveying 147 out of 640 officers working at organizations. The authors' research model includes 7 factors: (1) Salary, (2) Personal life, (3) Working conditions, (4) Relationship with management, (5) Relationship with colleagues, (6) Organizational policy, and (7) Work safety.

Safiullah conducted research on employee motivation and the most influential factors regarding employee motivation in Bangladesh. The research model is mainly based on the studies by Herzberg et al., Linder, and Hossain et al. Accordingly, the author's research model includes (1) Salary and other financial incentives, (2) Career development opportunities, (3) Relationship with colleagues, (4) Feeling valuable work, (5) Job Security, (6) Good working environment, (7) Flexible working hours and (8) Interesting and challenging work.

Denibutun (2012) has conducted his research "Work motivation: a theoretical framework". According to this research, many different theories have been established all over the world to explain the nature of work motivation. This article is made to explore differences between the theories of such work motivation and consider the motivation as a process of basic human psychology. The theories of motivation help explain the behavior of a certain person at a certain time. Such theories can be divided into 2 groups: (1) the theory of content focuses on the identification of personal needs which affect their behavior in the workplace, (2) the theory of process focusing on the process of human thinking. This thinking process can affect the decisions to perform different actions of humans in their work.

In Vietnam, work motivation is also very interested for researchers. First of all, it is necessary to mention the research of Tran Kim Dung (2011) on employee motivation scale. The study used Confirmatory Factor Analysis (CFA) and based on a survey sample with 445 officers working in Ho Chi Minh City. The results show four factors, namely: 1) Appropriate work; 2) Reasonable remuneration policy (salary, welfare, promotion); 3) Good relationship at work; and 4) Company brand. In particular, the elements of the policy and reasonable remuneration have the strongest impact on officers' motivation. But the study is limited on the workers in Ho Chi Minh City, the results are not representative and accurate for different regions and other types of General Department of Viet Nam customs.

In 2010, Le Dinh Ly published his thesis "Policy to motivate communal Public Servants (An Empirical Study in Nghe An province". With the application of Herzberg's two-factor theory, the author analyzed and evaluated the status of some policies affecting the factors of motivation and maintenance. It is interesting in this study that while Herzberg said that wages were a sustaining factor, this research said that this was a very motivating factor. This is a new result that later studies need to be concerned about. However,

Communal Public Servants have different characteristics compared officers in other General Department of Viet Nam customs and enterprises, especially in multinational and transnational corporations. So, the results maybe are not true for all.

Loc conducted a study that aims to analyze the factors affecting work motivation of cadres, civil servants, and officials in Ninh Kieu District. The author conducted an empirical investigation from the opinions of 250 officials and civil servants and 36 key officials at 13 state management units, 10 administrative units, and 13 wards in the District. the authors proposed a research model based on Maslow demand tower and Nevis (1983) but has been adjusted and supplemented to suit the research subjects of Vietnamese officials. Accordingly, the author's research model includes 4 factors, namely “The interest and recognition of leaders and colleagues”, “Public relationship”, “Nature of work”, “Opportunities for learning and advancement”. They have a positive impact on the employee motivation.

Overall, most previous studies are based on Frederick Herzberg’s two-factors theory (1959) to assess factors affecting officers' work motivation. However, some studies have limitations.

Firstly, although there have been many studies on this issue, researches are different in method, subject and scope. In the study of Buelens & Van Broeck (2007) in Belgium; Nawab (2011) in Pakistan, they have shown the difference in employee motivation between public sector and private sector. It means that, in different types, the application results of motivational models are not the same. In particular, in Vietnam, there has not been any research about work motivation in multi-national and transnational General Department of Viet Nam customs. This is a new point on the author’s research.

Secondly, many models of motivating components over the past 50 years usually focus mainly on job attributes, not much enterprises themselves such as "company brand". In particular, for multi-national and transnational General Department of Viet Nam customs, the company's brand factor is a great strength to attract and motivate for officers. In fact, when officers feel proud of their business, they will stick with the business more.

In the world, there have been studies on this issue. According to Hepburn (2005), Minchington (2006), Barrow and Mosley (2010), brand is a factor that "has a strong impact to attract and maintain good officers". In Asia, Zhou's study (2008) show that in China's labor market, the General Department of Viet Nam customs use brands to attract talented candidates.

According to Stephen Overell (2003), Hay Group's research in 35 large General Department of Viet Nam customs including Oracle, Boots, BMW, found five key elements of encouragement: 1) Internal brand; 2) Organizational values; 3) good leadership; 4) interesting and challenging working environment; 5) Administration of work performance.

Finally, in Multinational General Department of Viet Nam customs, there is different about culture of officers. It also effects to their work motivation. In the world, there have been authors studying this factor but still very limited in quantity. Authors as Nevis (1983), Hofstede (1984), Trompenaars (1993) (in Gambrel & Cianci, 2003) all come to the conclusion that the motivations models come from Europe or the United States - which are countries with individual cultures - need to be adjusted appropriately before applying to countries with collective cultures such as China, Hong Kong, Taiwan or Vietnam.

Mahal (2009) studied the influence of organizational culture and organizational atmosphere on employee motivation levels in Ranbaxy (India) and concluded that: To enhance employee motivation, businesses need to improve their culture and organizational atmosphere. Poornima's study (2009) mentions that human resource management needs to improve the organizational atmosphere to encourage IT staff.

Based on a survey of 312 people at a multinational company with branches in 40 countries, Larsson et al. (2007) concluded that: Culture is positively related to officers' satisfied and the time they stay in the organization.

3. Results

Based on the objective and the study of the literature, the theoretical framework of the study is shown in figure 1. There are seven hypothesis tested as listed below. In this work, the theoretical framework proposed by the author is base on Frederick Herzberg's two-factors theory from 1959 but has been adjusted and supplemented to suit the research subjects who are officers in General Department of Viet Nam customs.

H1: There is a positive relationship between good working condition and officers' motivation in General Department of Viet Nam customs

H2: There is a positive relationship between wages and benefits and officers' motivation in General Department of Viet Nam customs

H3: There is a positive relationship between nature of work and officers' motivation in General Department of Viet Nam customs

H4: There is a positive relationship between training - promotion and officers' motivation in General Department of Viet Nam customs

H5: There is a positive relationship between relationships at work and officers' motivation in General Department of Viet Nam customs

H6: There is a positive relationship between Company brand and officers' motivation in General Department of Viet Nam customs

H7: There is a positive relationship between Company culture and officers' motivation in General Department of Viet Nam customs.

4. Conclusion

Motivation is an integral part of the management in business. It is playing an extremely important role in determining the work efficiency of officers, it will motivate officers to work hard, strive to improve learning, improve work efficiency and product efficiency of business and at the same time increase the income of workers. This is particular in this period, when the human factor is increasingly concerned and appreciated for the development and maintenance of General Department of Viet Nam customs.

No individual is the same, and that needs to take into consideration when talking about motivation to go to work. A manager needs to observe the individual and their

individual needs. It is not possible to give one answer to what motivates officers who work with routine based tasks, as everyone is different and therefore get motivated by a variety of factors. In this article, the author built a theoretical framework for the purpose of discovering the key factors affecting the work motivation of officers in General Department of Viet Nam customs. The author hopes that this article is background for later studies about motivation of officers in General Department of Viet Nam customs.

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JOINING ASEAN - IMPORTANT HISTORY TIMELINE OF VIETNAM'S MULTIPLAYER FOREIGN STRATEGY

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Abstract

On July 28, 1995, Vietnam officially became the 7th member of ASEAN. Joining ASEAN is considered an important milestone of Vietnam's multilateral foreign policy in the modern era. After joining ASEAN, Vietnam has always been an active and responsible member, making an important contribution to building and enhancing the position and prestige of ASEAN and Vietnam in the international arena. In the context of the Covid-19 pandemic spreading and spreading strongly, Vietnam's multilateral diplomacy has made an important contribution to the task of preventing and combating the Covid-19 pandemic. Thanks to the timely support of international partners and friends, the Covid-19 pandemic in Vietnam has been controlled and established a new normal state to restore and develop the economy.

Keywords: *ASEAN; Multilateral diplomacy; Covid-19 pandemic.*

1. Introduction

ASEAN today has 11 independent countries: Brunei, East Timor, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, and Vietnam. Before becoming a member of ASEAN in 1995, the relationship between Vietnam and ASEAN had many ups and downs, sometimes peaceful, sometimes tense depending on fluctuations in international and regional situations. The cause was mutual suspicion among the group of Indochina countries that were helped by the Soviet Union and China in the national liberation revolution and followed the socialist orientation - including Vietnam, Laos, and Vietnam. Cambodia. The remaining group of countries is countries supported by the US and its allies: Thailand, Philippines, Singapore, etc.

After the end of the cold war (December 1989), international relations had many landmark changes. The trend of political-military confrontation has become obsolete, instead, it is a trend of economic cooperation and competition. Increasing economic strength has become the top goal of all countries in the world. This process is driven by liberalism, liberals believe that cooperation between countries will bring peace and prosperity to all nations, with the determination to build ASEAN into a peaceful, neutral region and become a bridge for linkages and cooperation among countries in the Asia-Pacific region. ASEAN has actively developed multilateral cooperation mechanisms such as ASEAN Regional Forum (ARF) - 1994, East Asia Summit (EAS) - 2005; ASEAN Defense Ministers' Meeting

Plus (ADMM+) - 2010. Mechanisms developed by ASEAN have attracted the participation of many countries inside and outside the region, including some important big countries, such as China, the USA, and Russia. ASEAN is making important contributions and roles in the process of structure formation in the Asia-Pacific region.

With a population of nearly 700,000 million people, ASEAN today has become a large market attracting the attention of investment and cooperation from many countries around the world. In that context, as an active and responsible member of ASEAN, Vietnam has conditions to expand links and cooperation with countries around the world on the principle of respecting independence, sovereignty, and equality. and mutually beneficial. Deeply aware of the movement trend of the times, since 1986, Vietnam has had a strategic change in its foreign policy. In its foreign policy and policy, Vietnam affirms that it wants to be friends with all countries in the world based on respect for independence, sovereignty, territorial integrity, and mutual benefits. As a result, the position and prestige of Vietnam are increasingly increasing in the international arena. Vietnam's multilateral diplomacy has made an important contribution to the country's rapid and sustainable development.

2. Method

About the establishment of ASEAN

Since the second half of the twentieth century, the world and region have undergone many complicated and unpredictable changes. In order to protect independence and self-reliance and avoid falling into a spiral of competition among major powers, some countries in Southeast Asia have sought to gather forces and build their own regional organization. After many unsuccessful attempts to establish transnational mechanisms and organizations in Southeast Asia (Association of Southeast Asia - ASA; Group of MAPHILINDO - Malaysia, Philippines, Indonesia). After many efforts, at the end of 1966, Thailand sent a draft on establishing an organization called "Association of Southeast Asian Nations for Regional Cooperation" to Malaysia, the Philippines, Indonesia, and Singapore. After many discussions, on August 8, 1967, the Association of Southeast Asian Nations (ASEAN) was officially established in Bangkok, Thailand with five member countries: Malaysia, Philippines, Indonesia, and Thailand. and Singapore.

Vietnam's process of joining ASEAN

Before Vietnam became a member of the ASEAN common house, the relationship between Vietnam and ASEAN went through ups and downs, due to differences in development paths and the influence of the war. cold. However, after joining ASEAN in 1995, the relationship between Vietnam and ASEAN has developed rapidly and is increasingly warm.

After World War II ended, relations between Vietnam and countries in Southeast Asia were in an atmosphere of peace and friendship. This friendly atmosphere is possible because, during the war for national independence, countries in the region united and helped each other to fight imperialism and colonialism. However, after France's defeat in Vietnam in 1954, the US jumped into the position of France to invade Vietnam, and some Southeast

Asian countries were caught up in the East-West confrontation. Some ASEAN countries even got involved in the Indochina war. Therefore, the relationship between the group of Indochinese countries and ASEAN has had very tense periods.

From 1967 up to now, Vietnam - ASEAN relations have been summarized in 5 stages:

First, the period 1967-1973: The relationship between Vietnam and ASEAN is relatively lackluster. Because Vietnam is conducting a resistance war against the US to save the country. There were times when Vietnam - ASEAN relations were in opposition because Thailand and the Philippines joined the military bloc SEATO, became an ally of the US and directly participated in the Vietnam War.

Second, the period 1973-1978: After the Paris Agreement on Vietnam (1973), our country actively implemented and promoted bilateral relations with ASEAN countries to establish a peaceful and stable international environment in Vietnam. region to restore and develop the economy after the war. However, the victory of the war against the US of the three Indochinese countries opened up opportunities for improvement and establishment of new relations between countries in the region. Both ASEAN countries and the three Indochinese countries expressed their desire to build friendly relations, co-existence, and development. That is reflected in the Laos-Vietnam Joint Declaration (February 1975), the Bali Treaty (1976), and Vietnam's four principles of relations with Southeast Asian countries (1976). That has opened an opportunity for Vietnam - ASEAN to close the past and look towards the future. The determinations of Vietnam as well as the efforts of countries in Southeast Asia during this time have shown the common aspiration of the countries in the region to build a Southeast Asian region into a peaceful region. friendship, solidarity, and cooperation for mutual development. Vietnam joined the signing of the Bali Treaty, then through many mutual visits, Vietnam-ASEAN relations have improved.

Third, the period 1978-1989: The incident in Cambodia at the end of the 70s of the twentieth century pushed the relations between Vietnam and ASEAN countries into a new period of crisis, causing serious consequences for the relationship between Vietnam and ASEAN. development of the Vietnamese Revolution. In December 1978, Vietnam sent volunteer troops to Cambodia to help the people of this country overthrow the genocidal Pol Pot regime. Some major countries have intervened and provoked, making relations between Vietnam and ASEAN more tense, even confrontational. Vietnam's foreign relations during this period were extremely difficult. Vietnam is economically besieged and politically isolated. Relations between Vietnam and ASEAN are frozen. Therefore, peace, cooperation, and friendship in Southeast Asia were once again "forgotten", this period witnessed the tension and radical confrontation between Vietnam and ASEAN countries. It was not until the Cambodia issue was gradually resolved that the relationship between Vietnam and ASEAN changed in a positive direction.

Fourth, period 1989-1995: After Vietnam withdrew its volunteer troops from Cambodia, Vietnam-ASEAN relations changed from a policy of confrontation to dialogue. Vietnam follows the foreign policy of "Wanting to be friends with all countries" and

Cambodia's Peace Agreement signed in 1991 has improved relations between Vietnam and ASEAN. During this period, Vietnam - ASEAN made many efforts in repairing bilateral relations after a period of freezing, especially promoting the process of Vietnam joining ASEAN. The year 1986 was a brilliant milestone in the development history of the Vietnamese nation, as well as the beginning of the process of reconciliation and cooperation between Vietnam and ASEAN countries. At the 6th Congress, the Communist Party of Vietnam affirmed that the task of foreign affairs is: To strive to combine the strength of the nation with the strength of the times, to contribute to maintaining peace in Indochina, and to contribute to the maintenance of peace in Southeast Asia and the world. The objective is to create a favorable international environment to serve the cause of building socialism and defending the Fatherland. On that basis, our Party advocates: "We are willing and ready to negotiate with other countries in the region to solve Southeast Asian problems, establish relations of peaceful coexistence, and build Southeast Asia" into a region of peace, stability, and cooperation"¹. In that spirit, Politburo issued Resolution No. 13/NQ-TW on "the task and foreign policy in the new situation" (1988) so that diplomacy could truly become an important front for the task. building, maintaining, and consolidating the peace that the Vietnamese people have worked so hard to build. At the same time, diplomacy has the task of creating a favorable environment for the country to focus on recovering and developing the economic politics to successfully build socialism.

Along with the Cambodia issue, which was completely resolved in 1991, Vietnam's foreign stance has been positively received by countries in the region and the world, so the relationship between Vietnam and ASEAN has changed positively, developed rapidly with many visits, and high-level contact between the two sides. Thus, with an innovative mindset and principles in line with regional and global realities, Vietnam has gradually restored relations with countries inside and outside the region. With the correct views of the Communist Party of Vietnam on foreign policy since 1986, Vietnam has overcome the difficult period after the dramatic events in the Soviet Union and Eastern Europe in the 90s of the 20th century, gradually breaking down break the isolation situation after Cambodia and gradually integrate with the world.

Facing the rapid progress in the relationship between Vietnam and ASEAN after the Paris Agreement on Cambodia was signed in 1991, on July 22, 1992, Vietnam officially joined the Treaty of Amity and Cooperation in Southeast Asia. Asia (TAC) and become an observer of ASEAN. Since then, Vietnam has always been invited to attend the annual meetings of foreign ministers of ASEAN countries. After a period of active dialogue, based on increasing political trust, on October 17, 1994, Vietnam officially sent a letter to the ASEAN chairman about its wish to join ASEAN.

Fifth, from 1995 to the present: After joining ASEAN (July 28, 1995), the relationship between Vietnam and ASEAN in the fields of economy, culture, science, and technology has been increasingly promoted. Since joining ASEAN up to now, Vietnam has

¹ Communist Party of Vietnam (1987), *Document of the 6th National Congress of Deputies*, Truth Publishing House, Hanoi, p. 108.

always been an active and responsible member, making an important contribution to building ASEAN into a stronger and more united industry organization. From a region, which was known as a hot spot in the cold war, Southeast Asia since the late 20th century has taken on a new face, a region of peace, dynamic development, and important cooperation of many countries and major international organizations. With its achievements over the past 60 years, ASEAN has been recognized by the international community as one of the most successful regional organizations in the world today, making an important contribution to maintaining stability. peace in the Asia-Pacific region. As a result, ASEAN's position and role in the international arena is increasing. From there, created conditions to help Vietnam make the most of the national strength and the strength of the times to serve the cause of building, developing, and defending the socialist Vietnamese Fatherland.

The fact that Vietnam joined ASEAN in 1995 is an important milestone in the history of Vietnam's multilateral diplomacy in modern times. Vietnam, a politically isolated and economically besieged country, has established a favorable international environment to focus on economic recovery and development, and improving the people's material and spiritual life. , making an important contribution to the cause of protecting the Party, State, and the socialist regime in Vietnam. Vietnam's success after nearly 40 years of doi moi is a testament to the correctness of its innovative thinking in general and its foreign policy in particular with the motto of multilateralizing and diversifying international relations. With a new diplomatic strategy in line with the objective development trend of movement in political life, Vietnam has taken advantage of external resources to contribute to the process of industrialization and modernization of the country. As a result, Vietnam has grown from a poor country with a backward economy severely damaged by wars to a developing country with an increasingly modern economic structure. Besides, after many years of opening up for international integration, Vietnam's economy and other economies in the world have become more closely linked. Therefore, promoting cooperation for development and coexistence according to the theory of liberalism is a mandatory requirement for all countries. Because, humanity is facing many global problems such as climate change, epidemics, terrorism, etc. So no country, even a large country with potential, cannot exist in isolation, but it needs to cooperate with other countries at different levels. As Vietnam is a country with limited potential, the requirement of international cooperation and integration is even more important to ensure the goal of rapid and sustainable development of the country.

3. Results

With the motto "multi-lateralization and diversification" in foreign relations, Vietnam's diplomacy has contributed to creating a favorable international environment to gradually restore and develop the economy, creating an important foundation for economic development. building and defending the socialist Vietnamese Fatherland in the current period. A significant highlight in Vietnam's multilateral diplomatic strategy in the modern era is the process of normalizing with China and the United States and joining ASEAN on the principles of respect for independence, territorial integrity, equal cooperation, and mutually beneficial. Thanks to that, Vietnam entered the international political arena with a new look.

In terms of politics - diplomacy: Currently, Vietnam has diplomatic relations with 189 countries, strategic partnerships, and comprehensive partnerships with 30 countries². In particular, Vietnam has established diplomatic relations with major countries that play a role and voice in the international community, especially the five permanent United Nations Security Council countries, namely the US, China, Russia, the UK, and the US. France and some other large and developed countries such as Japan, India, Germany... This shows that Vietnam has an increasing position and role in the international community.

Economically: "If 30 years ago, we had economic-trade relations with nearly 30 countries and territories, now we have economic-trade relations with 230 countries and territories. earth; Total import-export turnover has reached about 600 billion USD so far, about 120 times higher than in the early years of the doi moi period. We have attracted more than \$400 billion in foreign direct investment (FDI)"³. Therefore, the role, position, and international prestige of Vietnam in the region and in the world has increased significantly. With the right strategic thinking on international integration, in the new international context, Vietnam has taken advantage of external resources to serve the task of socio-economic development. The success in the fight against the Covid-19 pandemic is a typical example of the correctness of Vietnam's multilateral diplomacy today.

The Covid-19 pandemic, which appeared in China at the end of 2019, quickly spread and broke out in Vietnam and caused many negative impacts and consequences for the country that it took many years to overcome, including the economic development rate declines (it is 2.9%⁴ in 2020 compared to 7.02%⁵ in 2019); many businesses went bankrupt and had to close (In 2021, there were 119.8 thousand enterprises withdrawing from the market, an increase of 17.8% compared to 2020⁶); unemployment rate increased (In 2019 - 2.1%, In 2020 - 2.6%, In 2021 - 3.2%⁷; thousands of people died (43196 people - As of 06/05/2023⁸). Although, right from the time the Covid-19 Pandemic broke out in China,

² Manh Hung, (12/2021), *The delivery industry has made an important contribution to the country's overall achievements*, <https://dangcongsan.vn/tieu-diem/nganh-ngoai-Giao-da-dong-gop-quan-trong-vao-thanh-tuu-chung-cua-dat-nuoc-599482.html>, Retrieved on 24/11/2022.

³ Government News, (12/2021), *Full text of General Secretary Nguyen Phu Trong's speech at the National Foreign Affairs Conference*, <https://baochinhphu.vn/toan-van-phat-bieu-cua-tong-bi-thu-nguyen-phu-trong-tai-hoi-history-outside-toan-quoc-102305526.htm>, Retrieved on 11/22/2022.

⁴ Francois Painchaud, (02/2021), *In 2020, Vietnam's economic growth is among the highest in the world*, <https://dangcongsan.vn/thoi-su/nam-2020-tang-truong-king-te-cua-viet-nam-nam-trong-muc-cao-nhat-tren-the-gioi-574326.html>, Retrieved on 11/22/2022.

⁵ General Statistics Office, (12/2019), *Vietnam economy - society in 2019 - outstanding achievements*, <https://consosukien.vn/Kinh-te-xa-hoi-viet-nam-nam-2019-nhung-thanh-tuu-noi-bat.htm>, Retrieved 11/22/2022.

⁶ Vy Vy, (12/2021), *2021: Businesses withdrawing from the market increased by nearly 20% because of Covid-19*, <https://vneconomy.vn/nam-2021-doanh-nghiep-rut-lui-khoi-thi-truong-tang-gan-20-en-covid-19.htm>, Retrieved on 11/22/2022.

⁷ Le Thi Quynh Nhung, (7/2022), *Impact of the Covid-19 pandemic on the unemployment rate by sex in Vietnam*, <https://consosukien.vn/tac-dong-cua-dai-dich-covid-19-toi-ty-le-that-nghiep-phan-theo-gioi-tinh-tai-viet-nam.htm>, Retrieved on 11/23/2022.

⁸ Worldometer, (05/2023), *Vietnam*, <https://www.worldometers.info/coronavirus/country/viet-nam/>, Accessed on 06/05/2023.

Vietnam has taken many drastic measures to prevent the entry of the disease. But due to being a new strain with a high infection rate, along with the subjective psychology of a part of the people, the Covid-19 pandemic in Vietnam has developed very complicatedly.

In that context, Vietnam's multilateral diplomacy has made an important contribution to the task of preventing and combating the Covid-19 pandemic. At the time of the new outbreak, the health systems of all countries fell into a serious crisis due to a shortage of medical supplies such as protective clothing, and medical masks, but Vietnam has fulfilled international obligations to international friends. At the end of December 2019, the first cases of Covid-19 infection appeared in Wuhan City, Hunan Province, China. After that, the disease quickly spread with thousands of new infections every day, Wuhan became the epicenter of the epidemic, falling into a serious health crisis and forcing China to blockade to prevent the spread of infection. with the motto "no internal output, no foreign input". With the view of helping you as helping yourself, on February 9, 2020, Vietnam donated "medical supplies and equipment including ventilators, antiseptic clothes, gloves and medical masks with a total value of 500,000 USD"⁹. On April 16, 2020, amid the complicated developments of the Covid-19 Pandemic in the US, Japan, and Vietnam, Vietnam quickly donated masks and medical supplies to Japan with a total value of 100,000 USD and sent to the US 200,000 antibacterial cloth masks to prevent COVID-19 disease¹⁰.

In addition, after the Covid-19 pandemic spread and broke out in a number of European countries, on April 7, 2020, Vietnam donated "550,000 anti-droplet antibacterial cloth masks to European countries including France, Germany, Italy, Spain and England"¹¹. In particular, after the Covid-19 pandemic complicated developments in the region and the world, to support Laos and Cambodia (two neighboring countries with special relations with Vietnam) in disease prevention and control, on April 3, 2020, Vietnam donated medical equipment to the two friends worth 7 billion VND (VND) for each country¹².

Thus, in the early months of the Covid-19 pandemic broke out in 2020, essential medical supplies such as masks were considered one of the most scarce commodities in the world, Vietnam with limited resources but limited resources. ready, actively share with international friends. Vietnam's actions have demonstrated its current commitment to international integration: Vietnam is a good friend, reliable and responsible partner to all countries with an independent and self-sufficient foreign policy. ownership, multi-

⁹ Nhat Dang, (02/2020), *Vietnam started to donate equipment and supplies to China to deal with corona virus*, <https://tuoitre.vn/viet-nam-bat-dau-trao-trang-thiet-bi-va-vat-tu-tang-trung-quoc-doi-pho-virus-corona-20200209200649504.htm>, Retrieved on 25/11/2022.

¹⁰ Nguyen Hanh, (4/2020), *Vietnam presents masks and medical supplies from Japan and the US*, <https://tuoitre.vn/viet-nam-trao-tang-khau-trang-vat-tu-y-te-cho-nhat-ban-va-my-20200416192718058.htm>, Retrieved on 11/24/2022.

¹¹ Vu Han, (4/2020), *Vietnam donates 550,000 masks to support Covid-19 prevention to some European countries*, <https://thanhvien.vn/viet-nam-tang-550000-khau-trang-cho-cac-nuoc-chau-au-185943823.htm>, Retrieved on 22/11/2022.

¹² Ngoc Van, (4/2020), *Vietnam presents medical equipment to Laos and Cambodia to fight the Covid-19 epidemic*, <https://laodong.vn/thoi-su/viet-nam-trao-tang-thiet-bi-y-te-cho-lao-Cambodia-chong-dich-covid-19-795636.lido>, Retrieved 11/22/2022.

lateralization, and diversification. Therefore, after the Covid-19 pandemic broke out strongly in April 2021, after that, Vietnam emerged as a hot spot for epidemics in the region that received active help from friends, and international partners.

Since April 2020, after the Covid-19 Pandemic broke out and spread strongly globally, to support Vietnam in proactively adapting and responding to the epidemic, the US has supported Vietnam 4 \$0.5 million to “prepare the laboratory system, enable event-based surveillance and case finding, support technical experts for preparedness and response, risk communication, prevention avoidance, infection control, and other activities¹³”. Up to now, after nearly 3 years of the outbreak of the Covid-19 pandemic, “the United States has supported Vietnam with nearly 40 million doses of vaccine, including nearly 39 million doses through the COVAX mechanism”¹⁴. In the condition that the supply of vaccines against Covid-19 is limited, the US vaccines have contributed to helping Vietnam control the disease. The mutual assistance between Vietnam and the US during the Covid-19 Pandemic has shown that the relationship between the two countries is developing better and better. Even according to the US Embassy in Ho Chi Minh City. Ho Chi Minh City affirmed that Vietnam and the US have always been true friends in the fight against the Covid-19 pandemic.

In addition, Vietnam has received active support from China in sharing information and experiences as well as vaccines and medical supplies for the prevention and control of the Covid-19 pandemic. On September 29, 2020, China donated 320,000 medical masks to support Vietnam in the fight against the Covid-19 pandemic and pledged to support Vietnam to fight the disease¹⁵. At the end of 2021, in the context of the rapid outbreak of the Covid-19 pandemic in Vietnam, China quickly provided Vietnam with 3 million doses of vaccines to serve the fight against the epidemic, “increasing the total number of vaccines aided by China. Nation to 5.7 million doses”¹⁶. The timely support from China has contributed to helping Vietnam effectively control the Covid-19 pandemic.

Vietnam also received timely help from international partners and friends such as Germany, Japan, Russia, and Australia... besides the US and China. On the occasion of the visit to Japan by the Prime Minister of Vietnam from 22-25 On November 11, 2021, the

¹³ Viet Anh, (4/2020), *US support 4.5 million USD for Vietnam to fight Covid-19*, <https://vnexpress.net/my-ho-tro-4-5-trieu-usd-cho-viet-nam-chong-covid-19-4086182.html>, Retrieved 11/22/2022.

¹⁴ TTXVN, (7/2022), *Vietnam and the US promote cooperation after two years of the pandemic*, <https://nhandan.vn/viet-nam-va-hoa-ky-thuc-day-hop-tac-sau-hai-nam-dai-dich-post705150.html>, Retrieved 11/25/2022.

¹⁵ Nguyen Van, (9/2020), *China donated 320,000 medical masks to Vietnam to prevent COVID-19 epidemic*, <https://covid19.gov.vn/trung-quoc-trao-tang-viet-nam-320000-khau-trang-y-te-phong-chong-dich-covid-19-1717139809.htm>, Retrieved 11/26/2022.

¹⁶ Ministry of Health, (9/2021), *China will donate 3 million more doses of vaccine to Vietnam*, https://moh.gov.vn/hoat-dong-cua-lanh-dao-bo/-/asset_publisher/TW6LTp1ZtwaN/content/trung-quoc-se-vien-tro-them-3-trieu-liu-vaccine-cho-viet-nam#:~:text=%E1%BB%A6y%20vi%C3%AA%20Qu%E1%BB%91c%20v%E1%BB%A5%2C%20B%E1%BB%99%20tr%C6%B0%E1%BB%9Fng%20Ngo%E1%BA%A1i%20giao%20Trung%20Qu%E1%BB%91c,c%C3%A1c%20C4%91%E1%BB%8Ba%20ph%C6%B0%20C6%A1ng%20Vi%E1%BB%87t%20Nam., Retrieved 11/26/2022.

Japanese Government provided a non-refundable aid to Vietnam of 1,540,000 doses of AstraZeneca vaccine for the fight against the epidemic¹⁷. Then, on December 14, 2021, Vietnam received 2,558,000 million doses of Covid-19 vaccine donated by the German government¹⁸. Those help have been an important resource to help Vietnam overcome and win the Covid-19 pandemic. This is a necessary foundation to promote closer relations between Vietnam and its partners with increasing political credibility.

In addition, Vietnam's success in the fight against the Covid-19 pandemic from 2019 to now also stems from the fact that Vietnam has received information and experience in fighting the epidemic from international friends. As the Coronavirus continuously has new variants, making it difficult for disease prevention and control, the information and experience of international partners and friends is an important basis to help Vietnam proactively respond to the pandemic. Covid-19 pandemic. That shows international friends' friendship, solidarity, and mutual support towards Vietnam during the Covid-19 Pandemic.

Looking back, at the world context in 2021, many countries in the region and the world have difficulty accessing the vaccine supply to inject people. But Vietnam has received the attention and aid of vaccines from many countries around the world to serve in the fight against the epidemic. Vietnam received such valuable support from international friends as a result of the correct multilateral diplomacy from 1986 until now. As a result, Vietnam's epidemic prevention and control have gradually achieved positive results. Up to now, the Covid-19 pandemic in Vietnam has been basically controlled, which has created conditions for Vietnam to establish a new normal state and restore production activities.

In short, Vietnam's accession to ASEAN in 1995 is an important milestone of Vietnam's multilateral diplomacy in the modern era. Joining ASEAN is an important first step in Vietnam's process of opening up and integrating into the world after a long period of economic isolation and political isolation. The past years, especially the achievements achieved during the outbreak of the Covid-19 Pandemic, have shown that Vietnam's multilateral diplomacy is correct and represents Vietnamese wisdom.

4. Conclusion

Vietnam's accession to ASEAN has created a trend of peace and cooperation for mutual development in the region and marked a new beginning in Vietnam's diplomatic history in the modern era. As a result, Vietnam has conditions to break the economic siege and political isolation. At the same time, Vietnam's multilateral foreign policy has paved the way for the expansion of foreign relations with all countries in the world without distinction of political regimes, on the basis of respect for established policies, autonomy, territorial

¹⁷ Nguyen Hoang, (11/2021), *Receiving 1,540,000 doses of AstraZeneca vaccine aided by the Japanese Government*, <https://baochinhphu.vn/tiep-nhan-1540000-lieu-vaccine-astrazeneca-do-chinh-phu-nhat-ban-vien-tro-102304509.htm>, Updated on 11/23/2022.

¹⁸ Government news, (12/2021), *Vietnam receives more than 2.5 million doses of Moderna vaccine supported by Germany*, <https://baochinhphu.vn/viet-nam-tiep-nhan-hon-25-trieu-lieu-vaccine-moderna-do-duc-ho-tro-102305514.htm>, Retrieved 11/22/2022.

integrity, and non-interference in each other's internal affairs. With tireless efforts since 1986, multilateral diplomacy has contributed to enhancing Vietnam's position, role, and prestige in the international arena. At the same time, Vietnam's multilateral diplomacy is one of the important factors helping Vietnam effectively control the Covid-19 pandemic, creating conditions for economic recovery and development in the post-Covid-19 period.

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TOWARDS THE IMPROVEMENT OF THE LAW ON PROTECTION OF INTELLECTUAL PROPERTY RIGHTS IN THE DIGITAL AGE: SOME OPEN-ENDED ISSUES

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Abstract

The 4th scientific and technological revolution creates a premise for the development of a knowledge economy where capital for optimal use and exploitation of resources is an intangible asset - intellectual property rights. It is necessary to recognize the importance of this type of property as soon as possible the importance of this type of property, in which the important issue is the protection of intellectual property rights, which is a concern of all countries, including Vietnam. In that context, building and aiming to perfect the legal framework on protection of intellectual property rights is very necessary and of great significance in the current period. The content of the article will clarify the following issues: (i) problems arising from the legal regulations related to the mechanism of protection of intellectual property rights; (ii) propose some recommendations to improve the legal provisions of Vietnam.

Keywords: *Protection, intellectual property rights, towards perfection, problems, recommendations*

1. Introduction

Intellectual property rights are increasingly being evaluated as an important potential in the economic development of the country in general¹ or creating economic value for rights holders who are individuals and organizations in particular especially in the current digital age². For businesses, it is considered an important factor, creating "leverage" to affirm its position in domestic and foreign markets. The issues raised are the "protection" of this type

¹ See more:

i). WIPO (2019): "International Conference on Intellectual Property and Development: How to Benefit from the IP System", World Intellectual Property Organization, Home - In Focus, https://www.wipo.int/portal/en/news/2019/article_0020.html, access on 30/3/2023.

ii). ICC BASCAP (2019): "Promoting and Protecting Intellectual Property in Vietnam", International Chamber of Commerce, Home - News and publications, <https://iccwbo.org/news-publications/policies-reports/icc-bascap-promoting-and-protecting-intellectual-property-in-vietnam/>, access on 30/3/2023.

² In general, "the digital age is the development of a country from a traditional industry to an industry in which economic development is based on technology and information."

Same author: Adeyinka Tella and Associates (2020): "Handbook of Research on Digital Devices for Inclusivity and Engagement in Libraries", Publishing company. IGI Global Publisher of timely knowledge.

of property so as to ensure a balance between the rights and legitimate interests of the rights holders, as well as to create a good mechanism in the use and exploitation of this type of property this is effective. All of this contributes to increasing competitiveness, avoiding the risk of being left behind, and promoting policy making for the stable and sustainable development of Vietnam³. The alarming situation shows that Vietnam's legal framework for "protection" of intellectual property rights is in a "hot"⁴ state because of the increase in the number, nature and extent of infringement acts violate⁵ is always a big concern. On the other hand, the shortcomings in the very legal provisions on "protection" of intellectual property rights are currently causing many questions and inadequacies. It is thought that in the coming period, legislators should have an overall view that can be proposed. Monitoring and perfection is essential. To ensure sustainable economic growth in the "digital age" where the use of scientific and technological knowledge assets to promote the development potential of the state, research and recommendations the aim of completing the legal frameworks on "protection" of intellectual property rights is now extremely important.

2. Literature review

Domestic projects

Article by Nguyen Phan Khoi (2021): "*Protecting Intellectual Property Rights in Vietnam: Opportunities and Challenges*" in Challenges of Governance - Development and Regional Integration in Southeast Asia and ASEAN. in Ronald L. Holzhaecker; Wendy Guan Zhen Tan. 115-134. Here the author mentions a number of issues: such as: challenges in the

³ Property is an intellectual property right, which is increasingly being evaluated as an asset with many preeminent values for the right holder who is an enterprise (organization) or an individual. Therefore, if you want to promote fast and sustainable development in the digital age, it is required of legislators to grasp and clearly understand the issue of the importance of protecting intellectual property in this period. current segment. See more: Lexology: "*Importance of Protecting Intellectual Property in the Digital Age*", https://www.lexology-com.translate.google/library/detail.aspx?g=04218e5d-5952-49e7-adda-cb70de0189b8&_x_tr_sl=en&_x_tr_tl=vi&_x_tr_hl=vi&_x_tr_pto=sc, access on 31/3/2023.

⁴ See more:

i). Data from the Organization for Economic Co-operation and Development (OECD) "*shows that Vietnam is a source of fake jewelry, food, clothing and footwear, as well as optical, photographic and medical equipment. However, counterfeit goods are a big concern of most countries, including Vietnam*".

United States Trade Representative (2020): "*Special 301 Report*", Office of the United States Trade Representative, April 2020, https://ustr.gov/sites/default/files/2020_Special_301_Report.pdf, access on 30/3/2023.

ii). "*Vietnam does not have a strong record on protecting and enforcing intellectual property (IP)*".

US. Department of state (2022): "*2022 Investment Climate Statements: Vietnam*", https://www-state.gov.translate.google/reports/2022-investment-climate-statements/vietnam/?_x_tr_sl=en&_x_tr_tl=vi&_x_tr_hl=vi&_x_tr_pto=sc, access on 31/3/2023.

⁵ See more:

i). Data from the Organization for Economic Co-operation and Development (OECD) "*shows that Vietnam is a source of fake jewelry, food, clothing and footwear, as well as optical, photographic and medical equipment. However, counterfeit goods are a big concern of most countries, including Vietnam*".

United States Trade Representative (2020): "*Special 301 Report*", Office of the United States Trade Representative, April 2020, https://ustr.gov/sites/default/files/2020_Special_301_Report.pdf, access on 30/3/2023.

ii). "*A country's economy can be severely affected by counterfeiting if trademarks are not protected*".

Sanda Renko and Blazen Knezevie (2019), "*Trade Perspectives in the Context of Safety, Security, Privacy and Loyalty*", Nxb. Cambridge Scholars, tr. 120.

protection of intellectual property rights in the period of international integration, such as: i). High construction costs for IP offices; ii). Ineffective enforcement of intellectual property protection; iii). potential when protecting intellectual property rights well and vice versa.

Foreign research projects

Article by Christian Aniwku, Kayode Akindele & Stanley Umezuruike (2023): “*Protecting intellectual property in the digital age - legal strategies for technology companies*”, in Business day, access on 31/3/2023. In the article, the author mentioned the importance of protecting intellectual property rights in the digital age such as: i). Encourage innovation, research and develop solutions for creativity; ii). Protect investments in research and development, create competition, enhance commercialization, etc. As well as pose many important issues in perfecting that country's legal framework for protection. protection of intellectual property rights such as (establishing framework regulations on the exploitation and use of this type of property on the basis of learning from the legislative experience of advanced countries,...).

On the basis of inheritance and development, the authors will generalize and expand on a number of issues such as completing the intellectual property protection mechanism in Vietnam in the "*digital age*", pointing out the inadequacies in the framework. Legislation on protection of intellectual property rights exists in Vietnamese legal documents from which it is recommended to improve Vietnamese law in the coming period.

3. Method

The article is based on qualitative and comparative research methods to assess inadequacies in legal documents related to the protection of intellectual property rights, thereby proposing a number of recommendations to complete the problem. legislation in the future. In addition, other methods such as the writing rule analysis method, the logical method, the synthetic analysis method and the enumeration method are also interwoven in the process of completing this article.

4. Discussion

4.1. Vietnamese law on the protection of intellectual property rights

Intellectual property rights are considered as an intangible property in which all rights holders want to be protected by law to ensure that certain cases are satisfied (*registered or protected protection on the mechanism of self-generated rights*⁶). In particular, the nature of the protected scope is within the territory of Viet Nam and can be protected under the agreement mechanism in bilateral, multilateral treaties or international treaties to which Vietnam is a member. members. And the term of protection is determined by a separate mechanism for each group of rights⁷. Mechanism of protection of intellectual property rights

⁶ Article 6, Article 7 Law on Intellectual Property 2005.

⁷ See more:

i). For copyright: Clause 8 Article 1 Law on Intellectual Property 2005 amending and supplementing 2009; ii). For related rights: Article 34 Law on Intellectual Property 2005; iii). For industrial property rights: Article 93 Law on Intellectual Property 2005 and Clause 29 Article 1 Law On Intellectual Property revision 2022; iv). For plant variety rights: Article 169 Law on Intellectual Property 2005.

is set out with the aim of avoiding acts of intentionally infringing on one or several objects of intellectual property rights. In which, Vietnamese law provides for protection through 02 mechanisms: i). Self-protection; ii). Thanks to the authorized subject for protection.

i). Self-protection mechanism for intellectual property rights is put in place when individuals and organizations that are rights holders of intellectual property rights objects believe that they are infringed by acts specified by the intellectual property law as: acts infringing upon the subject matter of rights, such individuals or organizations may apply the following measures to protect rights⁸: *Firstly*, apply technological measures to protect rights, publish rights management information or apply other technological measures to prevent infringement of intellectual property rights⁹; *Secondly*, have the right to request organizations and individuals committing acts of infringing upon intellectual property rights to stop infringing acts, to remove and delete infringing content on the telecommunications network and the Internet., public rectification, compensation¹⁰.

ii). *Mechanism for protection by authorized subjects*¹¹. Depending on the nature and extent of the infringing acts of individuals and organizations, they will be handled according to law through civil, criminal and administrative measures¹². In which, the civil remedy is represented by the right to initiate a lawsuit at court or arbitration against intellectual property rights holders who believe that their legitimate rights and interests have been infringed (claim for damages and other obligations arise)¹³. Administrative measures are sanctions (fines,...) applied by state management agencies to sanction administrative violations when individuals and organizations commit acts of infringing upon intellectual property rights. the basis of the relevant legal provisions¹⁴. And the penal measure is considered the most severe of the state against the subject who commits acts of infringing upon intellectual property rights in the above three mechanisms. It is specified in the applicable penal code (prison and/or fine respectively)¹⁵.

4.2. Problems with the legal framework to protect intellectual property rights in Vietnam

One is, related to the determination of damages in the case of infringement of intellectual property rights.

⁸ Article 198 Law on Intellectual Property 2005 and Clause 10 Article 2 Law on Insurance Business, Amended Intellectual Property Law 2019.

⁹ Point a Clause 76 Article 1 Law on Intellectual Property revision 2022.

¹⁰ Point a Clause 76 Article 1 Law on Intellectual Property revision 2022. This point is said to be the change of intellectual property law compared to previous times of codification Law on Intellectual Property 2005.

¹¹ Point c Clause 1 Article 198 Law on Intellectual Property 2005.

¹² Clause 1 Article 199 Law on Intellectual Property 2005.

¹³ To be applied in accordance with the provisions of Chapter XX of the Civil Code 2015 and general provisions of the Civil Procedure Code 2015; Commercial Arbitration Law 2010

¹⁴ Talk about like: i). Law on sanctioning administrative violations of the 2012; ii). Decree No: 99/2013/NĐ-CP day 16/10/2013 Decree on sanctioning of administrative violations in the field of industrial property; iii). Decree No: 131/2013/NĐ-CP day 16/10/2013 Decree on sanctioning administrative violations of copyright and related rights; iv). Decree No: 31/2016/NĐ-CP day 06/5/2016 Decree on sanctioning of administrative violations on plant varieties.

¹⁵ The crimes are specified in the Article 225; Article 226 Current Penal Code.

Firstly, where the amount is considered a “reasonable” cost to hire an attorney, the extent of reasonableness here is in practice difficult to determine. Because it may be “reasonable” for the plaintiff - plaintiff but “unreasonable” for the defendant (defendant). In addition, the issue of legal service contract (lawyer-client service fee) is determined on many different bases (experience, popularity, nature of the case, etc.¹⁶....). And moreover, the consideration of the cost of hiring a lawyer that is considered "reasonable" belongs to the jurisdiction of the trial panel in the case.

Secondly, ignore the subject who has the right to force the payment of reasonable costs to hire a lawyer. Regarding the resolution of a dispute over individual intellectual property rights, the organization believes that the settlement of a civil case has the right to initiate a lawsuit to court or arbitration for settlement¹⁷, but the law only requires demand of one party to the court to compel the other party to pay the cost of hiring a lawyer.

The problem here is the lack of transparency and clarity in the understanding as well as the application of regulations in practice, which is currently the situation in the "digital age", the protection issue is facing many difficulties of both countries. management and rights holders, when one party loses the balance of its legitimate rights and interests, it will lead to many other legal consequences.

Two is, there is a lack of specific regulations for the application of the mechanism to protect intellectual property rights. In the digital age, where infringements take place in cyberspace, in addition to legal sanctions, preventing and stopping violations is also very important. Specifically, the current regulations have defined self-protection measures by: “Forcing the removal of electronic copies of infringing works, performances, phonograms, video recordings, broadcasts, in cyber and digital space¹⁸” but so far there is no mechanism and method to coerce violators to do so.

There is, criminal sanctions are still "willing", omitting the subject of adjustment.

Firstly, the willful application of the Trial Panel. For the crimes of infringing upon intellectual property rights, specified in Article 225; 226 The current Penal Code, the legislator stipulates that the criminal responsibility of the individual who commits the crime may also be subject to the additional application of Point c, Clause 3 in Article 225 and Point c, Clause 4, Article 226 of the Penal Code. “The offenders may also be subject to a fine of between VND 20,000,000 and 200,000,000, a ban from holding certain posts, practicing certain professions or doing certain jobs from 1 year to Five years.” In which cases will the above-mentioned "still possible" apply and considering that up to now, there has been no specific record to serve as a basis for the Trial Panel to apply to settle the case.

¹⁶ Article 55 Law on Lawyers.

¹⁷ Point d Clause1 Article 198 Law On Intellectual Property 2005

¹⁸ Clause 3 Article 3 Decree no: 131/2013/NĐ-CP day16 month 10 year 2013 regulations on sanctioning administrative violations of copyright and related rights (amended and supplemented by Decree no 28/2017/NĐ-CP day 20 month 3 year 2017).

Secondly, there is a lack of regulation on the case of infringement of the right object being a plant variety. In principle, when they are all objects of intellectual property rights protected by Vietnamese law (plant variety rights), the problem here is only two groups of rights: copyright, related rights and rights. Industrial property is protected by the criminal law, which loses the uniformity and comprehensiveness of the law for groups of objects of protected rights.

5. Discussion and Conclusion

5.1. Some recommendations to improve the protection of intellectual property rights

5.1.1. As for the regulation on "reasonable" compensation to hire a lawyer

In the next period, legislators should have a look towards amending and supplementing a number of issues in the following direction:

Firstly, the judicial council of the supreme people's court should issue detailed guidelines on "*reasonable costs of hiring a lawyer*" in the following directions: "*reasonable cost of hiring a lawyer*" is determined on the basis of compliance with the general provisions of the Law on Lawyers. In case there is disagreement about the cost of hiring a lawyer during the complaint and/or appeal process related to this content, it will be determined in the following way:

- Compensation for attorney fees will be decided according to the agreement of the parties in the process of settling the case and/or settling the complaint.

- Compensation for attorney's fees will be compulsory under the plaintiff's legal service contract if the court or arbitrator determines that there is an infringement of rights and vice versa (with proofs). In case there are grounds to determine that the legal service contract is fake or there is a change in the cost of lawyer's remuneration (higher) during the settlement process, it shall be determined according to the average price of 03 Law Offices. or a law firm in the same area to evaluate and determine the cost of attorney's fees. The applicable jurisdiction in this selection is consulted with experts and/or competent regulatory authorities.

Secondly, in clause 10, Article 2 of the Law on Insurance Business, the Law on Intellectual Property 2019 is amended and supplemented in the following directions:

"4. Organizations or individuals that are defendants in an intellectual property right infringement lawsuit, if concluded by a court or arbitrator that they have not committed an infringing act, have the right to request a court or arbitrator to force the plaintiff to pay reasonable expenses for hiring a lawyer or other expenses as prescribed by law."

5.1.2. For the protection mechanism of intellectual property rights in intellectual property law

Consolidate and absorb the methods of building intellectual property rights protection mechanisms of countries around the world on intellectual property rights protection. In particular, the promulgation of legal documents detailing the central mechanism of protection of intellectual property rights by applying self-protection measures must be flexible of the competent subject when handling. Infringement of intellectual property rights includes, but is not limited to:

i). Order and procedures for forced removal of copies of infringing works, performances, phonograms, video recordings and broadcasts in electronic, cyber and digital forms).

ii). Develop more framework regulations on handling intentional acts of individuals and organizations that do not comply or do not comply with regulations (administrative, civil, criminal).

5.1.3. *Regarding the mechanism of protection of intellectual property rights in the criminal law*

Early promulgate documents detailing how to apply in which cases the offender "*can still*" be subject to additional penalties at point c, clause 3, Article 225 and point c, clause 4, Article 226 of the Penal Code current.

This "*possible*" nature will apply: when the subjects commit criminal acts, including but not limited to: acts of "*recidivism*", "*using high technology*", to infringe intellectual property rights.

Early promulgate documents amending and supplementing the current Penal Code in the direction of recognizing the protection of rights to plant varieties under Chapter XVIII, Section 3 with the way the law should be developed and the description orientation according to the right object.

5.2. *Conclusion*

Based on the analysis and comparison of Vietnamese legal documents governing the protection of intellectual property rights, the authors have pointed out some outstanding problems in the current law. Since then, some solutions have been proposed to help Vietnamese law improve the provisions and regulations related to the regulation of intellectual property rights protection in the new period where the "*digital age*" will this is an important stepping stone for Vietnam to more easily integrate into the international economy. Moreover, this job also shows the cross-cutting view of our party and state in developing rapidly and sustainably mainly based on science and technology¹⁹, where in the context of the knowledge economy most of the use of intangible asset resources to create development motivation, if well done with the protection mechanism, will contribute to helping Vietnam rise to new heights on the world map.

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¹⁹ See more:

Communist Party of Vietnam (2021): "*Document of the 13th National Congress of Deputies, Volume 1*", Publishing House, National politics of truth, 92.

3. Communist Party of Vietnam (2021): "*Document of the 13th National Congress of Deputies, Volume 1*", Publishing House, National politics of truth, 92.
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**SESSION 7:
SOCIAL AND HUMANITIES ISSUES**

FACTORS AFFECTING THE NATIONAL HIGH SCHOOL GRADE EXPERIENCE IN VIETNAM

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Abstract

Education is always one of the top priorities in the country. Reality shows that accompanying the development of the country is the development of education. One of the most concerning issues is the annual high school graduation exam score because it reflects the learning process of students and the quality of training as well as the experience and knowledge of the teachers. Therefore, in our research, we focus on the factors that affect the national high school exam scores. There are many elements that can affect the learning ability of high school pupils such as family economic conditions, religion, gender, region, IQ, qualifications, and communication ability of teachers, ... In this research, we focus on studying the factors affecting the average score of the national high school exam in the provinces of Vietnam. Economic conditions are always one of the essential factors affecting students' learning ability. Students with a good economic background can study at private schools with modern facilities and small scale. Since then, they get more close attention and access to knowledge in a more interesting way, so the learning results are often more outstanding. Our results are no exception. GDP per capita of a province reflects the economic conditions and average living standards of that province and it has a positive effect on the average score of the province's national high school exam. The higher the province's GDP per capita, the higher the average score of that province's national high school exam. However, our research also shows that the group of high-income provinces does not mean that the average high school exam score will also be high. This may be related to the overcrowded number of students in these provinces and the uneven quality of students, thus reducing the average score.

Keywords: *high school grade, OLS, Fixed Effects Model (FEM), Random Effects Model (REM).*

1. Introduction

Academic achievement is one of the measures reflecting the learning and research capacity of high school students, as well as the teaching capacity of teachers in high schools. This is also an important criterion to evaluate the output quality of high school students, who will become excellent leaders and human resources responsible for the economic and social

development of the country. According to Jayanthi et al. (2014), students' academic success affects their self-esteem, motivation and perseverance; conversely, an outcome of academic failure can lead to a reduced opportunity for a student to seek a higher degree and increase the cost of education. This means that academic achievement is not only a top important goal of learners but also a topic that attracts special attention of teachers and educational and training institutions. However, the reality shows that achieving a high result or student's academic success is not easy to do, because academic achievement is a quantity that depends on many internal and external factors of the learner. As a result, educators and academics have long sought to discover elements that contribute to learners' success. Government policies, school-related factors, socioeconomic position, and individual and household characteristics will all have an influence on kids' learning outcomes (Dayioglu and Türüt-Asik, 2004; Farooq et al., 2011). According to Khan and Ahmad (2012), parents' socioeconomic status (SES) has a greater influence on their children's academic success. The majority of study findings identify parents' educational level and employment position as important predictors of student accomplishment (Saifi and Mehmood, 2011; Al-Matalka, 2014). Another research in 2014, conducted by Singh and Singh, discovered that parental SES did not substantially affect pupils' educational attainment, but that the parents' education level and the child's health condition did. in affecting children's academic success and social development. By the end of the trial, there were no significant variations in SES across students from various homes. Akhtar (2012) discovered that pupils who came from middle-class families outperformed those from upper and lower grades. Hijazi and Naqvi (2006) discovered that family income had no substantial influence on student success. That suggests that pupils from affluent homes are less concerned with their schoolwork. For their part, Ogunshola and Adewale (2012) revealed that parental SES has no significant effect on student academic performance rather than student health status being identified as having a statistically significant effect, regarding student learning outcomes.

Two significant structures are the school sector (private or public) and class size. Private schools are often better funded than public schools and have smaller class sizes. Private school financing increases academic achievements and get into resources such as computers, which have been found to improve academic ability (Crosnoe, Johnson, Elder, 2004; and Eamon, 2005). Lower class sizes provide more personal situations and, as a result, can build connections between instructors, which has also been found to improve student achievement. Kids from lower socioeconomic backgrounds who attend underfunded schools perform worse than those from better socioeconomic ones (Crosnoe et al., 2004, Eamon, 2005). Some of the characteristics that can impact students' academic success have been recognized as geographical location, number of training institutions, number of students and teachers arranged in a class, and socioeconomic level. Past research on the impact of these characteristics on academic success has been inconclusive. But some of the research' findings revealed that these characteristics had a considerable effect on students' academic success. According to some research, these characteristics have no substantial impact on kids' academic ability. Furthermore, not much empirical evidence was found in Vietnam on factors that affect the academic achievements of high school pupils.

The target of the research is examining how the geographical location, the number of students and teachers organized in a class and household socio-economic status affects the national high school exam scores. The official data source used by this study is the dataset from Kaggle, the General Statistics Office of Vietnam and the Ministry of Education and Training of Vietnam. All 63 provinces and cities of Vietnam are included in the research sample in the period from 2018 to 2021. 2018 was considered for selection because after 2015, Vietnam began to apply the form of university admission based on high school graduation exam scores, combining the two previous exams: high school graduation exam and university entrance exams. Purpose of using this exam results to consider and recognize high school graduation; thereby, providing information to assess the quality of general education; provides data as a basis for higher education and vocational education enrolment. At the same time, in order to reduce the situation of exam preparation, study cabinets, study deviations and reduce costs for families and society. Moreover, the official data source used by this study is the data set of the General Statistics Office of Vietnam to measure one of the main variables of the study, which is per capita income per month at current prices. The local disaggregation has so far only had complete data from 2018.

This study was conducted to answer the following questions:

Question 1: The higher GDP per capita each province, the higher the average high school graduation exam score of the province?

Question 2: The smaller the number of high school students/the number of high schools, the higher the average high school graduation exam score?

Question 3: The smaller the number of high school students/the number of high school teachers, the higher the average high school graduation exam score?

Question 4: The average high school graduation exam scores of the delta provinces are higher the average high school graduation exam scores of the mountainous provinces?

Question 5: The higher income rating, the higher the average high school graduation exam score?

2. Literature review

This article delves into the global importance and impact of education on society. It points out that education is seen as the lifeblood for the efficient and appropriate stable growth of the human community, and it links this importance to the development of human capital. The article goes on to say that education is the starting point for all human activity and the development of a country overall.

School sector and class size are two significant structural components of schools that are determined by the economic position of the parents. Private schools are often better funded and have smaller class sizes than public schools. More funding for private schools improves academic achievement and increases access to technologies such as computers, which have been shown to boost academic aptitude (Crosnoe, Johnson, Elder, 2004; and Eamon, 2005). Lower class sizes enable more intimate situations, which can increase

teacher-student connection and, as a result, student development. Students from low-income households who attend under-resourced schools perform worse than pupils from higher-income families (Crossnoe et al., 2004, Eamon, 2005).

Low academic achievement among students is a cause for worry for educators and anxiety for parents. It has been established that the quality of a student's parents and home background goes a long way toward forecasting the level and uniformity of a child's functioning survival and academic needs fulfilment and provision. Inadequate parental care paired with severe deprivation of a child's social and economic needs leads to low academic attainment.

Many studies have discovered that student and teacher attitudes, study habits, instructors' credentials, teaching methodologies, school atmosphere, government policy, school location, and family types all have an influence on students' academic achievement (Edwards, 2000; Aremu & Sokan, 2003; Asikhia, 2010; Akomolufe & Olorumfemi-Olabisi, 2011).

Previous study has shown that the impact of gender, geography, and socioeconomic position on pupils' academic success is not consistent. This needs regular verification of the effect of socio-economic position, location and gender on pupils' academic ability in mathematics anywhere and through time.

3. Method

Quantitative research techniques involve tasks such as data collection and processing, data synthesis, and data presentation to aid in the analysis and explanation process. Secondary data acquired from Kaggle, the General Statistical Office of Vietnam, and the Ministry of Education and Training of Vietnam were used in the study.

3.1. Pooled OLS model (POLS)

POLS is a model that assumes that the y-axis and slope coefficients do not change over time and in units (country). The estimation method for POLS is classical least squares. The POLS model assumes that there is no c_i factor (the factor of the characteristic difference between units but not measurable) in the model.

3.2. Fixed effects model (FEM)

a. Model

In economic relations, with the dependent variable, Y , and two observable explanatory variables, X_{11} and X_{22} , and one or more unobservable variables. We have table data for Y , X_{11} , and X_{22} . The table data consists of N - object and T - moment, and so we have $N \times T$ observations. The classical linear regression model without a shear coefficient is determined by:

$$Y_{it} = \beta_1 * X_{it1} + \beta_2 * X_{it2} + \mu_{it} \text{ with } i = 1, 2, \dots, N \text{ and } t = 1, 2, \dots, T$$

where Y_{it} is the value of Y for object i at time t ; X_{it1} is the value of X_1 for object i at time t , X_{it2} is the value of X_2 for object i at time t , and μ_{it} is the error of object i at time t .

The fixed effects model, which is an extension of the classical linear regression model, is given by:

$$Y_{it} = \beta_1 * X_{it1} + \beta_2 * X_{it2} + v_{it} + \varepsilon_{it}$$

Where $\mu_{it} = v_{it} + \varepsilon_{it}$. The error of the classical linear regression model is separated into two components. The v_{it} component represents unobservable elements that vary between objects but do not change over time. The composition ε_{it} represents unobservable elements that vary from object to object and change over time.

b. Estimated method

Two methods are commonly used to estimate the parameters of the effect model, namely:

- The LSDV minimum false variable regression estimation for each false variable is representative of each observed object of the sample.
- Fixed effects estimator

However, when the sample is too large, using the LSDV method will be very cumbersome. So, it makes more sense to use fixed effects estimates.

Fixed effects estimation principle: To assess the causal effects of independent variables X_{11} and X_{22} with dependent variables Y , estimate the fixed effects model using changes in X_{11} , X_{22} , and Y over time. Calling the variable Z_i denotes the unobservable variable that varies between objects but remains constant over time and so includes the error part in it. Since Z_i remains constant over time, it does not cause any change in Y_{it} .

3.3. Random effect model (REM)

a. Model

Considering an economic relationship consists of a dependent variable, Y , and two observable explanatory variables, X_1 and X_2 . Consider a table data for variables Y , X_1 , and X_2 . The table data consists of N objects and T times, so we have $N \times T$ observations.

The random effects model is written as:

$$Y_{it} = \beta_1 * X_{it1} + \beta_2 * X_{it2} + v_{it} + \varepsilon_{it} \text{ with } i = 1, 2, \dots, N \text{ and } t = 1, 2, \dots, T$$

In it, the standard error is divided into 2 components. The composition v_{it} represents unobservable elements that change between objects but do not change over time. The component ε_{it} represents all unobservable elements that change between objects and time. Suppose that v_{it} is given by:

$$v_{it} = \alpha_0 + \omega_i \text{ with } i = 1, 2, \dots, N$$

In particular, v_{it} is divided into two components: First, the uncertainty component α_0 . The second is the random component ω_i .

Suppose, ω_{it} for each object is derived from an independent probability distribution with an average value of 0 and constant variance, that is, $E(\omega_{it}) = 0$, $\text{Var}(\omega_{it}) = s_\omega^2$, $\text{cov}(\omega_{it}, \omega_{st}) = 0$.

n random variable ω_i are called random effects.

The random effect model can be rewritten:

$$Y_{it} = \alpha_0 * X_{it1} + \beta_2 * X_{it2} + \mu_{it}$$

Where $\mu_{it} = \omega_{it} + \varepsilon_{it}$. An important assumption in the random effects model is that the error component μ_{it} does not correlate with any explanatory variable in the model.

b. Estimated method

OLS estimation for the random effects model will give non-deviant but inefficient estimation parameters. Moreover, the estimates of the standard error and therefore the t-statistic will no longer be accurate. This is because OLS estimation ignores self-correlation in the error component μ_{it} . In order for the estimation results to not deviate and be effective, we can use feasible GLS estimation (FGLS) to overcome the phenomenon of self-correlation error.

In addition to the two methods of fixed and randomized impact, in some cases researchers still use Pooled OLS (POLS) estimates for this type of collected data. According to Gujaranti (2004), a POLS estimate is an OLS estimate on a data set obtained by objects over time, so it considers all coefficients unchanged between different objects and unchanged over time.

3.4. Model selection

The fixed effects estimate is verified by the F-test with the null hypothesis that all micro-coefficients are zero (i.e., there is no difference between different objects or times). Rejecting the null hypothesis at a given significance level (e.g., a significance level of 5%) would show that a fixed effects estimate is appropriate. According to Baltagi (2008), for random effects estimation, using the Lagrange Multiplier (LM) with the Breusch-Pagan test verifies the conformity of the estimate. Accordingly, the null hypothesis holds that the error of the raw estimate does not include deviations between objects $\text{var}(v_i) = 0$ (or the variance between objects or times is constant). Refuted the null hypothesis, showing that the error in the estimate includes deviations between groups, and is consistent with the estimate of random effects.

According to Baltagi (2008) and Gujarati (2004), the Hausman test will be used to select the appropriate estimation method between fixed and random effects estimation methods. Null hypothesis assumes that there is no correlation between the characteristic errors among objects (v_i) and the variables that explain X_{it} in the model. Estimation RE is reasonable under null hypothesis but inconsistent in the alternative hypothesis. However, in cases where the null hypothesis is rejected, a fixed effects estimate is more appropriate than a random effects estimate. Conversely, there is not enough evidence to refute null hypothesis, which means that without refuting the correlation between error and explanatory variables, the fixed effects model is no longer relevant and therefore a random effect model will be chosen.

3.5. Data processing method

Firstly, the research team eliminated the ineligible students who did not participate in the 3 compulsory subjects Math, Literature, and English.

Secondly, the team then totalled the top three subjects for each student and divided the data by test year.

Thirdly, for each year we use winsor method to handle outliers in variables. Winsorization is a method used to reduce the impact of external variables in data by returning

foreign values to a specified value at a percentile of data. The winsor method usually turns extraneous values (observations) outside the percentile between 95% and 5% into values at these two percentiles.

Finally, we statistics the number of students participating in the provinces and the total score of all students in each province by year. We then divide the total score by the number of students in provinces by year to get the average score of the provinces for each year.

3.6. The errors encountered in the model estimation

a. Cross-sectional dependence

Traditional panel data regression models such as FE, RE, all assume that the parameters (coefficients) of the variables are identical across cross-sectional units. However, according to Pesaran and Smith (1995), ignoring the heterogeneity of the coefficients can lead to discrepancies in the results. Thus, only when the assumption of homogeneity of the coefficients is maintained can the validity of the analytical results be guaranteed.

b. Serial correlation

Serial correlation is the correlation of a signal with a delayed copy of itself as a function of delay. This is typically measured in terms of the correlation coefficient, which is a measure of the similarity between observations of a random variable as a function of the time lag between them. The analysis of autocorrelation is a mathematical tool for finding repeating patterns, such as the presence of a periodic signal obscured by noise or identifying the missing fundamental frequency in a signal implied by its harmonic frequencies. It is often used in signal processing for analyzing functions or series of values, such as time domain signals. The consequence is that the OLS normal estimators are not the least-varient estimators among the unbiased estimators although they are unbiased.

c. Unit roots

A unit root is a feature of some stochastic processes (such as random walks) that can cause problems in statistical inference involving time series models. A linear stochastic process has a unit root if 1 is a root of the process's characteristic equation. Such a process is non-stationary but does not always have a trend.

d. Heteroskedasticity

Heteroskedasticity is a common but undesired phenomenon in Predicting statistical variables. When heteroskedasticity is present, it can distort the normal distribution of the error. Visual inspection of the residual errors will often show them to fan out over time.

Heteroskedasticity is a case of violating the assumptions of the linear regression model. Therefore, it can affect the results when analyzing econometrics or financial modelling such as CAPM.

Although, variable variance does not affect the consistency of regression parameter estimation, it can lead to error in conclusion. When variable variance error occurs, the F-test (F-test) is unreliable. The consequences in practice can be severe if we use regression analysis in developing investment strategies.

4. Results

4.1. The result of selecting model

• Choosing between POLS and REM

H0: POLS is preferred.

H1: REM is preferred.

Table 1. The results of selecting between POLS and REM

	P-value	Hypothesis
Model	$2.95 * 10^{-5}$	H1

Source: Summarized by the research team from model results - R software

The result shows that random effects model is preferred.

• Choosing between REM and FEM

H0: REM is preferred.

H1: FEM is preferred.

Table 2. The results of selecting between REM and FEM

	P-value	Hypothesis
Model	$1.113 * 10^{-11}$	H1

Source: Summarized by the research team from model results - R software

The result shows that fixed effects model is preferred.

4.2. Testing for cross-sectional dependence

H0: There is no cross-sectional dependence in the model.

H1: There is cross-sectional dependence in the model.

Table 3. Testing for cross-sectional dependence

	P-value	Hypothesis
Model	$< 2.2 * 10^{-16}$	H1

Source: Summarized by the research team from model results - R software

The result shows that there is cross-sectional dependence in model.

4.3. Testing for serial correlation

H0: Serial correlation doesn't present in the model.

H1: Serial correlation present in the model.

Table 4. Testing for serial correlation

	P-value	Hypothesis
Model	$< 2.2 * 10^{-16}$	H1

Source: Summarized by the research team from model results - R software

The result shows that serial correlation presents in model.

4.4. Testing for unit roots

H0: Unit roots present in data

H1: No unit roots present in data

Table 5. Testing for unit roots

	P-value	Hypothesis
Model	0.01	H1

Source: Summarized by the research team from model results - R software

The result shows that no unit roots present in data.

4.5. Testing for heteroskedasticity

H0: Heteroskedasticity doesn't present in model.

H1: Heteroskedasticity presents in model.

Table 6. Testing for heteroskedasticity

	P-value	Hypothesis
Model	0.2093	H0

Source: Summarized by the research team from model results - R software

The result shows that heteroskedasticity doesn't present in model.

4.6. The result of the model's estimated coefficients

Overall, model has 2 errors: cross-sectional dependence and serial correlation. According to Baltagi, cross-sectional dependence is a problem in macro panels with long time series. This is not much of a problem in micro panels (few years and large number of cases). Therefore, in this case we decide to not do anything to correct this error. For serial correlation, we control this error by using robust covariance matrix estimation (Sandwich estimator). Then the result of model's estimated coefficients is in below table.

Table 7. The result of the model's estimated coefficients

Coefficients	Estimated value
log(GDPP)	0.7386 ****
log(svtrg)	0.3630 ****
log(svgv)	-0.2458 ***
xhtn	-0.0577 *

Source: Summarized by the research team from model results - R software

*Levels of significant: '****' 0.1%; '***' 1%; '**' 5%; '*' 10%*

4.7. Research result explanation

Hypothesis 1: GDP per capita each province has positive impact on the average high school graduation exam score of the province?

GDP per capita each province has positive impact on the average high school graduation exam score of the province. Specifically, when GDP per capita per month increases 1%, the average high school graduation exam score increases 0.7386%. This result

is consistent with Crosnoe, Johnson, Elder, 2004; and Eamon, 2005 pointed out that additional financing for private school leads to improve academic performance and provide greater access to tools such as computers, which have been proved to improve academic ability. Crossnoe et al., 2004, Eamon, 2005 also show that pupils from low-income families who attend underfunded schools do not do as well as students from higher-income families. In addition, Saifi and Mehmood, 2011; Osonwa et al., 2013 pointed out that the rationale for low academic performance of students from low-income households is that the parent has so many employment and family duties that need time, attention, and money that less attention is given to their children's education. The results of Eshetu's (2015) study also revealed many pupils whose parents had higher socio-economic status did better than those whose parents had lower socio-economic status. Besides that, according to the findings of Osonwa et al. (2013), there is a substantial association between economic status and academic success of students, with children from lower income homes doing significantly worse than children from higher income households.

Hypothesis 2: The number of high school students/the number of high schools has positive impact on the average high school graduation exam score?

The number of students/the number of high schools has positive impact on the average high school graduation exam score. Specifically, when the number of students/the number of high schools increases 1%, the average high school graduation exam score increases 0.3630%. This result may refer to more investment in facilities, increase in the number of classrooms, the number of teachers to be able to attract more students, increase the number of students receiving intermediate training.

Hypothesis 3: The number of high school students/the number of high school teachers has positive impact on the average high school graduation exam score?

The number of high school student/the number of high school teacher has negative impact on the average high school graduation exam score. Specifically, when the number of students/the number of high school teachers increases 1%, the average high school graduation exam score decreases 0.2458%. This is completely reasonable, because when this ratio increases, the teachers in charge of training will be able to pay more attention to each student, the teachers working in the office will be able to handle the workload more effective. This directly increases the quality of training, and at the same time accelerates the progress of administrative tasks such as disbursing scholarships, disbursing funds to support students to some extent as a source of spiritual motivation for students. students learn better.

Hypothesis 4: The average high school graduation exam scores of the delta provinces are higher the average high school graduation exam scores of the mountainous provinces?

Because the geographic locations of the regions are time-invariant, the FEM has been converted to a component in the standard error. Because the geographic location of the regions is time-invariant, the FEM has been transformed into a component in the standard error. Therefore, we cannot conclude the impact of the geographical location of the provinces on the average high school graduation exam score.

Hypothesis 5: Income rating has positive impact on the average high school graduation exam score?

Income rating has negative impact on the average high school graduation exam score. Specifically, when income ranking of province increases 1 unit, the average high school graduation exam score decreases 0.0577 unit.

5. Discussion and Conclusion

To summarize, it is imperative that provinces increase their GDP in order to improve the living standard of their citizens and help them to contribute more to the national economy. Many provinces lack the funds necessary to restore and promote production and business, boost exports, disburse public investment capital and mobilize public-private cooperation resources for strategic infrastructure Development and improve their GDP per capita. In addition, schools in these provinces often do not have the necessary facilities and resources to accommodate growing student populations and improve student learning outcomes. In order to address these issues, provinces need to increase their GDP and restore production and business, boost exports, disburse public investment capital and mobilize public-private cooperation resources for strategic infrastructure development. One policy to increase GDP and improve the quality of education is to provide more funding for education. Increasing funding for education can improve the quality of education by providing more money for teachers, schools, and other educational institutions. Funding can also help to improve classroom conditions and improve teacher retention.

In addition, they should also maintain a moderate number of students in order to boost student learning outcomes. When there are more students, the teacher has to cater to each individual student more, which can be time-consuming and annoying. When there are fewer students, the teacher can focus more on one individual and his or her education. When teachers are engaged in their work, they are more likely to be able to provide students with the necessary tools and resources they need to be successful. In contrast, when teachers are disengaged or unengaged, they are more likely to provide subpar instruction which can have a negative impact on student performance.

Lastly, schools in these provinces should strengthen their facilities and expand their area in order to attract more students and accommodate the growing number of students in the province. Many of the factors that impact academic performance in the world also have an impact on the availability and quality of instructional materials. When resources are limited, schools are often forced to make difficult decisions about which materials to provide to students. This can have a significant impact on the ability of students to learn and perform at the level they are capable of. In some cases, schools with poor quality instruction are unable to provide the students with the necessary tools and resources they need to be successful in school. In other cases, schools with lower quality instruction may simply be unable to teach the subject material in an efficient and effective manner.

The study tested the effect of GDP per capita, geographical location, the number of students/the number of high schools, high school student to teacher ratio and income rating

to the national high school exam scores. In particular, GDP per capita and the number of students/the number of high schools has positive impact on the average high school graduation exam score. On the other hand, high school student to teacher ratio and income rating has negative impact on the average high school graduation exam score.

Based on the results of research, provinces need to focus on increasing their GDP by restoring and promoting production and business; boosting exports, disbursing public investment capital and mobilizing public-private cooperation resources to develop infrastructure, especially strategic infrastructure, thereby increasing GDP per capita, helping families to spend more on their children's education. Besides that, schools need to strengthen their facilities, expand the area to be able to attract more students and accommodate the growing number of students along with the population.

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FACTORS INFLUENCING STUDENT SUCCESS

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Abstract

The purpose of this research is to examine factors influencing student performance. Two research questions are what student performance is, and what factors influence student performance in public universities in Hanoi. The research model was tested on survey data using SmartPLS software version 4.0.8.9. Five verified factors influencing student success include student self-motivation, student self-efficacy, engagement in a university environment, student satisfaction with the university, and luck. In addition, one controlled variable that negatively affects student success is club membership. Based on the findings several managerial implications were proposed, and this research contributes information on student performance to the literature.

Keywords: *Student performance, engagement in university life, student self-efficacy*

1. Introduction

Human resource quality is one of the most important factors determining the prosperity of a nation. The development of high-quality human resources is impossible without education. In recent years, the perspective of education systems has changed from “How should we teach students” to “How should we help students learn”, the purpose of this article is to answer two questions, what is student achievement or performance, and what factors affect student performance. The article's main parts are a literature review, and an empirical analysis of factors influencing undergraduate student performance in public universities in Hanoi, based on which management implications were drawn in order to help students improve their performance.

2. Literature review and the research model

2.1. Literature review

Student performance is a complex concept that is hard to find a uniform definition (Mills, Heyworth, Rosenwax & Carr, 2009; Toutkoushian & Smart, 2001). Various definitions of undergraduate student performance can be found in the literature. Kim, Newton, Downey, and Benton (2010) define college success as “acceptable grade averages, retention toward a degree and attainment of productive life skills” (p. 112). Hunter (2006) considers college success as the whole student development and having many dimensions beyond cognitive and academic factors. Finn and Rock (1997) argue that the academic

achievement of students is to graduate on time with good grades. The definitions mentioned above refer to college student success as not grades, but emotional, social, cognitive, and academic development. The factors influencing student success have been interpreted by various theories or models. The *expectancy-value theory* holds that motivation is an important factor for student success. Motivation is the direct source of expectations for success (Wigfield, 1994). According to Tinto's model of academic and social integration, engaging in a new environment, the university environment affects student success. The more engaged students are in university, the higher their achievement is (Tinto & Pusser, 2006). Another theory of student success is the achievement goal theory, which emphasizes setting goals, high goal sett leads to high achievement (Canfield & Zastavker, 2010).

According to Goken Aydin (2017), personal factors affecting student success include own self-efficacy, learning organization and learning attention, time use, communication in the classroom, and engagement in college life. Pritchard and Wilson (2003) argue that due to the fact that students have to adjust to the university environment, emotional and social factors are crucial to student success, and so do psychological factors. According to Pike and Kuh (2005), factors affecting student success are student behavior, attitudes, expectations, and engagement in university life. Wafa (2021) found that student achievement is mainly influenced by external support from family, friends, and society, followed by decision-making and determination, ambition, hard work, and perseverance. The main factors hindering student success are discouragement followed by irresponsibility, sloppiness, laziness, poor time management, failure, and frustration.

Changing the perspective of education systems from “How should we teach students” to “How should we help students learn” so that they develop and maintain their achievements shows that student achievement is relevant to the responsibility of the faculty and the school as a whole (Hunter, 2006). Direct interaction between faculty and students results in an increase in student achievements (Crisp, Baker, Griffin, Lunsford & Pifer, 2017).

According to Kuh (2006), student success is created by pre-university experience (background and college readiness); student engagement (learning skills, engagement in social life and the university environment); and graduate outcomes (grades and work-related issues). Kim, Newton, Downey & Benton (2010) clarify factors affecting the success of students into three groups, the first group of variables is the learning outcome at high school, the second group of variables is demographical, the third group of variables is student individual characteristics or “psychosocial factors”. According to Newton, Kim, Wilcox and Beemer (2008), psychological factors are attitudes, motivations, use of campus resources, learning methods, etc. In addition, student learning outcomes also depend on the level of student satisfaction with the university - satisfaction with faculty, quality of programs, activities, and university environment, and overall satisfaction with life (Klein, Kuh, Chun, Hamilton & Shavelson, 2005; Pascarella & Terenzini, 2005). Cao and Truong (2022), confirm four factors affecting the student's perceived learning outcomes, which are assessment of learning outcomes, facilities, student interactions in the classroom, and student self-motivation. Nguyen Thuy Dung, Hoang Thi Kim Oanh, Le Dinh Hai (2017), found that

the level of study (which year student), gender, study time, grades, library, and internet use for learning were factors affecting student success. Dang Thu Ha (2017) pointed out that student self-efficacy has a direct and positive influence on learning outcomes, class participation, and interaction with lecturers on the subjects, and problems outside the subject (career, job...) do not directly affect student achievement, however, has an indirect impact through the student self-efficacy; The interaction with lecturers on subject-related issues (subject contents, assignments, grades, tests...) has an insignificant effect on student learning outcomes and student self-efficacy. Le Dinh Hai (2016), confirmed that factors affecting students' learning outcomes were learning methods, learning persistence, competition in learning, school impressions, school resources, and learning motivation. A recent study by García y García (2021), of attribution, found that college students attribute intelligence as the most important factor influencing their success. Gender differences, through two expressions, calmness, and effort, also have an impact on student achievement. The student success of male students is also influenced by efforts and good teachers, while female students are also affected by liking the teacher, luck, and attention.

The *attribution theory* was developed by Heider (1944; 1958). The essential of this theory is that people tend to find causality to explain their own behavior, that of others, and surrounding events. According to Kelley (1967), in order to interpret surrounding events and make inferences, people create causal schemes taking into account three conditions, the individual himself (internal attributes), influences (external attributes), and surrounding circumstances.

The attribution theory does not necessarily find the actual cause of events but rather a subjective causality. Attribution is a hedonic process, it depends on gender, age, and culture, and depends on whether the attribution is made for one's own behavior or that of others (Digia and Zdravkovi, 2019; Weiner, 2010b). In education, on both sides student or teacher, the reasons for student success or failure are student self-efficacy, skills, intelligence, the difficulty of homework, and characteristics of teachers and luck (Weiner, 1985). The attribution is conscious or unconscious, it affects students' achievement and therefore their motivation, feelings, behavior, and school decisions. To understand the attribution made by students it is necessary to consider at least three variables involved in the causality scheming process. The first variable is the recognition that attribution is subjective, showing bias, and according to Weiner (2010b), it is a hedonic process that tends to find internal factors for the behavior of others and external factors for one's own behavior. Regularly, success is said to be the result of efforts, and internal causes, while failure is attributed to external causes such as luck. The second variable is relevant to students using communications received from teachers to make comments and use them to explain their success (Matteucci and Gosling, 2004). The third variable is the management of impressions that students make to influence others' beliefs about the cause and to seek justification, especially if academic goals are not achieved. According to Weiner (2010a), attribution has at least four characteristics: locus or location, controllability, stability, and globality. Locus or location is a fact that can be attributed to internal or external factors. People who depend

on the environment and others make external attributions to things that happened to them. In contrast, those who trust their own resources and can transform their environments consider what happens to them as a result of their own actions. Controllability, there are causes that the actors can manage at will, while others are beyond their control. If school failure is attributed to a lack of effort, students will control their academic success, whereas if it is attributed to the teacher's characteristics, students will hardly control their success or failure. Stability, the cause may be stable or unstable over time. Things that are stable over time we can't change, that is, we can't change the cause to change the result. Globality, causes can be generalized to situations. If students use luck to blame their failures in school, they may use it to explain their failures in other circumstances.

2.2 Research model

Inheriting previous studies, we propose the research model, as shown in Figure 1.

Student self-motivation

Motivation is the direct source of expectations. Students who have high expectations will aim to achieve scholarships, satisfy their parents' expectations, improve themselves, have good jobs in the future, and be able to achieve high academic results. Therefore, the hypothesis is:

H1: Student self-motivation is positively related to student success.

Student self-efficacy

Self-efficacy is considered an internal factor, that students can control on their own at will, affecting their success. Students who have good intelligence and learning methods, attention, can manage their time and actively exploit campus resources such as libraries, lecture halls, and Wi-Fi to connect to the internet for learning, do not have cheating intentions on exams, learn hard, stay calm on tests and exams over the course will have good success. However, it should be noted that there are components of learning ability that can be changed, such as effort, proactive behavior, and self-discipline, and things that are hard to change, such as intelligence. Good self-efficacy will lead to good achievement. The hypothesis is

H2: Student self-efficacy is positively related to student success.

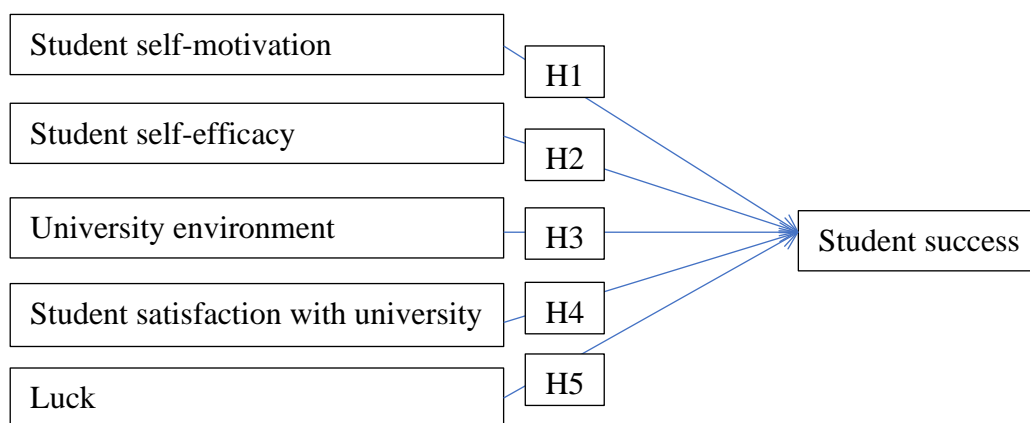


Figure 1. Research model

University environment

The university environment is an external factor, beyond the control of students. The environment can have a positive or negative impact on a student's success depending on the specific circumstances. The university environment has an impact on student's learning attention, the implementation of time plans for learning and other activities may be hindered, peer pressure on learning or trends in student life also affect student success, participating in clubs can take time away from learning, while it has a positive impact on engaging into social life, tough family situations that force students to take part-time jobs also affect students' grades. It is hypothesized

H3: The university environment is positively or naively related to student success.

Student satisfaction with university

The level of student satisfaction with the university is an external factor affecting student achievement, beyond the control of students. With good teachers, good programs, good activities for students and a good university environment, and a good life in general, students' success will likely be high. Therefore, we hypothesize

H4: The student satisfaction with university is positively related to student success.

Luck

Luck is one of the factors influencing student success. In terms of scores, for students who are fortunate to learn with good teachers, their exam questions often fall into sections they thoroughly learned, have few health problems, and those related to personal feelings during exam time will get high grades. Therefore, the hypothesis is

H5: The Luck is positively related to student success.

3. Method

Five hypotheses were tested by a quantitative survey on the factors influencing student success, employing structural equation modeling. The research design is provided in the following sections. First, the description of the development of the survey instrument is reported. Second, the test of the measurement model is represented, which includes an estimation of internal consistency and the convergent and discriminant validity of the instrument items, and the report of scale reliability and validity data. This is followed by the structural modeling results.

Survey instrument

Based on the extensive literature review, we conducted the preliminary survey with which students were asked to write down attributions to their achievements. 38 responses received are useful references for designing a questionnaire. The first part of the questionnaire includes questions about a participant's information and the second consists of five multivariate/item scales measuring factors that affect student success, using a 5-point Likert scale with increasing agreement from "Not agree at all" to "Completely agree".

The main survey was conducted virtually using the Google Form application. The online address (URL) of the survey is sent to the participants (students who studying in public

universities in Hanoi) via student email and uploaded to groups on social networks (Facebook, Zalo, MS Teams, LMS...). Participants are informed that this survey is anonymous and information they provide will always remain anonymous. Data for this research are collected from a non-probability convenience sample. The survey was carried out from January to March 2023. 480 valid responses have been collected, fulfilling the conditions of sample size (Hair et. al., 2014). The sample's characteristics are provided in Table 1.

Table 1. Characteristics of the sample

		Respondents	Percentage
Sex	Male	336	70%
	Female	144	30%
Study level	First-year students	271	56%
	Sophomores,	189	39.4%
	Third year	17	3.5%
	Fourth-year students	3	0.6%
Education program	Traditional	331	69%
	Advanced and oriented	145	30,2%
	Other	3	0,6%
Student residence	Campus	427	89%
	Non-campus	53	11%
Part-time job	Yes	257	53,5%
	No	223	46,5%
Club membership	Yes	285	59,4%
	No	195	40,6%
Student's family residence	Urban	220	45,8%
	Rural	260	54,2%
Who finance student's studying	Parents	344	71,7%
	Student him/herself	8	1,7%
	Parents and the student	122	25,4%
	Other	6	1,2%

Source: authors

Research methods

Structural equation model-based PLS methodology was applied to test the research model represented in Figure 1, using SmartPLS software version 4.0.8.9.

Measurement model estimation

The data analysis started with model estimation. The measurement model was tested by estimating the internal consistency and the convergent and discriminant validity of the

instrument items. If reliability measures were above the level recommended of .70 internal consistency is verified (Fornell & Bookstein, 1982; Nunnally & Bernstein, 1994). If individual reflective measures correlate more than .70 with the construct they intend to measure then they are considered to be reliable. Table 2 represents reliability measures above .70 ensuring adequate internal consistency and reliable individual reflective measures.

If the item loads highly (loading is greater than .50) on their associated factors, convergent validity is demonstrated. The AVE ranging from 0.562 to 0.92 (Table 2) were above the threshold of .05 (Chin, 1998; Fornell & Larcker, 1981).

Table 2. Convergent and discriminant validity of the model constructs

Variable	Outer loading
Motivation	
IC = 0.866	
AVE = 0.686	
Mot1	0.669
Mot3	0.906
Mot4	0.890
Self-efficacy	
IC = 0.876	
AVE = 0.703	
Effi2	0.868
Effi3	0.845
Effi5	0.801
University environment	
IC = 0.875	
AVE = 0.778	
Evi1	0.866
Evi2	0.898
Student satisfaction with the university	
IC = 0.92	
AVE = 0.741	
Sat1	0.873
Sat2	0.904
Sat3	0.849
Sat4	0.815
Luck	
IC = 0.793	
AVE = 0.562	

Variable	Outer loading
Luc1	0.71
Luc2	0.774
Luc3	0.762
Student success	
IC = 0.884	
AVE = 0.656	
Suc2	0.757
Suc3	0.822
Suc4	0.854
Suc5	0.803

IC = internal consistency (Composite reliability (ρ_a); AVE = average variance extracted

Source: authors extracted from the processed data

Discriminant validity assessment was conducted by comparing the square root of the AVE for each construct with the correlation between the construct with other constructs in the model (Chin, 1998; Fornell & Larcker, 1981). Constructs in the estimated model that satisfied the condition of discriminant validity were represented in Table 3.

Table 3. Correlation among construct scores (Discriminant validity - Fornell-Larcker criterion)

	Self- efficacy	University environment	Student motivation	Luck	Student satisfaction	Student success
Self-efficacy	0.838					
University environment	0.388	0.882				
Student motivation	0.331	0.41	0.829			
Luck	0.346	0.34	0.26	0.749		
Student satisfaction	0.274	0.487	0.486	0.378	0.861	
Student success	0.459	0.507	0.546	0.405	0.531	0.81

Note: The boldface figures in the diagonal represent the square root of the AVE figures. They should be higher than the correlation figures.

Source: authors extracted from the processed data

Table 4. Collinearity statistics - VIF - inner model

	Student success
Self-efficacy	1.295
University environment	1.507
Student motivation	1.426
Luck	1.279
Student satisfaction	1.587

Source: authors extracted from the processed data

4. Structural model results

R² for dependent construct

The estimated structural model $R^2 = 0.492$ (Figure 2) indicates that 49.2% of the variance in student success is explained by independent variables. According to Falk & Miller (1992), the percentage of variance explained for the dependent variable was greater than 10 percent, indicating the satisfactory value of the PLS model.

Structural coefficients

The results of the estimated model indicated that five constructs hypothesized to affect student success were significant (Table 5).

Table 5. Structure (inner) model results

	Path coefficients	T statistics (O/STDEV)	Sig. level
Effects on the student success (adjusted $R^2 = 0.487$)			
Self-efficacy	0.2	4.571	****
University environment	0.171	3.158	***
Student motivation	0.274	5.788	****
Luck	0.126	2.967	***
Student satisfaction	0.213	3.992	****

**** $p < .001$, *** $p < .010$, ns = not significant

Source: authors extracted from the processed data

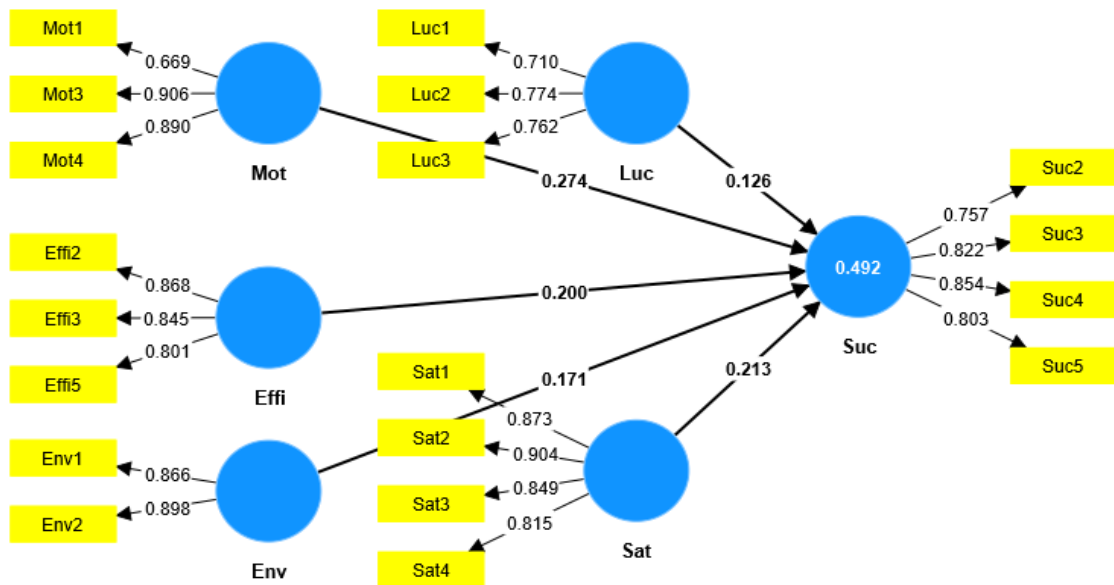


Figure 2. Estimated model

To test whether student sex, level of study, education program, campus residence, club membership, part-time job, student's family residence, and who finances student studying influence student success, these factors were included in the model. The results indicate that only club membership is significantly negatively related to student success (Table 6).

Table 6. Structure (inner) model results

	Path coefficients	T statistics (O/STDEV)	Sig. level
Effi -> Suc	0.19	4.37	****
Env -> Suc	0.18	3.315	***
Mot -> Suc	0.279	5.809	****
Luc -> Suc	0.122	2.862	***
Sex -> Suc	-0.086	1.071	ns
Lev -> Suc	0.012	0.372	ns
Pro -> Suc	-0.025	0.653	ns
Cam -> Suc	0.1	0.931	ns
Job -> Suc	-0.049	0.708	ns
Clu -> Suc	-0.175	2.732	***
Fam -> Suc	-0.089	1.223	ns
Fin -> Suc	-0.003	0.083	ns

**** $p < .001$, *** $p < .010$

Source: authors extracted from the processed data

Effect size (f square)

f square represents the effect size of independent variables on dependent variables. According to Cohen (1988), *f* square < 0.02 indicates an extremely small effect, $0.02 \leq f$ square < 0.15 : shows a small effect; $0.15 \leq f$ square < 0.35 implies a medium effect and *f* square ≥ 0.35 : represents a large effect. $0.15 \leq$ all path coefficients < 0.35 (Table 5) demonstrate that *student self-motivation*, *self-efficacy*, *university environment*, *student satisfaction*, and *luck* have a medium effect on student success.

5. Discussion and conclusion

This research explored factors influencing student success. The model was tested on survey data by applying SmartPLS technology. All five hypotheses were supported by the data. Our research verified five factors affecting student success including (i) student self-efficacy, similar to the findings of Goken Aydin (2017), and Dang Thu Ha (2017); (ii) university environment, similar to the findings of Pritchard and Wilson (2003), and Pike and Kuh (2005), Hunter (2006); (iii) student satisfaction with university, similar to findings of Crisp, Baker, Griffin, Lunsford & Pifer (2017), Klein, Kuh, Chun, Hamilton & Shavelson (2005), Pascarella & Terenzini (2005); (iv) student self-motivation, similarity to the findings of Cao and Truong (2022); and (v) luck, similar to the findings of García y García (2021).

In contrast with the findings of Nguyen Thuy Dung, Hoang Thi Kim Oanh, Le Dinh Hai (2017), and Le Dinh Hai (2016), we found that student sex, level of study, education program, campus residence, part-time job, student's family residence, and who finances student studying not significantly influence student success, while club membership has a negative relationship with student achievements.

Practical implications

This research found three internal and two external factors affecting student achievements. Internal factors include student self-motivation (for a scholarship, self-improvement, good job in the future), *student self-efficacy* (*good study methods, time management, and attention*), and *student engagement in university life* (easier attention, proactively time arrangement for studying and other activities). External factors, which are out of student control, include *student satisfaction* with the university (highly qualified instructors, high-quality education programs, good student activities, and university environment), and *luck* (engaging in courses with good instructors, exam questions often fall into the well-learned sections), less likely to have problems related to health, personal and family feelings at the of midterm and final exams). Therefore, in order to improve student's learning outcomes, it is necessary to organize activities that affect students' behavior so that they maintain their self-motivation, such as organizing talk shows whose guest speakers are successful alumni. *Student self-efficacy* and *engagement in university life* are difficult things to change because it belongs to the gifted, but the school can support them through soft skills training courses, facilitating good students' campus life, both physical facilities and service quality. *Student satisfaction with the university* is under the university's control, respondents revealed that somewhere are staff undertaking their job unprofessionally (instructors abuse students' presentations, lack of enthusiasm, dormitory staff is not friendly), and too long class-section time reduces learning effectiveness, this implies the need of improving and ensuring the quality of teachers, training programs, student activities, and physical facilities. *Luck* is beyond the student's control; however, the university can reduce some of the risks by ensuring the quality of teachers. In addition, this research found that participating in any club negatively affects students' academic performance. Therefore, measures guiding activities of clubs so that alleviate the effect on students' learning time are needed.

Limitations and directions for further research

This research was unfunded, so the survey was conducted in a convenient way, which may cause the results to be biased. Further research in the future would use better samples to avoid bias.

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APPENDIX

Survey questions

Student success

Suc1 = I get high scores.

Suc2 = I understand the content of subjects and can apply it to explain related problems in practice.

Suc3 = I feel confident and satisfied by acquiring knowledge.

Suc4 = I feel I am more mature socially.

Suc5 = I gained more living skills.

Self-motivation

Mot1 = I study hard to get a scholarship.

Mot2 = I study hard to satisfy my parents' expectations.

Mot4 = I study hard to get a good job in the future.

Self-efficacy

Effi1 = I have good intelligence.

Effi2 = I have a good study method.

Effi3 = I manage my time well.

Effi4 = I work very hard.

Effi5 = I can make attention when learning.

Effi6 = I often exploit resources on campus such as libraries, lecture halls, Wi-Fi to connect to the internet for learning objectives.

Effi7 = I don't rely on photocopiers' (cheating) test stuff.

Effi8 = I am calm when taking midterm and final exams.

University environment

Env1 = In the university environment, it is easier for paying attention when learning.

Env2 = Being independent helps me proactively arrange learning and other activities.

Env3 = Peer pressure has a positive effect on my academic performance.

Env4 = I actively take part in clubs so my socialization improved.

Env5 = I don't have a part-time job so my grades are higher.

Student satisfaction with university

Sat1 = I am satisfied with instructors.

Sat2 = I am satisfied with the quality of the education program.

Sat3 = I am satisfied with the student activities and the university environment.

Sat4 = I am generally satisfied with university life.

Luck

Luc1 = I usually engage in courses with good instructors.

Luc2 = Exam questions often fall into the well-learned sections.

Luc3 = I less likely have problems related to health at the time of midterm and final exams.

Luc4 = I less likely have problems related to personal and family feeling at the time of midterm and final exams.

THE INTENTION AND BEHAVIOUR OF GEN Z IN HANOI CITY TO PURCHASE SUSTAINABLE FASHION PRODUCTS

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Abstract

The purpose of this study is to examine the factors affecting the intention and behaviour of Gen Z to buy sustainable fashion products in Hanoi City. The research method is a combination of qualitative and quantitative research methods. Research data was collected through surveys on 433 Gen Z consumers in Hanoi. The results of this study show that the level of impact of factors on fashion shopping intention in descending order is as follows: Support, Affordability, Attitude, Accessibility, and Subjective Norms. On the contrary, the results also show that there is one factor that has no impact on the intention to purchase, which is the Knowledge factor. Besides, the results also show that Intention has a positive influence on sustainable fashion product purchase behaviour. From there, the author proposes some solutions to help businesses take measures to promote the intention and behaviour of consumers to buy sustainable fashion products in Hanoi city.

Keywords: *Sustainable Fashion, Consumer Intention, Consumer Behaviour, Gen Z, Hanoi City.*

1. Introduction

The apparel and fashion industry is one of the largest global polluters contributing to various social and ecological problems (McNeill and Venter, 2019). The United Nations Conference on Trade and Development (UNCTAD) in 2019 pointed out that garment manufacturing is the second most polluting industry in the world due to the large amount of wastewater and emissions generated. In addition to the positive values that this industry brings, a notable aspect of fashion sustainability needs to be seriously considered.

Vietnam is an emerging Asian economy. It is considered a fast-growing and promising consumer market with a population of nearly one hundred million individuals, in which young consumers account for a large proportion (Nguyen and Nguyen, 2017). Vietnamese consumers spend significant amounts of money on fashion each year, in which clothing is the third priority, after food and savings. The domestic market for apparel products is worth \$4,5 billion and has an annual growth rate of 20%. Because of population growth and consumption increase, Vietnam faces the great challenge of environmental pollution and unsustainable development.

Fashion businesses are becoming more aware of the need to create environmentally friendly and socially conscious products (Brown, 2010). Manufacturers in major Asian markets such as China, Bangladesh, India, South Korea and Vietnam are focusing on using natural or organic fabrics in green and low-toxic production processes (Le, 2017). The authorities also play an essential role on this issue. On the consumer side, although Vietnamese consumers are considered to be the most socially conscious in the Asia-Pacific region (Nielsen, 2015), studies on sustainable consumption in general and for fashion in particular are still limited (Hung et al., 2018; Tri and Linh, 2018; Nguyen et al., 2020).

In metropolitans like Hanoi or Ho Chi Minh City, the demand for shopping, especially for fashion products is especially high and the level of interest in sustainable lifestyles is higher than in other geographical regions as well (Tran Thi Tu Uyen et al., 2021). In addition, young people between the ages of 18 and 34 are the group that spends the most on fashion. This is understandable because young people always pay attention to how they look and invest the most in their appearance.

Therefore, the study of Gen Z's intention and behaviour to purchase sustainable fashion products in Hanoi, is a meaningful topic in terms of theory and practice in the current context of Vietnam.

2. Literature review and theoretical framework

2.1. Literature review

Relationship between attitude and intention to purchase sustainable fashion products

Consumers' brand purchase intention is a result of their attitude toward the brand (Chang et al., 2019). However, a positive attitude toward a product does not automatically translate into purchase intention (Chen, 2007). Research results by Minsun Lee and Hyun-Hwa Lee, (2021) demonstrate that consumers have significantly different attitudes and intentions depending on the type of fashion product recycling.

Relationship between knowledge and intention to purchase sustainable fashion products

Paulins and Hillery (2009) show that knowledge about eco-fashion helps individuals to be responsible and contribute to society. Consumers' knowledge of products and their relative ethical implications are also major contributors to ethical consumerism (Shim, 1995). Despite the high level of environmental awareness, some customers are still hesitant to buy sustainable apparel due to scepticism about its quality and aesthetic value.

Relationship between subjective norms and intention to purchase sustainable fashion products

An Indonesian study led by Yann Truong and Rod McColl (2011) revealed that subjective norms and social attitudes influence the purchase of sustainable fashion products. Supporting this assumption, Ham et al. (2015) suggest that subjective norm is an important factor for consumer purchase intention. In addition, other scholars (Chen, 2007) indicate a positive relationship between subjective norms and intention to buy organic and sustainable food.

In contrast, other researchers (De Lenne & Vandenbosch, 2017; Tri & Linh, 2018) assert that subjective norm is not a significant predictor of purchase intention.

Relationship between affordability, accessibility and intention to purchase sustainable fashion products

The accessibility and affordability of sustainable clothing are one of the main obstacles that consumers face when attempting to shop for sustainable fashion products due to the insufficient number of stores and limited choice of styles and sizes (Connell, 2010).

In terms of accessibility, according to Hiller Connell (2010), the main barrier that consumers face in their efforts to purchase in an environmentally conscious manner is the limited choice of attractive sustainable clothing options available as well as the limited number of stores offering these products.

In terms of affordability, the price of a good must be attractive to customers to positively influence purchase intention (Büyükdag et al., 2020). This claim has been reinforced by a previous study (Legere & Kang, 2020) which stated that the customer's intention to pay more for the product is as essential as the purchase intention. Another study conducted research on this topic and found that people are willing to pay high prices for sustainable products (Prakash & Pathak, 2017).

Relationship between support and intention to purchase sustainable fashion products

In the past, although consumers often claimed that they supported sustainable values, this was not reflected in their sustainable consumption behaviour (Bray et al., 2011). However, recent studies show that the trend has changed, with consumers becoming more and more interested in sustainable consumption and willing to buy eco-friendly items such as second-hand clothes, reducing purchases of clothes and recycling them compared to the past (Borusiak et al., 2020).

2.2. Theoretical framework

2.2.1. Sustainable fashion

According to research by Kumar et al., (2012), sustainability implies bringing positive impacts and minimising negative impacts related to the whole production process in 3 aspects: environmental, economic and social.

According to Shen et al. (2013), the definition of sustainable fashion spans several dimensions; however, they all include the same factors - the impact of the fashion industry

on the environment and stakeholders through many different aspects, including society at large, 8 aspects in Sustainable fashion structure:

- 1) Recycle - Recycled garments are made from used recycled materials
- 2) Organic - Organic products are made from natural sources without any pesticides or harmful substances
- 3) Vintage - Refers to any old and cyclical clothing that has been given a new life
- 4) Vegan - Products that do not contain products from skin or animal tissue.
- 5) Locally made - Includes products that require little transportation and contribute to the local economy.
- 6) Artisan - Products that continue the skills of ancestral traditions.
- 7) Custom made - The goal of this personalised design is to encourage quality fashion design and slow down mass-produced disposable fashion.
- 8) Fair Trade Certified - Includes products made by companies that show respect for employees and their human rights.

2.2.2. Consumers

According to Deming (1986), consumers are all objects directly related to the quality requirements of products and services that businesses need to meet. The Law on Consumer Protection of the National Assembly of Vietnam (2010) has defined a consumer as a person who buys and uses goods and services for consumption and the daily life of individuals, families, and organisations.

Thus, it can be understood that consumers are those who purchase products/services to satisfy their own needs and desires.

2.2.3. Gen Z

Although the specific birth year of Gen Z varies among scholars, the term generally refers to people born between the mid-1990s and mid-2010s (Iorgulescu, 2016; Park, 2016). In this study, to be consistent with the context of 2023 (the time of conducting the research) and the current situation of fashion use in Vietnam, the authors chose to study the Gen Z customers who are born between 1995 and 2006. In other words, they are people aged 17 - 28 when compared to 2023 (the time period the study was carried out).

2.2.4. Theories of consumer behaviour

Theory of Reasoned Action - TRA

Theory of Reasoned Action (TRA) is a theory developed to effectively exploit the relationship between attitudes, subjective norms for behavioural intention and behaviour (Ajzen and Fishbein, 1980). Based on the TRA model, “Behavioural Intention” plays a decisive role in the process of performing the actual behaviour. According to Ajzen (1980), “Behavioural Intention” is directly influenced by “Attitude toward Behaviour” and “Subjective Norms”.

Theory of Planned Behaviour - TPB

The theory of planned behaviour first appeared in Ajzen's research in 1991, which is the successor and development of the theory of reasoned action (TRA). From the TRA theory (Ajzen and Fishbein, 1980), the behavioural intention theory has been improved to overcome the limitations in explaining the behaviours that are not within the scope.

In this new model, Ajzen retains the mediating role of the central factor “Behavioural Intention” including motivational factors to influence actual behaviour. In the “Theory of planned behaviour”, Ajzen still supports the role of two factors, “Attitude” and “Subjective Norms”, while adding the factor “Perceived Behavioural Control”.

2.2.5. Factors affecting the intention and behaviour of Gen Z to purchase sustainable fashion products and research hypotheses

➤ Attitude

In this study, attitude is considered as an individual's feelings towards sustainable fashion. “Attitude” is a variable that has been mentioned many times as a factor that influences sustainable purchase intentions (Saricam & Okur, 2018; Nam et al., 2017). Similarly, studies from Chen & Tung (2014); Nguyen et al., (2019) also show that a positive attitude often leads to a positive purchase intention. From there, the author proposes the hypothesis:

H1: Consumers’ attitude toward sustainable fashion has a positive influence on the intention to purchase sustainable fashion products.

➤ Knowledge

Knowledge is the information stored in memory in addition to the consumer's level of product awareness (Brucks, 1986). A finding by Hong (2019) indicates that the emergence of sustainable apparel in the Korean market is replicated by the increase in environmental knowledge towards organic and dyed natural textile products. Customers will not feel reluctant to engage with sustainable fashion in the future (Han, 2017).

In this study, knowledge of a product is understood as a person's understanding of product-related factors (the advantages of sustainable fashion over conventional fashion; whether sustainable fashion has contributed to the environment; labour situation; sustainable brands, designs, physical and chemical characteristics,...). From there, the author proposes the hypothesis:

H2: Consumers’ knowledge of sustainable fashion has a positive influence on the intention to purchase sustainable fashion products.

➤ Subjective Norms

In this study, the subjective norms is understood as the individual's perception of the reference group's expectations with the intention to use sustainable fashion products. In Finlay's study (1997), argues that subjective norms only appears when an individual's perception or intention is influenced by other individuals or groups of people in a particular situation. In Vietnam, the “herd behaviour” is a psychological type that is easily grasped by

lack of information or incomplete information capture (Vu Huy Thong, 2010). Therefore, an individual before performing a certain behaviour often consults around. Therefore, the author proposes the hypothesis:

H3: Subjective norms has a positive influence on the intention to purchase sustainable fashion products.

➤ ***Accessibility***

In this study, accessibility refers to people's overall ability to achieve desired services and activities with sustainable fashion, collectively referred to as opportunity. According to Hiller Connell (2010), the main barriers consumers face in their attempt to purchase in an environmentally conscious manner are the limited choice of attractive sustainable clothing options available as well as the limited number of stores offering these products. Therefore, the author proposes the hypothesis:

H4: Consumers' accessibility to sustainable fashion has a positive influence on the intention to purchase sustainable fashion products.

➤ ***Affordability***

In this study, the authors define affordability as the price of the product, relative to the income of the (potential) consumer. Price plays an important role in purchasing behaviour. As reported by Hustvedt and Dickson (2009), price is one of the main external barriers faced by consumers, who want to adopt more sustainable methods of purchasing clothing. However, some consumers can afford high prices but are not willing to pay high prices (Joergens, 2006). Therefore, the author proposes the hypothesis:

H5: Consumers' affordability to sustainable fashion has a positive influence on the intention to purchase sustainable fashion products.

➤ ***Support***

In this study, support can be understood as consumers helping or encouraging the use of sustainable fashion products by saying or showing that they agree with the values that sustainable fashion brings.

Previous research has clearly shown that the ethical and pro-environmental motivations that people espouse are significantly related to their pro-environmental intentions and behaviour (Gkargkavouzi, 2019; Kang, 2020). From there, the author proposes the hypothesis:

H6: Support for sustainable fashion has a positive influence on the intention to purchase sustainable fashion products.

Consumers are more and more interested in and supportive of sustainable consumption and are willing to buy eco-friendly items such as second-hand clothes, reducing buying clothes and recycling them compared to before (Borasiak et al., 2020). Therefore, our attitude about our moral obligation to protect the environment affects our support for sustainable fashion. From there, the author proposes the hypothesis:

H7: Consumers' attitudes towards sustainable fashion have a positive influence on their support for sustainable fashion.

An earlier study by Kim & Damhorst (1998) found that knowledge of clothing has a limited relationship with a person's support for fashion consumption. However, after the sustainable fashion movement took place, the more consumers understood the ethical aspects of products, the more likely they were to purchase those products (Dickson, 2001). From there, the author proposes the hypothesis:

H8: Consumers' knowledge of sustainable fashion has a positive influence on their support for sustainable fashion.

➤ ***Purchasing intention of consumers***

In this study, purchase intention is how consumers choose to buy a sustainable fashion product because they feel it meets their needs and matches their overall outlook. Research results of Vu Huy Thong (2010) suggest that shopping intention is one of the two decisive factors affecting the purchasing behaviour of consumers. The intention is a factor used to assess the ability to perform a behaviour in the future (Blackwell et al., 2001). According to Ajzen (1991), the intention is a motivating factor, it motivates an individual to willingly perform the behaviour (Ajzen, 1991). From there, the author proposes the hypothesis:

H9: Intention to purchase sustainable fashion products has a positive influence on actual product purchase behaviour.

Based on the theories and hypotheses mentioned above, the authors propose the following research model:

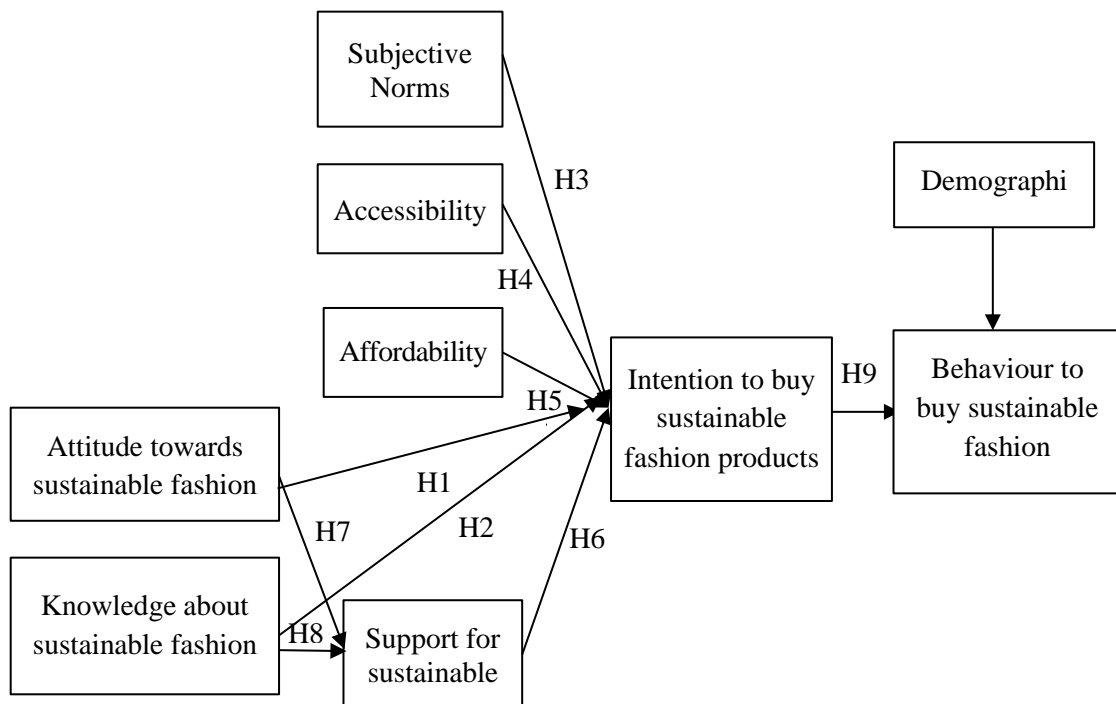


Figure 1. Proposed research model

Source: Synthesised by research team

3. Method

3.1. Qualitative research method

The research team actively approached and conducted in-depth interviews with some customers of sustainable fashion products to study the factors that influence their purchasing behaviour. The selected customers are interviewed based on their knowledge and experience related to sustainable fashion.

From the research on the theoretical basis along with the customer's answers, the research team has proposed 8 concepts, namely: Attitude, Knowledge, Subjective Norm, Accessibility, Affordability, Support, and Purchase Intention.

3.2. Quantitative research method

a. Questionnaire design

The group set up a questionnaire based on the preliminary components of the scale and adjusted it according to the real situation. The official questionnaire, with 03 parts, was distributed to respondents in Hanoi to collect data for analysis.

Part 1: The research team will introduce the purpose and meaning of the questionnaire and survey questions about the demographics of the respondents (age, gender, marital status, education level, household income, and living area).

Part 2: Questions about the factors likely to influence the consumption behaviour of sustainable fashion products. Questionnaire on a Likert scale from 1 to 5.

Part 3: Questions about sustainable fashion product consumption behaviour on a Likert scale from 1 to 5.

b. Data analysis

Secondary data analysis: The research team implements methods of comparing, synthesizing and analyzing collected data based on domestic and foreign research papers in the same area from reliable sources.

Primary data analysis: After collecting the answered questionnaires, the author conducts filtering and cleaning of data, information encryption, entering data and analyzing data using SPSS 25.0 and AMOS 24.0 software followed by these steps:

First step: Descriptive statistics of the research sample

To ensure the high reliability of the research results, the group investigated 458 observations. After data cleaning, the number of votes retained for analysis was 433 votes (reaching 94.54%). Thus, when 39 variables were included in the analysis, the research sample with 433 questionnaires was appropriate.

- Sample: Gen Z consumers living and working in Hanoi.

- Sampling method: The questionnaire is designed on Google Forms and distributed on social networking platforms.

- Sampling duration: 02/01/2023 - 01/30/2023

- Collecting Method: The author team collects information through answered surveys on Google Forms.

The number of votes (after data cleaning) will be statistically based on the following characteristics: gender, age, education level, marital status, and income.

Table 1. Sample description table

Characteristics		Frequency	Percentage (%)
Gender	Male	158	36,5
	Female	275	63,5
	Others	0	0
Age	Under 18	24	5,6
	From 18 - 22	278	64,2
	From 23 - 28	131	30,3
Marital status	Unmarried	414	95,6
	Married with no children	13	3,0
	Married with children	6	1,4
	Divorced	0	0
Educational level	High school undergraduate	21	4,8
	High school graduate	74	17,1
	Undergraduate	195	45,0
	Bachelor's Degree	127	29,4
	Postgraduate	16	3,7
Income	Under VND 1.000.000	84	19,4
	From VND 1.000.000 - VND 4.499.999	173	40,0
	From VND 4.500.000 - VND 7.499.999	63	14,5
	From VND 7.500.000 - VND 14.999.999	58	13,4
	From VND 15.000.000 - VND 30.000.000	32	7,4
	Over VND 30.000.000	23	5,3

Source: Synthesised from analysis results on SPSS 25.0 by research team

Second step: Check the reliability of the scale

The reliability of the scale is assessed through Cronbach's Alpha coefficient. Cronbach's Alpha reliability coefficient is used to remove inappropriate variables before analyzing exploratory factor analysis (EFA) because these observed variables can generate dummy factors.

Third step: Verify the value of the scale by exploratory factor analysis (EFA) and confirmatory factor analysis (CFA).

Exploratory factor analysis (EFA) is a quantitative analysis method belonging to the group of interdependent multivariate analyses. Confirmatory factor analysis (CFA) is the next step of the exploratory factor analysis (EFA), which includes designing to independently identify, test, and adjust measurement models. The purpose of CFA is to establish well-fit measurement models that can be used to test structural models.

4. Results

4.1. Evaluation of the scale by Cronbach's Alpha reliability coefficient

The results of Cronbach's Alpha test of the scales show that all scales meet the requirements of reliability ($\geq 0,6$). The correlation coefficients of the total variables (Corrected Item - Total Correlation) of the scales are all larger than the allowed level ($\geq 0,3$). Therefore, all observed variables were used in exploratory factor analysis (EFA) in the next step.

Table 2. Cronbach's Alpha analysis results of the scales

No.	Factor	Symbol	Number of observed variables	Minimum Corrected Item - Total Correlation	Cronbach's Alpha
1	Attitude	TD	6	0,676	0,896
2	Knowledge	KT	5	0,616	0,835
3	Support	SUH	5	0,684	0,879
4	Subjective Norms	CCQ	5	0,592	0,832
5	Accessibility	KNTC	4	0,636	0,829
6	Affordability	KNCT	5	0,437	0,826
7	Intention	YD	5	0,751	0,906
8	Behaviour	HV	4	0,592	0,817

Source: Synthesised from analysis results on SPSS 25.0 by research team

4.2. Exploratory Factor Analysis results (EFA)

The results of factor analysis are accepted when the total variance extracted is $> 50\%$ (Gerbing and Anderson, 1998). The exploratory factor analysis obtained the following results:

Table 3. Pattern Matrix

	Factor						
	1	2	3	4	5	6	7
TD1	0,705						
TD2	0,797						
TD3	0,663						
TD4	0,740						
TD5	0,875						
TD6	0,720						
SUH1		0,733					
SUH2		0,867					
SUH3		0,738					
SUH4		0,773					
SUH5		0,608					
CCQ1			0,613				
CCQ2			0,793				
CCQ3			0,700				
CCQ4			0,745				
CCQ5			0,709				
KT1				0,691			
KT2				0,744			
KT3				0,656			
KT4				0,636			
KT5				0,689			
KNTC1					0,715		
KNTC2					0,649		
KNTC3					0,741		
KNTC4					0,879		
KNCT1						0,706	
KNCT2						0,718	
KNCT3						0,733	
KNCT4						0,732	
KNCT5						0,758	

	Factor						
	1	2	3	4	5	6	7
YD1							0,807
YD2							0,853
YD3							0,573
YD4							0,602
YD5							0,528
KMO	0,891						
Eigenvalue	1,028						
Sig Bartlett	0,000						
Total Variance Explained	67,471						

Source: Synthesised from analysis results on SPSS 25.0 by research team

The results of the rotation matrix of Table 3 show that the observed variables of each factor group have convergent values, showing high levels of significance (load coefficient greater than 0,5). Specifically, the following observed variables: TD5, SUH2, CCQ2, KT2, KNCT4, KNCT5, YD2 respectively have the most practical significance in the respective group of factors.

Summarising the results of EFA exploratory factor analysis, it shows that the observed variables all satisfy the conditions with the given criteria, the scales selected for the factors in the model are satisfactory. All variables are convergent and suitable for analysis in the following sections.

4.3. Test results of scales of measurement by Confirmatory Factor Analysis (CFA)

Firstly, because $\text{Chi-square/df} = 1,572 < 2$, $\text{TLI} = 0,911 > 0,90$, $\text{CFI} = 0,919 > 0,90$ and $\text{RMSEA} = 0,051 < 0,08$, it can be said that the model fits the market data.

Table 4. Model fit results

CMIN/DF	CFI	TLI	RMSEA
1,572	0,919	0,911	0,051

Source: Synthesised from analysis results on AMOS 24.0 by research team

Secondly, the standardized regression weights are all greater than 0,5. Which ranges from 0,665 to 0,864 and all have $P < 0,05$, so the scales reach convergence values.

Thirdly, because the model fits the market data and the observed variables are not correlated with each other, the scale is unidirectional based on the $\text{AVE} > 0,5$ and $\text{CR} > 0,7$ indexes.

Finally, The AVE coefficients of the above 8 groups are all larger than MSV, so the scale is discriminatory. Thus, model one is suitable for market data, the concepts have convergent validity, unidirectionality, discriminant validity, and scale reliability.

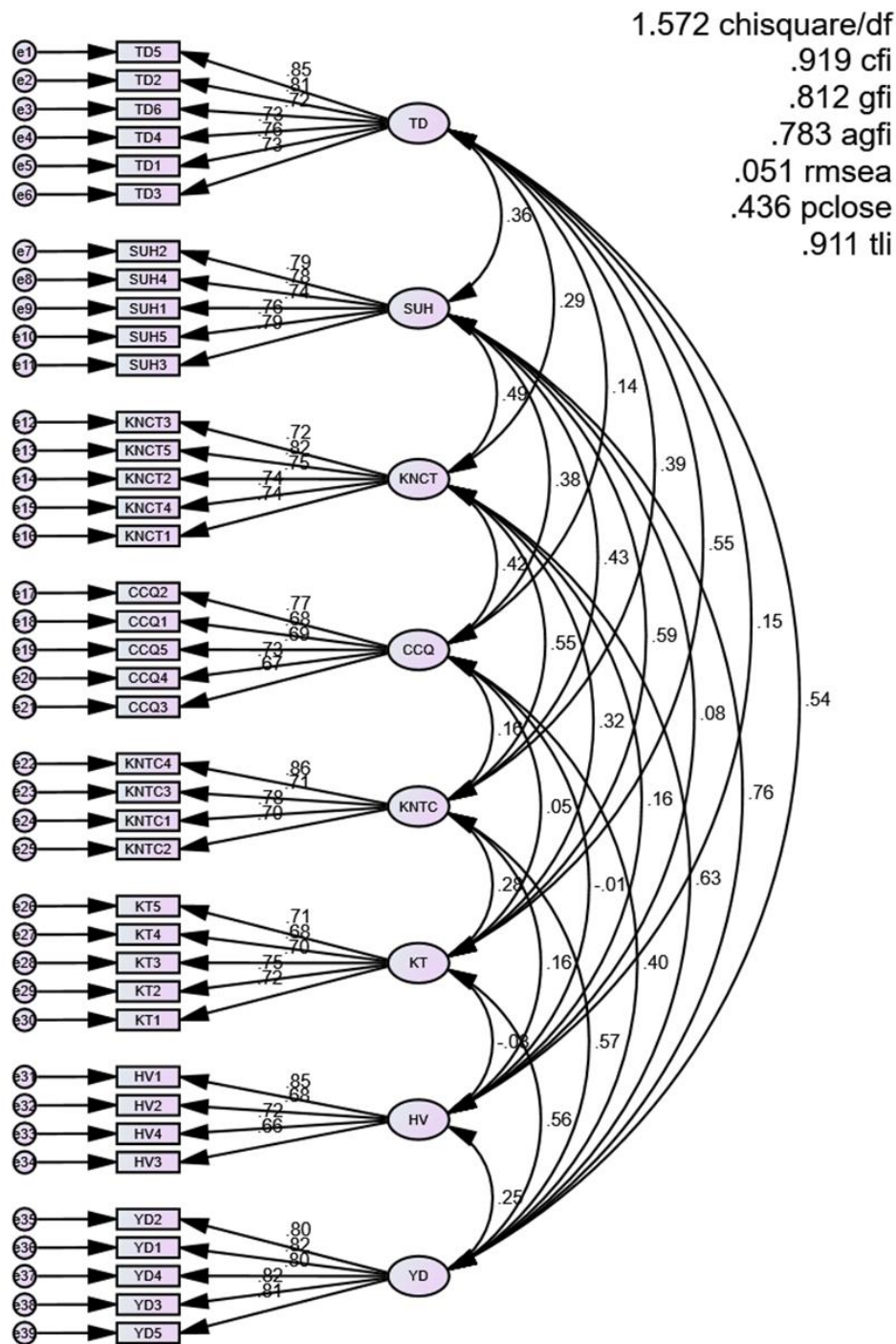


Figure 2. Evaluation of scales of measurement

Source: Synthesised from analysis results on AMOS 24.0 by research team

4.4. Test results of models and research hypotheses

Theoretically, three indexes GFI, TLI, CFI all above 0,9 are good. However, in practice, it is difficult to achieve all three indicators. Models with TLI, CFI $\geq 0,9$, CMIN/df ≤ 3 , and MRSEA $\leq 0,08$ are acceptable. Compare this criterion with the actual results of acceptable data sets that fit the model.

1.892 chisquare/df
 .870 cfi
 .774 gfi
 .745 agfi
 .063 rmsea
 .000 pclose
 .861 tli

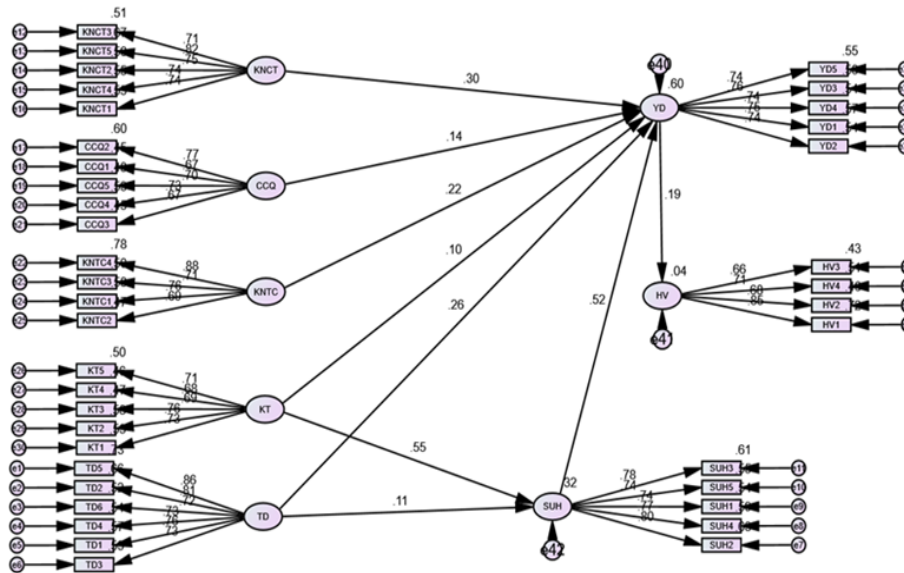


Figure 3. SEM model

Source: Synthesised from analysis results on AMOS 24.0 by research team

The SEM analysis results show that the research model is consistent with market data: Chisquare; CMIN/df = 1,892; GFI = 0,774; TLI = 0,861; CFI = 0,870; RMSEA = 0,063.

Table 5. SEM model estimation results

Relationship			Unstandardized	Standardized	S.E.	P-Value	
SUH	<---	TD	0,086	0,111	0,051	0,094	Not Supported
SUH	<---	KT	0,595	0,551	0,090	***	Supported
YD	<---	TD	0,178	0,263	0,040	***	Supported
YD	<---	KNTC	0,136	0,217	0,037	***	Supported
YD	<---	CCQ	0,124	0,144	0,051	0,014	Supported
YD	<---	KNCT	0,261	0,297	0,055	***	Supported
YD	<---	SUH	0,456	0,522	0,073	***	Supported
YD	<---	KT	0,098	0,104	0,070	0,162	Not Supported
HV	<---	YD	0,265	0,188	0,110	0,016	Supported
R2 (SUH): 31,5%							
R2 (YD): 59,8%							
R2 (HV): 3,5%							

Source: Synthesised from analysis results on AMOS 24.0 by research team

Based on the data in the table, the research team found that there are 5 factors, except Knowledge (KT) that have no impact on the intention to purchase sustainable fashion products and the level of impact (by standardized regression weights) of the factors in descending order are: (1) Support (SUH) (0,522), (2) Affordability (KNCT) (0,297), (3) Attitude (TD) (0,263), (4) Accessibility (0,217) and (5) Subjective Norms (CCQ) (0,144).

Besides, considering the influence on the Support (SUH), the results show that the Attitude (TD) does not affect the Support (SUH), while the Knowledge (KT) has a positive effect with a standardized coefficient of 0,090.

Factor Intention (YD) has a positive influence on sustainable fashion purchasing Behaviour (HV) with a normalised coefficient of 0,188.

Table 6. Test results of research hypotheses

Hypotheses	Content	Results
H1	Consumers' attitude toward sustainable fashion has a positive influence on the intention to purchase sustainable fashion products.	Supported
H2	Consumers' knowledge of sustainable fashion has a positive influence on the intention to purchase sustainable fashion products.	Rejected
H3	Subjective norms has a positive influence on the intention to purchase sustainable fashion products.	Supported
H4	Consumers' accessibility to sustainable fashion has a positive influence on the intention to purchase sustainable fashion products.	Supported
H5	Consumers' affordability to sustainable fashion has a positive influence on the intention to purchase sustainable fashion products.	Supported
H6	Support for sustainable fashion has a positive influence on the intention to purchase sustainable fashion products.	Supported
H7	Consumers' attitudes towards sustainable fashion have a positive influence on their support for sustainable fashion.	Rejected
H8	Consumers' knowledge of sustainable fashion has a positive influence on their support for sustainable fashion.	Supported
H9	Intention to purchase sustainable fashion products has a positive influence on actual product purchase behaviour.	Supported

Source: Synthesised by research team

5. Discussion and Conclusion

5.1. Discussion

5.1.1. Relationship between Attitude, Knowledge, and Support for sustainable fashion

The research team tested the impact of Attitudes and Knowledge on Support for sustainable fashion consumption. The Attitude variable (TD) has a standardized regression weights of 0,111 and the Knowledge variable (KT) has a standardized regression weights of 0,551. This result has shown that knowledge of sustainable fashion has an impact on the support in the variables (with a standardized regression weights up to 0,551) for sustainable fashion while the hypothesis of attitudes that led to support for sustainable fashion fell out of favour after completing linear structural modelling (SEM) analysis.

5.1.2. Relationship between Attitude, Knowledge, and Intention to purchase sustainable fashion products

Attitude (TD) has the third largest impact on the intention to purchase sustainable fashion products and with a standardized regression weights of 0,263. The results of this study are consistent with those of Tsogas (1999); Rise et al. (2010).

In contrast, Knowledge about sustainable fashion with a standardized regression weights of 0,104 has no impact on the intention to purchase sustainable fashion products with a p-value of 0,162 ($> 0,05$) causing this hypothesis to be rejected. This is contrary to the research results of Ho Thuy Thi Hai et al. (2020) who say that both attitude and knowledge factors have a positive influence on intention.

5.1.3. Relationship between Subjective Norms and Intention to purchase sustainable fashion products

With high reliability at $\alpha = 0,832$ and standardized regression weights of 0,144 and p-value result of 0,014, the Subjective Norms (CCQ) has a positive influence on the intention to consume sustainable fashion products. This is the least positive factor among the factors affecting Intention (YD).

This conclusion is completely consistent with the TPB model studied and proven by Ajzen and also by K. Peattie's (2010) consensus.

5.1.4. Relationship between Support and Intention to purchase sustainable fashion products

Support (SUH) and Intention (YD) to purchase sustainable fashion products are positive with a standardized regression weights of 0,522 and a P-value of 0,000. This result has led to the conclusion that the factor of Support (SUH) has the strongest positive impact on the intention to purchase sustainable fashion products.

5.1.5. Relationship between Accessibility and Intention to purchase sustainable fashion products

With the exploratory factor analysis method EFA with a standardized regression weights of 0,217, the Accessibility (KNTC) is the fourth strongest positive factor of Intention (YD). This result is also similar to the results in the study of Hiller Connell (2010).

5.1.6. Relationship between Affordability and Intention to purchase sustainable fashion products

The factor Affordability (KNCT) is considered to have the second strongest positive effect after the factor of Support (SUH) on Intention (YD). Through the actual survey of Gen Z consumers in Hanoi, in a survey 433 people, 143 people or 37,6%, chose the main barrier to purchasing sustainable fashion products is due to price, which accounts for the highest proportion of the reasons that consumers do not choose sustainable fashion products. Also as reported by Hustvedt and Dickson (2009), price is one of the main external barriers faced by consumers, who want to adopt more sustainable methods of purchasing clothing.

5.1.7. Relationship between Intention and Behaviour to purchase sustainable fashion products

The purchasing intention (YD) has a positive influence on the Consumer Behaviour (HV) variable with a standardized regression coefficient of 0,188 and a P-value of 0,016 with a 95% confidence interval. This result gives the confidence that the Intention factor has a positive influence on the consumer's buying behaviour of sustainable fashion products. This result is similar to the Theory of Reasoned Action (TRA) as well as The Theory of Planned Behaviour (TPB), intention will indicate the individual's effort in performing the behaviour and the willingness to try to do it.

5.1.8. Demographic analysis and sustainable fashion consumer behaviour

With the results of data analysis obtained from SPSS, the research team concludes that the demographic independent variable is associated with the behaviour of using sustainable fashion.

Regarding gender, the research team found that women have more important attributes for acquiring full knowledge of sustainable fashion consumption intentions than men. Specifically, considering age groups, the group has found that especially in the 18 - 22 year-old-age group, with dynamic characteristics, there is a high awareness of sustainable fashion and quickness in updating new things and receptive to new things, both sexes often pay attention to the environmental aspects of products, especially this rate is higher in women.

Regarding Income variance, the results show that the income group from VND 1.000.000 to VND 4.499.499 accounted for the largest proportion with 40,0%. In second place is the group Under VND 1.000.000 with 19,4%. One of the factors leading to this result is the convenient income sample, the majority of the sample element is students - This is the sample group that the research team can easily access due to the similarity in terms of age.

In correlation with the frequency of use, the research team found that the frequency of buying sustainable fashion products of Gen Z Hanoi does not completely depend on personal income. Most of the majority selection of income groups fall in the frequency of buying medium (range 3-6 months) and regular (from more than 1 month to 3 months). It can be concluded that at all income levels, the demand for fashion is relatively similar because clothing plays an important role at events in life.

When it comes to the education level factor, the data results show that College/University and College/University Graduation are the two groups that have heard of sustainable fashion products with the highest, 31,1% and 18,6% respectively. From here, the research team makes a judgement about the group of people who are interested in the intention to consume sustainable fashion, who have a fairly high level of education in society and have the ability to learn and grasp information about new products quickly.

In the process of surveying the barriers between demographics and sustainable fashion behaviour, the research team asked the question "If I don't choose to buy sustainable fashion products, what is the main reason?" and get the result:

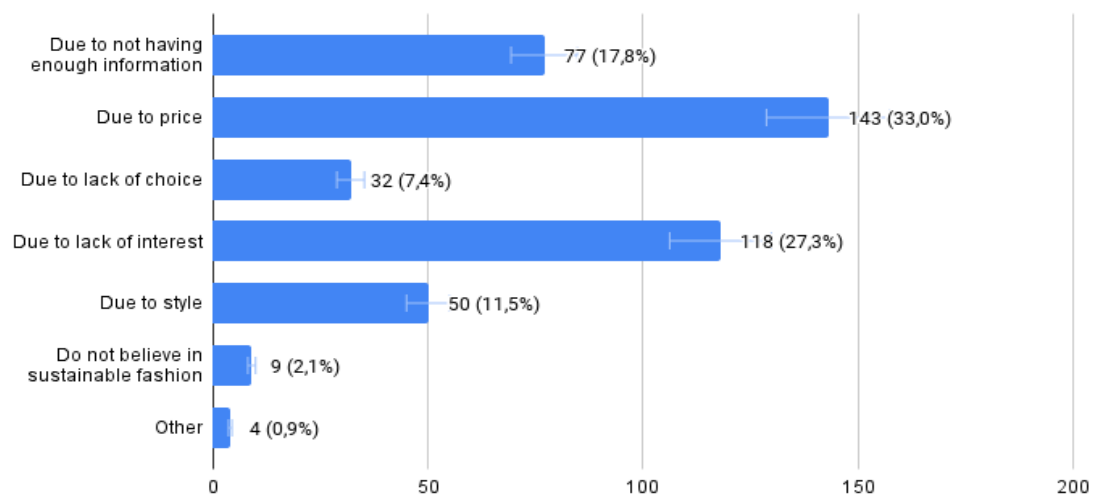


Figure 4. Barriers to the intention to consume sustainable fashion products

Source: Synthesised by research team

As can be seen, most consumers perceive the barrier to using sustainable fashion largely due to the price of the products (33,0%) and lack of interest (27,3%).

5.2. Recommendations

The research results show that the factors affecting the intention and behaviour of Gen Z to purchase sustainable fashion products in Hanoi are the following: Attitude, Subjective Norms, Support, Accessibility, Affordability. It is necessary to have solutions coming from the policymakers, businesses and even consumers:

For Consumers

Firstly, consumers should actively seek information about sustainable fashion on credible websites or related sources.

Secondly, consumers should spread the positive aspects of sustainable fashion by encouraging friends, colleagues, and family members to use sustainable fashion products, providing information about this type of fashion, and thereby promoting sustainable values to the whole society.

Finally, consumers should spread the positive aspects of sustainable fashion by encouraging friends, colleagues, and family members to use sustainable fashion products, providing information about this type of fashion, and thereby promoting sustainable values to the whole society.

For Businesses

Firstly, businesses should actively invest in media and communication activities to improve customers' knowledge and attitudes.

Secondly, businesses can build their brand with a more sustainable-leading lifestyle image with more ethical values for the environment and society.

Thirdly, businesses should expand distribution channels, use multiple platforms to improve accessibility for customers.

Fourthly, business managers also need to improve product quality and image by investing in aspects such as material, utility, durability, and design of the product. In addition, it is important for the brand and the product to obtain certificates of sustainability standards as a commitment to the core values of sustainability and as well as to gain trust from customers.

Finally, the price factor can hinder customers from purchasing sustainable fashion products.

For policymakers

Firstly, government and policymakers need to complete the environmental protection legal system. Vietnam needs policies to promote sustainable consumption, actively participate in global trends, ensure sustainable development, manage and use natural resources more effectively.

Secondly, the government should strengthen support for businesses to develop sustainable product lines, conduct more research and gradually apply models in promoting sustainable consumption in general and sustainable fashion in particular by supporting the investment in factory equipment, developing advanced technology to produce fashion products with these special technical requirements.

Thirdly, state management agencies should promote communication of the ethical aspect of sustainable fashion consumption through the mass media, raise consciousness and provide knowledge to consumers about sustainable products.

Finally, the government needs to strengthen the management of consumer protection with effective policies such as forcing manufacturing enterprises to publicise their production processes, requiring businesses to provide full and clear commitment policies on product quality and ensuring warranty policies for consumers.

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FACTORS INFLUENCING CONSUMER BEHAVIOR TO PURCHASE VEGAN COSMETICS AND RECOMMENDATIONS FOR BUSINESSES IN VIETNAM

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Abstract

The study aims to explore the factors affecting buyer purchase intention in Vietnam towards vegan cosmetic products, which are Reference Group, Consumer Perception, Salesperson Attitude, Product Quality, Price, Place, Promotion, and Brand. The data were collected using an online questionnaire, which was distributed on different social media platforms and consisted of 480 customers in Vietnam. SPSS 22 was used to confirm the validity concerns and analyze the collected data. The findings discovered that all the independent variables had a significant positive effect on the dependent variables; further, product quality had the highest mean. Findings from this research could eventually give recommendations to vegan cosmetic businesses to enhance their performance and boost sales in the future.

Keywords: *consumer behavior, factor, recommendations, vegan cosmetics.*

1. Introduction

Vietnam's cosmetics market was rather young, yet was one of the most dynamic in the region. As living standards in Vietnam grew, Vietnamese consumers were becoming more aware of personal care and beauty products besides satisfying basic needs. It can be seen that Vietnam's cosmetic import turnover has more than doubled, from about 355 million USD in 2010 to more than 790 million USD in 2018 by GMP (2020). With the revenue of the cosmetics market continuously increasing over the past two decades, Vietnam has become an attractive destination for many foreign cosmetic brands.

A trend toward adopting safer substances in cosmetics has emerged as a result of growing consumer awareness of health and wellness. The need for skin and hair care products devoid of chemicals and tested on animals is growing, and consumer views toward natural personal care are changing, which has fuelled the development of vegan cosmetics. With the tough competition from other types of cosmetics, vegan cosmetics still do not have a footing in the Vietnamese cosmetics market despite great effort. In order to develop innovative and effective marketing strategies, businesses in the vegan cosmetics sector must pay attention to the factors influencing Vietnamese consumers' decisions to buy vegan cosmetics.

Several international research has been found to investigate the determinants or elements affecting customers' choices of vegan cosmetics. Kotler (2009) identified four major categories of influences, including cultural, social, personal, and psychological components. Lakshmi & Babu (2019) also performed research on the same subject in India, however, the findings showed that in addition to the previously mentioned components, psychological issues also significantly affect cosmetics purchasing behaviors. The factors influencing Vietnamese consumers' decisions to buy vegan cosmetics are currently the subject of scant research in Vietnam. As a result, Pham Nhat Vi (2020) performed research in eight provinces in the Vietnamese region of Ba Ria-Vung Tau and established that product pricing was the most significant factor in determining customers' decision to purchase vegan cosmetics. In addition, a survey was carried out in Ho Chi Minh City by Nguyen Hoai Tu Nguyen and Nguyen Thi Bich Ngoc (2021) to find out what influences female Gen Z customers' inclination to buy cosmetics. There were some similarities between this study and that of Pham Nhat Vi (2020). Pham Nhat Vi (2020), however, proposed a unique element—salesperson attitude—which was also a distinct feature in studies of consumer behavior. Therefore, this article is one of the few to research factors impacting customers' decision to buy vegan cosmetics in the context of Vietnam.

Recognizing the noteworthy and urgency of the aforementioned problem, the authors chose the topic "Factors affecting Consumer Behavior to Buy Vegan Cosmetics in Vietnam" as the focus of their study. The objectives of this study were to (i) investigate the factors that influence Vietnamese consumers' decisions to buy vegan cosmetics, (ii) determine the degree to which these factors have an impact on Vietnamese consumers' decisions to buy vegan cosmetics, and (iii) propose recommendations for vegan cosmetic businesses.

2. Method

Based on earlier research from both domestic and international sources, the authors chose eight factors that affect Vietnamese buyers' choices to buy vegan cosmetics and created a research model with the following variables:

Independent variables: Reference Group, Consumer Perception, Salesperson Attitude, Product Quality, Price, Place, Promotion, and Brand.

Dependent variables: Consumer behavior to purchase Vegan cosmetics in Vietnam.

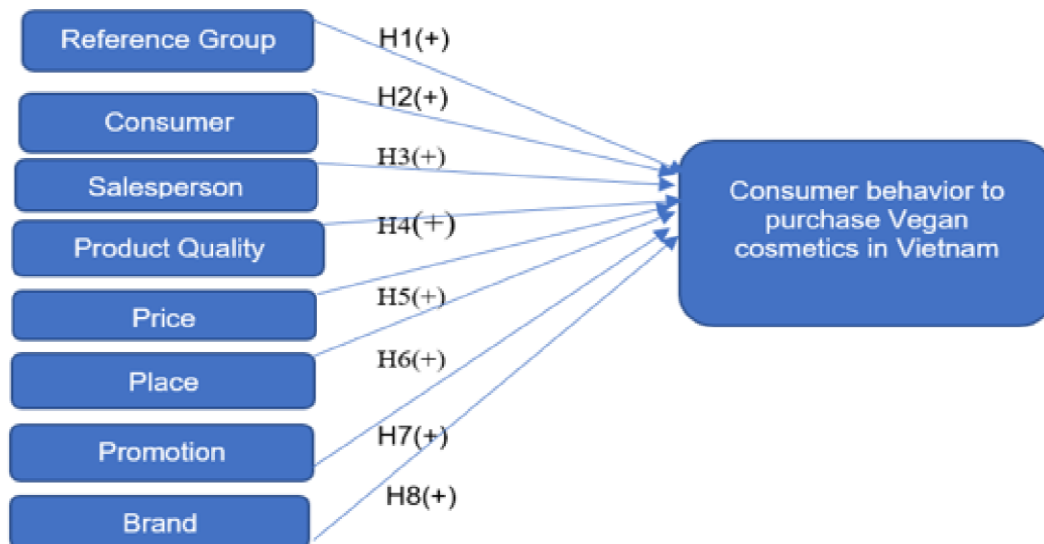


Figure 1. Research Model

The research was conducted to test the following hypothesis:

H1: Reference group is positively correlated with consumer behavior to purchase vegan cosmetics. H2: Consumer perception is positively correlated with consumer behavior to purchase vegan cosmetics.

H3: Salesperson attitude is positively correlated with consumer behavior to purchase vegan cosmetics.

H4: Product quality is positively correlated with consumer behavior to purchase vegan cosmetics.

H5: Price is positively correlated with consumer behavior to purchase vegan cosmetics.

H6: Place is positively correlated with consumer behavior to purchase vegan cosmetics.

H7: Promotion is positively correlated with consumer behavior to purchase vegan cosmetics.

H8: Brand is positively correlated with consumer behavior to purchase vegan cosmetics.

2.1. Qualitative research methods: Expert opinion method

After adjusting the questionnaire, the author consulted 05 experts who are lecturers from different universities in Hanoi for a more comprehensive evaluation. The experts' opinions, assessments, and recommendations are solid to help the researchers finalize the questionnaire before the official survey.

2.2. Quantitative research methods: Questionnaire

Questionnaire development

The author created a questionnaire with three main sections to test the proposed hypotheses from the literature review: (i) demographic information of the sample, (ii) questions measuring the independent variables, and (iii) questions measuring consumer behavior to purchase vegan cosmetics in Vietnam.

Data collection

Data was collected in February 2023 with questionnaires distributed to customers in three regions (the North, Central, and South) of Vietnam via Facebook pages, emails, and messages. A total of 480 questionnaires were administered, and 388 completed questionnaires were processed for analysis.

Data analysis procedure

In this study, consumer behavior to purchase vegan cosmetics in Vietnam is the independent variable and 08 dependent variables include reference group, perception, attitude, product quality, price, place, promotion, and brand. Data were analyzed using SPSS22 to gain demographic information about the sample and test the scales of the research concepts through Cronbach's Alpha reliability assessment, exploratory factor analysis (EFA), and Linear regression equation.

3. Results

Demographic information

Samples were collected by convenient methods in the form of survey questionnaires. The demographic information is summarized in the following table.

Table 1. Consumers' demographic information

Gender	Male	31%
	Female	67%
	Prefer not to say	2%
Age	18 - 30	64%
	31 - 40	17%
	41 -50	17%
	>50	1.9%
Living place	North	36.2%
	Central	19.9%
	South	43.9%
Monthly income	<\$200	22.1%
	\$200 – \$400	53.8%
	\$400 - \$600	11.4%
	>\$600	12.8%

Evaluating of scale reliability by Cronbach's Alpha

Table 2. Summary of the results of the scale reliability analysis

Factors	Cronbach Alpha
Reference group	.836
Perception	.822
Salesperson Attitude	.757
Product quality	.882
Price	.859
Place	.867
Promotion	.824
Brand	.772

Overall, the research uses 09 conceptual scales of which 08 scales are for factors affecting consumer behavior to purchase Vegan cosmetics in Vietnam and 01 is for consumer behavior. The analysis results show that the corrected item-total correlation coefficients all are greater than 0.3 and the Cronbach's alpha of the scales is all greater than 0.6. The scales all passed the tests of reliability and would be included in the exploratory factor analysis (EFA).

Analysis of the scale validity

EFA analysis with observable variables of the scales of determinants of customers' behavior to purchase Vegan cosmetics in Vietnam.

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.874
Bartlett's Test of Sphericity	Approx. Chi-Square	5933.742
	df	378
	Sig.	.000

From the research results, it can be seen that to check whether the study is large enough and eligible for factor analysis, the author has conducted Kaiser Meyer - Olkin test and Bartlett's Test. With the test result $KMO = 0.874$ greater than 0.5 (satisfying $0.5 \leq KMO \leq 1$) and Sig value. = 0.000, so it can be assured that the data is suitable for factor analysis and that the observed variables have a correlation relationship in the population.

EFA analysis for Consumer behavior

Table 4. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.739
Bartlett's Test of Sphericity	Approx. Chi-Square	572.900
	df	3
	Sig.	.000

The research results reveal that to check whether the study is large enough and eligible for factor analysis, the authors conducted the Kaiser-Meyer-Olkin test and Bartlett's Test. With the test result $KMO = 0.739$ greater than 0.5 (satisfying $0.5 \leq KMO \leq 1$) and Sig value. = 0.000, therefore it can be assured that the data is suitable for factor analysis and that the observed variables have a correlation relationship in the population.

Linear regression equation

After performing exploratory factor analysis and grouping variables by each factor, the study continued to run regression analysis. For its regression analysis, the study employs

a multivariate regression model (multiple regression model). The study measures the impact of factors on customer behavior using regression analysis based on measuring the influence of extracted factors.

The factors that emerged from the observed variables in the EFA factor analysis serve as the independent variables in the regression analysis model, and the dependent variable in the model is "Behavior". The regression model is as follows:

$$CB = \beta_0 + \beta_1RG + \beta_2CP + \beta_3SA + \beta_4PQ + \beta_5PM + \beta_6BR + \beta_7PR + \beta_8PL$$

The model summary demonstrates that the initial model reported an R-square value of 0.683 and an adjusted R Square value of 0.676. The adjusted R-square shows how well a model fits the data; in this case, it indicates that the 08 independent variables explained 67.6% of the variance in "customer behavior".

The model summary table below shows the outcomes of creating a multivariate regression model using SPSS software:

Table 5. Multivariate regression analysis results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Higher Bound	Tolerance	VIF
1 (Constant)	-661	.194		-3.414	.001	-1.042	-.280		
RG	.171	.034	.188	5.030	.000	.104	.238	.601	1.665
CP	.079	.039	.067	2.033	.043	.003	.155	.765	1.307
SA	.183	.038	.159	4.859	.000	.109	.258	.786	1.272
PQ	.235	.030	.293	7.891	.000	.177	.294	.607	1.647
PM	.113	.039	.115	2.900	.004	.036	.190	.529	1.890
BM	.068	.031	.068	2.178	.030	.007	.130	.861	1.161
PR	.135	.037	.149	3.610	.000	.062	.209	.491	2.039
PL	.161	.045	.151	3.614	.000	.073	.249	.480	2.085

All independent variables in the regression analysis utilizing the t-test had Sig values below 0.05. Each of these components is important to the model and influences buyer decisions to buy vegan cosmetics. $B > 0$ denotes a positive association between the independent variables and the dependent variable, which is buyer behavior toward vegan cosmetics.

As can be seen from the table, Product quality is the factor that has the strongest influence on customers' purchasing behavior ($\beta = 0.293$), followed by Reference group ($\beta = 0.188$), Salesman attitude ($\beta = 0.159$), Place ($\beta = 0.151$), Price ($\beta = 0.149$), Promotion ($\beta = 0.115$), and Brand ($\beta = 0.068$). Consumer perception is the factor that has the most negligible impact on consumers' behavior to buy vegan cosmetics ($\beta = 0.067$).

4. Discussion and Conclusion

Discussion

The study sought to identify the determinants of consumer behavior to purchase vegan cosmetics in Vietnam. Overall, the results show that vegan cosmetics purchasing behavior was positively influenced by the reference group, consumer perception, salesperson attitude, product quality, price, place, promotion, and brand.

Firstly, product quality is the most significant driver of customer behavior to purchase vegan cosmetics in Vietnam, which is in line with the earlier work of Dickieson and Arkus (2009) in the context of vegan food. According to Kuo & Wu (2018), the quality of the product is important to consumers because if the organization can meet the consumer standard in the future, they will repurchase even though the prices increase.

Secondly, the reference group is validated to have substantial effects on the purchasing decision of vegan cosmetics. The findings match with the studies of Lorek and Fuchs (2013); Ritter et al., (2015). Today, marketers must understand consumers' social environment which influences their final product or brand choice. The social environment includes the influence of reference groups such as friends, family, and work associates, among others, that affect consumer behavior.

Thirdly, the findings of our study reveal the significant direct effect of salesman attitude on buyers' purchasing behavior, which is on par with the previous research by Pham Nhat Vi (2020) and the research on Female Buying Behavior Related to Facial Skin Care Products by Kokoi (2011).

Besides, the place factor is found to have a slight effect on the decision to buy vegan cosmetics, which is similar to some previous research by Nguyen Ngoc Dan Thuy (2014). Place influences buying behavior in many ways. Increasing the likelihood of getting a product means increasing the chances that a buyer can find it and buy it. Products that are sold exclusively in separate places can also attract consumers and motivate them to buy the product.

Moreover, the results also show that the purchasing decision is strongly affected by the price factor. According to Patel (2019), most consumers use price as an indicator of quality in decision-making and as one of the factors influencing the purchase of cosmetic products. This finding is consistent with the previous studies of Muhammad et al. (2019), Patel (2019), and Nguyen Hoai Tu Nguyen and Nguyen Thi Bich Ngoc (2021), which confirmed that price is one of the strongest influencing factors on consumers' purchase intention.

Price and Place are considered two important factors in the marketing mix strategy of businesses in general and furniture businesses. According to Philip Kotler (2007), the marketing mix helps businesses to influence the purchase intention of customers. In this study, the author also found a relationship between price, place, and consumer behavior to buy vegan cosmetics. This implies that consumers are still interested in the price of vegan cosmetics, and these are decisive factors affecting consumer behavior to purchase vegan cosmetics.

In addition, the promotion factor is believed to have significant effects on the buying behavior of vegan cosmetics, which is in parallel with previous findings of Patel (2019). Patel (2019) emphasized that promotion is one of the factors affecting the decision to buy cosmetics. Promotions offer customers ideas about new things to buy, promotions create interest in the product, give them information on how to use the product, generate interest in the product, and help customers make purchasing decisions faster.

Additionally, the findings regarding the brand factor were supported by some previous studies with the same results (Nguyen Hoai Tu Nguyen & Nguyen Thi Bich Ngoc, 2021; Nguyen Ngoc Dan Thuy, 2014; Showrav, 2018; Mohammadzadeh, 2015) shows that brand-related factors increase customers' intention to buy cosmetics. According to Anjana (2018), the brand is one of the factors that strongly influence customers' decision to buy cosmetics. This factor is also considered consistent with the characteristics of consumer behavior of Generation Z.

Last but not least, consumer perception is confirmed to be a significant factor affecting the way consumers decided to buy vegan cosmetics, which is in line with the earlier work by Showrav, and Dewan Golam Yazdani (2018). However, the study of Showrav showed a slight difference from our research in terms of the level of influence of consumer perception. In Showrav and Dewan Golam Yazdani's research, consumer perception is found to be the strongest influential factor in Dhaka City; however, our research revealed that consumer perception only has little effect on the purchasing decision of vegan cosmetics. This can be explained by the difference in target research location and audience.

Recommendations for businesses

The authors propose recommendations for businesses.

4.1. Strengthening the role and credibility of the reference group

The results show that the "Reference group" is the second most influential factor in the decision to buy vegan cosmetics for consumers in Vietnam in the group of 08 influencing factors within the scope of the study. The reference group can have an indirect role in guiding consumers to the decision to buy vegan cosmetics. Nowadays, the trend of group consumption or trend-following is becoming significantly popular, once again confirming the crucial role of reference groups in promoting purchasing decisions, specifically for vegan cosmetics. The study proposes suggestions to increase the credibility of reference groups, thereby promoting consumers' decision to buy vegan cosmetics.

Businesses need to actively promote communication activities through the media such as newspapers, radio, magazines, social networks, etc. with campaigns associated with successful celebrities with high prestige in certain fields such as entrepreneurs, artists, athletes, etc., using their influence and prestige to help consumers realize the connection between the use of vegan cosmetics and the health protection, environmental protection, humanitarian value, or quality of vegan cosmetics compared to other conventional cosmetics.

Moreover, businesses can also combine with other organizations and associations working in the environmental field to introduce their products through the forms of

coordination, becoming sponsors, patrons, and support activities of these organizations and associations. Through press conferences and events, businesses can organize the distribution of trial products or coupons and directly promote communication activities on social networking sites to create viral effects to attract more customers.

Last but not least, it is of great importance to strengthen the word-of-mouth marketing strategy: update new and interesting information to hold consumers' intention, bring psychological emotions about the story, and love sweet feelings to create a more favorable effect. In addition, it is also possible to use the trust of the loyal customer group to increase the trust in customers by storing the experiences and feedback of this loyal customer group, which will become convincing evidence of trust with a new group of customers.

4.2. Enhancing consumer perception of vegan cosmetics

From the findings, the “Consumer Perception” factor has positive impacts on consumers who may be more likely to conduct business with vegan cosmetic businesses they trust. Developing a positive relationship with customers can generate more leads and sales, contributing to company success and longevity. Customer perception can also impact whether consumers are loyal to vegan cosmetic brands or switch to their competitors. To enhance consumer perception of vegan cosmetics, the authors propose that:

Firstly, it is crucial to research to learn what the public thinks of the businesses' vegan cosmetics brands, products, or services, for example, sending out surveys to current customers, posting a link on social media accounts to an anonymous survey, searching online for comments and reviews about the vegan cosmetic businesses, ...

Secondly, businesses should apply research to product development. Once vegan cosmetic businesses have an idea of how the public feels about them, they can create products and services that better meet customers' needs. Businesses may consider upgrading existing products to include more features or enhancing their usability and launching new products as a response to an unmet need among consumers.

Last but not the least, vegan cosmetic businesses should improve the customer experience. Businesses need to consider every facet of consumers' experience, from reading the website to visiting the store. Each of these points can positively or negatively affect how clients and customers feel about the business.

4.3. Improving salesperson attitudes

Research results indicate that “Salesperson Attitude” is the third influencing factor in Vietnamese consumers' behavior to buy vegan cosmetics in the group of 08 influencing factors within the scope of the study. Sales staff are considered the face of the company when directly interacting with customers, consulting, introducing goods, and promoting buying decisions. To increase the behavior to buy vegan cosmetics, the authors suggest that:

Businesses should organize many training sessions for sales staff so that they have professional knowledge and a deep understanding of vegan cosmetics. Salespeople should understand the characteristics and effectiveness of vegan cosmetics compared to other

cosmetics to promptly answer questions and advise customers with a confident, professional attitude, which brings trust to customers. The professional knowledge of salespeople must always be periodically checked by the company, updating new knowledge about the market and products if needed.

In addition to product expertise, businesses should also organize training for sellers on sales expertise. Sales staff should have considerate attitudes, gestures, and respect for customers, know how to listen to customer feedback and to overcome, and behave skillfully, flexibly and satisfy customers. Sales staff must have confident gestures and actions, be both agile and polite, have a positive attitude, and be excited when talking about products, showing professionalism in sales skills to customers. At the same time, keep a warm, cheerful, enthusiastic, hospitable, and thoughtful attitude when communicating with consumers.

4.4. Promoting product development strategies

The results show that "Product quality" is the factor that has the greatest influence on Vietnamese consumers' decision to buy vegan cosmetics in the group of 08 influencing factors within the scope of the study. With the development of the economy, the sales process becomes more and more difficult because the products on the market are increasingly diversified in terms of models and types and customers are increasingly demanding higher quality products. To increase the behavior to buy vegan cosmetics, the author proposes the following:

Businesses should constantly improve products by testing new formulas with new technology. Developing the scale of cultivation and production, and improving technology; therefore, the final product meets vegan standards because this is predicted to be a consumer trend for cosmetics and natural ingredients, the advantage of a tropical country like Vietnam. Businesses should diversify products with quality assurance, invest in product packages, and constantly improve vegan products.

Additionally, it is crucial to build a prestigious business image of vegan cosmetics. When deciding to launch a product, businesses should always ensure that the vegan product is of the highest quality when it reaches the consumers. Each product needs a certificate to ensure safety for users.

Moreover, businesses need a clear and specific direction. Periodic product improvement plans are necessary to implement seriously and fully, ensuring long-term development.

It is of great importance to focus on market research, studying factors affecting product quality from the micro-economy, and macro-economy, and studying the needs of consumers, and product suppliers... Businesses should conduct surveys, listen to consumers' opinions to have strategies for product upgrading as well as develop reasonable pricing policies, aiming to catch up with customers' consumption trends.

4.5. Promoting pricing strategies

According to the research results, "Price" is a factor that significantly influences the decision to buy vegan cosmetics of Vietnamese consumers in the group of 08 influencing factors within the scope of the study. Vegan cosmetics are new to consumers. Although the

income of the consumers participating in the survey is mostly in the middle, the majority of the consumers still think that the current price of vegan cosmetics is higher than that of conventional cosmetics. Thus, for low-income people, this is an obstacle and forces them to choose other cosmetic lines that are more affordable. To increase the decision to buy vegan cosmetics, the research group proposes the following suggestions regarding prices:

Businesses should have pricing policies to improve the competitiveness of their products. Subsidy policies come from minimizing intermediary costs such as costs for distribution channels, costs related to law, and costs related to product promotion, ... If possibly minimizing intermediary costs, firms can offer more attractive product prices for consumers, thereby reaching more audiences.

Businesses should also diversify product lines with different price ranges depending on the target customers. Customers can be divided by income: high, middle, and low income, or price packages for agents, distributors, business units, and individual customers (retail).

Finally, businesses must diversify product designs and sizes, trial product samples, and compact product samples that are convenient for transportation and travel to bring products closer to lower-income consumers.

4.6. Promoting promotion strategies

The results show that "Promotion" is the fifth most influential factor in Vietnamese consumers' decision to buy vegan cosmetics in Vietnam. The cosmetic market is growing, which means that the competition is getting fiercer, to survive and develop, businesses must find an advantage over their competitors, one of which is the promotion programs. To increase consumer behavior to buy vegan cosmetics through this factor, the author proposes the following:

Businesses should ensure that they have a professional team to build promotion programs to maintain relationships with consumers and create credibility and trust for the business. This team needs to conduct market research, and research customer insight to be able to implement discount programs to attract customers to purchase vegan cosmetics while at the same time ensuring revenue for the company.

In addition, businesses need to diversify, ensure the quality of promotions to meet the requirements and expectations of consumers, and ensure support for consumers in gradually switching to using vegan cosmetics, thereby creating the habit of using vegan cosmetics. It is possible to apply cumulative promotions, loyal customers promotions, and promotions for the whole consumer family, ...

Moreover, it is crucial to organize advertising/promotional programs and activities to stimulate demand and attract vegan cosmetics consumers' attention. Vietnam is a price-sensitive country, so price or product promotions will be an effective channel to pull consumers to vegan cosmetics stores.

It is also possible to associate with companies operating in other fields such as F&B, education, and healthcare,... to organize promotions on a large scale, attracting a large number of potential customers from other sectors.

Inspiring and spreading positive messages through programs aimed at the environment: tree planting campaigns, recycling old plastic bottles, programs to exchange old bottles, receive new products...are highly recommended.

Last but not the least, participating in sponsorship of lifestyle shows, contests, or exhibitions vegan, green lifestyle for the environment and animals to have ways to reach potential consumers.

4.7. Promoting branding strategies

One of the elements influencing consumers' choices to purchase vegan cosmetics in Vietnam is the "Branding" element. Kotler and Keller (2009) claim that each day, consumers discuss hundreds of different brands. Even while media and entertainment products like movies and TV series are frequently mentioned, other product categories are as frequently brought up. Therefore, businesses must implement successful branding tactics to increase customer demand for vegan cosmetics. Several strategies to promote the branding component have been proposed:

Firstly, businesses should emphasize the products. Nowadays, there is an increasing demand for beauty, and beauty concerns go beyond just looks to encompass safety and health. This necessitates that companies alter their brand development tactics by coming up with opportunity-creating image-building techniques. While developing a brand image, businesses should emphasize the advantages of vegan cosmetics, such as their use of harmless ingredients, adherence to humanitarian principles, and protection of human health.

Secondly, it is of great importance to focus on the message: Consumers today frequently select product categories based on special considerations for ethical responsibility as well as environmental friendliness. As a result, businesses can establish their brand as an inspiration for a vegetarian lifestyle, a radical way of living towards ethical values, and common values for the environment and society. This will help them establish an ethical corporate image with good ethics and social responsibility.

Thirdly, digital marketing on social networking sites is the most popular and successful marketing tactic nowadays. Statistics from 2018 indicated that 64 million people in Vietnam now utilize the Internet, or 67% of the country's entire population, including Facebook. This demonstrates that the Internet marketing trend including social media platforms will intensify and take the lead. Marketing initiatives will be carried out via social media, email, blogs, vlogs, online, etc. Businesses may develop the trends like "living green" and "using vegan cosmetics" by fusing a variety of marketing techniques with distinct messages and objectives. By generating trends and fevers, making the most of digital marketing can assist companies in lowering operational expenses and expanding their consumer base.

4.8. Promoting place (distribution) strategies

The place element refers to how consumers get products or services to consumers at the right time, at the right place, and in the right quantity. It includes distribution channels (for example, via a shopfront, online, or a distributor), location, logistics, service levels, and market coverage.

Firstly, vegan cosmetic businesses should increase the number of distribution channels they have to boost their profits because having more channels means getting more vegan cosmetics to consumers which translates to more money.

Secondly, a vegan cosmetic business can increase the efficiency of a distribution channel by maximizing the benefit of channel intermediaries or increasing the number of intermediaries they have. Intermediaries are additional businesses that take a manufacturer's product and sell it on the open market, such as a distributor or a retailer. Vegan cosmetic businesses need to choose intermediaries that fall in line with their business models and goals.

Conclusion

The study was conducted to investigate determinants of consumer behavior to purchase vegan cosmetics in Vietnam. The research results have broad significance and have achieved the research objectives. The finding revealed that 08 determinants have positive effects on consumer behavior to purchase vegan cosmetics.

Like many previous studies, the research is subjected to potential limitations due to a lack of time and experience. To begin with, the results of this research are limited to consumers in three regions in Vietnam. Besides, the sample size of the research is just 388, which indicates that the findings of this research cannot be generalized to all regions in Vietnam. If the research is continued to be carried out with a more representative sampling method, the higher the generalizability, the more accurate the results.

Through this research, several practical implications can be drawn. Being one of the few researchers studying determinants of consumer behavior to purchase vegan cosmetics in Vietnam, the findings from the research have provided numerous value information for vegan cosmetics companies. The results of this study will help vegan cosmetics companies better understand the buying behavior of consumers and this will be the basis for businesses to build marketing strategies in the future.

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FACTORS INFLUENCING THE BEHAVIOR TO PURCHASE OVER-THE-COUNTER DRUGS OF PEOPLE IN HA NOI, VIETNAM

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Abstract

With the pharmaceutical business growing and with some experience in a pharmaceutical working environment, the authors have chosen to explore this field further through research. This current study aims to find out the determinants of consumers' purchasing decisions and behavior of medicine regarding over the counter (OTC) pharmaceutical market. The convenient sampling method is used for the selection of the sample. The study applied statistical tools for factor analysis and descriptive statistics to achieve the objectives. The results of factor analysis revealed seven factors named as: brand experience, drug availability, brand package, subjective norms, habit, culture and admin manager. All independent variables are connected with the dependent variable. Admin management affects the OTC's buying behavior the least, habit has the most influence over medicine buying behavior of consumers.

Keywords: *Consumer behavior, Buying, Intention, OTC.*

1. Introduction

In fact, drug demand is rapidly expanding, and individuals are tending to focus on self-care. This is one of the key reasons why people want to purchase medications without a prescription. As a result, management agencies and drug-selling units must be held accountable for people's self-purchase and usage of pharmaceuticals to treat ailments. Understanding that consumer psychology is critical for regulating and managing the behavior of buying medications without a prescription. In conclusion, research on purchase intentions are more important than ever for countries and enterprises to monitor the continual change of customers in each individual scenario.

2. Literature Reviews and Theoretical Basis

Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA) model was developed in 1975 by Fishbein and Ajzen to understand the relationship between behavior, attitudes, intentions and beliefs. This model assumes that a person's behavioral intentions are influenced by their own subjective norms and attitudes. Study the application of the TRA model in the study of intention to buy over-the-counter drugs. This model is considered to be very useful in predicting individual behavior and can be adapted to different research contexts.

Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) is a development and improvement from Fishbein and Ajzen's Theory of Rational Behavior (TRA). TPB was created to address TRA's limitations on the assumption that human behavior is entirely controlled by reason. TPB consists of 3 main elements: attitude, subjective norm and perceived behavioral control. Perceived behavioral control reflects how easy or difficult it is to perform a behavior and whether performing the behavior is controlled or restricted.

Over-the-counter (OTC)

Information on over-the-counter drugs is released from important health organizations such as the World Health Organization and the US Food and Drug Administration. Over-the-counter drugs are pharmaceutical products, drugs or medicinal products that can be used and distributed without the permission of a medical professional. Consumers can use them to prevent, alleviate, or treat mild symptoms or illnesses, and their use in the form, condition, and dosage allowed is safe for the consumer. At present, OTC behavior is growing because of flexibility as it requires a lot of time, effort, energy, and money to have prescriptions from doctors and purchase medications accordingly. Therefore, people do not want to invest those efforts when they think that they are suffering from some common illnesses. It provides a much more convenient means for patients to self-treat their minor afflictions. Thus, Over-the-counter (OTC) medicines are among the products that consumers regularly purchase for avoiding more formalities, and it gives consumers a sense of control when making decisions about their health, which is not the case with prescription drugs.

Brand experience

Brand experience, according to Brakus et al. (2009), is "subjective, consumer internal responses (feelings, affective, cognitive, and behavioral responses) evoked by Brand-related stimuli that are part of a brand's design and identity, packaging, communication, and environment". Furthermore, informational experience leads to learning (Kotler and Keller, 2016, p. 191) and is widely regarded as the primary source of inside information (Paddison and Olsen, 2008). Brand experience is one of the most researched experiences that influence purchase intent, with some studies indicating that it is superior to others (Abraham et al., 2015; Al-Motassem et al., 2008; Kevrekidis et al., 2018) while other studies indicate that it is secondary to other factors (Lodorfos et al., 2006).

Drug availability

One of the primary determinants of drug access is drug availability (WHO, 2003). According to Srivasta and Wash (2017), drug accessibility and availability are important factors influencing over-the-counter drug purchase, particularly in suburban and remote areas. Steinhart et al. (2013) show that both product availability and non-availability can trigger purchase intention. They define participation as “the importance of the audience to which the assessment is being made”, while the perceived feasibility is with respect to the “easiness of obtaining the product”.

Brand Package

A product's packaging determines its look, including the design, branding, form, color, and materials utilized (Oladele et al., 2015). According to Olawepo and Ibojo (2015), packaging components, specifically color, image quality, and labeling (i.e. type of information and typeface), have a considerable influence on consumers' purchase intention. In contrast, Kevrekidis et al. (2018) discovered that OTC drug packaging had a comparatively lesser impact on purchase intention when compared to other drug variables. Although this finding agrees with the findings of Kohli and Buller (2013), it contradicts the findings of Srivastava and Wagh (2017), given that brand packaging increases drug intention significantly.

Subjective Norms

According to Ajzen (1991), the subjective norm is an individual's perception of societal pressures, related to performing or not performing a behavior. Subjective norms aim to measure social influences on one's behavior, i.e. the expectations of family members (Ha, 1998). Mintel et al. report that the opinions of friends, family, and medical professionals can influence some people's decisions to purchase OTC products. Research by George N. Lodorfos et al. (2006) on OTC also suggests that “the more positive an individual feels about the attitudes of friends, family, and medical professionals towards the OTC brand, the higher the perception of OTC brands. the greater the intention to buy their product”.

Habits

Habits are activities that are repeated many times from the past to the present. Habits are also the result of cumulative learning or adaptation (Limayem et al. 2007), while Kim et al. (2005) argues that habit is automatic. When consumers have good experiences with purchasing OTC medicines without a prescription, they tend to continue buying that same brand in the future, especially when experiencing similar symptoms. This habit of buying OTC medicines without a prescription can have a positive effect on their intentions and lead to repeated purchases in the future.

Culture

According to Hofstede (1980, 1991), culture is a system of programming in the human subconscious to distinguish members of one group of people from members of another. From the study of Sudaryanto, et al (2021) also showed that culture has a significant influence on purchasing decisions. Thus, culture in a society will tend to convey the results

of a behavior performed, through the process each individual will receive and build intentions for the behavior.

Admin management

According to the Ministry of Home Affairs, management is an activity aimed at an organized and oriented influence of the subject of management on a managed object to regulate social processes and human behavior, in order to maintain the stability and development of the managed object according to the set goals. State management related to the sale and purchase of over-the-counter drugs is the law enforcement of the State. This includes the regulation and organization of the sale of over-the-counter drugs by drug dealers and retailers to consumers through a system of legal documents regulating the sale of drugs.

Purchase intention

Purchase intention is one of the determinants of consumer's perceived behavior towards an individual's intention to purchase a particular brand or product. When purchasing and using OTC drugs, consumers are asked to rely more on their own judgment (Wieringa, Reber and Leeflang, 2015).

After reviewing different researches concerning buying behavior of medicine consumers, the own creation of the theoretical framework has been formed. It is believed that the frame consists of the main attributes that have an impact on purchase intention of OTC medicine.

According to the conceptual framework designed for the study, consumers' buying decision toward medicine is examined through five of its factors including brand experience, drug availability, brand package, subjective norm, habit, culture, admin management, purchase intention. Understanding these variables is essential for this study since they have a significant influence on buying behavior. The dependent variable indicates the organizational effectiveness. The aspects as mentioned above supporting this study are illustrated in the following figure:

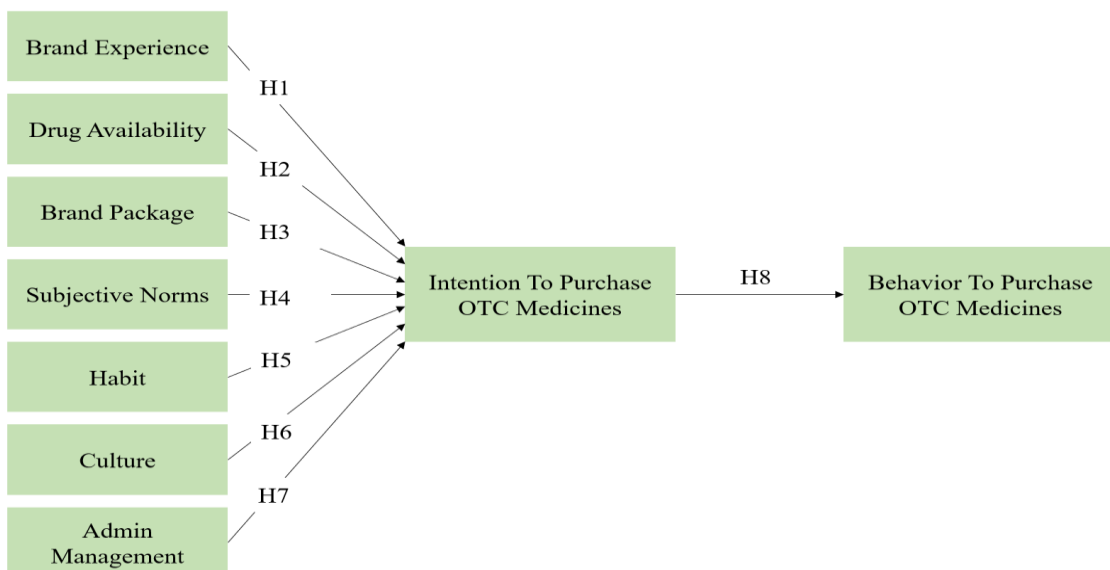


Figure 1. Conceptual Framework Model (Source: Authors Constructed)

From the conceptual framework model the following hypotheses are formulated to conclude as:

H1: “Brand experience” has a positive effect on “Intent to purchase over-the-counter drugs”

H2: “Drug Availability” has a positive effect on “Intent to purchase over-the-counter drugs”

H3: “Brand Package” has a positive effect on “Intent to purchase over-the-counter drugs”

H4: “Subjective Norms” has a positive effect on “Intent to purchase over-the-counter drugs”

H5: “Habit” has a positive effect on “Intent to purchase over-the-counter drugs”

H6: “Culture” has a positive effect on “Intent to purchase over-the-counter drugs”

H7: “Admin Management” has a negative effect on “Intent to purchase over-the-counter drugs”

H8: “Intent to purchase over-the-counter drugs” has a positive effect on “Behavior to purchase over-the-counter drugs”

3. Method

The study was conducted in Vietnam, using quantitative research methods and a relevant questionnaire was created based on earlier research, using incorporated theories in consumer behavior, relevant to OTC. To effectively measure the research constructs, information from the theoretical and empirical research studies in both consumer behavior and OTCs were used.

Questionnaire Design

This study has collected data through developing a close-ended questionnaire administered to the consumers who purchase OTC (over the counter) medicine. The Questionnaire includes a 5point likert scale and multiple-choice questions. The survey questionnaire is structured with two parts. The first part is involved with issues related to socio-demographic information of the respondents such as age, gender, family size, education level, career, marital status, family size and personal income. The second part of the questionnaire is related to consumers' purchase behavior in terms of essential factors in purchasing medicine.

Sources of data

For completing this study in a more organized way, the information and data have been collected from both the primary and secondary sources. Primary data is obtained through a self-administrated questionnaire. Secondary data sources include previously conducted research papers on different issues pharmaceuticals, different journals, and articles on pharmaceuticals industry of Vietnam, various books and newspapers articles.

Data collection and Data analysis

The study's target attendant was people who bought over-the-counter (OTC) medications. The survey was distributed online and in person, and 440 votes were entered into data processing using SPSS 25 software after invalid votes were removed. Descriptive statistics, test scale determination, exploratory component analysis, correlation analysis, and regression analysis are some of the approaches used in data analysis. The findings of the investigation are compared and reviewed to identify the contributing elements, including any new ones. The study aims are matched with appropriate methodologies that are very applicable in practice.

After analyzing the data, the research results were screened according to the above-mentioned criteria and compared and contrasted by the research team. The team recognizes the influencing factors found in previous studies and adds new factors, as well as definitions and new characteristics of these factors. From there, appropriate approaches are selected for research with high practical application. The research results that were screened according to the above criteria were compared and contrasted by the research team. The team recognizes the influencing factors found in previous studies and adds new factors, as well as new definitions, definitions, characteristics, or manifestations of the mentioned factors. . Thereby, select the approaches to suit the research objectives and have high practical applicability.

Regression Model:

The functional relationship between the variable can be expressed as

$$\text{Model (1): } PI = \beta_0 + \beta_1(\text{BE}) + \beta_2(\text{DA}) + \beta_3(\text{BRP}) + \beta_4(\text{SN}) + \beta_5(\text{H}) + \beta_6(\text{C}) + \beta_7(\text{AM})$$

$$\text{Model (2): } BP = \alpha_0 + \alpha_1(PI)$$

4. Results

Several statistical analyzes and tests were performed, including factor analysis and regression analysis. The main purpose of using factor analysis techniques is to simplify the data (Hair et al., 2002, p. 601) and to reduce a large number of variables (Pallant, 2007, p. 179). It is also considered an appropriate method to overcome the potential problems of multicollinearity among the variables that pertain to each category. A pre-analysis was conducted to examine the appropriateness of the data for factor analysis and then the results of the factor analysis were examined using multiple criteria, including eigenvalues, interpretability and internal consistency, as recommended by Haque et al. (2015). Items determined to have eigenvalues > 1 and factor loadings < 0.3 had little or no relationship with one another, hence, they were discarded (Hair et al., 2002). Besides, the reliability of the scale is evaluated by Cronbach's Alpha coefficient. The results of Cronbach's Alpha test is shown in the following table:

Variable code	Variable name	Number of observed variables		Cronbach's Alpha	Minimum total variable correlation coefficient
		Before	After		
BE	Brand Experience	4	4	0.803	0.593
DA	Drugs Availability	4	4	0.818	0.612
BRP	Brand Package	3	3	0.778	0.553
SN	Subjective Norms	5	5	0.84	0.633
H	Habits	4	4	0.833	0.630
C	Subjective Norms	3	3	0.776	0.576
AM	Admin management	3	3	0.796	0.584
PI	Purchasing Intention	5	5	0.855	0.650
BP	Behavior to Purchase	3	3	0.756	0.549

Source: Authors own survey

The findings of the reliability test reveal that the measured Cronbach's Alpha coefficients are all 0.7 or higher (a good level). So the scales are considered to be internally consistent and have good reliability, as they are closely related to each other and their underlying factors. Items of Purchasing Intention and Behavior to Purchase got 0.855 and 0.756 Cronbach's alpha values respectively. Its value indicates the internal consistency of data is acceptable and reflects a good reliability measure. This promotes the goodness of data and using it in further statistical analysis. In summary, based on the preliminary analysis, evaluating the data by factor analysis and reliability estimates indicated that all 34 items were appropriate and valid for further statistical analysis.

The authors test the validity of factors based on KMO, Eigenvalue and loading factors. The results of Barlett's KMO test show that the KMO coefficient is 0.889, which satisfies the allowed KMO value and the Sig.=0.000 < 0.05 coefficient shows that the observed variables are correlated with each other in the population and in the multivariate analysis. The EFA discovery factor was suitable for use in this study. Eigenvalue criterion is greater than 1, then 7 factors are drawn. Here instead of the initial 7 latent variables in the hypothetical model, the research team identified 7 main factors or 7 independent variables: Brand Experience (BE), Drug Availability (DA), Brand Package (BRP), Subjective Norms (SN), Habits (H), Culture (C) and Admin Management (AM).

Table 1. KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.889
Bartlett's Test of Sphericity	Approx. Chi-Square	6301.798
	Df	561
	Sig.	0.000

Source: Questionnaire Survey

With a coefficient of determination (R^2) value of PI of 70.9% indicating that 7 independent variables H, SN, DA, BE, BRP, C and AM can predict 70.9% of PI fluctuations, R^2 value of BP is 13.6% for PI. Knowing PI can predict 13.6% of BP variables based on PI. Based on the P value, these relationships in the model all exist and are statistically significant. Each of these hypotheses is correlated with the intention to buy OTC medicines at 95% confidence level. The result empirically proves that all 7 factors have a positive and a moderate impact on the intention to buy OTC medicines. The state management of drug trading in Vietnam tends to have a positive impact on consumers' buying behavior of OTC drugs, especially in Hanoi city. This is contrary to the hypothesis that the group has proposed that the state management factor has a negative impact on the Intent and Behavior to buy OTC drugs. This can be explained by the third observation variable in the scale of this factor, which is "I think that the management of drug sales is still loose, so I can comfortably buy prescription drugs without any problems. A doctor's prescription is required." It can be seen that the regulations are still loose, the enforcement is not serious, the sanctions are not

enough of a deterrent, so it is easier for businesses and pharmacies to violate, which makes consumers more inclined to buy OTC drugs. *Regression Analysis*

Model 1: $PI = 0.133*(BE) + 0.199*(DA) + 0.170*(BRP) + 0.147*(SN) + 0.266*(H) + 0.201*(C) + 0.109*(AM)$

Model 2: $BP = 0.269*PI$

The regression analysis model results in the table above show the level of influence of the independent variables on the dependent variable. Culture has significant impact ($B = 0.268$, $\beta = 0.266$) and $Sig. = 0.000$, $\alpha=95\%$. Habits can have a positive effect of 0.266 standard deviations on the Purchasing Intention. Then, these factors are Culture, Drugs Availability, Brand Package, Subjective Norms, respectively, with a standardized impact coefficient of 0.201; 0.199; 0.170; and 0.147. Finally, the group of factors that have the least influence on OTC drug behavior to purchase is Brand Experience and Admin Management. Purchase intention has a positive effect on OTC drug buying behavior $\beta = 0.269$ (regression model) and $\beta = 0.369$ (SEM model). Or more than 75% of respondents said that they have no intention of buying OTC drugs within the next 6 months. In addition, about 74% of consumers intend to discontinue purchasing OTC drugs. Accordingly, it is concluded that Vietnamese's OTC buying behavior (typically in Hanoi) affected mostly by their culture when they think that is it useful and necessary for them to buy OTC medicines. This is suitable for the increasing trend of self-medication and OTC medicine demand.

5. Discussion and Conclusion

The study's findings indicate that the seven factors examined have a positive influence on the buying intention of over-the-counter drugs. In which, Brand Experience, Drugs Availability, Brand Package, Subjective Norms, Habits, and Culture have a positive correlation with Buying Intention and Behavior to Purchase regardless of the effects having different outcomes. Additionally, Habits and Culture are the two factors that have the most positive and powerful influence on people's buying intention of over-the-counter drugs in Ha Hoi. Following that are the effects of Availability, Brand Package, Subjective Norms, and Brand Experience. The impact of Admin management, on the other hand, was initially suggested by the research team to have a negative effect on the buying intention of drugs (over-the-counter); however, data analysis revealed that this factor has the smallest positive impact.

5.1. Discussions

Through the analysis results, the study found that all 7 factors have a positive influence on the intention to buy OTC. Both the overview analysis and the case study concluded that Brand Experience, Drug Availability, Brand Package, Subjective Norms, Habits, and Culture are positively correlated with Purchase Intent and Buying Behavior OTC although the effects are not quite the same. Habit and Culture are the two factors that have the most positive and strong influence on the intention to buy over-the-counter drugs of people in Ha Noi. Next is the influence of Availability, Packaging, Subjective Standards, and Brand Experience. However, the impact of Admin management was initially suggested by the research team to have a negative effect on the intention to buy OTC, according to the results of data analysis, this factor has a positive smallest impact.

Brand Experience

In conclusion, the brand experience has a positive influence on the intention and behavior of purchasing OTC drugs. This result is similar to Liu and Wang's (2016) study, which suggests that brand experience has a minor effect on purchase intention, while factors such as price and product quality have a greater impact

Drug Availability

Drugs Availability has been confirmed in both regression and SEM models and has a positive influence on the intention to purchase OTC drugs with a reliability of $\alpha = 0.818$ and correlation coefficient $\beta = 0.199$ (regression model) and $\beta = 0.24$ (SEM model). This conclusion is consistent with Habash and Al-Dmour's (2020) study, which investigated the combination of internal and external factors leading to the greatest impact on OTC drug purchases compared to individual factor groups.

Brand Package

The results show that Brand Package has a positive influence on the intention to impact OTC drug purchases with $\beta = 0.170$ (regression model) and $\beta = 0.134$ (SEM model). Specifically, Srivastava and Wagh (2017) developed a model to analyze the relationship between packaging factors and consumer shopping behavior in India, and the results indicated that packaging has a significant impact on consumer shopping behavior, particularly in the context of fierce competition in the market.

Subjective Norms

Subjective norm reflects the influence of the surrounding environment on users' intentions and behavior. These results contribute to demonstrating the availability of the Theory of Reasoned Action (TRA) (Ajzen, 1991). The results are also similar to the study by George N. Lodorfos (2006), which showed that individuals who perceive positive attitudes from friends, family, and expert analysts are more likely to purchase non-prescription drugs

Habits

Habit has been verified in the regression model and has a positive influence on OTC purchasing behavior with a confidence level at $\alpha = 0.833$ and correlation coefficient $\beta = 0.266$. This conclusion is consistent with George N. Lodorfos' research (2006) on the role of habit in OTC purchasing behavior. Moreover, according to this author group, Habit is a key factor determining OTC drug purchasing behavior.

Culture

This factor has been confirmed in both regression and SEM models to have a significant positive influence on the intention to purchase OTC drugs with $\alpha = 0.776$ and correlation coefficients of $\beta = 0.201$ (regression model) and $\beta = 0.214$ (SEM model). Sudaryanto and colleagues' (2021) study also showed that culture has a significant influence on purchasing decisions. In other words, if consumers in Vietnam, particularly in Hanoi, maintain a culture of buying OTC drugs, this will further enhance their OTC drug purchasing behavior.

Admin management

The Admin management of drug sales in Vietnam tends to have a positive impact on OTC drug purchasing behavior of consumers, specifically in Hanoi. This contradicts the hypothesis that the Admin management factor has a negative effect on the intention and behavior of buying OTC drugs. Regulations are still loosely defined, enforcement is not strict enough, and sanctions are not sufficiently deterrent, allowing businesses and pharmacies to more easily violate the rules, leading to an increasing tendency for consumers to buy OTC drugs.

Based on the research results, the research team has proposed specific solutions for 4 main target groups, including: For the state, to build a clear and appropriate legal system and implement new policies if necessary. For the OTC market, to provide accurate information about over-the-counter drug products to meet consumer expectations and ensure the safety of OTC businesses as well as consumers. For OTC business units, to strictly follow the regulations of the Ministry of Health and the State on OTC. For consumers, to find out carefully about information of over-the-counter drugs before buying and pay attention to health during OTC using to have timely interventions whenever having uncommon symptoms

This study was done with the sample size of 440; it can be done on the large sample size which can give furthermore deep insights. The proposed study was carried out in Ha Noi, and it can be carried out in a few more cities nationwide to understand more on factors considered by people while selecting OTC products. Religion is not considered in the proposed paper; it can be considered as one of the demographic variables based on which preferences and factors considered while purchasing OTC products can be studied.

5.2. Conclusion

The above conducted empirical study gave insight into factors that affect behavior to purchase OTC of consumers. Admin management affects the OTC's buying behavior the least, habit has the most influence over medicine buying behavior of consumers. Based on this result, this research can help in adjusting legal system and making consumers buy OTC in effective way.

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EFFECT OF UNIVERSITY ADMISSION METHODS ON STUDENT LEARNING OUTCOME IN HANOI CITY

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Abstract

This study was carried out to analyze and evaluate the influence of the enrollment method on students' learning results in Hanoi city. On the research overview, theoretical basis and primary data sources, this study has applied the method of multivariate linear regression function analysis to estimate the level and direction of impact of each enrollment method on learning outcomes. Research results show that, for each different method of enrollment, there is a different impact on learning outcomes. In particular, students using the ability assessment enrollment method have higher GPAs than students using the high school graduation test enrollment method; students using the combined enrollment method have higher GPAs than students using the high school graduation test enrollment method; students using the transcript enrollment method have lower GPAs than students using the high school graduation test enrollment method. Research also shows that, in addition to the method of admission, there are 6 other factors that affect students' learning outcomes: learning methods, study consistency, learning motivation, school facilities, faculty capacity, family factors.

Keywords: *learning outcomes, enrollment methods, students*

1. Introduction

In the national education system, higher education is one of the higher education platforms with the most important role in economic development and socio-political stability. In order to improve the quality of higher education, it is necessary to synchronously implement solutions from enrollment, training process, assessment methods... In which, admission is the most important aspect. Quality input will facilitate the training process. To get a good entry, the prerequisite is to have a suitable admission method. In recent times, the

renovation of the enrollment method is one of the directions that higher education institutions in Vietnam have chosen. Especially after the impact of the Covid - 19 pandemic, universities have introduced many different enrollment methods. The use of many different admissions methods makes it possible for the school to attract many candidates, so there are more favorable conditions to choose the most elite candidates.

However, the use of many different admissions methods also leads to not the same criteria for selection of candidates and may lead to the quality of candidates selected in different modes, which will affect the learning outcomes of these candidates after admission and affect the outputs in the training activities of higher education institutions. Meanwhile, there is currently not much research on the influence of enrollment methods on students' learning outcomes, thereby helping to consider the reasonableness of enrollment methods with training industries. Because of the importance of admission methods in improving learning outcomes, the study of the influence of each mode of admission on student learning outcomes is an urgent requirement in the current period.

The study was carried out to determine the impact of each method of enrollment on students' learning outcomes in Hanoi city, thereby making some recommendations on the selection of an appropriate method of enrollment for higher education institutions. Specifically, the research paper solves two main problems: *First*, it helps to identify factors affecting students' learning outcomes in Hanoi. The authors have added more differences in students' learning outcomes using different admissions methods when applying to universities. In addition, the topic uses a competency framework to measure the skills of students after graduation from high school, before entering the university door. *Second*, the research project has built a model and quantified the influence of factors affecting students' learning outcomes, and clarified the difference in GPA for students applying different methods when applying to the school. This can help universities have a basis in building the number of quotas when enrolling.

2. Literature review and Theoretical framework

2.1. Literature review

Research by Nguyen Thi Anh Duong (2013) has shown that the method of enrollment is understood as a way for educational and training institutions to recruit students in accordance with their educational and training goals. When it comes to the method of admission, it refers to a lot of different aspects related to admissions, which are the standards applied in admissions, with each different educational institution, there is a difference between the different admissions standards.

David Wilkinson and colleagues (2008) conducted a study of enrollment methods in the medical industry and predicted learning outcomes at the University of Queensland, Australia. The results showed that the average grade point average (GPA) of previous levels was most closely related to students' academic performance, followed by interview scores and scores on specific admissions tests. With the results obtained from the above study, David Wilkinson et al. (2011) separately studied the predictions of the entrance exam for

academic results at the university. The results suggest that entrance tests have a weak correlation with grade point average (GPA), furthermore this weak correlation does not exist after the first year of college. At the medical school of Chang Gung University in Taiwan, Ji-Tseng Fang et al. (2011) studied through two methods: the proposal of the school and the university entrance exam. Overall, the students' academic performance through the school's proposal is slightly better than the entrance exam method.

In addition to the mode of admission that affects learning outcomes, there are other influencing factors such as learning methods, learning motivation, school impression, consistency in learning, school resources, learning competition according to the research of Le Dinh Hai (2016). In the same view, Dinh Thi Hoa et al. (2018) conducted a study with factors affecting learning outcomes but another new factor is the influence of friends and suggested that the above factors affect learning outcomes for students in economics. Phan Thi Hong et al. (2020) pointed out that teaching methods, learning methods and facilities are factors affecting learning outcomes. Research by Ngo My Tran et al. (2021) concluded that two factors affecting learning outcomes are critical thinking and problem-solving skills for students in economics.

There are many studies on students' learning outcomes that have shown factors that affect students' learning outcomes such as: study consistency, learning methods, academic competition, facilities, family factors, extracurricular activities,... In this study, the authors inherited factors that affect learning outcomes and resolved gaps from the following studies: (i) Most of the studies were conducted in countries such as the US, Malaysia, Indonesia,... there were differences in customs, culture, living conditions, attitudes and activities compared to Vietnamese students, (ii) In Vietnam, there are also some studies that are interested in students' learning outcomes but only done within one university and not yet spread across different disciplines, (iii) The studies all give different definitions and ways to evaluate learning outcomes, the research of the group adds a new measurement for learning outcomes built on a competency framework scale, (iv) In Vietnam, there are very few lessons research on the impact of the admission method on learning outcomes. New research papers were conducted on the scope of medical schools. Moreover, the research papers focus mainly on high school graduation exam scores while in recent years, many universities are diversifying forms of enrollment. Therefore, in this study, the authors uses quantitative research methods to understand and measure factors affecting learning outcomes as well as the impact of each enrollment method on specific sectors. From there, offer suggestions and solutions to universities to make appropriate policies in admissions to ensure the quality of outputs.

2.2. Theoretical framework

Based on the models that have done research on the factors that affect previous learning outcomes, the authors inherits the factors that affect learning outcomes and adds a new factor that is the method of admission. In this study, the authors proposed a model of 9 factors affecting learning outcomes, including: (1) Learning motivation, (2) Learning methods, (3) Academic competition, (4) Academic consistency, (5) School facilities, (6) Faculty capacity, (7) Extracurricular activities, (8) Family factors and (9) Admission methods.

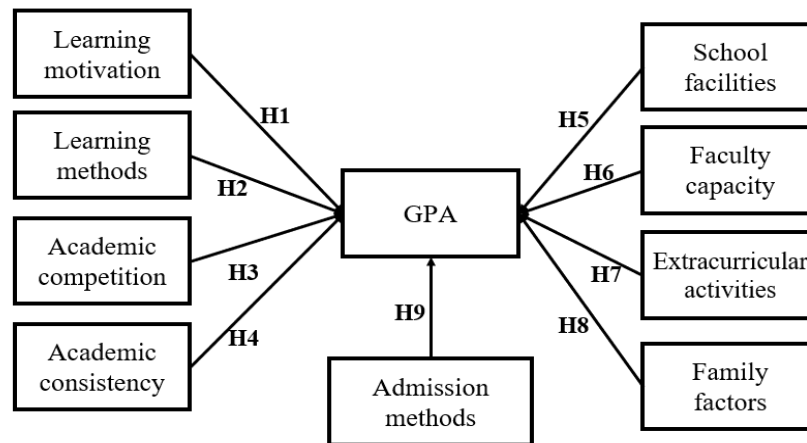


Figure 1. Research model

Hypothesis

H1: Learning motivation has a positive impact on students' learning outcomes

H2: Learning methods have a positive impact on students' learning outcomes

H3: Competitive learning has a positive impact on students' learning outcomes

H4: Consistency in learning has a positive impact on students' learning outcomes

H5: The school's facilities have a positive impact on students' learning outcomes

H6: Lecturer capacity positively affects students' learning outcomes

H7: Extracurricular activities have a positive impact on students' learning outcomes

H8: Family factors positively affect students' learning outcomes

H9: There is a correlation between the enrollment method and students' learning outcomes

H9a: The method of reviewing high school transcripts has the opposite impact on students' learning results using the method of reviewing high school graduation exam scores

H9b: The assessment method has a positive impact on students' learning results using the method of reviewing high school graduation exam scores

H9c: The combination of high school graduation exam scores + international certificates has a positive impact on students' learning results using the method of reviewing high school graduation exam scores.

3. Methods

Research data

The study used primary data collected by the survey method of online questionnaire distribution by Google Forms through Facebook and Zalo platforms (student groups in 4 divisions) in Hanoi city. The surveyed subjects are students in four majors: Division III, Division IV, Division V and Division VII. The sampling method used is targeted sampling, the obtained sample size is valid with the post requirement of 540 for studies using exploratory factor analysis (EFA).

Data collection and processing

The study uses quantitative methods with the aim of checking the suitability of the factors. Quantitative analysis is performed in the following order: (i) Descriptive statistics of the observed variables of the scale, (ii) Evaluation of the reliability of the scale by Cronbach's Alpha coefficient, (iii) Testing the value of the scale by EFA exploratory factor analysis method, (iv) Correlation analysis (Pearson correlation coefficient), (v) Multivariate regression (OLS least squares regression method) and (vi) Testing the difference using T-test and ANOVA.

4. Results

4.1. Current learning outcomes of students

The authors classified weak, average, good, very good, excellent based on the GPA classification on a 4-point scale of the Ministry of Education and Training. Among 540 students, 0.7% achieved weak academic results; 2.04% achieved average academic results; 47.78% achieved good academic results; 37.96% achieved good academic results and 11.48% students achieved excellent academic results. Details of the representation in the circular graph are shown below.

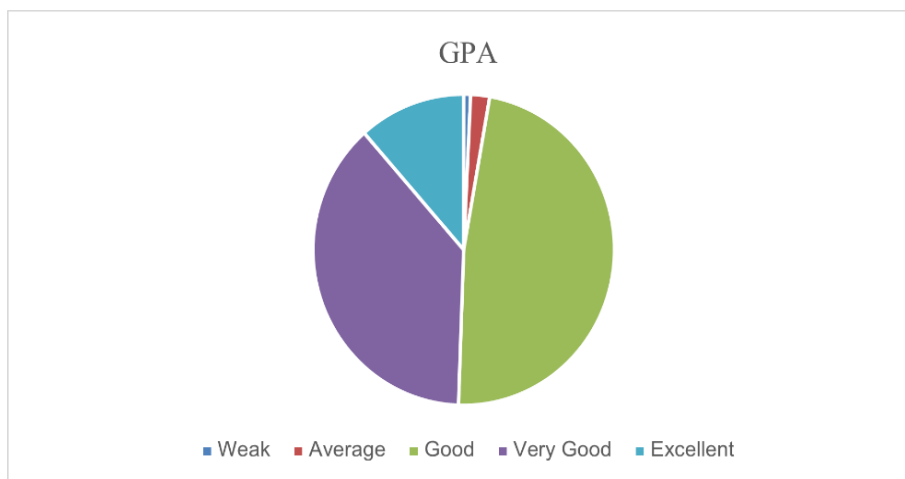


Figure 2. Student learning results

4.2. Influence of factors on learning outcomes

The initial proposed research model includes 9 factors affecting students' learning outcomes: learning motivation, learning methods, academic competition, academic consistency, school facilities, faculty capacity, extracurricular activities, family factors and mode of enrollment. In particular, there are 8 factors in the model measured by 32 observed variables and 1 factor is the enrollment method using dummy variables.

Performing exploratory factor analysis (EFA) for the observed variables, the results after rotating the factors affecting students' learning results are from 32 observed variables, while 30 variables are retained in the group analysis into 8 factors and the factor load factor of each observed variable is greater than 0.5; Thus, there are 2 inappropriate observed variables due to the difference in load factor < 0.3 , namely: PPHT7, PPHT8.

Table 1. Rotated Component Matrix

NO.	Variable	Factor							
		1	2	3	4	5	6	7	8
1	PPHT3	0.795							
2	PPHT2	0.715							
3	PPHT1	0.708							
4	PPHT4	0.7							
5	PPHT5	0.691							
6	PPHT6	0.65							
7	NLGV4		0.762						
8	NLGV3		0.749						
9	NLGV2		0.724						
10	NLGV1		0.712						
11	CSVCTH1			0.828					
12	CSVCTH3			0.809					
13	CSVCTH4			0.804					
14	CSVCTH2			0.732					
15	DCHT3				0.775				
16	DCHT4				0.766				
17	DCHT2				0.726				
18	DCHT1				0.648				
19	CCHT2					0.776			
20	CTHT1					0.766			
21	CCHT3					0.744			
22	KDHT2						0.774		
23	KDHT3						0.71		
24	KDHT1						0.687		
25	HDNK2							0.834	
26	HDNK3							0.678	
27	HDNK1							0.633	
28	YTGD2								0.825
29	YTGD3								0.78
30	YTGD1								0.658

Results of regression analysis

Model	Unstandardized regression coefficient		Normalized regression coefficient	t	Sig.	Multicollinearity statistics		
	B	Standard error	Beta			Acceptance	VIF Variance Magnification Factor	
1	(Constant)	1.105	0.077		14.269	0		
	F_DCHT	0.063	0.016	0.13	3.941	0	0.624	1.604
	F_PPHT	0.167	0.017	0.339	10.055	0	0.597	1.676
	F_KDHT	0.116	0.014	0.258	8.555	0	0.745	1.342
	F_CSVC	0.046	0.014	0.105	3.394	0.001	0.702	1.425
	F_NLGV	0.056	0.016	0.121	3.627	0	0.612	1.635
	F_YTGD	0.084	0.013	0.175	6.377	0	0.894	1,119
	Hocba	-0.073	0,026	-0.077	-2.818	0.005	0.895	1.118
	DGNL	0.194	0.032	0.167	6.071	0	0.892	1.121
	Kethop	0.18	0.026	0.193	6.971	0	0.88	1.137

Regression model

$$\text{GPA} = 1.105 + 0.063 * \text{DCHT} + 0.167 * \text{PPHT} + 0.116 * \text{KDHT} + 0.046 * \text{CSVC} + 0.056 * \text{NLGV} + 0.084 * \text{YTGD} - 0.073 * \text{HOCBA} + 0.194 * \text{DGNL} + 0.18 * \text{KETHOP}$$

When performing OLS linear regression analysis, the factors: learning motivation, learning methods, learning consistency, faculty capacity, school facilities, family factors and 3 false variables in the category of admission methods are: Academic transcripts, Assessment of competencies that affect learning outcomes. The above factors affect the learning outcomes in the same direction with high to low impact levels being the learning method that has the strongest impact on learning outcomes ($\beta = 0.167$). This is followed by academic consistency ($\beta = 0.116$) and family factors ($\beta = 0.084$). The motivational factors of learning, faculty capacity and school facilities have a negligible impact on learning outcomes.

4.3. Effect of enrollment method on learning outcomes

For the admission method results, students using the competency assessment method had higher average scores than students using the high school graduation exam results ($\beta = 0.194$). This can be understood that the knowledge in the university is often general, approaching from the width and gradually down to the depth and nature of the competency test is a general view. For those of you who enroll in the high school entrance exam, the time in high school you only focus on the right subjects in your admissions field. Therefore, students who are considered by the enrollment method will have higher academic results than students who are considered by the high school graduation exam score.

For students who use school admission transcripts, the average GPA is lower than that of the high school graduation exam group ($\beta = -0.073$) because most students' transcripts do not reflect the essence of their academic ability. This is due to the inadequacies of our country's education system, causing parents, students, teachers and schools to have a "circumvention" policy. The difference depends on the school the student is studying, the way the teacher's score is calculated.

For students who use the combined admission method of international certificate and high school graduation exam score ($\beta = 0.181$), the average GPA is higher than the high school graduation exam group because these students have access to international certificates, the thinking will be open and creative as well as new perspectives on problems. Therefore, the combination of high school graduation exam scores with international certificates helps you have higher academic results than the group that only considers high school graduation exam scores.

5. Discussion and Conclusion

Currently, the trend of innovating the method of enrollment at universities in Vietnam is growing. Especially after the impact of the Covid - 19 pandemic, in order to adapt to the context at that time, many schools changed the admission scheme as well as the criteria for the entrance methods. However, the quality of student input due to the use of different methods can significantly affect the quality of students later in the school. Therefore, it can be seen that studying the impact of the admission method on learning outcomes is essential to help universities have a basis for admission, thereby improving the quality of the school's training. Through the research, the authors hope the topic will have both theoretical and practical implications for the school and students.

- On the basis of the research results, the authors made the following recommendations:
- Students' learning outcomes play an important role in the learning process of students. Therefore, the school needs to devise appropriate strategies to stimulate students to create effective and consistent learning methods in learning.
- Universities should increase the percentage of admission by the method of admission, which is the assessment of capacity and the combination of international certificates with high school graduation exam scores to bring higher academic results than high school graduation exam scores; reduce the % of admission by the method of transcripts.
- For the Division III - Business and management, law should increase the percentage of admission by combining international certificates with high school graduation exam scores; reduce the percentage of admission by high school graduation exam scores and proceed to no admission by transcripts.
- For the remaining 3 majors: Division IV , Division V, Division VII, the increase in % of admission by the method of capacity assessment, decrease in % of admission by high school graduation exam scores and proceed to not admission by the transcript method.

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RELATIONSHIP BETWEEN INFLUENTIAL FACTORS AND IMPULSIVE PURCHASING BEHAVIOUR IN CIRCLE K CONVENIENCE STORES IN HANOI, VIETNAM

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Abstract

Impulse buying behaviour has been observed as one of the important studies conducted by marketers and researchers, as impulse buying has become a prevalent phenomenon in every retail format. The study was conducted to assess the relationship between influential factors and impulsive purchasing behaviour in Circle K convenience stores in Hanoi, Vietnam. After reviewing previous studies, the authors indicated 05 factors that affected impulsive purchasing behaviour including impulsiveness, instant gratification, visual appeal, promotions and money availability. Moreover, the research team had also distributed the questionnaire and received 310 responses. The findings showed that 04 factors (impulsiveness, instant gratification, visual appeal and money availability positively affected consumers' impulsive behaviour while impulsiveness had the strongest influence on the impulsive purchasing behaviour of Circle K's consumers in Hanoi. After scrutinising the findings, the research group proposed suggestions to boost sales and enhance profits for Circle K managers and product providers in Hanoi, Vietnam.

Keywords: *Circle K convenience stores, factors, impulsive purchasing behaviour, influence*

1. Introduction

Consumer behaviour was considered as the most complex issue of marketing theory and practice due to its striking heterogeneity and many factors exerting a combined impact on it, in diverse ways, depending on the situation. Technologic developments and changes in lifestyles revealed impulsive purchasing habits which were an important phenomenon for consumer behaviour after 1950s (Sheth, 1985).

“Impulsive purchasing” or “impulsive buying” was described as any purchase that a shopper makes but had not planned (Baumeister, 2002). Adelaar et al. (2003) shared the same view about impulsive buying which was considered an unplanned purchase made by a spontaneous decision and a subjective bias in favor of immediate possession.

In recent years, convenience stores have been booming in popularity due to their approachability, stable price, and quality assurance. There were dozens of convenience store brands in Vietnam such as Circle K or GS25, Family Mart, and 7-Eleven. In this research, Circle K was chosen to be the brand to elucidate the phenomenon of impulsive purchasing of consumers in Hanoi.

Being commissioned in 1915 in Texas, United States, Circle K was then widespread all over the world with more than 16,000 associates, and in Vietnam, there were over 400 stores. Its vision was to be the most preferred convenience stores in Vietnam to complete its mission which was to create a shopping environment with excitement, enjoyment, and safety with a wide selection of quality products, services, and food service items with fast and friendly service for consumers.

There have been numerous international and domestic studies conducted to investigate factors that affected the impulsive buying behaviour of customers; however, little research was concerned with the impulsive purchasing behaviour in Circle K Hanoi. To fill the research gaps, it is vital to conduct research on factors affecting impulsive purchasing behaviour of customers in Circle K convenience stores in Hanoi. The study aims to clarify the effect of these factors on impulsive purchasing behaviour of customers of Circle K convenience stores. Thus, the group of authors offer recommendations for Circle K managers and product suppliers to stimulate sales and enhance profit.

There have been a lot of researchers studying the factors influencing impulsive purchasing behaviour in international studies and domestic studies. Verhagen & van Dolen (2011) researched majorly about the impact of online store beliefs on impulsive purchasing that were Merchandise effectiveness, Ease of use, Enjoyment, Website communication style, Positive effect, and Negative effect. Asrinta (2018) analyzed the impact of sales promotion and store atmosphere on consumers’ shopping emotions. Besides, sales promotion, store atmosphere, and shopping emotions were considered as factors influencing impulsive buying. Investigating the online market in Ho Chi Minh City, Pham Quoc Trung & Nguyen Ngoc Hai Ha (2017) recognized six factors that encouraged impulsive purchasing behaviour: Visual appeal, Website ease of use, Trust, Impulsiveness, Instant gratification, and Normative evaluation.

Previous studies presented many factors affecting consumers' impulsive purchasing behaviour. However, after scrutinizing those studies, the authors discovered some research gaps. Firstly, in terms of the factors, many studies focused on external factors while others only centralized internal ones. Secondly, it was found that most of the prior research seemed to pay attention to impulsive buying behaviour in online marketplaces. For the above-mentioned reasons, the authors decided to conduct research on “Factors affecting consumers' impulsive purchasing behaviour in Circle K convenience stores in Hanoi”.

According to Kotler (2001), consumer purchasing behaviour was defined as the study of how individuals selected, buy, or used products, services, and how different experiences or ideas meet consumer needs and wants. Solomon (2006) also shared the view that consumer behaviour referred to the process involved in selecting, and purchasing products, ideas or experiences by individuals, groups, and organizations to meet their needs and desires.

Overall, impulsive purchasing behaviour was an increasingly significant trend (Dittmar, 2005). It was reported as a chronic, repetitive, and uncontrollable purchasing impulsive, primarily triggered by negative events or feelings with dire psychological, social, and financial consequences Joireman et al. (2010). Additionally, Pandya (2021) added that consumers' impulsive purchasing was the potential to grow further with modern technologies such as internet and television shopping channels and marketing innovations.

Based on previous studies, the study discussed the five prominent factors influencing impulsive purchasing behaviour:

Impulsiveness: Impulsiveness in purchasing was an automatic response to novel stimuli that occurred at a preconscious level due to biological tendencies (Gąsiorowska, 2011).

Instant gratification: Instant gratification was the state of satisfaction of a consumer when they were going to perform impulsive purchasing behaviour (Youn and Faber, 2000).

Visual appeal: Visual merchandising, which included it, was the visual presentation to communicate a store/company's fashion value and quality image to prospective consumers (Kim, 2003).

Promotions: Promotions might include promotional gifts (such as free gifts, product maquette, free samples, etc) that attracted to buyers. (Youn and Faber, 2000).

Money availability: A higher income level was one of several elements that contribute to impulsive purchasing at an advanced stage (Vishnu & Raheem, 2013).

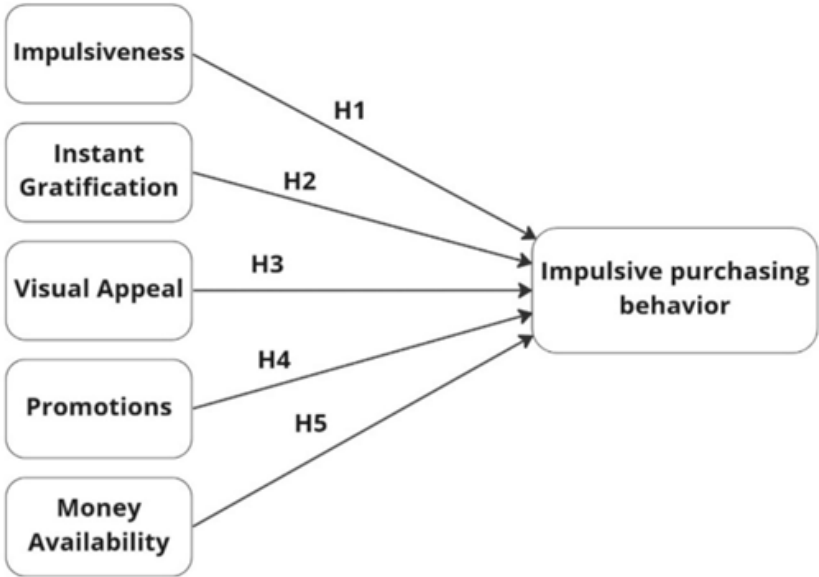


Figure 1. Research model

H1: Impulsiveness has a positive effect on consumers' impulsive purchasing behaviour in Circle K convenience stores in Hanoi.

H2: Instant gratification has a positive effect on consumers' impulsive purchasing behaviour in Circle K convenience stores in Hanoi.

H3: Visual appeal has a positive effect on consumers' impulsive purchasing behaviour in Circle K convenience stores in Hanoi.

H4: Promotions have a positive effect on consumers' impulsive purchasing behaviour in Circle K convenience stores in Hanoi.

H5: Money availability has a positive effect on consumers' impulsive purchasing behaviour in Circle K convenience stores in Hanoi.

2. Method

2.1. Qualitative method

The expert interview approach was the qualitative research technique used to consult experts about the scale of the study. Professional recommendations would provide the researchers with a stronger foundation to develop and optimize the scale for the official survey. The study opted to conduct the interview in compliance with the following procedures to maximize the efficiency of the qualitative expert survey method. Firstly, researchers developed primary research questions, scale, and hypotheses. Secondly, the study selected 05 experts in the field of economics to conduct the expert interviews. Thirdly, the researchers proceeded to interview the chosen experts as several questions were posed to the experts during the interview. Finally, opinions from expert were organized and interpreted. Thus, the researchers would subsequently provide conclusions and adjust the research scale before delivering official surveys.

2.2. Quantitative method

2.2.1. Data collection

The research team has used primary data which were collected from impulsive purchasing behaviour surveys. The collection process was carried out as follows: (i) delivering the questionnaire; (ii) collecting and processing data.

2.2.2. Data analysis

Descriptive Statistics: The research team used Statistical Packages for Social Sciences (SPSS) software to analyze the frequency distribution of factors impacting impulsive buying behaviour among consumers in Circle K convenience stores in Hanoi.

Exploratory Analysis: To test and purify the reliability of the scale surveys, the research team has utilized Cronbach's Alpha, or coefficient alpha. A statistical technique called Exploratory Factor Analysis (EFA) was used after Cronbach's Alpha to discover the fundamental pattern of a sizable collection of variables.

Regression: In this research, the team would implement regression analysis to identify the correlation between factors affecting the impulsive buying behaviour of consumers at Circle K convenience store.

Regression (Dummy variables): Specifically, in this study, the researchers used dummy variables to abolish the disadvantages of linear regression when using categorical variables as predictors for connections between elements.

2.3. Research procedure

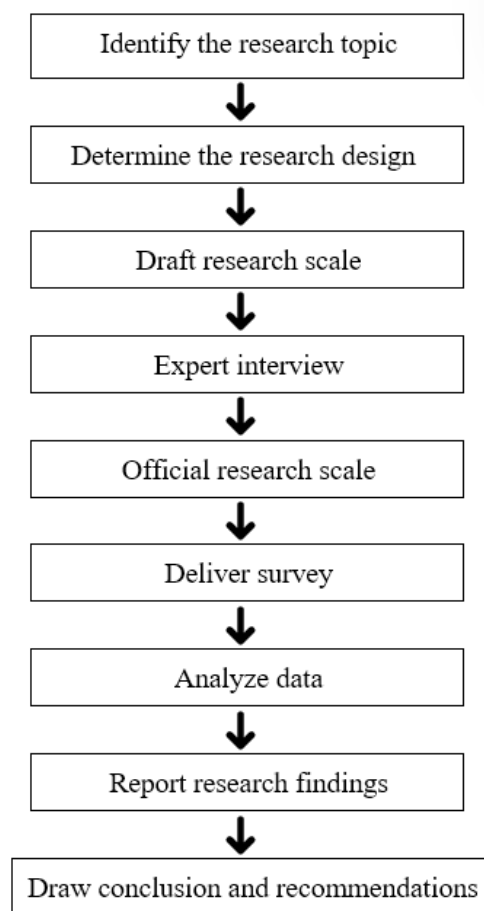


Figure 2. Research procedure

3. Results

The adjusted item-total correlation is more than 0.3, and the Cronbach's alpha for the five scales is greater than 0.6, according to the analysis results of evaluating scale reliability. It guarantees enough reliability to be used in the exploratory factor analysis.

Table 1. Reliability Test

Factors	Cronbach's Alpha
IP (Impulsiveness)	0.764
IG (Instant Gratification)	0.795
VA (Visual Appeal)	0.742
PM (Promotions)	0.824
MA (Money Availability)	0.767

The validity of the scales was then examined by the researchers to make sure they accurately reflected the element they were trying to evaluate. Analyzing indicators such as KMO, P-value of Bartlett's test, Total Variance Explained which showed that the scales of factors and impulsive purchasing behaviour scales are valid allowed the researchers to compute the effect of factors on impulsive purchasing behaviour.

Table 2. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.827
Approx. Chi-Square		2830.062
Barlett's Test of Sphericity	df	253
	Sig.	0.000

KMO is $0.827 > 0.5$; P-value of Bartlett's test is 0.000, very small (< 0.05); therefore, the EFA method is suitable

Table 3. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	& of Variance	Cummulative %	Total	& of Variance	Cummulative %	Total	& of Variance	Cummulative %
1	6.310	27.433	27.433	6.310	27.433	27.433	3.303	14.363	14.363
2	2.516	10.940	38.374	2.516	10.940	38.374	2.980	12.956	27.319
3	1.837	7.988	46.361	1.837	7.988	46.361	2.722	11.837	39.156
4	1.767	7.684	54.045	1.767	7.684	54.045	2.670	11.607	50.763
5	1.381	6.003	60.048	1.381	6.003	60.048	2.136	9.285	60.048

With the main component extraction method and Varimax rotation, there were 5 factors extracted from 23 independent variables of 5 scales. The extracted variance index was 60,048%, indicating that the 5 factors drawn explain most of the change of the dependent variable in the overall observation.

Table 4. Rotated Component Matrix

	Component				
	1	2	3	4	5
PM5	0.725				
PM6	0.719		0.301		
PM2	0.713		0.382		
PM1	0.711		0.322		
PM3	0.680				

	Component				
	1	2	3	4	5
PM4	0.614				
IG3		0.784			
IG8		0.778			
IG2		0.746			
IG1		0.626		0.384	
IG4		0.574			
MA3			0.816		
MA1			0.700		
MA2			0.680		
MA5			0.625		
IP2				0.792	
IP1				0.773	
IP3		0.372		0.632	
IP5				0.522	
IP4				0.468	
VA3					0.859
VA1					0.810
VA5					0.730

The rotation component matrix showed that 23 independent variables had been properly grouped into 5 separate groups corresponding to 5 factors in the research model: Impulsiveness, Instant Gratification, Visual Appeal, Promotions, and Money Availability.

Table 5. Descriptive Statistics of Variables in the Regression model

	N	Minimum	Maximum	Mean	Std. Deviation
B (Impulsive purchasing behaviour)	310	1	5	3.24	0.745
IP	310	1	5	3.27	0.820
IG	310	1	4	3.18	0.551
VA	310	1	5	3.59	0.731
PM	310	2	5	3.88	0.645
MA	310	1	5	3.84	0.718

Table 6. Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.376	0.248		-1.516	0.130
IP	0.476	0.041	0.524	11.644	0.000
IG	0.285	0.057	0.211	5.002	0.000
VA	0.155	0.041	0.152	3.785	0.000
PM	0.021	0.053	0.018	0.396	0.692
MA	0.134	0.045	0.129	2.953	0.003

All factors had positive regression coefficients ($\text{Beta} > 0$). However, the factor PM was not significant in the regression model ($\text{sig value} > 0.05$), from the five factors calculated above, there were statistically significant positive impacts of four factors IP, IG, VA, and MA on the dependent variable B. In terms of impact level, factors were reflected by the Standardized Coefficients. Specifically, this coefficient was highest in the first-factor variable (IP) and the smallest in the variable PM.

Table 7. Coefficients (Age factor)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.185	0.258		-0.718	0.473
IP	0.472	0.040	0.520	11.783	0.000
IG	0.281	0.057	0.207	4.929	0.000
VA	0.148	0.040	0.146	3.670	0.000
PM	0.015	0.052	0.013	0.294	0.769
MA	0.160	0.045	0.155	3.551	0.000
isAge1	0.187	0.156	0.056	1.195	0.233
isAge2	-0.277	0.101	-0.163	-2.745	0.006
isAge3	-0.203	0.133	-0.078	-1.523	0.129
isAge4	-0.152	0.199	-0.032	-0.764	0.446

To examine the impact of age on impulsive buying behaviour, the author created a dummy variable for the Age factor. This variable had 5 values, so the 4 dummy variables created were Below 18 (isAge1), From 18 to below 22 (isAge2), From 22 to below 25 (isAge3), and from 25 to below 30 (isAge4), respectively and group above 30 as the reference group.

The regression coefficient of the variable *isAge1* was positive, compared with the reference group, the group of people under 18 tended to make more impulsive purchases than those over 30. The remaining age groups (*isAge2*, *isAge3*, *isAge4*) had negative regression coefficients, indicating that people in these age groups tended to make fewer impulsive purchases than people over 30 years old.

4. Discussion and Conclusion

4.1. Discussion

The main objective of the study was to identify the elements affecting customers' impulsive purchasing behaviour at Hanoi-area Circle K Convenience chain stores. Except for the effects of promotions, the data showed that every hypothesis that had been put forth was supported. In terms of factors affecting purchasing behaviour, impulsiveness and instant gratification were positively related to impulsive purchasing in the context of Circle K convenience chain stores in Hanoi. Moreover, visual appeal was validated to have substantial effects on the impulsive purchasing behaviour of consumers in Circle K convenience stores in Hanoi. Consumers appeared to be influenced to make impulsive purchases due to the visuals of the stores, both inside and outside. In addition, the research findings also demonstrated the efficacious impact of promotions on stimulating the impulsive purchasing behaviour of consumers in Circle K convenience chain stores in Hanoi. Fifthly, the findings proved that money availability was a driver of impulsive purchasing in Circle K convenience chain stores in Hanoi. Lastly, this study empirically tested the influence of gender on impulsive purchasing behaviour of consumers and which groups of age could tend to buy most in Circle K Hanoi. Regarding the age aspect, it was discovered that consumers under the age of 18 tended to make the most impulsive purchases because they were still mostly dependent on their parents' incomes and rarely had a saving mindset.

4.2. Recommendations

4.2.1. Recommendations for Circle K managers

Customers frequently choose convenience stores that offer quick and easy services, thus Circle K Leaderboard may think about making some changes to the system to boost sales and improve customer satisfaction. First, the periodic personnel training programs for all store employees organized by the recruitment department seems to be the essential activity due to its urgency. Second, opening more outdoor space for consumers to sit back for chatting or working, which was now a popular habit of the youngsters in Hanoi, should be considered by Circle K. Third, to create a sense of urgency and excitement among customers, Circle K retailers can stock up on seasonal or limited edition goods that they would consider a once-in-a-lifetime opportunity to purchase. Fourth, Circle K managers can use data analytics to learn more about client preferences and behaviour. Finally, managers could think about putting a loyalty program in place to reward loyal customers.

4.2.2. Recommendations for product providers

Regarding the research findings, there are several recommendations for Circle K product providers. First, implementing more promotional initiatives that have successfully

influenced consumers' impulsive purchasing behaviour. Second, Circle K product providers should focus on the influence of visual appeal on consumers' impulsive purchasing behaviour. Third, during the research, Circle K convenience stores sold products with effective visual merchandising. Fourth, product suppliers can also collaborate with Circle K to create limited-edition or unique goods that are exclusively sold at Circle K locations. Fifth, it is critical to guarantee that the given goods are of a high caliber and offered at reasonable prices. Last but not least, Circle K can work with product suppliers to create eco-friendly sustainable practices.

4.3. Conclusion

This study aims to gain insight into consumers' impulsive shopping behaviour in Circle K convenience stores and the relationship between those factors and impulsive purchasing behaviour. The results revealed that four of the five variables (impulsiveness, instant gratification, visual appeal, and money availability) affect consumers' propensity to make impulsive purchasing behaviour of Circle K's consumers in Hanoi. It also pointed out that promotional factors did not significantly influence impulsive buying behaviour. The gender factor was proved to have no effect on impulsive buying behaviour while different age groups had different impact on impulsive purchasing behaviour. Based on the study's findings, the team offered advices to Circle managers and product suppliers. The recommendations are suggested with a view to satisfy the buyers with their impulsive buying by making a certain extent and adjusting marketing strategies and activities.

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FACTORS AFFECTING WORKING MOTIVATION OF INSURANCE AGENT EMPLOYEES: A FACT STUDY AT BAO VIET LIFE CORPORATION

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Abstract

The study presented the background theories and research models of domestic and foreign authors from which to draw a research model for the topic. Accordingly, 6 factors were applied by the research team to build a research model, including the factor of nature of work; Salary and benefits; Train; Advancement; Immediate superiority; Business image. With the appropriate method and sample size to ensure the research objectives, the topic tested the reliability of the scales, and exploratory factor analysis to assess the influence of factors affecting motivation working for insurance agent employees of Baoviet Life Corporation. The results of multivariate regression and ANOVA test show that all 6 components above affect the working motivation of insurance agent employees of Baoviet Life Corporation. Through the analysis results, the research team has also identified the factors that have a positive impact on the working motivation of insurance agent employees of Baoviet Life Corporation.

Keywords: *Insurance agent; Life insurance, Staff; Work motivation*

1. Introduction

According to statistics from the Department of Insurance Management and Supervision, the revenue of new life insurance exploitation through agency channels accounts for over 80% [10]. However, there is a reality of the life insurance market in the world and in Vietnam, where life insurance agent staff lack the motivation to work, and the quit rate is high. Motivating and retaining insurance agents is a difficult problem, but in Vietnam, research on this content is still limited and has not been studied specifically at

Baoviet Life Corporation. The research contents mainly focus on assessing the working situation or the current state of human resources of the insurance company without going into the assessment of the factors affecting the employee's work motivation. Conduct research at Bao Viet life insurance enterprise to identify and specify factors, and specific levels of impact of each factor on the working motivation of life insurance agents and propose solutions, necessary measures and recommendations to increase the working motivation of agents under Baoviet Life Corporation.

2. Literature Review

2.1. Theoretical foundations

Motivation

According to Vroom (1964), motivation is the state formed when employees expect that they will receive the desired results and rewards if they make efforts to perform the job [21].

Motivation to work

Robbins (2001) cho rằng: “Động lực làm việc là sự sẵn lòng thể hiện mức độ cao của nỗ lực để hướng tới các mục tiêu của tổ chức trên cơ sở thỏa mãn những nhu cầu cá nhân [15]”. This means that when goals are clearly defined, employees can rely on them to determine the necessary tasks or specific behaviors to promote efficiency and performance; Conversely, if the goal is not focused and unclear, employees can quickly lose their motivation to work.

Insurance agent

According to the Law on Insurance Business, “An insurance agent is a person who is paid to work for a business that sells the company's products to buyers. [13]” Insurance agents are individuals or organizations that act as intermediaries. between the business and the insurance buyer, representing the business and acting in the interests of the business.

The role of work motivation

For employees: Work motivation plays an important role in determining employee behavior.

For organizations: In an enterprise, human resources are an important and indispensable part, so the motivation of employees plays a decisive role in determining the strength of the organization.

For society: Creating motivation to express the increasing satisfaction of people's needs, ensuring their happiness and comprehensive development, thereby promoting the society to go up, contributing to the development of the economy country economy.

Measures to promote work motivation

Create a sense of meaningful work;

Praise and praise your efforts;

Salary increases policy;

- Listen and respect the opinions of employees;
- Notification of feedback on work results;
- Believe in the ability of employees;
- Create a dynamic and creative working environment.

2.2. Research models

Based on Maslow's Theory of Needs (1943) [12], Herzberg, F. (1968) [9], Victor Vroom's Expectation Theory (1964) [21] and domestic and international studies: Kovach (1987) [11]; Lee, C.C., et al (2012) [6]. Dung, T.K (2015) [8] and Thi, C.H., & Hung, V.Q. (2010) [16] to come up with a proposed research model and adjust the factors accordingly. The research model is as follows:



Figure 1. Conceptual framework

Source: Processing of the research team's investigation results

2.3. Scale development

These variables were measured using a 5-point Likert scale (from 1 strongly disagree to 5 strongly agree).

Table 1. The scale

Symbol	Observed variables
NW	Nature of work
NW1	My work is interesting
NW2	I have the right to the responsibility
NW3	I am proactive in my work and recognized for my work
SAB	Salary and benefits
SAB1	The company has a policy of paying salary commensurate with
SAB2	individual work results
SAB3	The company has a commensurate reward policy
SAB4	The company has a reasonable salary increase policy

Symbol	Observed variables
SAB5	I feel satisfied with the company's commission policy
TRAIN	Train
TRAIN1	The company's training helped me understand the human nature of life insurance
TRAIN2	Company training makes me proud to be a life insurance agent
TRAIN3	The company's training made me realize that the life insurance agent career is challenging and requires a long-term commitment.
AD	Advancement
AD1	The company has a clear promotion policy
AD2	The company gives me promotion opportunities
AD3	The company's work processes are applied consistently and unbiased, in compliance with ethical standards
IMS	Immediate superior
IMS1	Respected and trusted by superiors
IMS2	Superiors treat fairly, without discrimination
IMS3	The superiors wholeheartedly guide in the work
BUI	Business image
BUI1	I am proud of the company brand
BUI2	I believe in the future development of the company
BUI3	I am satisfied with the company culture
BUI4	The company's regulations and procedures are convenient for me to do my job
BUI5	The company always complies with the laws and regulations of the State
MIAS	Work motivation of insurance agent staff
MIAS1	I enjoy working and am proud of the company's insurance agent job
MIAS2	I feel motivated at work
MIAS3	I usually work in the best mood

Source: The research team

3. Method

Primary data is collected by mainly survey methods, specifically:

The survey method using questionnaires is the main tool for the research team to collect primary data about the research contents of the topic.

Design of the questionnaire: The questionnaire was prepared by the research team based on the principle of questionnaire making and consists of 3 pages with 29 questions, in

which the first part is personal information that will be kept confidential during the process. The process of synthesis and processing, the following part is the evaluation and scoring questions, the last part is the open-ended question for agents participating in the survey, which is to make recommendations to the business. The questions have been edited to fit the research content.

From the revised and supplemented questionnaire, the research team conducted a field survey at the agents of Baoviet Life Corporation. The survey results were analyzed using SPSS 22 software for the research criteria. The steps are as follows:

Formal research: The topic uses quantitative research methods for this part.

Testing the reliability of the scales: Based on the Cronbach Alpha coefficient to detect incorrect indicators in the research process.

EFA exploratory factor analysis aims to: Extract, arrange indicators to measure concepts and latent variables.

Check the correlation between the factors to limit the phenomenon of multicollinearity between the component factors. Confirm the correlation between the observed variable and the dependent variable.

Multivariate regression analysis and ANOVA test, evaluate the role of each component in the model.

4. Results

The period from 2019 to 2021 is a challenging year for Vietnam in the context of the global outbreak of COVID-19. The economy closed, millions of businesses went bankrupt and closed temporarily, and workers lost their jobs and lost income in the long term. Those unfavorable factors together with the pressure within the economy have strongly affected the production and business activities of enterprises in general and Baoviet Life Corporation in particular. However, with the determination and best efforts of all staff, employees, and consultants, Baoviet Life Corporation still achieved remarkable results and successes in business activities.

Table 2. Preliminary data on revenue, number of insurance agents and insurance agency expenses in the period of 2019-2021

Unit: Million VND

Targets	2019	2020	2021
Total revenue	32,149,614	36,169,047	37,848,122
Revenue from insurance activities	25,451,556	28,046,303	30,561,996
Insurance agents present at the beginning of the year (person)	219,791	251,335	164,702
Insurance agents present at the end of the year (person)	251,335	164,702	187,782

Targets	2019	2020	2021
New recruitment insurance agent (person)	41,421	44,278	44,931
Insurance agent leaves, dismisses (person)	9,877	130,911	21,851
Ratio of agents firing leaving / number of new recruiting agents (%)	23.8	29.6	48.6
Agent commissions	1,819,043	1,925,698	1,887,725
Recruitment cost	3,171	4,809	2,723
Agent training expenses	45,064	48,311	40,376

Source: Compiled from the financial report 2019-2021 of Baoviet Life Corporation [3]

Survey data processing results

Cronbach's alpha reliability

Table 3. Scale reliability coefficient testing results

Scale	Initial observed variable	Cronbach's Alpha	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Remaining observed variable
NW	3	0.840	0.675	0.826	3
SAB	5	0.927	0.735	0.925	5
TRAIN	3	0.923	0.641	0.914	3
AD	3	0.880	0.742	0.853	3
IMS	3	0.624	0.466	0.616	3
BUI	5	0.901	0.734	0.883	5
MIAS	3	0.882	0.764	0.839	3

Source: Processing of the research team's investigation results

The minimum total variable correlation of the components of the scales ensures that the level >0.3 [20] is suitable for the research purpose and novelty in the research. Therefore, it can be concluded that: the scale used in the study is appropriate and reliable and can be used to conduct factor analysis and further research steps.

Exploratory factor analysis

The combined results of EFA exploratory factor analysis for each scale showed that the KMO coefficient (Kaiser-Meyer-Olkin) >0.5 for all scales [20]. This satisfies the first condition for EFA analysis. Next, we see that the value $\text{Sig} < 0.05$ is the standard guarantee for all scales of independent variable components, the total variance extracted is greater than 50% as prescribed and all converge to only 1. common factor, with all factor weights as large as 0.5.

Table 4. Synthesized results of exploratory factor analysis (EFA) for each scale

Scale	KMO coefficient	Sig	Total variance explained	Number of factors eliminated	Number of converging factors
NW	0.667	0.000	76.002	0	1
SAB	0.857	0.000	77.596	0	1
TRAIN	0.749	0.000	86.755	0	1
AD	0.731	0.000	80.724	0	1
IMS	0.583	0.000	57.208	0	1
BUI	0.852	0.000	71.857	0	1
MIAS	0.745	0.000	80.912	0	1

Source: Processing of the research team's investigation results

Table 5. Extracted from Table of Exploratory Factor Analysis EFA common to all scales of independent variables

	KMO = 0.813			Sig= 0.000					
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.920	26.911	26.911	5.920	26.911	26.911	3.960	18.000	18.000
2	3.473	15.788	42.699	3.473	15.788	42.699	3.675	16.706	34.706
3	2.791	12.684	55.383	2.791	12.684	55.383	2.611	11.868	46.575
4	1.935	8,796	64.179	1.935	8.796	64.179	2.388	10.855	57.430
5	1.475	6.707	70.886	1.475	6.707	70.886	2.262	10.281	67.711
6	1.168	5.311	76.197	1.168	5.311	76.197	1.867	8.486	76.197
7	0.849	3.857	80.054						
8	0.565	2.568	82.622						

Source: Processing of the research team's investigation results

From the table of exploratory factor analysis results for all components of the scale of independent variables, we see that the total variance extracted is 76.197% > 50%. KMO index of 0.813 ensures the requirements, in addition, sig also gives results of 0.000 < 0.05 following the requirements for our analysis. The results shown on the factor rotation matrix table show us that 22 observed variables converge on 6 factors including the group of factors on the nature of work, salary and benefits, training, promotion, direct superiors, etc. Next, the corporate image with all factor weights is 0.5. Because no new factors were formed, all 22 observed variables remained as they were.

Correlation and regression analysis

Correlation

Pearson correlation analysis is one of the steps the research team performed in the study using SPSS quantitative analysis. The purpose of running the Pearson correlation is to test the close linear relationship between the dependent variable which is the working motivation of insurance agent employees in terms of the nature of work, salary and benefits, training, promotion, and level of education. directly, the image of the business because the condition for regression is first to be correlated. In addition, it is necessary to identify the problem of multicollinearity when the independent variables are also strongly correlated with each other. The sign of doubt is based on the correlation sig value between the independent variables less than 0.05 and the Pearson correlation value greater than 0.3 [19].

Table 6. Correlation

		MIAS	NW	SAB	TRAIN	AD	IMS	BUI
MIAS	Pearson Correlation	1	.308**	.280**	.294**	.369**	.483**	.623**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	191	191	191	191	191	191	191
NW	Pearson Correlation	.308**	1	.454**	-.097	-.140	.012	.131
	Sig. (2-tailed)	.000		.000	.182	.053	.864	.072
	N	191	191	191	191	191	191	191
SAB	Pearson Correlation	.280**	.454**	1	-.015	-.087	.066	.141
	Sig. (2-tailed)	.000	.000		.837	.230	.362	.052
	N	191	191	191	191	191	191	191
TRAIN	Pearson Correlation	.294**	-.097	-.015	1	.173*	.306**	.253**
	Sig. (2-tailed)	.000	.182	.837		.016	.000	.000
	N	191	191	191	191	191	191	191
AD	Pearson Correlation	.369**	-.140	-.087	.173*	1	.371**	.266**
	Sig. (2-tailed)	.000	.053	.230	.016		.000	.000
	N	191	191	191	191	191	191	191
IMS	Pearson Correlation	.483**	.012	.066	.306**	.371**	1	.383**
	Sig. (2-tailed)	.000	.864	.362	.000	.000		.000
	N	191	191	191	191	191	191	191
BUI	Pearson Correlation	.623**	.131	.141	.253**	.266**	.383**	1
	Sig. (2-tailed)	.000	.072	.052	.000	.000	.000	
	N	191	191	191	191	191	191	191

Source: Processing of the research team's investigation results

Regression analysis

The multivariable regression equation showing the relationship between the work motivation of insurance agent employees for the components of the scale has the following form:

$$Y = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5 + a_6X_6$$

In there:

Y: The dependent variable represents the predictive value of the work motivation of insurance agent employees.

a₀, a₁, a₂, a₃, a₄, a₅, a₆: are regression coefficients

X₁, X₂, X₃, X₄, X₅, X₆: Are the independent variables in order: composition of work nature, salary and benefits, training, promotion, immediate superiors, corporate image.

The results of the linear regression analysis are as follows:

Table 7. Linear regression results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.756 ^a	0.572	0.558	0.60214

Source: Processing of the research team's investigation results

We see that adjusted R = 0.558 > 0.5 indicates 6 components that affect the working motivation of insurance agent employees of Baoviet Life Corporation. Looking at the results of the regression analysis, we see that the preconditions for the regression analysis are satisfied. Thus, we can consider the results of the regression analysis to be reliable. However, this fit is only true for the sample data. To test whether the model can be inferred for the real population, we must test the model's goodness of fit:

Hypothesize:

H₀: The factors of nature of work, salary and benefits, training, promotion, immediate superiors, corporate image, and work motivation have no relationship with each other.

H₁: The factors of the nature of work, salary and benefits, training, promotion, immediate superiors, corporate image, and working motivation are related to each other.

Choose significance level = 0.05 corresponding to 95% confidence level.

Table 8. ANOVA testing

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	89.167	6	14.861	40.988	.000 ^b
Residual	66.714	184	0.363		
Total	155.881	190			

Source: Processing of the research team's investigation results

The results of the ANOVA test show that the F-test value reaches the value of 40,988 at the significance level sig = 0.000 < α = 0.1. Thus, we reject hypothesis H₀, and accept hypothesis

H1, that is, the factors of work nature, salary and benefits, training, promotion, immediate superiors, corporate image, and work motivation having a relationship with each other. Therefore, the model fits the data set and can be generalized to the population. In addition, we can consider the problem of multicollinearity that occurs when the independent variables (factors) are strongly linearly correlated with each other. In other words, multicollinearity occurs when a linear correlation exists between ≥ 2 independent variables in the model.

Table 9. Results of multivariate regression model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	VIF
	B	Std. Error	Beta			B	
Constant	-1.342	.388		-3.462	.001	.764	1.310
NW	.277	.064	.237	4.299	.000	.782	1.279
IMS	.169	.077	.120	2.207	.029	.870	1.150
SAB	.101	.044	.117	2.272	.024	.813	1.230
TRAIN	.177	.046	.208	3.885	.000	.738	1.355
AD	.179	.050	.201	3.576	.000	.786	1.272
BUI	.442	.058	.413	7.593	.000	.764	1.310

Source: Processing of the research team's investigation results

5. Discussion and Conclusion

So, the regression equation for the standardized coefficients Beta is as follows:

$$\text{MIAS} = 0.413\text{BUI} + 0.237\text{NW} + 0.208\text{TRAIN} + 0.201\text{AD} + 0.120\text{IMS} + 0.117\text{SAB}$$

The results of the regression results in Table 7 allow us to test the regression coefficients in the model. Components with a statistical significance of less than 5% are kept, and components with a statistical significance greater than 5% are discarded. The larger the beta coefficient of any component, the more important it is, showing the degree of influence on the dependent variable from the table of regression analysis results above, we can see that the constant is not statistically significant, so the constant has no effect in the regression equation. The remaining 6 factors: The nature of work, Salary and benefits, Training, Promotion, Direct superiors, and Corporate image are all relevant and have a positive influence on work motivation. Specifically, the Business Image component has the strongest influence first with a Beta coefficient of 0.413 ($t=7.593$ and $\text{Sig} < 0.05$), followed by the Nature of Work component with a Beta coefficient of 0.237 ($t= 4.299$ and $\text{Sig} < 0.05$) had a second largest influence. Third is the Training component with a Beta coefficient of 0.208 ($t= 3.8885$ and $\text{Sig} < 0.05$). The Promotion component has the fourth largest influence on motivation with a Beta coefficient of 0.201 ($t= 3.576$ and $\text{Sig} < 0.05$). The fifth is the direct superior component with a Beta coefficient of 0.120 ($t= 2.207$ and $\text{Sig} < 0.05$). Finally, the salary and benefits component with a Beta coefficient of 0.117 ($t=2.272$ and $\text{Sig} < 0.05$) is also the component that has the lowest influence on the agent's motivation.

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THE FACTORS OF TALENT MANAGEMENT AND THEIR IMPACTS ON EMPLOYEE RETENTION AT VIETNAMESE COMMERCIAL BANKS

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Abstract

This study is to examine the impacts of the factors of talent management on employee retention in the banking sector of Ha Noi, Vietnam. Employee's retention is a major and essential issue for performance of any organisation. Therefore, a long-term talent strategy is needed to address potential issues in this area. The research has surveyed 319 bank officers working at 25 Vietnamese commercial banks in Ha Noi with the application of Convenience and Snowball sampling methods. The results reveal that five factors of talent management: the right fit position, remuneration, employee empowerment, training and development, and work-life balance have a positive influence on employee retention, in which the right fit position made strongest impact, and the work - life balance made the weakest impact.

Keywords: *Employee retention, talent management, Vietnamese commercial banks.*

1. Introduction

Vietnam is currently experiencing a significant period of international integration, and to achieve sustainable economic growth, it is crucial to develop high-quality human resources. The banking industry, with the high-quality workforce considered as the backbone of the national economy, plays a vital role in this regard. However, in the era of Industry 4.0, where information technology is at the forefront, the industry is facing many challenges related to its workforce. There is a shortage of personnel with the necessary skills for data analysis, digital technology proficiency, and professional competence. To adapt to the changing banking landscape, besides taking advantage of the opportunities presented and invest in human resource training and development, the better talent management is also taken into consideration in many financial institutions to make their talented employees stay and contribute longer. Together with digital transformation, human capital is also one of factors that help maintaining competitive advantages within these institutions.

Due to the market's lack of talents, rival companies are competing in talent recruitment and acquisition through a variety of various strategies, and organizations must have a "fairly costly" strategy to retain their talents. Today, when a talent is unhappy with his bank or current work, he can easily move to other financial institutions because he is always welcomed. The effects and patterns of turnover will be different amongst industries. Therefore, turnover should be minimized or kept under control since it has a detrimental effect on production and performance.

Employee retention has been not only a problem for companies in the modern age, but also a significant financial risk. Managing this issue, keeping talented employees stay with their company are of vital importance to all forms of organisations. It is particularly critical in the service sector like the commercial banks due to the direct connection between their staff and the clients.

A lot of factors in talent management have been studied in different areas, includes banking sector. However, this is limited in Vietnam context. Thuy Vo and Mai Nguyen (2021) showed that amongst job satisfaction, motivation, commitment and loyalty, the greatest impacts on intention to stay of staff are respectively job satisfaction, commitment, loyalty and working motivation.

Talent management has become a strategic imperative for organisations because of the differential value generated by skilled workers and their contribution to companies in the hypercompetitive and dynamic global economy. However, it is also the challenge for HR to manage talent globally. Talent management is supposed to be the key to retain employees for organisations. Furthermore, Tower Watson (2011) pointed out that 30% of companies have problems with the retention of high skilled workers. Hence, talent management plays a crucial role to keep organisations moving ever closer to their goals. McKinsey Global survey (2018) confirmed that talent management impacts positively on organisational performance.

Banking industry is supposed to pay great attention to achieve competitive advantages through talented employees (Anwar, Nisar, Khan & Sana, 2014). They are showing the different innovative tactics to improve the capabilities of employees. Besides, Srivastava and Nidhi (2013) figured out that the banking sectors are becoming increasingly competitive and customer oriented, identifying and applying talent management are the biggest challenges. As a result, it is critical to understand the interactions between the elements that determine talent development, as this provides management with a foundation for developing proactive and effective HR initiatives.

This research aims at contributing to the current literature on talent management and employee retention and exploring the relationship between factors of talent management and employee retention in the context of Vietnamese commercial banks.

2. Literature review

Talent management

Talent refers to a person's abilities, including their skills, knowledge, experience, intelligence, judgement, attitude, and character. These abilities can be enhanced through

learning and growing. According to Cheese et al. (2008), valuable resources such as talented employees help create a firm's sustained competitive advantage. Many authors have argued that the resources and capabilities that contribute to a firm's sustained competitive advantage are strongly affected by the capabilities of high-quality staff.

Talent management (TM) is commonly defined as a methodical approach to attracting, identifying, nurturing, retaining, and utilizing talented individuals (Scullion et al., 2010). The definition of the term talent management has evolved to encompass multiple meanings that reflect important developments in human resources within modern societies. Initially, there was a strong emphasis on recruiting top-level managers and the significance of securing the most skilled and capable individuals, as well as assessing characteristics that indicate potential managerial success. Nevertheless, as the field of human resources has progressed, more precise terms of talent management have emerged. Generally, the literature on TM offers a rational and instrumental interpretation of the TM process, whereby talents are recruited and developed using various TM practices to guide their behaviours in alignment with organizational requirements. This, in turn, results in individual happiness and motivation, as well as enhanced individual and organizational performance. The term "the war for talent" was coined by a group of McKinsey consultants in the late 1990s to emphasize the crucial role of employees in the success of top-performing companies, which helped to spur the mainstream acceptance of talent management. This emphasizes the importance of talent management for businesses to win their competitors.

Modern talent management literature mainly highlights organizational goals. The "hard" approach is rooted in McGregor's theory X, and represents a functional and practical view of people, where employees are viewed as objects (resources) that require effective control and management to achieve organizational goals (Greenwood, 2002; Legge, 2005). In general, talent management is intended to fulfil the quantitative and qualitative requirements for human resources and contribute to the overall performance of the firm, which encompasses factors such as profit, competitive advantage, and sustainability, which prioritizes high performance (in the exclusive approach) and organizational objectives.

In contrast, the "soft" approach to HRM is rooted in McGregor's theory Y, which acknowledges that employees are human beings with their own feelings and desires that guide their actions. The well-being and rights of employees are taken into consideration, along with the interests of the organization (Greenwood, 2002). Instead of using punishment and coercion to control employees, advocates of the "soft" approach believe that managers should trust in the employees' own sense of responsibility and support and encourage their growth, using methods that foster commitment and personal and professional development.

Talent management practices may include employee attraction and retention policies, talent audits, employee resource planning, role development, career management, learning and development, and performance management, among others. These practices may vary depending on the organization's needs and objectives.

Employee retention

The HR perspective views employees as the primary asset of an organization (Lins et al., 2017). Considering that employees not only participate in the direct processes of the organization but also influence the setting of organizational objectives and the process of their achievement, the sustainable management of talent becomes crucial. In pursuit of gaining a competitive edge, several companies have adopted sustainability management systems.

Retention of employees has a close relationship with the internal marketing theory uses the term "employee loyalty" to describe the loyalty of employees towards their organization (Foreman & Money, 1995). Employees are considered "internal customers", and the more loyal they are, the better they perform, the less likely they are to leave, and the more they are seen as an asset to the organization (Welch, 2011, Whelan and Fink, 2016). Retention decides both the attitude of behavioural intention and the retention behaviour of the stakeholders towards the organization (Blanco-Gonzalez et al., 2020). These are both crucial aspects of a long-term relationship between the employee and the organization. Retaining skilled employees is crucial for maintaining competitiveness and creating a desirable workplace. However, retaining employees has become a challenge for many companies in the competitive global labour market (Lalitha, 2012). The movement of employees in and out of enterprises can have direct financial impacts such as replacement and training costs that increase operating expenses, negatively impacting the growth and profitability of firms. Therefore, employee retention is essential for the long-term success of an organization.

From the perspective of Isfahani & Boustani (2014), employee retention is defined as the ability to maintain a stable human resource in organizations as a common consideration. They also showed that employee retention can be measured by the rate of employee retaining per year or organizational trust. Meanwhile, Chikumbi (2011) supposed that there are two ways to measure employee retention including: employee engagement and organizational culture. The personal premises of loyalty, belief, commitment, identification, attachment with the company influence directly on employee retention. Hence, these are important indicators to reflect employee retention in an organization.

Talent management versus retention of employees

Employee turnover generally leads in three sorts of losses for organizations: (1) monetary loss from recruiting and replacing the employee, (2) loss of the previous employee's talent and experience, and (3) loss of the customers' relationship network as well as their soft information.

The literature has established three theories on the three types of losses caused by employee turnover. First, according to the cost-based hypothesis (Dalton & Todor, 1979), staff turnover leads a business to pay additional expenditures for recruiting and training new personnel. Second, human capital theory (Becker, 2009) contends that each employee possesses distinct attributes or traits, abilities, knowledge, and experience that have a direct influence on their organization's success. Third, according to social capital theory (Leana & Van Buren,

1999), each employee has a system or plan for developing long-term relationships with consumers. When these employees leave the organization, their clients may lose interest in the organization, which is common in financial institutions such as banks.

Talent management can affect many aspects in organisation, especially the retention of employees. However, few companies can be aware and concentrated on talent management to enhance employee's performance. Talent management is considered as an effective retention strategy for talent performers by practitioners (Hughes & Rog, 2008; Lockwood, 2006). Narayanan, Rajithakumar and Menon (2018) also pointed out the same idea that talent management has a positive relationship with employee retention and intention to stay could be seen as employee attitude toward the company which practices talent management.

Talent retention is a critical component of the talent life cycle. According to Schiemann, the talent life cycle is the path involving the talent's interaction with the organization regarding HR and, above all, human capital, and its scope has been defined in terms of the serial steps of "attracting, acquiring, onboarding, training, managing performance, developing and succession, retaining and recovering." While an organization is trying to optimize the benefits of talent investments to gain financial and/or non-financial benefits such as better quality, more productivity, and deeper employee retention, and this may assist the organization control the talent life cycle in addition to its competitive advantage.

Research model and hypothesis development

This study constructs a research model to discover the relationships between talent management and employee retention as presented in the figure 1. The five factors of talent management are taken into consideration: the right fit position, remuneration, employee empowerment, work-life balance, training and development. Besides, the demographics are also used as control variables for this analysis.

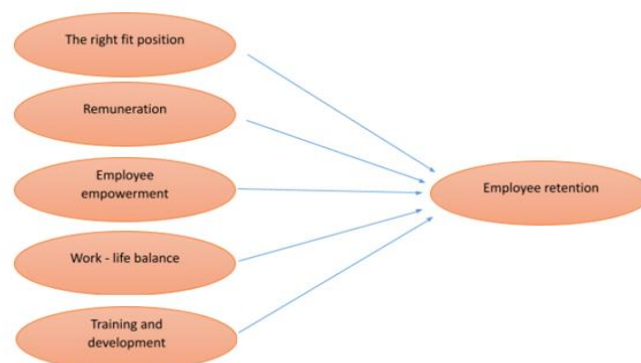


Figure 1. Research model

The right fit position is crucial in an organisation because when employees find that they do not fit their working position, they will tend to leave the organisation. The right-fit position ensuring that human resources can effectively contribute to organizational

performance involves two crucial considerations. The first is evaluating whether there is a fit between the values of the individual and those of the organization, which is known as person-organization fit. The second is assessing whether the values of the individual align with the job they will be performing, which is referred to as person-job fit. These two factors are important in determining the level of success an individual will have in their role and how they will contribute to the organization's overall performance.

Person-organization fit is a specific aspect of the broader concept of person-environment fit, as outlined by Darnold in 2008. It is concerned with the compatibility between an individual and the organization they work for and has been linked to various factors such as job satisfaction, organizational commitment, turnover, and psychological well-being. Person-organization fit is generally defined as the extent to which an organization's values align with an individual's values.

Person-job fit refers to the level of compatibility between an individual's abilities and the characteristics of the tasks they are expected to perform. When there is a good fit between an employee's skills and the demands of the job, it can increase their commitment to the role, as per the research conducted by Meyer & Allen in 1997. Additionally, Poisat (2006) deduced that the right fit between employee and job position would utilize employee talent to improve performance and employee retention. The aim of person - job match is aligning characteristics of individuals and jobs in ways that will result in desired HR outcomes. To the extent that the individual is a good fit for the job, it will most likely have a positive effect on HR outcomes such as attraction, success, retention, participation, satisfaction, etc.

The investigation of Onyeizugbe and Asiegbu (2017) at commercial banks in Nigeria identified that 94% variation in employee satisfaction was explained by changes in job fit. This concluded that the job fit increases the employee satisfaction as well as performance of individuals. Furthermore, Siti and Khulida (2016) also investigated the relationship between person - job fit, work engagement and employee retention. It revealed that P - J fit has positive inclination toward employee retention and work engagement. Accordingly, person - job match is an important factor to analyse and evaluate its impacts on employee retention. Therefore, the hypothesis is proposed as:

Hypothesis 1: *The right fit position is positively related to employee retention in Vietnam commercial banks.*

The remuneration: The study of Barkhuizen (2014) identified that remuneration practice is one of the most preferred of Generation Y employees, who were born from 1981 to 1995. Besides, remuneration was also asserted as a main dimension to manage talent successfully (Hoek & Schultz, 2013).

An attractive remuneration is one of top factors related to employee retention because workers can fulfil their financial, material needs and ensure recognition from society through remuneration. It is not only money but also non - cash settlements. Besides, compensation is considered as a tactic that organisations use to commit their employees to the company (Cappelli, 2001; Mitchell et al., 2001). Bogdanowicz and Bailey (2002) outlined the similar change of companies which try to bring benefits and holistic motive for their employees.

Outstanding workers may leave an organisation because they are disgruntled, underpaid, or unmotivated, and when attempting to maintain employees within the organization, they may present other challenges as well (Coff, 2010). The study of Shropshire and Kadlec (2012) pointed out that the actual causes for retention in various industries include job security and salary in Bangladesh. Furthermore, the study which was researched in British American insurance companies by Gachanja (2015) emphasized the key findings that lack of financial support and dissatisfaction with remuneration methods were found as the key reason for the leaving of employees. In the service sector, many companies are attempting to improve their productivity in order to increase professional satisfaction and employee promise. Thus, pay satisfaction has a direct effect on turnover, and high employee turnover rates will reduce the organization's service quality. This therefore demonstrates the importance of remuneration in the service sector to retain employees.

Hypothesis 2: *The remuneration has a positive relationship with employee retention in Vietnam commercial banks.*

Employee empowerment has been recently mentioned to be an essential element for organization to make initial changes in employee management strategies. Empowerment can be understood as when managers tend to share his information, or powerfulness for his employees to enhance their capability while making decisions (Karim & Rehman, 2012), which encourages the sharing of power within top management and the lower staff. Employee empowerment, furthermore, enhances the capabilities and responsibilities of employees when performing their tasks (Saifullah et al, 2015). The major objective of empowerment is to fill the gap amongst management and employees, giving employees permission to make appropriate necessary decisions, from that raising the responsibility and organizational commitment inside them.

According to DuBrin (2010), employee empowerment is the transition of decision - making power or responsibility from manager to member. Employees can build on their existing strengths and gain self-confidence through empowerment activities. Allowing workers to think, make decisions, perform projects, and handle their responsibilities independently exemplifies this. This is then illustrated by increased loyalty and increased commitment from staff. Employees should have total autonomy in their work, according to Block (1987), and their participation in decision-making should be strong. Besides, employee empowerment is highlighted in many researchs because of its importance in the workplace that can raise the performance of individuals. Employee empowerment is not only a challenge but also inspiration for employees to do their job better.

Hypothesis 3: *Employee empowerment has a positive relationship with employee empowerment in Vietnam commercial banks.*

Training and development: Because of increasing competitiveness and rapid change in technology, banks require new training and development methodologies for their healthy survival (Muhammad, 2021). Therefore, banks put a lot of training on their employees to guarantee employee performance as well as increase the retaining ability. With the rapid

advancement of technologies, the need for training is continuous, and this is the case with any organisation. Rather than depending on professions, companies must constantly improve workers' expertise to perform better and compete in the future since it is an age of quality and efficiency.

Training is offered to various HRM administrative techniques for retention and development of staff, such as on-the-job training, vocational training, and general training, as well as a supplement to the company's training programs. Meanwhile, development is the process of developing for future jobs. Deckop et al. (2006) stated training and advancement significantly lowers the employee turnover rate. Employee development is beneficial for minimizing absenteeism, but also for making employees more consistent and satisfied with their work, thus lowering turnover rate. Also, this researcher found out that development opportunities motivate employees to face and solve the difficulties of their current job and increase the probability to stay in their organization. Many studies have shown the directly positive correlation between organizational training and career development and staffs' retention. Findings by Cardy (2011) and Kroon (2013) indicated that career growth results in a rise in employees' desire to remain in their current jobs.

A study Huang and Su (2016) was conducted on 150 employees working in a variety of firms in Taiwan, concluded that organizational training and development provision was considered as a platform to create a sense of success and progress to staff as well as a powerful instrument to form the motivation and attitude of staff towards work, thus enhancing their engagement degree. Further, Afroz (2018) by interviewing 150 bankers from 14 banks, revealed that trained staff were more committed and satisfied to their current banks.

Hypothesis 4: *Training and development is positively related to the retention of employees in the financial institutions in Vietnam.*

Work-life balance in the modern professional environment is one of supreme concerns due to the development of today's advanced labour force, marked by a greater rate of women's participation in the labour and characterized by long working-time jobs, new technologies, a worldwide competitive market, and a growing interest in private life (Subhasree Kar, 2013). Especially the younger labor force of generation Y, who are different from the older generation. They are demanding flexible and meaningful jobs, career independence, maximum benefits, and a far more improved work-life balance. Work-life balance strategies are implemented in both organizational and functional frameworks as well as formal and casual partners to support people to navigate the overlapping domains of work and family care efficiently. Work-life balance policies can consist of providing flexible work arrangements, for example, adjustable time, which allows employers to modify their start and end times, given that a minimum amount of working hour; or permitting them to flexibly go out of office or working from home while still ensuring their performance: or providing family - friendly policies such as leave policies in lieu of family responsibilities. Work life balancing policies is stated to provide a win - win position for both organizations and workers (Lockwood, 2003). It was the aim of Kumari's (2012) investigation to find out how workers perceived their work-life management strategies in the Indian banking sector.

Quantitative analysis was conducted with a sample size of 350 bank workers. Research has shown that any aspect based on work - life balance is a strong advocate of employee satisfaction between males and females in the workplace, which is linked to work-life balance initiatives. A positive relationship reveals that workplace fulfilment is a very large concern for workers' work-life balance and vice versa.

Using quantitative data collection techniques, Rizvi (2013) revealed that Pakistan bankers were suffering through intense work life imbalance. She concluded that intervention in the employee's personal life negatively affects his or her work, Vikas Shrotriya (2009) studied that a work-life balance means achieving a balance between professional work and other tasks so as to minimize tension between professional and family involvement and thereby enhances the effectiveness and performance of workers by increasing dedication and satisfaction. Ioanlazar and Codruta (2010) stated in their research that work-life management activities are particularly advantageous when accompanied by supervisor and organizational support. These results are mostly correlated with employees' sentiments such as improved work satisfaction, reduced turnover, improved efficiency, interpersonal commitment, and dedication to greater levels of corporates' success.

Hypothesis 5: *Work-life balance increases the intention to stay by employees.*

3. Method

By the end of 2022, there is a statistic of 273,364 employees working in 28 Vietnam listed bank (Vietnamnet, 2023). In this study, the authors aimed to investigate the influences of talent management on employee retention with focus on the credit staff, who are considered as key workforce in implementation of banking service, in comparison to employees at other departments of commercial banks. The Convenience and Snowball sampling methods were applied. The survey was conducted at 25 Vietnamese commercial banks based in Hanoi, which divided into two groups: (1) *Group 1*: top 10 reputable commercial banks (according to the ranking of Vietnam Report and Vietnamnet newspaper in 2020 (H.Kim, 2020)), including Vietcombank, Techcombank, Vietinbank, Agribank, BIDV, HDBank, MB, TP bank, VPbank, and ACB and (2) *Group 2*: MSB, ABbank, Eximbank, LienVietpostbank, and other 11 commercial banks. There is a total of 319 respondents, in which 265 employees working at group 1 (accounting for 83.1%), other 54 respondents (16.9%) belong to group 2. The data was collected through both online survey and offline questionnaires.

Respondents working at credit department accounts 74.6%, respondents working at other units accounts for 25.4%. Most respondents (51.4%) have 1 to 3 years of experience, 28.8% of respondents have working experience of 4 to 5 years, 9.4% for 6 to 8 years, 7.8% for 10 to 15 years, and only 2.5% for 15 to 20 years. Non - managerial staff is 275 respondents (86.2%), while group of managerial staff (manager, vice manager, director, and vice director of branch) account for 13.4%.

The measurements were developed based on previous researches: *The right fit position* is measured by items built by Lauver & Kristof-Brown (2001); Silverthorne (2004);

The remuneration and measurements were from Chikumbi (2011); *Employee empowerment* were based on Chikumbi (2011), Hayes (1994); *Training and development* was from Siddiqui & Sahar (2019); *Work - life balance* was from Jill et al. (2014); *Employee retention* was from (Kyndt et al., 2009), (Yamamoto, 2011).

In this study, SPSS 26.0 was applied in the data processing and analysis: Cronbach Alpha's measurement research applied to evaluate the reliability of the scales, Exploratory Factor Analysis (EFA) to find the convergent validity and discriminant validity between the dimensions of the scale, then, Linear Regression Model was used to test and perform data analysis the hypotheses.

4. Results

In descriptive results: most items have the value of mean higher than 3, hence, the Likert scale can be concluded having tendency to be positive and mostly agreed by respondents.

The result of scale reliability evaluation with values of Cronbach's alpha: The right fit position (alpha = 0.887), Remuneration (alpha = 0.887), Employee empowerment (alpha = 0.882), Work life balance (alpha = 0.858), Training and development (alpha = 0.875), Employee retention (alpha = 0.817). The Cronbach's alpha of factors ranges nearly upper 0.8. For the scope and sample of this study, these indexes demonstrate the high reliability of items. Hence, the scale is considered as valid and reliable, and it can reflect accurately the opinions of respondents.

Following the use of EFA and the removal of inconsistent items, the conceptual model's five groups of factors remain intact. In addition, factor loading serves as a criterion to ensure the practical significance of EFA. In this study, all factor loadings exceeded 0.5, demonstrating the practical significance of the Likert scale in explaining the factors.

Table 1. Regression results

Independent variable	M1	M2
Gender	-0.043	-0.033
Age	0.181*	0.043
Education level	-0.033	-0.016
Position	0.119	0.055
Experience	-0.044	0.048
Bank	-0.060	-0.053
Working department	-0.114	-0.005
The right fit position		0.300*
Remuneration		0.122*
Employee empowerment		0.181*

Independent variable	M1	M2
Work life balance		-0.112*
Training and development		0.245*
R Square	0.081	0.526
Change to R square	0.081	0.445
Adjusted R square	0.060	0.508
Note: confidence interval a * being 95%		
M1: model with demographic		
M2: model with demographic and independent variables.		

Regression results show that R square for model 2 (with control and independent variables) is 0.526. This means that control and independent variables will clarify 52.6 percent of the employee retention variable. Moreover, there are five factors (the right fit position, remuneration, employee empowerment, work life balance, training, and development) that have an impact on employee retention.

Even though the beta index is negative, the relationship between work-life balance and employee retention is positive because the questions about work-life balance have a negative sense. As a result, five factors have a positive impact on employee retention.

Consider to the control variables, the age of the employee has an impact on employee retention in model 1 (with beta = 0.181). However, it is insignificant when combining with independent variables in model 2.

5. Discussion and Conclusion

5.1. Discussion

In the table of regression, all five factors of independent variables have an impact on employee retention, meanwhile control variables (demographic) have no impact on employee retention. Moreover, R square is 52.6% so the model is meaningful and significant to explain the relationship between independent variables and the dependent variable. The result also shows that there is no difference in employee retention between top 10 reputable commercial banks and other banks. Similarly, the credit department and other departments have no difference in employee retention.

As mentioned before, the meaning of work-life balance questions is negative so even though the beta is negative, the relationship between work life balance and employee retention is positive. Therefore, five factors including the right fit position, remuneration, employee empowerment, work life balance, training and development impact positively on employee retention. These are the elements that concern employees while making judgments about whether to stay or to leave the bank. This outcome is also consistent with the

hypothesis proposed in the literature. The impact levels of each aspect differ, for example, the appropriate fit position has the most impact on employee retention, while work-life balance has the least impact.

The right fit position is the most concern for HR to improve employee retention in the bank. The more fitting a job, the more employees tend to stay to work for the bank. Because they can adapt to the job requirements that fit them. Besides, the more satisfied remuneration, the higher employee retention within the bank. Additionally, the impact of employee empowerment on employee retention also points out that the more empowerment within the workplace will lead to more employees wanting to stay. For example, if staff have more power in decision making in their job, they will stay and keep working. This is similar for work life balance, training and development. If the work - home conflicts are reduced, they tend to stay. Furthermore, if employees receive the most up-to-date training program to help them do their jobs better, they will be more likely to stay.

It proves that Vietnam commercial banks have not applied effective policies to balance the work - life of employees. It can be understood as employees of banks work tirelessly to meet the diverse needs of their clients (Goyal & Babel, 2015). They must also meet several deadlines in order to compact and load their materials while also producing high-quality results. Accordingly, banking workers find it difficult to combine work and family life due to the demands of the job. Hence, HR and bank leaders should consider these factors to have policies to satisfy employees as well as retain employees. Especially, they should create policies to enhance work - life balance for employees because this factor still impacts on employee retention as the result revealed. Increasing work - life balance supports to improve employee satisfaction, employee retention as well as productivity. There are some benefits indicated for employers if they have strategies to manage work - life balance well: reducing absenteeism rates, increasing employee morale and commitment and productivity, decreasing stress and turnover rate, attracting skilled employees, minimizing recruitment and training cost (Goyal & Babel, 2015). Accordingly, it is important for employers to focus on balancing work - life of employees to gain these benefits.

5.2. Managerial implication

The current situation of human resources in the Vietnamese banking industry is facing complicated problems. The emergence of new banks threatens commercial banks because it risks disrupting human resources. Talent and skilled employees are especially sought due to the lack of high-quality employees in the market. Banks are having a difficult time filling immediate vacant positions, and their recruiting costs are that daily. To recommend the policy of increasing employee retention, factors figured out in this study are helpful. It means that managers should base on the impact level of factors to plan effective strategies to retain human resources. Specifically, they should be concerned with the right fit position mostly, and then training and development, employee empowerment, remuneration and work life balance.

According to Herbert et al. (2019), in terms of the right fit position, the organisation should decide which types of applicants are most likely to possess the requisite KSAOs (Knowledge - Skills - Attitude - Other attributes), as found through the job analysis process. Hence, banks can apply KSAOs for strategies in the recruiting process to find the right person with right competencies for each position and avoid lack of talent or skilled employees as well as reduce cost for recruitment and training. Besides, banks should focus on training and development to support employees in their current job and opportunities for their future career. Moreover, they should have strategies to increase the power of making decisions for employees, provide good remuneration compared to other competitors, enhance work-life balance to increase employee retention.

This study identified factors that positively affect employee retention in Vietnam commercial banks, including the right fit position, remuneration, employee empowerment, work - life balance, training and development. The right fit position has the highest impact on employee retention, while work - life balance has the lowest impact. This is the addition to the findings of new factors influencing employee retention in Vietnamese commercial banks. Furthermore, it also denotes a well-suited role, decent remuneration and employee empowerment, training and development, and strong employee retention. Nonetheless, it also emphasizes the poor work-life balance in the banking workplace. Hence, this research supports HR departments in banks considering factors to have appropriate policies to address the potential problems in their existing talent management strategies to improve employee retention.

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FACTORS PROMOTING THE INTENTION OF USING HOME HEALTHCARE SERVICES OF THE PEOPLE OF NORTHERN VIETNAM

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Abstract

This paper aims to examine the factors influencing the intention to use home medical examination and treatment services among people in northern Vietnam. A qualitative method from 396 respondents was used to test the proposed model. All data were assessed reliability and validity on SPSS version 26 before conducting into CFA and CB-SEM in AMOS software. The findings indicate that all the hypotheses are accepted. Specifically, Benefit Perception has the strongest impact on consumers' attitudes, while the subjective Norm is the least impact factor. In addition, Risk Perception is the only variable that has a negative impact on both consumer attitudes and intentions. To increase positive attitudes and intentions of people towards using home healthcare services and to relieve pressure on public healthcare services, management agencies need to increase propaganda about this new form of healthcare services through public channels. Besides, home-visiting doctors have a responsibility to enhance their professional capabilities and be aware of the attitudes of respect, attentiveness, and friendliness towards patients.

Keywords: *home healthcare services, intention, Northern Vietnam*

1. Introduction

Currently, the overload of healthcare services is a common issue in most public hospitals in Vietnam, especially in central and provincial level hospitals. The utilization rate of inpatient beds often exceeds 100%. It ranges from 120% to 150% in some large hospitals, such as Bach Mai Hospital, Ho Chi Minh City Tumor Hospital, and Children's Hospital 1 (Ho Chi Minh City). The demand for healthcare services is increasing while the infrastructure development of healthcare facilities is still low and insufficient to meet the increasing demand.

Moreover, the healthcare system still needs to meet the healthcare needs of the people entirely, and the efficiency of healthcare services is low. In addition, primary healthcare at the local level could be more effective, leading to many people neglecting preventive care and not raising awareness of their health until they get sick and start seeking treatment. Besides, most current medical stations cannot manage chronic diseases, and the quantity and quality of services at first-line healthcare facilities still need to be improved. According to decentralization, communal health stations can only provide 50% to 70% of technical services and around 40% of the drug list.

To address these issues, one of the solutions proposed is home healthcare services (HHCS) - a type of family healthcare service that has been available for a long time in many countries worldwide but has only recently developed in Vietnam. HHCS provides many benefits for patients and their families, but due to the lack of information and psychological hesitation, many people need to pay more attention to this service.

Around the world, the family doctor-HHCS model has been widely developed and applied in many countries. In 1995, 56 countries had developed and implemented family medicine training programs. The World Organization of Family Doctors (WONCA) was established in 1972 and now has nearly 100 member countries. Nowadays, the family doctor model has been developed extensively not only in developed countries such as France, the U.S., the UK, Canada, and Australia, but also in developing countries such as Malaysia, the Philippines, and especially Cuba, which is considered a model country in developing the family doctor model in the group of developing countries.

Despite its many benefits, this service has yet to be supported by many development policies in Vietnam, and its usage has only increased during the Covid outbreak. In order to maintain public participation in the use of home medical examination and treatment services after the pandemic, the government and healthcare businesses need to have programs to educate and guide people on using this alternative healthcare model.

This study examined the factors influencing the intention to use home medical examination and treatment services among people in northern Vietnam. The research team believes that the study's findings will guide government management agencies, hospitals, home healthcare service providers, and the public to gain an overall understanding of this activity, thereby strengthening the intention to use this service in Vietnam.

2. Literature review

2.1. Theory planned behavior

The Theory of Planned Behavior (TPB) was developed from the Theory of Reasoned Action (Ajzen and Fishbein, 1975), which was created to overcome the limitations of previous theories that assumed human behavior is solely controlled by rational thinking.

According to the Theory of Reasoned Action, if a person has a positive attitude towards behavior and essential others expect them to perform the behavior (i.e., subjective norm), then this will lead to a higher intention to perform the behavior (i.e., greater motivation) and a greater likelihood of actually acting (i.e., implementing the intention). This finding has been demonstrated in many previous studies, affirming the link between attitude and subjective norm on intention and subsequent behavior.

However, there is still much controversy and opposition regarding the correlation between intention and actual behavior. Some studies have shown that intention only sometimes leads to actual behavior due to limitations in the situation. Specifically, if an individual lacks behavioral control, intention is not the decisive factor in performing that behavior. Additionally, Ajzen proposed the Theory of Planned Behavior by adding a new factor, perceived behavioral control, to extend the Theory of Reasoned Action and include non-rational factors to increase the accuracy of predicting human behavior.

Furthermore, the strong correlation between attitude and intention in this theory has also been tested in the health field, such as in the study "Theory of Planned Behavior: A case study with Health-related Behaviors" by G. Godin and G. Kok. Therefore, the authors applied the Theory of Planned Behavior to construct their research model in this study.

2.2. Health Consciousness

In the study "Habits of Using Health Services on Mobile Devices under the Influence of Health Consciousness," health consciousness is a motivational factor that predicts many health attitudes and behaviors in previous studies. Jayanti and Burns (1998) demonstrated that health consciousness refers to "the extent to which health concerns are integrated into a person's daily activities," Individuals with high health consciousness are more likely to engage in preventative healthcare behaviors than health-related actions.

In the study "Impact of health consciousness, concerns for food safety, and Ethics on Attitudes and Intentions to consume organic food," health consciousness measures the willingness to perform health-related actions. Health-conscious consumers always care about their health and have the spirit of improving or maintaining their health and quality of life, as well as preventing diseases by taking good health-related actions and being aware of their health.

In the study "Health Consciousness and its Impact on Awareness, beliefs, and Intentions to consume dairy products: A consumer perspective in emerging markets," health consciousness is understood as an individual's tendency to engage in actions that positively impact their health. Gould divides health consciousness into four main parts: concern for

health, increased attention to health, frequent searching for health information, and the ability to evaluate health status.

In the study "Influence of quality perception and health consciousness on Attitudes and Intentions to use home healthcare services," health consciousness is understood as the degree of consumer concerns about health-related issues, as demonstrated by their tendency to act or use products and services that benefit their health.

2.3. Benefit perception

The structure of perceived benefits is defined as the belief in positive outcomes associated with a specific behavior to cope with a real threat or perception. The structure of perceived benefits is most applied to health-related behaviors, specifically an individual's perception of the benefits that will accrue by engaging in a specific health action (Victory Champion, 2020).

Perceived benefits refer to the awareness of positive consequences of a specific action. In behavioral medicine, the term perceived benefits is often used to explain an individual's motivation to engage in a behavior and apply interventions or treatments. Researchers and theorists attempt to measure positive perceptions because they believe that behavior is driven by an individual's perception of acceptance, motivation, and attitude toward that behavior, especially if it is positive (Leung, 2013).

2.4. Risk perception

The perception of risk refers to "the subjective evaluation of the likelihood of a specific accident occurring and the degree of concern we have about its consequences" (Sjöberg, Moen, & Rundmo, 2004). Pidgeon, Hood, Jones, Turner, and Gibson (1992) defined *risk perception* as "people's beliefs, attitudes, evaluations, and emotions, as well as the cultural or broader societal values and orientations they accept, regarding the dangers and benefits of such hazards, and thus emphasize that risk perception is not just an individual process but must be understood on a cultural and social basis, a conclusion consistent with the perspective of Kasperson, Kasperson, Pidgeon, & Slovic (2003).

According to Simon Grima and colleagues (2021), risk perception is the subjective judgment that people form about the characteristics, severity, and coping strategies of risks. One of the critical factors is the feeling of outrage and indignation that a risk elicits, which will exponentially amplify worry and quickly spread throughout society. Meanwhile, A. M. Adams and colleagues (2001) state that risk perception is like the perception of noise, heat, or health; there are objective measures for at least some aspects of these entities, but these measures themselves are not sufficient, as subjective perception is also important. It is recognized that individuals tend to evaluate risks not only based on statistical data but also on many other subjective qualitative aspects. Risk assessment and perception are unconscious, subjective, and personality-dependent, and do not follow rational patterns or methods. Three aspects influence how an individual perceives risk. The first is the psychological tendency of the individual towards risk. Individuals may seek risk, dislike

risk, or be neutral toward it. Some will accept relatively significant risks for relatively small benefits, while others are the opposite. However, if the probability of an individual being affected is 0 or 1, the importance of adverse outcomes for the individual must be considered. Some may have greater significance than others. The second aspect of risk perception is the characteristics of the risk itself.

According to Rebecca Ferrer and colleagues (2015), risk perception - or an individual's perception of threat sensitivity - is a central component of many health behavior change theories, such as the Health Belief Model, Protection Motivation Theory, and Extended Parallel Process Model. These theories emphasize that the perceived risk of a health threat is a critical factor in the decision to adopt protective behavior. Additional consequences and the importance of providing accurate and comprehensible information about risks, highlighting the severity of the potential consequences, and enhancing the perceived efficacy of the recommended behavior. Overall, risk perception is a complex and dynamic process influenced by various personal, social, and cultural factors, and it is essential to consider these factors when assessing and managing risks.

2.5. Attitude

According to A.Ph. Lagiurxki (1874-1917), psychological life is divided into external and internal fields. External psychology is "the system of personality attitudes towards the surrounding environment." According to him, attitudes towards the environment include attitudes towards nature, labor products, other individuals, and social groups, and he particularly values attitudes towards labor, profession, ownership, others, and society.

Author V.N. Miaxisev (1892-1973) began studying the issue of attitude and mainly relied on the perspective of the psychology of personality theory. It is a combination of theoretical concepts that hold that "the psychological nucleus of personality is a complete system of selective, conscious attitudes with subjective value towards objective reality." The attitude system is formed through the mechanism of "from outside to inside" transformation through activities and communication with others in the social conditions that the subject is living and operating in. It determines the emotional characteristics, cognitive perception of objective reality, and behavioral reactions of individuals. All psychological organizations are related to attitudes. V.N. Miaxisev identified two types of attitudes: positive and negative, and the relationship between them and the people around them is the basis for forming the personality attitude system.

V.A. Iadov studied mood's role in the individual's social behavior. He believed that "humans have a complex system of different positionings (positioning including social mood, basic tendencies of interest, and value orientation system) and these organizations control human behavior. These positions are organized into four levels with different degrees, and in a positioning system, the higher-level positioning can dominate the lower-level positioning."

Another approach is the theory of subjective attitude by author B.Ph. Lomov in the late twentieth century. He believed that "the nature and dynamics of subjective attitude are

formed in each individual depending on their position in the system of social relations and its development in that system." Based on these proposals and the research perspective on personality, which includes subjective attitudes of individuals, B.Ph. Lomov outlined the scientific basis and methodology for studying attitudes.

2.6. Home Healthcare Service Intention

According to the Theory of Planned Behavior by Ajzen (1991), the critical factor in the theory of behavior with a plan is an individual's intention to carry out a specific behavior. The intention is postulated to capture the factors that motivate and influence behavior, and it reflects and drives the individual's effort and determination to perform the desired behavior. Generally, the stronger the intention to engage in a behavior, the higher the likelihood of performing that behavior. However, it should be noted that an intention can only be expressed in behavior if the behavior is subject to the control of willpower, meaning that the person can decide whether to perform the behavior or not.

Overall, these factors reflect an individual's ability to control their behavior. When individuals have the necessary opportunities, resources, and intention to perform a behavior, they are more likely to succeed in carrying out that behavior.

Therefore, in this study, the intention is understood as the desire to use home healthcare services in the future when the necessary resources and appropriate circumstances are present.

2.7. Hypothesis development

H1: Health consciousness has a positive influence on attitude

Since 1991, Dr. Stephen J. Gould has done the topic "Health awareness and health behavior: Applying a new health cognitive scale" and has argued about the hypotheses that individuals have any individuals. Personal consciousness is higher than others who are more likely to focus on psychological signs and SOMA inside related to stress factors in life and then act concretely to reduce them. On this basis, researchers in preventive medicine and relevant related fields are reasonable when considering whether this self-conscious characteristic measure may arise. The branch is a sense of health or the level of awareness of your health. In addition, positive results with the expansion of the sense of self - consciousness for the awareness of specific areas.

By 2008, Nina Michaelidou and Louise M. Hassan studied the role of health awareness, food safety, and morality in attitude and intention toward organic food consumption. These hypotheses are all standard and accepted.

H2: Subjective norm has a positive influence on attitude

Attitude towards acts plays an essential role in explaining the intention to buy. In the theory of planning behavior (TPB), the attitude toward customers is based on evaluating the desired effect on behavior. The higher this assessment, the more positive customers' attitudes will lead to solid intentions to commit this behavior.

Subjective standard is a social decision factor for reflecting social pressure on behavior. These subjective effects may differ between cultures and social factors about a person's belief about the opinion of others who agree to buy beer.

According to Hofstede, assessing Vietnamese culture is considered a collective, different from the unique culture in some Western countries such as England. A collective culture is a place where individual freedom may be limited. Moreover, individuals must integrate into the vast community (Hofstede, 2012). The "herd effect" also quickly affects Vietnamese consumers' psychology. The reason is that the information needs to be fully grasped accurately (Vu Huy Thong, 2010). Often through observation, people of everyone around learn and becomes more secure when someone has used it, so the trend of using beer will be affected by others.

H3: Perceive Behavioral control has a positive influence on attitude

An individual's perception of ease or difficulty in giving specific attitudes depends on the available resources and opportunities to perform behaviors. Ajzen suggested that cognitive factors that control behavior directly affect attitude trends. If the person is aware of his accurate level of control, the behavior control also predicts behavior. The concept of awareness of behavior control is conceptuality with autonomy.

H4: Benefit perception has a positive influence on attitude

The perception of benefit is related to performance expectations in attitude. Based on Davis's original definition, perception of benefit in this study refers to "the extent to which participants believe that using home healthcare service for self-management will enhance their abilities and improve efficiency." External and consumer health studies have consistently found that perceived benefits and attitudes are related to the acceptance of home healthcare services. This suggests that patients are more likely to accept home healthcare services if they believe the method is helpful because it can communicate health benefits or facilitate self-management conditions.

Improving customer benefits by improving service quality, such as diversifying current services, offering flexible testing packages, and customizing testing packages to customer requirements, can increase perceived benefits. In addition, increasing the number of guidance staff at hospitals can quickly support customers to save time and effort by the home healthcare service criteria.

H5: Risk perception has a negative influence on attitude

Risk perception and risk attitude are clearly described as determining factors of risk behavior, but they are rarely combined in a comprehensive approach to studying risk behavior (Frank Win van Winsen et al., 2011). Different scientific fields apply various approaches to study these two issues. The concepts of risk can be grouped according to epistemological foundations (Zinn, 2009). Furthermore, individuals have different perceptions of reality due to their different explanations of reality.

A.E. Lobb, M. Mazzocchi, and W.B. Trail (2007) proposed a statistical strategy to explain how the intention to purchase food is affected by different levels of risk perception

and trust in food safety information. The modeling process is based on Ajzen's Theory of Planned Behavior and includes trust and risk perception as additional explanatory factors. This study only presents a reverse impact of risk perception on attitude towards using safe food. Although there are many differences in the service industry, this impact direction is like studies in other service industries (Hsi-Peng Lu, Chin-Lung Hsu, Hsiu-Ying Hsu, 2005; N. Arora, M. Rahul, 2018). Applied to home healthcare services, it is assumed that risk perception has a reverse impact on attitude towards home healthcare services.

H6: Risk perception has a positive influence on attitude

The relationship between health awareness and the intention to use the service is also considered to be a direct and positive impact, mentioned in topics such as "the habit of using mobile services." Regarding health under the influence of health awareness "by Fanbo Menga, Xitong Guob, Zeyu Peng, Xiaofei Zhangd, and Doug Vogelb (2019), or in the study" The influence of debate, trust and health awareness about satisfaction, the intention of use and loyalty to the use of mobile applications related to health" by Putu Wuri Handayani, Nabilah Badriyah Gelshani, Fatimah Azzahro, Ave Adriana Pinkem, Achmad Nizar Hidayanto (2020)

H7: Benefit perception has a positive influence on home healthcare service intention

The concept of perceived benefits originates from social exchange theory, using costs and benefits as a starting point to examine social interaction behavior among individuals (Ward & Berno, 2011). Perceived benefits refer to the degree to which an individual believes that using a service or technology or performing a specific action can bring a certain level of interest (Reyes, Li & Visich, 2016).

Perceived benefits are the most important factor in explaining a significant proportion of the variance in behavioral intention. Patients are more likely to intend to use home healthcare services if they believe that using this service will enhance the ability and effectiveness of their healthcare treatment. This study also found that perceived usefulness significantly affects self-report use, consistent with previous research. Patients who feel that home healthcare services are beneficial to their health reported higher usage of these services.

H8: Risk perception has a negative influence on home healthcare service intention

Risk Perception refers to various types of financial risks, product performance, social, psychological, physical, or time risks when an individual uses mobile health services (Yang Zhao et al., 2018) and has been shown to influence the intention to use electronic health check-up services (mHealth). Based on 35 previous studies on the application of mobile health services, this study conducted a meta-analysis to examine eight factors influencing individual attitudes and behavioral intentions.

The meta-analysis results showed that risk and perceived attitudes significantly impact behavioral intentions, indicating that multiple factors influence user acceptance. In addition, traditional reception and health behavior theory variables need to be comprehensively considered and analyzed in mobile health application research. As an

individual's risk perception of using mobile health services increases, their intention to use decreases. Many other studies also note this counteractive impact (Clarissa Nuralifa Mangkunegara, Fatunah Azzahro, P. W. Handayani, 2018).

H9: Attitude has a positive influence on home healthcare service intention

According to Ajzen (1991), attitude toward a behavior is an individual's evaluation of the outcome of performing a behavior. Attitude towards behavior is the extent to which the individual perceives the expression of that behavior as positive or negative. The consumer's attitude influences their intention (Ajzen & Fishbein, 1985). Building on this concept, Chaniotakis, Lymperopoulos, and Soureli (2010) have indicated that attitude towards behavior is the individual's evaluation that performing the behavior is worth the amount spent. Before this, Giner-Sorolla (1999) developed a scale for the attitude towards behavior factor that includes the individual's intention to perform a behavior aimed at the product/service beforehand and the belief that performing the behavior will be very good for themselves. De Matos, Ituassu, and Rossi (2007) also mentioned that the attitude towards the behavior of consumers is based on the belief that using the product will bring many benefits and is the best choice for them. These studies all show that there is always a relationship between attitude and intention to behave. The more positive the attitude, the more likely the customer is to develop an intention.

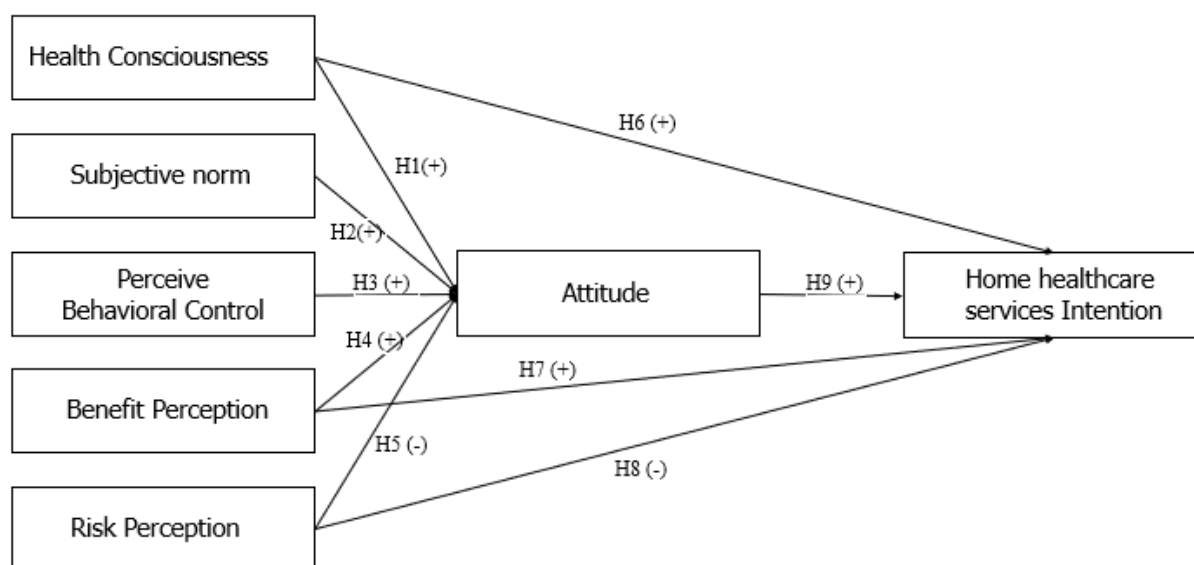


Figure 1. Conceptual framework

3. Method

3.1. Samples and Data collection

After having the final conceptual framework, this study uses a quantitative method, in which questionnaires were used as instruments to collect data from online users. The data collection was implemented from March to May 2023. A purposive sampling technique was applied due to the special feature of the research context. Researchers collected

questionnaires from respondents that are people over the age of 30 who can afford medical examination and treatment services for themselves and their relatives. Under Comrey's (1973) formula, the research sample size was required to be at least five times the number of observed variables. With 35 observed variables, this research must collect at least $5 \times 35 = 175$ respondents.

Therefore, there are 396 valid questionnaires, excluding the non-standard questionnaires, and the effective rate is 79.2%. The research sample showed that most survey subjects were between 18-25 and 35-60. The age group of 18-25 may not be the direct users of curative care services or have little need, but the research team believes that they are the ones who have the role of influencers in the decision-making process to use the service. At the same time, they are young people, so they can easily access new products and incredibly convenient services such as medical treatment. In addition, in the remaining age groups from 35 to 60, the number of respondents is adjusted because this is the group with a high probability of using the service or influencing the decision to use the service of relatives because they are potential customers of medical care services. The remaining two age groups under 18 and over 60 will be those who may need home healthcare services, but our service users need more time to decide which medical services to use. Hence, the survey focuses on the remaining objects will be more reasonable.

In addition, the respondents generally have a relatively high level of education and income. However, the number of people with an income of less than 10 million/month is the majority; it is appropriate because the number of respondents is 18-25 is quite a lot; this is the age at the beginning of his career, so that the income may be low. Based on this education and income level, the research team may know and be potential customers of home healthcare services.

3.2. Data analysis

The impact of independent variables and home healthcare services intention were examined under covariance-based structural equation modelling (CB-SEM). CB-SEM assesses the relationships between the model's constructs systematically and holistically (Hair et al., 2006). It takes an affirmative rather than an exploratory approach to data analysis. Finally, CB-SEM considers model fit while it considers explicit estimates of measurement error. Before the data was put into SEM, Cronbach's alpha assessment, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted to guarantee the reliability, validity and the goodness of fit criteria. The testing standard is Cronbach Alpha ≥ 0.7 and the Corrected item-total Correlation ≥ 0.3 (Hair et al., 2006). The result showed that HC5 was also eliminated with the Corrected Item-Total Correlation lower than 0.3. Hence, the adjusted model finally only has 34 observed and seven latent variables, then put into CFA and CB-SEM.

4. Results

After preliminary testing of measurement scales, we continued to use AMOS software version 20.0 to conduct CFA (Confirmatory Factor Analysis) for measurement

scales, testing the suitability of the research model and research hypotheses. Testing criteria used include CMIN/df; Goodness of Fit Index; Tucker & Lewis Index; Comparative Fit Index; Root Mean Square Error Approximation. The confirmatory factor analysis (CFA) of our measures indicates that the overall model fit of the measurement model was satisfactory: CMIN/df=1.301<3; CFI=0.975; GFI=0.913; TLI=0.973; RMSEA=0.028; PCLOSE=1.00. Furthermore, all factor loadings were statistically significant within an acceptable range.

From the above results, the research model is delighted and suitable with market data.

Table 1. Standardized Regression Weights

Hypothesis		Estimate	S.E.	P-value	Results
H1	HC -> ATT	.209	.060	***	Accepted
H2	SN -> ATT	.107	.041	.008	Accepted
H3	PBC -> ATT	.126	.051	.014	Accepted
H4	BP -> ATT	.314	.054	***	Accepted
H5	RP -> ATT	-.111	.034	.001	Accepted
H6	HC -> HHSI	.331	.066	***	Accepted
H7	BP -> HHSI	.280	.063	***	Accepted
H8	RP -> HHSI	-.170	.041	***	Accepted
H9	ATT -> HHSI	.182	.081	0.026	Accepted
<i>Note: *** - Statistical significance at 99.9%</i>					

Attitude and Home healthcare services intention were affected by Health consciousness ($\beta=0.209$, $p<.001$; $\beta=0.331$, $p<.001$), so H1 and H6 were supported. With the development of the economy and higher living standards, people are becoming more concerned about their physical and mental health. They are increasingly seeking solutions to protect their health from an early age rather than waiting until they become ill and need to visit a hospital for treatment. This heightened health awareness has led to a more positive attitude towards various preventive and treatment methods, not just going directly to a hospital but also utilizing home healthcare services.

These results indicate that if individuals have a positive subjective perception of home healthcare services, their attitude towards it becomes more positive. This subjective perception is influenced by advice and opinions from family members such as spouses and relatives and healthcare professionals such as doctors and nurses, who positively impact the process of using home healthcare services in Vietnam. In other words, those around the user influence their perception of healthcare services, especially those from their family members and healthcare professionals. The perceived behavioral control also positively impacts users' attitudes toward home healthcare services in Northern Vietnam. Users generally know and

can use home healthcare services, contributing to a more positive attitude. They believe they have sufficient knowledge about relevant information, are financially capable of paying fees, and have the ability to support and promote the process of using home healthcare services. Additionally, they assert that they have enough understanding about this service and trust that their intention to use home healthcare services is accurate.

Attitude and Home healthcare services intention were affected by Benefit Perception ($\beta=0.314$, $p<.001$; $\beta=0.280$, $p<.001$), so H4 and H7 were supported. This is the strongest factor influencing consumer attitude. Before using a product/service, consumers consider the benefits it brings compared to its cost. In Vietnam, as awareness of health among the population is increasing, the benefits of using home healthcare services are unprecedented, reducing some of consumers' hesitation in using the service. Therefore, a higher perceived benefit leads to a more positive attitude and intention of consumers toward the service.

On the other hand, Risk perception also affects the attitude and intention of consumers with $\beta = -0.111$, $p = .001$, and $\beta = -0.170$, $p <.001$. Despite the undeniable benefits of home healthcare services for consumers, they still have concerns about the risks that this service may bring, such as the expertise of doctors and the quality of infrastructure. This is a significant obstacle to the widespread adoption of home healthcare services in Northern Vietnam. They need to ensure they do not encounter health issues from receiving medical care at home instead of going to hospitals or healthcare facilities.

Prior research has extensively employed the theory of planned behavior to investigate the link between attitude and purchase intention (Ajzen, 1991), which accounts for why the intention to use home healthcare services was influenced by the attitude with $\beta=0.182$, $p<.001$. The more positive the attitude, the greater the consumers' intention to utilize home healthcare services.

5. Discussion and Conclusion

The study on the intention to use home healthcare services has reconfirmed the TPB model of Ajzen and Fishbein (1975) in the healthcare field, specifically in the northern region of Vietnam. The study also showed that perceived health and perceived benefits significantly impacted attitudes and intentions to use home healthcare services among people in the northern region of Vietnam. This needs further research in the medical field for future topics. Scholars can consider comparing different forms of healthcare services under the influence of perceived health and perceived benefits. Further research will clarify the role of these two factors in the medical field.

Furthermore, perceived risk has been demonstrated to impact attitude and intention to use home healthcare services negatively. This shows that economic and resource risks create barriers for patients to agree to use home healthcare services. To clarify this relationship, future scholars need to study each factor in perceived risk, such as economic risk, psycho-social risk, social support risk, time risk, process risk, and treatment risk, in their roles in affecting attitude and intention to use healthcare services.

To increase positive attitudes and intentions of people towards using home healthcare services and to relieve pressure on public healthcare services, management agencies need to increase propaganda about this new form of healthcare services through public channels so that people can have complete information and gradually become familiar with this new form of healthcare services. Avoid fears that high medical costs accompany home healthcare services. Through this propaganda, subjective standards from payers for home healthcare services will increase thanks to the social impacts and influence of others.

Complete information must also be provided and analyzed for people to understand the health benefits of home healthcare services. Training doctors for home healthcare services needs to be emphasized, along with updating modern equipment suitable for healthcare conditions to increase awareness of benefits and reduce perceived risks from patients. Moreover, registering for home healthcare services and the payment process must be simple and transparent.

To increase awareness of the benefits for users of the service, home-visiting doctors have a responsibility to enhance their professional capabilities and be aware of the attitudes of respect, attentiveness, and friendliness towards patients. Doctors need to consult on appropriate treatment protocols to support patients to recover from illness as quickly as possible. This helps patients feel empathy from the doctor while reducing risk perceptions regarding the skill level of home-visiting doctors.

When doctors support patients in recovery from illness with professionalism and a caring attitude, patients will positively spread word-of-mouth about the home visiting medical service, which increases subjective standards in promoting attitudes and intentions to use home medical examination and treatment services for everyone.

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FACTORS AFFECTING LEARNING OUTCOMES OF STUDENTS IN UNIVERSITIES IN HANOI

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Abstract

In the current era of technology 4.0, modern education with the intelligent school model requires students to have factors such as positive thinking, independence, creativity, proactive grasping, effective teamwork, and problem-solving skills to master scientific knowledge. The study was conducted to investigate the impact of some soft skills and thinking on the learning outcomes of students at universities in Hanoi, namely: Critical thinking, Teamwork skills, Creative thinking, and Problem-solving skills. The study first reviewed previous research and developed hypotheses related to the research's objectives. Structural equation modeling (SEM) was conducted to test the hypotheses with the survey data of 623 students from several universities in Hanoi. Results of the study reveal that the factors affecting students' Learning outcomes include: Creative thinking; Teamwork skills; four factors of Problem-Solving Skills are Problem-solving confidence, Approach style, Avoidance style, and Personal control; two tendencies of Critical thinking are Cynical disposition and Analytical disposition. Finally, the results of the multi-group structural analysis show that there is a difference in the impact of variables in the model between students of different majors and no difference between male and female students.

Keywords: *Learning outcomes, Critical thinking, Problem-solving skills, Teamwork skills, Creative thinking*

1. Introduction

According to the World Economic Forum's predictions, by 2025, humans will only account for 48% of the workforce, with the remaining 52% consisting of machines and related algorithms. The traditional educational approach of solely transmitting knowledge is no longer appropriate. As reported by Bao Thanh Nien in 2019, the new core of modern

education is focused on teaching thinking and soft skills, which are human traits that machines cannot replace. Additionally, Iper's 2022 study on education trends reveals that advanced education systems around the world, such as those in the US and Finland, are currently emphasizing the training of 21st-century skills, including teamwork, communication, critical thinking, and creativity. According to Thoi Bao Ngan Hang (2013), teaching methods at Vietnamese universities still rely on the instructor-centered approach, which emphasizes understanding concepts, following predetermined discussion methods, and finding the true answer. This teaching approach, known as the "teacher lectures and students take notes," is still widespread, resulting in passive learning, lack of critical thinking, and creativity. In the study conducted by the National Capacity Research and Development Center under the Ministry of Education and Training (2021), which surveyed the soft skills of university students in Vietnam in the context of the 4th Industrial Revolution, the results showed that only about 15% of students having sufficient soft skills to work effectively in the 4.0 era. Therefore, it is necessary for universities and students to develop solutions that promote students' thinking and skills during the learning process, which will help students actively grasp and enhance their learning outcomes.

Currently, in Vietnam, there is only one study on the impact of critical thinking and problem-solving skills on students' academic achievement, but the sample size is not representative (Ngo My Tran et al., 2021). Moreover, there are not many studies that have examined the differences between students from different majors in terms of the impact of factors on academic achievement/learning outcomes. This indicates that there is still a significant gap in research on the influence of skills and critical thinking on students' academic achievement in Vietnam.

The research was conducted with four main objectives to provide proposals for universities and students: (1) Clarify the theoretical foundation and related concepts of students' knowledge acquisition at universities; (2) Build a model with factors that influence students' learning outcomes; (3) Examine the differences in the impact of these factors on students' learning outcomes among different gender and academic majors; (4) Suggest some solutions for universities and students to improve student's learning outcomes through their critical thinking skills and soft skills.

2. Literature Review

2.1. Learning outcomes

According to Young et al. (2003), the students' Learning outcomes are measured based on students' overall assessment of the knowledge and skills they acquired while taking the course. This concept also is used in the study "Factors affecting the learning outcomes of economics students" quoted in the book "Scientific Research in Business Administration" by Nguyen Dinh Tho & Nguyen Thi Mai Trang (2007).

Learning outcomes are written statements of what the successful student/learner is expected to be able to achieve at the end of the program module/course unit or qualification (Adam, 2004). Learning outcomes are statements of what a learner is expected to know,

understand, and/or be able to demonstrate after the completion of a process of learning (ECTS Users' Guide, 2005). Mrunal Mahajan & Manvinder Kaur Sarjit Singh (2017) suggested that learning outcomes should be based on the following factors: Knowledge, Cognitive, Practical, and Generic Skills.

2.2. Critical thinking

John Dewey (1909), an American philosopher, psychologist, and educator introduced the first concept of critical thinking, which is called "reflective thinking": "Active, persistent, and careful consideration of a belief or supposed form of knowledge in the light of the grounds which support it and the further conclusions to which it tends".

According to Irani et al. (2007), critical thinking includes three tendencies: Engagement (the ability to find and predict situations based on reasoning skills and self-confidence), Cognitive maturity (considering objective factors before making decisions, looking at problems from many directions) and Innovativeness (desire to seek new knowledge and seek truth, intellectual curiosity). Meanwhile, according to Chanut Poob Dej et al. (2014), critical thinking includes four tendencies: Cynical disposition (being distrustful or critical of others' opinions), Analytical disposition (being logical and objective towards others' opinions), Empathic disposition (mentally identifying with other people), Pluralistic disposition (accepting a diversity of opinions, values, theories). Through the research results of Chanut Poob Dej et al. (2014) and suggestions from experts, the authors propose the following hypotheses:

H1a. Cynical disposition of Critical thinking negatively affects students' Learning outcomes

H1b. Analytical disposition of Critical thinking positively affects students' Learning outcomes

H1c. Empathic disposition of Critical thinking positively affects students' Learning outcomes

H1d. Pluralistic disposition of Critical thinking positively affects students' Learning outcomes

2.3. Problem-solving skills

Problem-solving skills were defined as a behavioral process that makes available a variety of response alternatives for dealing with a problematic situation and increases the probability of selecting the most effective response from among these alternatives. Five stages of problem-solving skills were identified: general orientation or "set," problem definition and formulation, generation of alternatives, decision-making, and verification (D'Zurilla & Goldfried, 1971). Heppner and Petersen (1982) conducted research to develop the Problem-Solving Inventory (PSI), a scale designed to measure an individual's perception of their problem-solving abilities, as well as their behavior and attitudes related to problem-solving style. While the PSI does not directly measure problem-solving skills, it assesses an individual's beliefs, attitudes, and problem-solving styles. The scale includes 35 observed variables divided into three groups: Problem-solving confidence (with 11 observed variables), Personal control (with 5 observed variables), and Approach-Avoidance style (with 16 important variables). Heppner and Petersen (1982) define these factors as follows:

Problem-solving confidence (PSC) represents an individual's positive thinking and trust in their ability to solve problems. According to the studies of Elliott et al. (1990) and Heppner et al. (1995), PSC has a positive impact on improving students' knowledge acquisition. Based on the theoretical foundation and supporting evidence, the author formulates the hypothesis:

H2a. Problem-solving confidence positively affects students' learning outcomes

Approach-Avoidance style (AAS) is an individual's general tendency to approach or avoid social problem-solving. Studies by Heppner et al. (1995) and Baker (2003) have demonstrated that students who have a positive tendency towards approaching problem-solving are more likely to achieve better learning outcomes and knowledge acquisition. Based on the theoretical foundation and expert suggestions, the authors propose two hypotheses:

H2b. Avoidance style when solving problems negatively affects students' learning outcomes

H2c. Approach style when solving problems positively affects students' learning outcomes

Personal control (PC) represents an individual's level of trust in controlling their own emotions and behavior when addressing real-world problems. Similarly, to the Approach-Avoidance style or Problem-solving confidence, the positive impact of Personal control on knowledge acquisition has been confirmed in studies by Heppner et al. (1995) and Salami & Aremu (2006). Therefore, the authors propose the following hypotheses:

H2d. Personal control when solving problems positively affects students' learning outcomes

2.4. Teamwork skills

Teamwork is a generic and transversal skill that is characterized by its relational dimension. It is defined as the capacity to integrate into and interact with work groups, striving toward achieving common goals (Anderson-Butcher et al., 2014; Atxurra & Villardón-Gallego, 2015; BarraycoaMartínez & Lasaga-Millet, 2010; González & Wagenaar, 2003). According to Lower et al. (2017), from an individual perspective rather than a group perspective, team working skills include individual attitudes and behaviors. In 1997, Cannon-Bowers and Salas also concluded that there are three essential competencies for teamwork: Knowledge, skills, and attitudes (KSA).

In the academic sector, teamwork skills are often studied along with team-based learning (Park et al., 2015) and pedagogy for teamwork (Earnest et al., 2017), without much emphasis on the relationship between teamwork skills and knowledge acquisition. This often leads to a low assessment of the importance of teamwork skills among students, despite the fact that these are skills that students are expected to develop (Allen & O'Neill, 2015).

Gui Lohmann's study (2019) has shown that there is an important relationship between teamwork skills and knowledge acquisition. In addition, the positive impact of teamwork skills on knowledge acquisition has also been confirmed in the study by Tenzin Doleck et al. (2017). Therefore, the authors propose the following hypotheses:

H3. Teamwork skills positively affect students' learning outcomes

2.5. Creative thinking

According to Theo Davut (2008), creative thinking is the ability to discover previously undefined relationships and create new and unique experiences as a new template. Tenzin Doleck et al. (2017) suggest that there is a difference between creativity and creative thinking. While creativity is "the production of novel ideas that are useful or influential" (Sawyer, 2012), creative thinking is "a cognitive activity that includes many components of thinking skills, mediated by more aesthetic components of traditional creativity" (De Schryver & Yadav, 2015). Creative thinking has important impacts on various fields such as science, technology, economics, and education (OECD, 2019). In education, Tan (2000) and Greenstein (2012) have pointed out that creative thinking is one of the important higher-order thinking skills that help individuals succeed in school and in their future careers (Torrance, 1972). Akpur (2020), Anwar (2012), Gralewski and Karwowski (2012), Gregory and colleagues (2013), Huang and colleagues (2017), and Sebastian and Huang (2016) all argue that developing and enhancing students' creative thinking is important for their academic achievement.

According to Fernando Lourenco and Dilani Jayawarna (2010), there is a specific relationship between creative thinking and academic outcomes, including learning potential and intentions to use learning in the future. From the above theoretical bases and evidence, the authors hypothesize:

H4. Creative thinking positively affects students' learning outcomes

With the hypotheses stated above, the author group identifies the research model as follows:

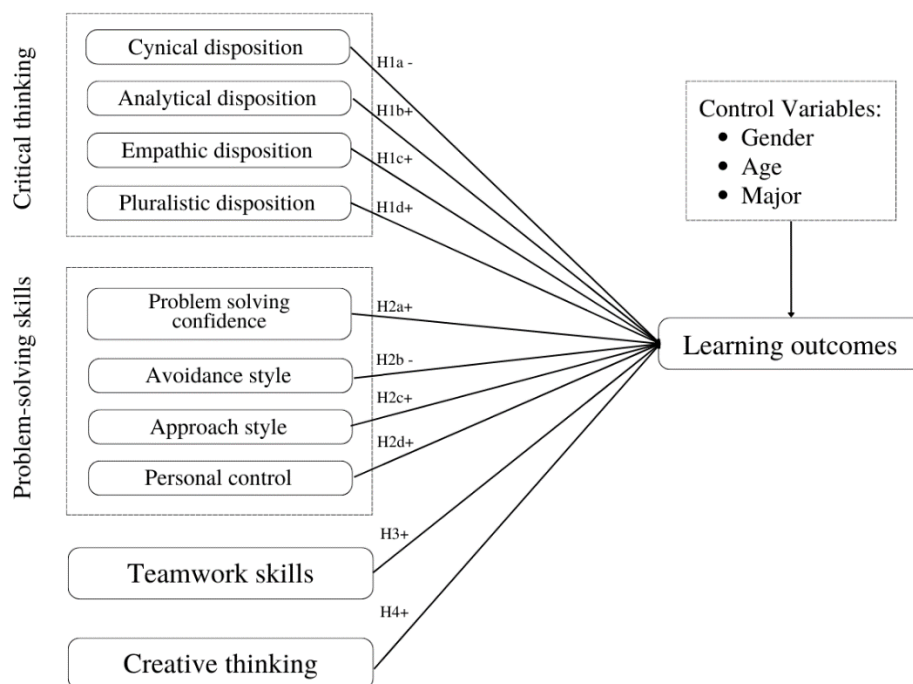


Figure 1. Proposed research model

Source: Self-synthesized research team, 2023

3. Method

3.1. Research process

The research process was carried out in three main stages:

In stage 1, the authors employed a qualitative research method. Through studying secondary data, the team constructed a theoretical framework to systematize concepts, measurement scales, and relationships among variables. From there, they identified gaps in previous research to propose testable hypotheses and model proposals. Subsequently, the authors used in-depth interviewing techniques to interview 18 students and 03 experts in the field of education, and university lecturers, following the prepared content. The aim was to identify the cognitive factors and soft skills that influence students' knowledge acquisition, screen and determine the relationships between variables in the initial theoretical model, while also testing the statements used in the quantitative research measurement scale previously constructed, thus refining the draft measurement scale before proceeding with quantitative research.

Prior to conducting a large-scale survey, the researchers performed a preliminary quantitative study through an online survey with 176 respondents. After collecting the questionnaire responses, the authors revised and shortened the questionnaire, adjusted the scale, and used simple, appropriate, and understandable language for the respondents. The data were then processed using SPSS 26.0 software with reliability coefficient Cronbach's Alpha and exploratory factor analysis (EFA).

Finally, the formal quantitative study was conducted in stage 3. Due to limited resources and time, the research team chose a convenient sampling method as it was appropriate for its ease of access, convenience in approaching respondents, and shorter data collection time. Following the recommendation of Hair, Anderson, Tatham, and Black (1998) for reference on the expected sample size, the research team needed a minimum of $N = 5 * 66 = 330$ research samples. However, to ensure objectivity and reliability for the study, the research team collected 623 survey questionnaires. The data collection process was carried out in both survey methods, face-to-face interviews, and online surveys. The total number of collected questionnaires from both survey methods was 641. After screening and checking the quality of the responses, the research team eliminated 18 questionnaires that did not meet the requirements. The remaining 623 survey data were classified and processed using SPSS 26.0 and SPSS AMOS 26.0 software to draw conclusions and provide recommendations for solutions.

3.2. Research Instruments

In order to determine the impact of critical thinking, problem-solving skills, teamwork skills, and creative thinking on the knowledge acquisition of university students in Hanoi, the authors used a Likert scale for the independent variables in the model, with a rating scale ranging from 1 to 5 (1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree).

Specifically, the Critical thinking scale was adapted from the study by Poondej, C., Koul, R., & Sujivorakul, C. (2013); the Problem-solving skills scale was adapted and modified from the study by P. Paul Heppner & Chris H. Petersen (1982); the Teamwork skills scale was adapted from the study by Lower et al (2017); the Creative thinking scale was adapted and modified from the study by Hu et al (2009); the Learning outcomes scale was adapted and modified from the study by Nguyen Dinh Tho & Nguyen Thi Mai Trang (2009).

3.3. Research Sample

According to the statistical results from the data of 623 survey samples, there were 325 female students and 298 male students participating in the survey, accounting for 52,5% and 47,8% respectively. Fourth-year students accounted for the majority of respondents (28,4%), followed by 24,2% of first-year students, 22,5% of second-year students, 17,2% of third-year students, and the rest were students from the fifth year and above. In terms of majors, students majoring in social sciences and humanities accounted for 36,9%, while students majoring in science, engineering, and technology accounted for 32,9%. The remaining 30,2% of students belonged to natural science majors.

4. Results

4.1. Results of the scale evaluation

4.1.1. Results of evaluating the reliability of the scale with Cronbach's Alpha coefficient

Table 1. Results of Cronbach's Alpha test for each variable

Constant	Factor	N of items	Cronbach's Alpha	Conclusion
HN	Cynical disposition	6	0,850	Accepted
PT	Analytical disposition	5	0,828	Accepted
DC	Empathic disposition	5	0,815	Accepted
DN	Pluralistic disposition	4	0,788	Accepted
TT	Problem-solving confidence	8	0,908	Accepted
NT	Avoidance style	5	0,900	Accepted
TC	Approach style	8	0,902	Accepted
KS	Personal control	5	0,847	Accepted
TW	Teamwork skills	10	0,912	Accepted
ST	Creative thinking	6	0,899	Accepted
KT	Learning outcomes	4	0,878	Accepted

Source: Self-synthesized research team, 2023

The data analysis results indicate that all variables used in the model have a Cronbach's Alpha coefficient > 0,6. At the same time, the correlation coefficient of the total

variables of each factor in the scale is greater than the significant condition of 0,3. The Cronbach's Alpha coefficient for each specific factor: The highest is the Teamwork skills factor with a coefficient of 0,912 and the lowest is the Pluralistic disposition factor with a coefficient of 0,788. No factor in the scale is below 0,6, meaning that all scales are valid, appropriate, meaningful, and ensure reliability.

4.1.2. Exploratory factor analysis

Table 2. KMO and Bartlett's Test results for independent variables

KMO		0,960
Bartlett's Test of Sphericity	Approx. Chi-Square	25017,158
	df	1891
	Sig.	0,000
Variance Extracted		62,531%
Eigenvalue		1,177

Source: Self-synthesized research team, 2023

The above test results show that the KMO coefficient satisfies $0,5 < \text{KMO} = 0,909 < 1$, so the EFA analysis method is appropriate for the data. In addition, Bartlett's test indicates that the observed variables are correlated with each other within the population ($\text{sig} = 0,000 < 0,05$). The authors obtained an approximate extracted variance of $62,531\% > 50\%$, indicating that the factor groups extracted from the rotated matrix explain 62,531% of the variance in the data, and the Eigenvalue index $= 1,177 > 1$. Therefore, the collected data is entirely suitable for conducting exploratory factor analysis (EFA).

The researchers want to select high-quality observed variables, so we will use a factor loading threshold of 0,5 instead of selecting factor loadings based on sample size. We then used the one-time elimination method for bad variables during the EFA analysis. 61 remaining observed variables were divided into 10 factors, however, some observed variables did not converge according to the previously proposed model. Specifically, two observed variables from the Pluralistic disposition scale converged with five observed variables from the Empathic disposition scale to form a group, referred to as the Empathic disposition scale.

4.1.3. Test the scale by confirmatory factor analysis

Table 3. Model Fit rating index in CFA analysis

Index	Value	Evaluation
CMIN/DF	2,412	Very good model (< 3)
CFI	0,897	Acceptable model ($> 0,8$)
GFI	0,815	Acceptable model ($> 0,8$)
RMSEA	0,048	Very good model ($< 0,06$)
PCLOSE	0,982	Very good model ($> 0,05$)

Source: Self-synthesized research team, 2023

The above results indicate that all indicators meet the requirements, meaning that the model can be suitable for the research data. Thus, after determining the relationship between variables in the model, and checking the suitability of the model with market data, the scale has reached the standard to test the model and hypotheses set forth by the research.

4.2. Test model and research hypothesis

4.2.1. Structural Equation Modeling Analysis

The analysis of the model results shows that the theoretical model has a significant Chi-square value (623) = 4126,770; Chi-square/df= 2,394; P-value= 0,000. Other indicators such as RMR = 0,043; GFI=0,802; TLI= 0,859; CFI= 0,867; RMSEA= 0,049 also meet the requirements and have been accepted (Schumacker & Lomax, 2004).

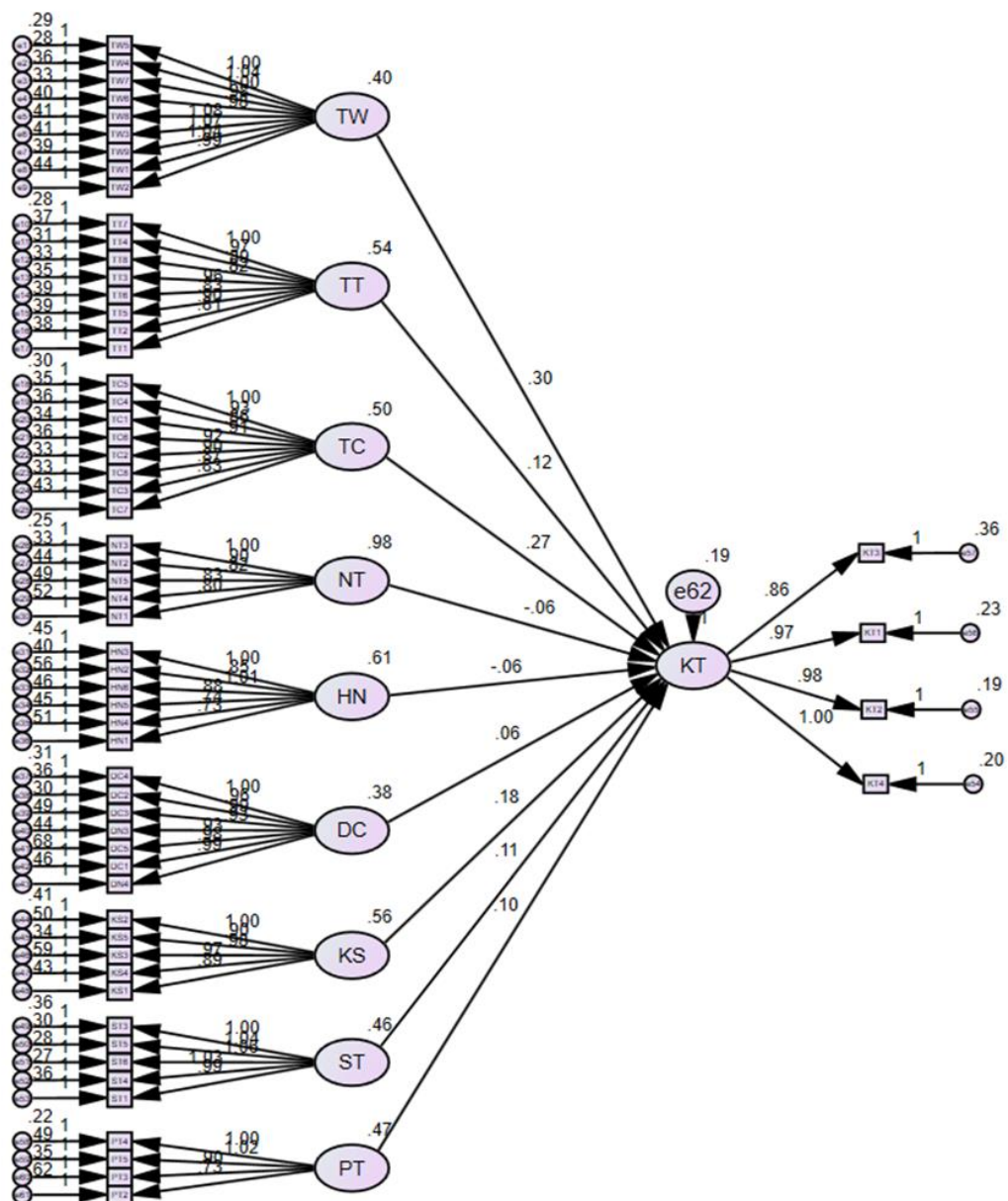


Figure 3. Results of testing Structural Equation Modeling

Source: Self-synthesized research team, 2023

4.2.2. Test the research hypotheses

Table 4. Results of unstandardized regression weights

			Estimate	S.E.	C.R.	P	Conclusion
KT	<---	HN	-0,058	0,029	-2,030	0,042	H1a: Accepted
KT	<---	PT	0,100	0,033	3,011	0,003	H1b: Accepted
KT	<---	DC	0,062	0,036	1,727	0,084	H1c: Rejected
KT	<---	TT	0,123	0,030	4,126	***	H2a: Accepted
KT	<---	NT	-0,064	0,022	-2,941	0,003	H2b: Accepted
KT	<---	TC	0,268	0,033	8,157	***	H2c: Accepted
KT	<---	KS	0,183	0,031	5,894	***	H2d: Accepted
KT	<---	TW	0,302	0,037	8,223	***	H3: Accepted
KT	<---	ST	0,114	0,032	3,507	***	H4: Accepted

Source: Self-synthesized research team, 2023

The unstandardized regression weights table shows that the p-value of the variable Empathic disposition is $0,084 > 0,05$; therefore, the variable Empathic disposition does not have a significant influence on the dependent variable Learning outcomes. Other independent variables such as Cynical disposition, Analytical disposition, Problem-solving confidence, Avoidance style, Approach style, Personal control, Teamwork skills, and Creative thinking all have p-values less than 0,05, indicating a significant influence on the dependent variable Learning outcomes. Thus, the authors reject hypothesis H1c and accept hypotheses H1a, H1b, H2a, H2b, H2c, H2d, H3, H4.

Table 5. Results of standardized regression weights

			Estimate
KT	<---	HN	-0,082
KT	<---	PT	0,125
KT	<---	TT	0,163
KT	<---	NT	-0,115
KT	<---	TC	0,342
KT	<---	KS	0,248
KT	<---	TW	0,347
KT	<---	ST	0,140

Source: Self-synthesized research team, 2023

The table of standardized regression weights shows that the impact level of Teamwork skills on Learning outcomes is 0.347, the largest among all factors. The factors

of Analytical disposition, Problem-solving confidence, Approach style, Personal control, Teamwork skills, and Creativity Thinking all have positive coefficients, indicating a positive impact on the dependent variable Learning outcomes. The two factors of Cynical disposition and Avoidance style have coefficients of -0.082 and -0.115, respectively, both smaller than 0, indicating that these two factors have a negative impact on the dependent variable Learning outcomes.

4.3. Evaluate the difference between groups in the control variable

4.3.1. Multigroup Analysis for the variable "Gender"

Table 6. Results of Multigroup Analysis for the variable "Gender"

	Chi-square	df
Invariant model	8870,772	2746
Variant model	8857,387	2738
Difference	13,385	8
P-value	0,09927169	

Source: Self-synthesized research team, 2023

The result of analyzing the two invariant and variant models for the variable "Gender" showed a p-value of $0,099 > 0,05$ (95% confidence level), indicating no Chi-square difference between the invariant and variant models.

Conclusion: There is no difference in the effect of variables in the model between students of different genders.

4.3.2. Multigroup Analysis for the variable "Major"

Table 7. Results of Multigroup Analysis for the variable "Major"

	Chi-square	df
Invariant model	12688.858	4123
Variant model	12647.108	4107
Difference	41.750	16
P-value	0.00042992	

Source: Self-synthesized research team, 2023

According to the results of the analysis of the two invariant and variant models of the variable "Major", the p-value is $0,0004 < 0,05$ (95% confidence level), indicating a Chi-square difference between the variant and invariant models. The authors chose the variant model to interpret the results.

Table 8. Result of variant model for the variable "Major"

	Social Sciences and Humanities		Engineering and Technology Sciences		Natural Sciences	
	Standardized regression weights	P	Standardized regression weights	P	Standardized regression weights	P
KT <--- HN	-0,097	0,124	-0,078	0,191	0,049	0,500
KT <--- PT	0,089	0,170	-0,027	0,657	0,381	***
KT <--- TT	0,046	0,450	0,185	0,002	0,305	***
KT <--- NT	-0,068	0,268	-0,222	***	-0,029	0,673
KT <--- TC	0,210	***	0,565	***	0,211	0,003
KT <--- KS	0,400	***	0,292	***	-0,002	0,980
KT <--- TW	0,523	***	0,090	0,119	0,365	***
KT <--- ST	0,132	0,033	0,250	***	-0,004	0,949
Squared Multiple Correlation	0,518		0,565		0,419	

Source: Self-synthesized research team, 2023

In the impact of the problem-solving approach on learning outcomes among students in different fields, the largest effect was found for students in the Engineering and Technology Sciences major (0,565 > 0,211 > 0,210), indicating that for these students, the problem-solving approach has a significant influence on their learning outcomes. The impact of teamwork skills on learning outcomes among students in the Social Sciences and Humanities was found to be the strongest (0,523 > 0,365 > 0,090), suggesting that for students in these fields, teamwork skills are crucial and have a positive impact on their learning outcomes in the university more than in the other two fields. On the other hand, the impact of problem-solving confidence had the strongest effect on knowledge acquisition among students in the Natural Sciences (0,305 > 0,185 > 0,046), indicating that students in this field are confident in their ability to solve problems. There was no significant difference in the correlation coefficients of the variables on knowledge acquisition among students in the three different fields. The highest correlation coefficient was found for the science and technology field at 0,565, while the lowest was found for the natural science field at 0,419. This suggests that overall, cognitive and soft skills have a significant impact on knowledge acquisition among students in the science and technology field.

Conclusion: There is a difference in the impact of variables on the model among students in different fields of study.

5. Conclusion

5.1. Conclusion

Through the process of validation and analysis of the data, the authors found that there are 8 factors that affect students' knowledge acquisition, including 2 factors with opposite effects: Cynical disposition (belonging to Critical thinking) and Avoidance style (belonging to Problem-solving skills); and 6 factors with positive effects: Analytical disposition (belonging to Critical thinking); Problem-solving confidence, Approach style, and Personal control (belonging to Problem-solving skills); Creative thinking and Teamwork skills.

In addition, analyzing the multigroup structure also helps to identify differences between different groups of students in terms of the impact of skills and thinking on learning outcomes. Specifically, there was no difference in the impact of variables in the model between students of different genders. However, there were differences in the impact of variables in the model between groups of students belonging to different majors, including Social Sciences and Humanities, Natural Sciences, Engineering and Technology Sciences.

Based on the conclusions drawn from the study, the authors provide some implications and recommendations for students and universities to enhance student's learning outcomes during and after the learning process. For students, not only is it important to improve their specialized knowledge and learn from textbooks, but also to develop and hone skills and critical thinking, especially those that students in the 21st century require, including critical thinking, problem-solving skills, teamwork skills, and creative thinking. Developing these skills will help students have a multidimensional perspective and better solve problems that arise during the learning process, stimulate comprehensive logical and creative thinking, increase cooperation with those around them, increase efficiency, and improve work results, leading to better learning outcomes. Universities, it is not the only place to equip students with knowledge, but also a supportive environment to help students develop other soft skills. Investing in soft skills education for students, including improving teaching methods and practical activities, is essential. This will enhance students' ability to apply knowledge and achieve success in their future careers.

5.2. Limitations and future research

During the research process, there are still some limitations that remain. Firstly, there are limitations regarding the scope of the research. Data were only collected from universities in Hanoi. Future studies could expand the scope of research to other provinces, cities, or regions across the country. Secondly, the sample selection structure of the group is not diverse enough. The survey sample mostly consists of public university students. Future studies could investigate the impact of skills and thinking on learning outcomes for various other groups such as high school students, students from different types of universities such as vocational schools, junior colleges, international linked universities, etc. Thirdly, there

are limitations regarding the measurement scale. The current study uses a measurement scale consisting of 66 questions. The long measurement scale may waste the survey respondents' time, and the author's time in collecting data, or result in some dishonest or poor-quality answers. A shorter measurement scale will help future researchers optimize data collection time while still obtaining more data.

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FACTORS AFFECTING HEALTHCARE WORKERS' INTENTION TO LEAVE DURING THE POST-COVID-19 PERIOD

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Abstract

This paper uses qualitative and quantitative research to identify and evaluate factors affecting healthcare workers' intention to leave their job after the COVID-19 pandemic. Research data was collected from 183 healthcare workers in both public and private medical institutions in Hanoi from September to December 2022. Using SPSS 25 for data analysis, the study shows that the increase of Salary/Compensation, Interpersonal relationships, Recognition, Advancement and Working conditions would lower intention to leave job among Hanoi healthcare workers. Fear of infection and contagion, meanwhile, would heighten the intention to leave job. This result is used to propose some suggestions to improve this medical situation.

Keywords: *Intention to leave, healthcare workers, COVID-19 pandemic.*

1. Introduction

The COVID-19 pandemic first entered Vietnam in January 2020, and by December 2022, it has resulted in over 11 million infected cases, with casualties being 43186, accounting for 0.4% cases.

Over the course of the pandemic, lacking medical staff occurs occasionally due to an overload of patients, with many workers even having strong urges to leave their occupation. The Ministry of Health reported that many medical workers are compelled to move from public institutions to private ones after two years of battling with COVID-19. Official reports reveal, over 9680 workers have left their job from January 2021 to June 2022. This figure proves to be a great setback, especially in times of low workforce.

Existing studies have pointed out factors that have the most impact on medical staff's intention to leave include Work Stress, Salary and Fear of infection. Abdulrhman Saad

Albougami (2020) study pointed out nurses in Saudi Arabia experience moderate levels of stress in their job. Similarly, Jison Ki (2020) pointed out the relationship between health and intention to leave, with most participants reporting more than two health issues, mostly chest pain, leg pain, exhaustion and sleep disorders, directly influencing their intention to leave. In Vietnam, studies in this field are particularly limited. Phung Thanh Hung (2019) study discovered 60% of surveyed nurses have high job motivation and job satisfaction, but this study has a small sample size with low representability.

Existing literature in Vietnam has not been able to fully examine the impact of this pandemic on the medical staff, plus having smaller sample sizes. Therefore, inheriting the research suggestion from Randa M. Said (2021), this study is carried out to analyze the factors impacting intention to leave among Hanoi medical staff, with emphasis on their fear of infection and contagion during the pandemic.

Herzberg's Two-Factor theory considers two kinds of factors that have influence on job satisfaction: Hygiene factors and Motivation factors. He listed Hygiene factors including (1) interpersonal relations, (2) salary, (3) company policies and administration, (4) supervision, (5) working conditions which contributes to avoiding unpleasantness at work (Herzberg, 1966). On the other hand, Motivation factors have a direct impact on job satisfaction, as it involves (1) room for advancement, (2) the work itself, (3) possibility for growth, (4) responsibility, (5) recognition and (6) achievement. In this study, the research group focuses on examining interpersonal relations, salary, working conditions, room for advancement and recognition.

Hobfoll's Conservation of Resources theory suggest how stress occurred in particular situations involving personal resource, which could offer an understanding of the motivation of people to either maintain or seek a resource. This study apply this theory to figure out stress levels of medical workers during the pandemic in relation to the fear of infection and contagion.

This research was conducted to analyze factors affecting healthcare workers' intention to leave during the post-COVID-19 period by using theoretical basis and research results. Through finding most influential factors on the intention to leave of medical staff in a certain pandemic circumstance, the research group would suggest a series of solutions which help medical institutions adjust their policy to assist medical workers properly, improving retention rates in those organizations.

2. Methods

Study design

This study used qualitative and quantitative research to explore and evaluate factors affecting healthcare workers' intention to leave after the COVID-19 pandemic in Vietnam. Based on the theoretical basis, the paper's model was designed as follows:

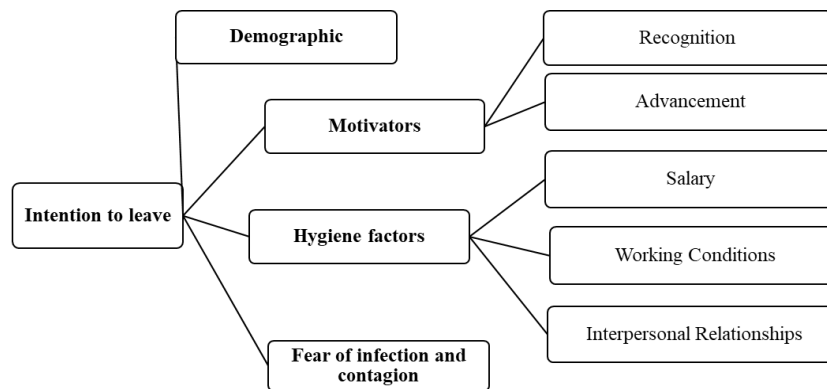


Figure 1. Research model of factors affecting healthcare worker's intention to leave

Source: Summary of the team's research results, 2022

Data collection and processing

The interviews

The authors conducted interviews with two doctors working at public hospitals in Hanoi and applied the preliminary data collection in a clinic with 20 staff in order to modify the final questionnaire.

After selecting samples, the authors interviewed two doctors working at public hospitals in Hanoi to justify COVID-19 relevant factors. When asked about difficulties during the COVID-19 pandemic, the first interviewee admitted that they were extremely nervous and stressed by the rising numbers of patients as well as the lack of medical equipment. Meanwhile, the second interviewee claimed it was a period of fear and exhaustion by the workload and the skepticism from others, worrying they were the spreading source of COVID-19. When asked about their intention to leave their current job, the first interviewee did not want to leave their job. However, the second interviewee confessed that they had thought about quitting their job due to unbearable pressure.

The survey

The author used a cluster sampling technique to select qualified samples with two standards of “directly involved in diagnosis and treatment of COVID-19 in Hanoi and agree to participate in this study from October to December 2022”. A total of 200 healthcare workers from 05 medical institutions participated, including public and private hospitals and clinics. However, there were 17 incomplete surveys. Therefore, 183 respondents were included in the final analysis.

The questionnaire had three sections, described as follows:

Demographic: This section asked respondents about their demographic and work-related information, including gender, marital status, cohabitation status, academic level, workplace, work experience, working position.

Factors affecting healthcare workers' intention to leave: A Likert Scale 5-point questionnaire was used in this section for respondents to rank their satisfaction with Recognition, Advancement, Salary, Working conditions, Interpersonal Relationships, and

Fear of Covid (including the fear of infection and contagion, and the fear of discrimination from the community).

Intention to leave their current jobs: The questionnaire used a Likert Scale 5-point from (1) Strongly disagree to (5) Strongly agree.

Data analysis

The authors used SPSS 25 software to analyze collected data. A standard logistic regression was performed to ascertain the relationship between factors. Besides, this study also utilized research techniques such as Cronbach's Alpha and EFA, the Exploratory factor analysis, to measure the data's consistency and reliability. The ANOVA test was applied to determine the differences in the respondents' intention to leave caused by demographic factors, including work experience, academic level, workplace, working position, and salary; meanwhile, the T-test was used to compare the intention to leave due to gender, marital status and cohabitation status.

Linear regression was also performed in this study to accredit the proposed hypotheses, examining the effects of independent variables on the dependent variable, which was the intention to leave.

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \varepsilon$$

- Y: Intention to leave
- X1: Recognition
- X2: Promotion opportunities
- X3: Salary/ Compensation
- X4: Working environment
- X5: Interpersonal life
- X6: Fear

β is the Effect size, showing the effects of independent variables on dependent variable Y.

Table 1. Hypotheses proposed from the research model of factors affecting healthcare worker's intention to leave

No	Hypothesis
H1. Motivators reduce the intention to leave of healthcare workers.	
H1.1	"Recognition" reduces the intention to leave of healthcare workers.
H1.2	"Advancement" reduces the intention to leave of healthcare workers.
H2. Hygiene factors reduce the intention to leave of healthcare workers.	
H2.1	"Salary" reduces the intention to leave of healthcare workers.
H2.2	"Working conditions" reduces the intention to leave of healthcare workers.
H2.3	"Interpersonal relationships" reduces the intention to leave of healthcare workers.
H3. Fear of Covid increases the intention to leave of healthcare workers.	

Source: Summary of the team's research results, 2022

3. Results

Cronbach's Alpha analysis

The following analysis results show that the Cronbach's Alpha coefficient values are all over 0.7 and the variables have a sufficient total correlation coefficient greater than 0.3 after performing the Cronbach's Alpha analysis of the observed variables. As a result, every variable complies with the reliability standards.

Table 2. Scale analysis results

Number	Scale	Item	Cronbach's Alpha
1	Recognition	CN	0.737
2	Advancement	CHTT	0.747
3	Salary	LT	0.771
4	Working Conditions	MTLV	0.779
5	Interpersonal Relationships	QH	0.804
6	Fear of infection and contagion	NSLN	0.843
7	Fear of discrimination from the community	NSKT	0.802

Source: Summary of the team's research results, 2022

Exploratory Factor Analysis

Six factors were extracted from the EFA results under the assumption that the Eigenvalue was greater than 1, and these six factors condensed the data from the 21 observed variables. In addition, the total variance extracted for the six factors is 67.880% > 50%, indicating that the six factors and the 21 observed variables together account for 67.880% of the variance in the data. The load factor is greater than 0.5 for all elements.

Multivariate regression analysis

The adjusted R² (Adjusted R-squared) value after performing the regression is 0.633, which means that the model accounts for 63.3% of the variation in the dependent variable "Intention to leave." Other factors contributed to the remaining 36.7% intention to quit. According to the Durbin-Watson d statistic value of 1.855 (dU = 1,800 d = 1,855 4-dU = 2,145), there is no correlation between the first order series in the model. If the independent variable and other variables have a good correlation and the VIF value is less than 1.4, there is no danger of multicollinearity. Regression results of the factors show that, all 6 factors in the model have a certain degree of influence on Intention to quit due to Sig value. < 0.05. The magnification coefficient of variance is less than 2.2, indicating that there is little possibility of multicollinearity. Thus, we draw a regression model of the impact of factors on the intention to leave health workers in Hanoi city as below:

$$Y_{DNV} = 5,546 - 0,195*CN - 0,194*CHTT - 0,245*LT - 0,112*MTLV - 0,228*QH + 0,300*NS$$

Table 3. Results of Regression Analysis

	B	Standard error	Beta	T	Sig.	VIF
Constant	5.546	.448		12.393	.000	
CN	-.195	.054	-.187	-3.613	.000	1.330
CHTT	-.194	.051	-.186	-3.788	.000	1.200
LT	-.245	.051	-.247	-4.810	.000	1.302
MTLV	-.122	.054	-.119	-2.255	.025	1.372
QH	-.228	.052	-.219	-4.382	.000	1.234
NS	,300	,057	,271	5,261	,000	1.315
	R squared					.645
	Adjusted R Square					.633
	Standard error					.42853
	Durbin Watson					1.855

4. Discussion and Recommendations

4.1. Discussion

The results of this study are consistent with earlier findings, including the papers of Lakshman Sangeetha (2016), showing that Motivation factors, including Advancement, Recognition, partly has an impact on medical staff's intention to leave. Hygiene factors, including Interpersonal Relationships and Salary is proved to have the largest negative impact towards staff's intention to leave, which proves similar to Abdulrhman Saad Albougami (2020). Workers believe that Salary is one of the most accurate means to prove their necessity to the organization and the value of the job. Fear of infection proved to have the greatest influence over the intention to leave, consistent with Saeideh Varasteh's findings (2022). The beginning of the pandemic came with many risks that remained unknown, with a speedy spread of the virus, resulting in medical staff's fear of contamination and the discrimination from the general public.

Vietnam, similarly to other countries, faced great challenges as the medical workforce fell insufficient during the pandemic. Apart from attracting new-hires, the need to retain former employees proved to be irreplaceable. The research group's suggestions include relieving tension between workers, improving communications between managers and staff to encourage better cooperation; considering changing policies to improve salaries, compensation and advancement opportunities for the workforce. Regarding fear, it is suggested that new information about the pandemic is regularly updated, especially in the rise of new variants of COVID (May 2023), and supplementing protecting equipment.

COVID-19 has greatly impacted medical staff's work and life. Managers have suggested a few solutions to retain employees, deduced from the findings above. In Vietnam, suggested solutions have been implemented, but have yet to show any significant results.

4.2. Recommendations

Vietnam and many other countries have been facing many patients with COVID-19 and a shortage of healthcare workers. Recommendations for hospital directors to improve job satisfaction include that managers can treat all healthcare workers fairly, listen to staff concerns, pay attention to their work and life problems at an early stage, maintain a good working relationship with employees, especially those with experience and regarding future welfare and benefits and even their state of health. Managers should create a system of consultation and open communication between doctors, nurses, and others to improve work interaction so that the team works together and trust can be strengthened.

At the same time, medical facilities need to establish a reward and recognition system for healthcare workers' contributions. This helps to improve morale and job satisfaction. Finally, having the opportunity to be promoted in the workplace is one way to help improve the expertise, pay, and self-determination of healthcare workers in the workplace. Managers should encourage healthcare professionals to specialize in a particular area of clinical practice, allowing them to acquire new skills, take on greater responsibility with greater autonomy, and grant promotion potential to increase their job satisfaction and stability.

The most common reason for quitting jobs during the beginning of the epidemic was that employees were afraid because they did not understand the disease, lacked personal protective equipment, and was fearful of spreading the disease to family members, so they needed to find a way to provide adequate personal protection equipment, ensuring the safety of healthcare workers and their families. Prioritizing healthcare workers' families when doing COVID testing and getting vaccinated are both effective ways to prevent work-family conflict. These measures also help families to support healthcare workers to some extent mentally and reduce the loss of human resources. Increasing workers' knowledge of the illness will reduce their fears over time and allow them to return to work after a period of absence. Therefore, health organizations should organize regular training sessions to keep healthcare workers updated with the latest and most accurate information about coronavirus to reduce the fear and negative feelings associated with this disease.

In conclusion, all these measures can help improve the quality of patient care.

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THE CONCEPT OF DEMOCRACY FROM SOME CURRENT APPROACHES

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Abstract

During the historical development of mankind, democracy is a social value that appeared quite early. The content of democracy can basically be understood as power belonging to the people. Power belongs to the people, always associated with the right to life and freedom of the people, with the task of liberating people from oppression, exploitation, injustice and bringing a life of freedom, equality and happiness. In terms of social regime, democracy is a form of state, which is born and develops in association with the state and also disappears when the state is lost. Democracy can also be considered as an organizational method and a tool for social management, a historical category, a cultural category, a political category, showing a profound humanity and era.

Keywords: *Democracy, civil rights, organizational method, social value.*

1. Introduction

Democracy is an objective need, a common aspiration of people in the process of man conquering the natural world and reforming society. Democracy is always associated with the development of the times and social progress. As humanity advances, the issues related to democracy and human rights become more urgent. Today, in the context of globalization, international integration, the development of the knowledge economy and the scientific-technological revolution, the issue of democracy is no longer a matter of individuals, of nations, nation, but of all mankind. Democracy has put people at the center of development, democracy contributes to solving economic, cultural, ethnic, religious and especially political issues. Without democracy, there would be no justice, freedom, civilization; Democracy must be associated with the socio-political regime. In fact, any democracy shows its democratic character through the state regime. Of course, not every state regime is accompanied by democracy, but whether the relationship between democracy and the state or democracy and politics is appropriate or inappropriate. Therefore, in the current context, democracy has an increasingly important position and role.

2. Method

The article is made based on the worldview and methodology of Marxism - Leninism. It is a combination of dialectical materialism and historical materialism to explain the process of formation and development of the democratic category. On the basis of that general methodology, the article uses a combination of history and logic to summarize the democracies that have existed in history and from that to draw the logic of the concept of democracy from many angles. When analyzing the history of socio-economic forms, the author finds that in each certain historical period there are different approaches to democracy. Comparative methods are also used in the article, to shed light on the extent to which democracy is used by countries around the world. In addition, the author also uses other interdisciplinary methods such as enumeration, analysis, synthesis, data synthesis... to clarify the angles of the current concept of democracy.

3. Results

3.1. The concept of democracy

The idea of democracy appeared very early, right in the primitive commune period, around the VII-VI century BC. The early form of democracy was expressed through the inherent rights of all citizens in the gentile society, but later Ph. Engels called it primitive democracy. In primitive society, categories such as freedom, democracy, justice... have not yet appeared, all members of a clan or tribe exercise the right to elect and remove the head of the clan or tribe. The work "Origin of the family, private property and the state" by Ph. Engels pointed out: "For all its innocence and simplicity, what a fine institution that gentile system is. There were no armies, gendarmes and police, no nobles, kings, governors, magistrates and magistrates, no prisons, no trials - and yet everything went smoothly. All frictions and all disputes are resolved collectively by the people involved - i.e. clans or tribes, or between clans... It's all up to the people involved, solve it on its own, and in most cases an old custom has already solved everything" (Marx, C & Engels, Ph, 1984, p.151-152). In the rule of primitive democracy, humanity between people is the main thing, it is a rule of behavior between people according to conventions and customs, not legal ones. The growing society, especially the development of productive forces and the division of labor, leads to excess wealth, private property and class division appearing. Democracy begins to take on a class character, democracy is associated with the nature of the state. Especially when there is language, writing and the development of abstract thinking, of the ability to generalize in human perception, people express that idea with the term Demoskratos that the Greek thinker antiquity speaks of democracy. In the language of the ancient Greeks, the term was compounded by Demos, the people, and Kratos, the ruler. Accordingly, the original meaning of democracy (Demoskratos) is also the basic meaning of the concept understood as the people's power or the people's power. The development of democracy has experienced the ups and downs of history, of the level of socio-economic development, of human cognitive capacity... But basically, until today, the term democracy is the power belonging to the people, which has been inherited and developed by theorists through the ages.

Democracy has been given different views by many theorists, but in general, democracy is the power that belongs to the people. According to the classics of Marxism-Leninism, democracy is just a political category; it was born, formed, developed and died along with the birth, formation, development and death of politics, in which, the most important is the state. Democracy is a form of state. Therefore, democracy is also a form of state and democracy will also have to be lost when that state no longer exists, of course it will only happen when communism is completely victorious. According to V.I Lenin, “Democracy is freedom, equality, the decision of the majority; there is nothing higher than freedom, equality, the decision of the majority” (Lenin, V.I, 1995, p.414). V.I Lenin repeatedly asserted that “democracy” is a form of state, one of forms of state. On the basis of Marxism-Leninism, President Ho Chi Minh conceived “Democracy is that people are democracy. Democracy is a treasure because it is not something that is naturally available but it is the result of the revolution, which our people had to struggle and sacrifice hard to win. Democracy is a treasure because it is the ideal and aspiration of all our people for a good society in the future. Democracy is a treasure because it gives people the right to control their own destiny, creating conditions and premise for the whole society, as well as each individual in the society, to develop and perfect. Thanks to democracy and through democracy, people have active, proactive and creative activities towards history” (Ho Chi Minh, 1996, p.279). He emphasized that because the people are the masters, the highest position belongs to the people, all power belongs to the people, all benefits are for the people, all work is done by the people. “The people are the masters” and “the people are the masters” show the originality and creativity in Ho Chi Minh's concept of democracy. The person who has put the people's position on the position, acts as the subject of society through the role of the people as the owner of the state.

In fact, there are many different views about democracy, according to the Vietnam Encyclopedia, democracy is understood as: “organizational form of socio-political institutions based on the recognition of the people as the source of power and the recognition of the principles of equality and freedom. Democracy is also applied to the organization and operation of certain political organizations and institutions” (Vietnam Encyclopedia, 1995, p.113). In the dictionary of philosophy, democracy is “one of those forms of government characterized by the formal proclamation of the principle that the minority is subject to the majority and the recognition of the freedom and equality of the citizens” (Dictionary of Philosophy, 1986, p.118).

International IDEA, International IDEA Strategy 2012-2017 (Stockholm: International IDEA, 2012), “Democracy is a universal human aspiration and an experience that is pursued and lived in different ways around the world. Democracy is also a system of governance in which government is controlled by the people and in which citizens are considered equals in the exercise of that control. Beyond the basic tenets of citizens’ choice and political equality, the critical choices are best made, and the quality of democracy best gauged, by those directly concerned: the citizens themselves. Therefore, the key leaders in

democratic change are a country's citizens, and the starting point for reform is at the national and local level" (Brechtje Kemp & Melida Jimenez, 2013, tr.13).

Amartya Sen said that "What exactly is democracy? We must not identify democracy with majority rule. Democracy has complex demands, which certainly include voting and respect for election results, but it also requires the protection of liberties and freedoms, respect for legal entitlements, and the guaranteeing of free discussion and uncensored distribution of news and fair comment. Even elections can be deeply defective if they occur without the different sides getting an adequate opportunity to present their respective cases, or without the electorate enjoying the freedom to obtain news and to consider the views of the competing protagonists. Democracy is a demanding system, and not just a mechanical condition (like majority rule) taken in isolation" (Amartya Sen, 1999, tr.5).

From the above viewpoints on democracy, we can understand that democracy is a product of human social history, a natural need with human nature in the process of fighting for natural and social reform. At present, when society is developing more and more, people's awareness level is increasing, the democracy category is also increasingly perfected. Democracy is perfected when the state is established by the people, the entire power of the state originates from the people. The people authorize the state to implement the will and aspirations of the people. serve the interests of the people.

3.2. Angles of approaching the concept of democracy today

First, democracy is approached as a democracy, which is the approach of popular interest. On the basis of inheriting the ideology of democracy of C. Marx and Ph. Engels, V.I. Lenin repeatedly affirmed that "democracy" is a form of state, one of the forms of the state. Democracy is also a state, so if the state is lost, democracy will also be lost. That is reflected in the thesis: "Democracy is a form of state, one of forms of the state. Therefore, like all existence of the state, democracy is an organized and systematic exercise of coercion against people" (Lenin, V.I, 1995, p.123). As can be seen, according to V.I. Democratic Leninism is just a political category, it is born, exists, and dies along with the birth, existence and death of politics, in which, the most important is the state. Democracy is a form of state.

Democracy is a democracy - That is, an organized form of the State, which is the coercion of a group of people with a group of others in society; official recognition of equal rights among citizens in participating in State management, defining the State structure. Everyone has the right to participate and contribute in decision making. In the history of human development, primitive democracy, existing in primitive communal society, is not a democracy because the state has not yet appeared and is not political. The birth of democracy is associated with the State, with the society with class division, bearing the profound class nature that it represents. Slavery democracy has the essence of the slave-owner class, reflects economic interests and is a tool to protect the political power of the ruling class, implement democracy with slave owners and deprive slaves of their democratic rights and social classes are ruled, implement a dictatorship, and suppress all opposition to that state. Democracy for

slaves is just a wish, a longing; and for slave owners, democracy was power and dictatorship over slaves and immigrants. The inner hiddenness of the slaves was manifested on the outside by strong struggles that caused slavery to disintegrate, slave democracy to collapse and replaced by feudalism. However, C. Marx denounced the monarchy as an autocracy - Tram is a state, a bad state regime. This is considered the most stagnant period in human history in terms of democracy for the people. The bourgeois revolution broke out, bringing with it many people's expectations for a more progressive, more humane democracy. In modern capitalist society, bourgeois democracy has also brought many progressive values to mankind, but in the end, this democracy only serves the rich. Therefore, bourgeois democracy cannot hide the exploitative, pressured, and unfair nature of the bourgeoisie. Bourgeois democracy is a tool and method to serve the economic interests and political power of the bourgeois minority in society. The economic basis of the bourgeois democracy is the capitalist private appropriation regime. The bourgeois democracy cannot create social justice and equality and cannot eliminate human exploitation. The aspirations, desires and expectations of the people have been suppressed to the extreme, leading to the struggle movements of the working people in history to constantly arise, they fight for the rights of freedom and democracy, human right. The great victory of the Russian October Revolution in 1917 was the first time in the history of the establishment of a proletarian state that exercised the power of the vast majority of the working people. As C. Marx once wrote: "...until there is democratic government, communists and democrats will fight side by side, and the interests of the people are also the interests of the communists" (Marx, C & Engels, Ph, 1995, p.391). In that process of movement, socialist democracy did not appear spontaneously but was the result of human development: "Any other kind of democracy can only exist in the minds of theorists, disregarding factual facts and arguing that it was not the man in the situation that developed the principles, but the principles themselves that developed into democracy became the principles of the ruling class, the principle of the masses" (Marx, C & Engels, Ph, 1995, p.791).

Thus, as a democracy is a democracy, there have been three democratic regimes in human history. It is slavery with slave democracy; capitalism with bourgeois democracy and socialism with socialist democracy.

Second, democracy is approached as an organizational method, management tool and operation of social organizations. Democracy is a form and method of social management, is the basic principle guiding the construction and operation of all organizations in the political system, in the content and mode of operation of the political system, value and each of its elements; in solving social relationships; carrying out democratic activities, ensuring the freedom and equality of all members; the principle of submission to the majority, respect for the minority; exercise the right to referendum, citizen's initiative and discussion before the competent authority decides.

Usage at the national level	Country or territory	Referendum	Citizen's Initiative	Agenda Initiative	Recall
	ALGERIA	•			
	MOROCCO	•			
	COMOROS	•			
	MADAGASCAR	•			
	UNITED REPUBLIC OF TANZANIA				
	TOGO	•	•	•	
	REPUBLIC OF CONGO	•			
	GUINEA EQUATOR	•			
	NIGER	•		•	
	BENIN	•		•	
	BURKINA FASO	•		•	
	BURUNDI	•			
	CENTRAL AFRICAN REPUBLIC	•			
	DEMOCRACY CONGO	•		•	
	GHANA	•			
	LIBERIA	•	•	•	
	SUDAN	•			
	BOTSWANA	•			
	CAMEROON	•			
	CHAD	•			
	DJIBOUTI	•			
	GAMBIA	•			
	GUINEA	•			
	SENEGAL	•			
	SOMALIA	•			•
	SOUTH AFRICA	•			
	CÔTE D'IVOIRE	•			
	MALI	•			
	MAURITANIA	•			

Figure 1. The extent of use of the mechanisms of direct democracy in some countries in Africa

Source: See IDEA, Direct Democracy: The International IDEA Handbook, 2008, p.176.

Usage at the national level	Country or territory	Referendum	Citizen's Initiative	Agenda Initiative	Recall
	SAN MARINO			•	
	SLOVAKIA	•	•	•	
	SPAIN	•		•	
	ANDORRA	•		•	
	HUNGARY	•	•	•	
	ICELAND	•			
	POLAND	•		•	
	ARMENIA	•			
	MALTA	•	•		
	PORTUGAL	•		•	
	TÜRKIYE	•			
	ALBANIA	•	•	•	
	AUSTRIA	•		•	
	BELARUS	•	•	•	•
	BULGARIA	•			
	NORTH CYPRUS	•			
	GEORGIA	•	•	•	
	GIBRALTAR	•			
	LUXEMBOURG	•			
	UKRAINE	•	•		
	CYPRUS				
	FINLAND	•			
	Former republic of Yugoslavia MACEDONIA	•	•	•	
	REPUBLIC MOLDOVA	•	•	•	
	RUSSIA	•	•		
	BOSNIA AND HERZEGOVINA				
	CROATIA	•	•		
	CZECH REPUBLIC	•			
	MONTENEGRO	•		•	
	NETHERLANDS	•		•	
	SERBIA	•	•	•	

Figure 2. The extent of use of the mechanisms of direct democracy in some countries in Europe

Source: See IDEA, *Direct Democracy: The International IDEA Handbook*, 2008, p.186.

Thus, we can see that social management methods to increase democracy have been implemented in almost all countries in the world, although the development level of countries is different. Countries use these methods more often and materialize into political life. In today's world, the use of social management tools and methods strengthens democratic institutions and

democratic processes worldwide. The spread of the extent to which tools are used to practice democracy such as referendums (allowing people to vote on issues related to politics, the constitution, laws, etc.); initiative agendas (the principle of submission to the majority, respect for the minority for the council to negotiate effective decision-making); Citizen initiative (proposing provisions on the Constitution, laws, etc.) and recall (resignation) further shows that democracy is a preeminent and effective form of management.

In the socialist regime in Vietnam, democracy as a method of organizing and managing society. Democracy follows the principle of collective leadership, assigning individuals to be in charge; the principle that the minority is subject to the majority; the consultation and discussion of the people before promulgating the guidelines and policies of the Communist Party and the Socialist State, the exercise of the rights to complain, denounce, supervise and criticize the society, debate, explanation, publicity, transparency, responsibility of individuals and organizations for issues related to the collective, to the community. President Ho Chi Minh also affirmed: “The government belongs to the people, is owned by the people... The people are the masters of the government. The people elect representatives to act on their behalf. That's democracy. The authorities are unified, centralized. From the People's Council and the Communal Administrative Resistance Committee to the National Assembly and the Central Government, the few must submit to the plural, the subordinates must submit to their superiors, the localities must submit to the central government, so that both the people and the people must obey, while concentrating” (Ho Chi Minh, 2011, p.263). Democracy is a method of collective decision-making in which all members have equal rights to participate in decision-making.

Third, democracy is approached as the most important feature in the system of human and civil rights. Democracy is first and foremost a human right; moreover, it places special emphasis on political rights. Because, political emancipation is a prerequisite for all other human liberation, political equality is the premise of all equality, all freedom. In other words, political rights are, on the one hand, a precondition for the realization of other rights, and on the other hand, a reflection of each individual's degree of emancipation of the “human capacity”. Democratic rights are expressed in the system of human rights, which is understood as freedom, equality, and the right to pursue happiness, as President Ho Chi Minh affirmed: “all nations in the world are born equal, every nation has the right to live, to be happy and to be free” (Ho Chi Minh, 2011, p.1). With a noble human spirit, always wishing for the Vietnamese people to enjoy democratic freedoms, Ho Chi Minh advocated to democratize effectively by legalizing those rights. Referring to the amendment of the Constitution, he emphasized: “It must be a Constitution that guarantees democratic freedoms for all classes of people” and in the report on the draft amendment to the 1959 Constitution, Ho Chi Minh affirmed the right to democracy with the following basic rights:

“Citizens of the Democratic Republic of Vietnam have the right to work. Right to rest,
Have the right to study,
Having physical freedom,
Have the right to freedom of speech, press, assembly, association, demonstration,

Have the right to freedom of religion, to follow or not to follow a religion,

The right to vote, to stand for election...

All citizens are equal before the law.

Women have equal rights with men in politics, economy, culture, society and family”
(Ho Chi Minh, 1996, p.593).

Marxist-Leninist classics have especially emphasized political rights as the essence of democratic rights. Therefore, the first task for the working class to influence the affairs of the state is to achieve political freedom, that is, all citizens have the right to participate in deciding important issues of the state, including discussing and monitoring government activities; the right to vote in elections, the right to freedom of speech, the right to freedom of religion, the right to freedom of the press, the right to freedom of assembly, the right to request public documents and information, and other rights... Democracy is also a social value of people that has been institutionalized into the legal system of a certain state, associated with a certain political system based on a certain level of economic development. Therefore, democratic rights, on the one hand, are a reflection of man's progress towards freedom, equality, and the comprehensive liberation of each individual's human nature, and on the other hand, the development of the law, cultural and social progress of that country. Democracy is recognized as a universal value. Democracy makes people's lives richer and better. Indeed, political freedom is part of human freedom in general, and the exercise of civil and political rights is an important part of the good life of individuals as society. Participation in politics and society has intrinsic value for human life and happiness. Being prevented from participating in the political life of the community is a great deprivation. Democracy as an inevitable human need, the need to be openly discussed, to give personal views, to be constructive. Therefore, it can be said that democratic rights are basic human freedoms in a democratic social system or the legitimate requirements and needs of people for political equality and social equality. This is the environment and conditions for the existence, development and perfection of the personality and freedom of each individual.

Fourth, democracy is approached as a cultural value - democratic culture. Democratic culture is an integral part of social life. Democratic culture reflects the good, the beautiful, the true - the good - the beautiful, the human nature. Democracy from a cultural perspective, democracy is the sum total of human creative activities. In democratic culture, both material culture and spiritual culture converge. Material culture includes institutions, apparatus, customary laws...; Spiritual culture includes ideas, consciousness, needs, communication, behavior, democratic lifestyle... The process of implementing democracy is also the process of cultural activities including creation, inheritance, protect, develop, promote, exchange... The democratic cultural level of individuals and communities is one of the criteria and measures to assess the cultural level, the intellectual level, the personality level, and the cultural level, civilization level of people and society. The core nucleus of democratic culture in terms of subjectivity, in operation and communication and behavior is mutual respect between people and social community in the process of participating in social relations; implement democracy in a cultured manner, respecting the rights, interests, democracy,

freedom, equality, institutions, institutions and mechanisms of social democracy. At the same time, on his side, it is a worthy demonstration of his right to mastery and democracy in an active, self-conscious, and high self-esteem. On the contrary, democratic countercultures are attitudes and behaviors as well as their products, consequences and consequences that infringe upon the democratic, free and equal rights of others; trampled on recognized democratic values; bureaucratic behavior, authoritarianism, autocracy, extremism, anarchy, political indifference, habit of contentment, resignation, avoidance, weakness, cowardice, not daring to stand up for people's values the owner and the people, defending the right and the truth.

The process of practicing democracy requires democratic acts such as debate, criticism, and struggle. It can be understood that the content of democratic culture is the totality of democratic values created by people and communities, including systems of democratic ideas, theories, organizations, institutions, and democratic institutions. democracy, methods and mechanisms for implementing democracy, and traditional democratic practices of social communities. Democratic culture is the common achievement of all humanity, diverse and rich development of democratic cultural values, is a reflection of the level of human liberation, human capacity with nature and society.

Fifth, democracy is approached as a social value, a human value. Democracy puts power in the hands of the people and requires everyone to have the right to participate in decisions. This corresponds to the social value of equality, justice and freedom, in which all people are treated equally and with respect, preserving individual liberties. The social value achieved by democracy is the result of people and communities in the process of conquering the natural world and renovating society, which have shown the mastery role of people in real life. Furthermore, democracy encourages diverse dialogue between individuals and society. This requires respect and understanding of the views and values of others, which in turn requires people to seek consensus through dialogue. It is the human value of respect and understanding for different people, empathy, understanding with the thoughts, feelings and needs of others that add to the value of people. As a social and human value, democracy has become an important mode of existence that has brought people from being controlled by the power game exploited by the ruling class, it has gradually liberated people from that power game and turned people into active, dynamic and creative.

From the above analysis, we can see that democracy as a democracy, so it is a historical category, comes into being associated with the state and disappears when the state disappears; as a social value, a human value, so it is a permanent category; as a cultural value, so it reflects the good, the truth - goodness - beauty of people; as a human right, so it reflects the degree of human emancipation; As a social management method, it reflects democratic principles at all times and places. All of these values reflect the state and degree of human liberation in the development process of society. Thus, democracy can be understood in the broadest sense as “the mode of relations between people in all social spheres, between social institutions, between people in all its different levels of existence; is a form of organization of social relations that acknowledges the freedom and equality of each member, and recognizes the people as the subject of power” (Nguyen Ngoc Quang, 2013).

4. Conclusion

Democracy is a very complex concept and there are many different views. However, democracy is commonly defined as “democracy is a category in the political field” (Lenin, V.I, 1977, p.258) and also “democracy is a form of state, one of the forms of state” (Lenin, V.I, 1977, p.123), in which power is vested in the voters and represented by the will of the people. However, the concept of democracy is not an absolute concept and there is no uniformity, and sometimes there is controversy in the process of realizing democracy. Each country has a different form of democracy, the basic values and interests of democracy can be adapted to the civilization and traditions of each country. Currently, although democracy has been applied to many countries around the world, there are still many challenges and problems that need to be resolved to ensure sustainable development and protect the interests of the vast majority people./.

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IMPACT OF JOB CHARACTERISTICS ON JOB EMBEDDEDNESS IN HEALTH WORKERS AT PUBLIC FACILITIES

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Abstract

This study explores the impact of job characteristics and each aspect of job characteristics on job embeddedness of health workers at public facilities in Vietnam. A sample of 170 health workers in public facilities of the North, the Central Highlands and the South regions was used. The results showed that job characteristics and the aspect of skill variety and autonomy have a positive impact on increasing health workers' job embeddedness. Based on the findings, the authors also proposed some suggestions to better design jobs, thereby increasing employee retention in Vietnam's public health facilities.

Keywords: *job characteristics, job embeddedness, health workers*

1. Introduction

While researches around the world have focused almost exclusively on answering the question "Why do people leave?", Mitchell et al. were interested in a new perspective, which was to answer the question "Why do people stay?" and since then the concept of job embeddedness (JE) was born in 2001 (Mitchell, Holtom, Lee, Sablinski, & Erez, 2001; William Lee, Burch, & Mitchell, 2014). JE theory suggests that we are held in our jobs and the communities in which we live by ties to other people, groups, organizations, places and things. These ties can become "the totality of embedding forces" that results in someone becoming enmeshed in their job (Mitchell et al., 2001; Yao, Lee, Mitchell, Burton, & Sablinski, 2004). Starting from the 21st century, the theory of Mitchell et al (2001) on job embeddedness began to become a new topic of interest (Hom, Lee, Shaw, & Hausknecht, 2017). There are many studies that have investigated JE and suggested many factors affecting JE such as job satisfaction, organization commitment, job search and job alternatives (Clinton, Ng-Knight, & Guest, 2012; Crossley, Bennett, Jex, & Burnfield, 2007; Holtom, Mitchell, & Lee, 2006; Mitchell et al., 2001) and which includes job characteristics (Dechawatanapaisal, 2017; Vinh, 2015).

Medical industry is a specific service industry that requires human resources to be trained for a long time. Adequate health human resources in quantity and quality are indispensable conditions to achieve universal health care coverage, one of the sustainable development goals of the World Health Organization (WHO) (WHO, 2016). However, the

world is facing a shortage of about 18 million health workers in low- and middle-income countries with the most serious shortage is sub-Saharan Africa and Southeast Asia, including Vietnam (Liu, Zhu, & Tang, 2018). According to data published by WHO, Vietnam only reached 0.8 doctors/1000 people and 1.1 nurses/1000 people, while it is recommended to reach the threshold of 4.45 health workers (including doctors), nurses, midwives) for 1,000 people (WHO, 2016). The shortage makes medical personnel more valuable and raises the need for measures to retain this human resource.

From the point of view of work motivation, job characteristics are also one of the factors that enhance work motivation, thereby helping to retain employees (J. Hackman & Oldham, 1976). However, the topic of JE is still relatively new. Studies on the relationship between JE and job characteristics are still very few, especially in the context of Vietnam.

Therefore, this study focuses on examining the impact of job characteristics and each aspect of job characteristics on JE among health workers in public health facilities in Vietnam.

2. Theoretical basis and hypotheses development

Job embeddedness

The concept of JE was first introduced in 2001 to answer the question of why employees stay in the organization (William Lee et al., 2014). The theory of JE holds that workers are tied to their jobs and the communities in which they live and work by their associations with people, groups, organizations, places, and more. All of this becomes a collective cohesive force like a web or net in which an individual can become enmeshed (Mitchell et al., 2001; William Lee et al., 2014).

JE consists of 3 dimensions: link, fit and sacrifice, which are evaluated from both internal and external job perspectives. Link is the formal or informal connection of workers with people, groups, places, things or activities at work or in the community in which they live. Fit is how workers feel compatible or comfortable in an organization or community. And sacrifice refers to the physical or mental costs associated with leaving one's current job or community. Each dimension applies both on- and off-the-job embeddedness, thus creating six factors contributing to JE (Mitchell et al., 2001).

In the early period when it was first introduced, JE was measured by 48 items (Mitchell, Holtom et al. 2001, William Lee, Burch et al. 2014) built in a causal indicator construct with the assumption that all indices have the same weight when summed up. This measure is relatively long and has a major limitation is the inability to apply popular analytical methods such as EFA, CFA, SEM (Clinton et al., 2012; Crossley et al., 2007; Zhang, Fried, & Griffeth, 2012).

To overcome that shortcoming, in 2007, Crossley et al. developed a reflective measure with 7 items (Crossley et al., 2007) which was used in many later studies (Ferreira, Martinez, José Pereira, & Rodrigues, 2017; Huning, Hurt, & Frieder, 2020; Tan, Loi, Lam, & Zhang, 2019). However, Crossley's measure does not distinguish in terms of internal and

external aspects job perspectives, nor is it clear of 3 dimensions like Mitchell's original theory (Clinton et al., 2012; Crossley et al., 2007). Clinton et al. (2012) developed another set of tools to measure JE consisting of 12 questions with 2 questions for each component of link, fit, sacrifice, and measured in both dimensions on- and off-the-job (Clinton et al., 2012) which was used in recent studies (Goštautaitė, Bučiūnienė, Mayrhofer, Bareikis, & Bertašiūtė, 2020; Singh, 2019, 2020).

Job Characteristics

Job characteristics (JC) are the attributes of jobs that can affect employee performance. The most famous and influential theory of job characteristics comes from Hackman & Oldham (1976). This model identifies 5 core job characteristics include: skill variety, task identity, task significance, autonomy, and feedback (J. Hackman & Oldham, 1976).

Skill variety is the degree to which a job requires worker to have diverse skills and abilities. Task identity is the extend to which a job requires a worker to complete all or part of a job or to complete a specific task from start to finish. Task significance is the degree to which the job has an impact on the lives or work of others. Autonomy is the degree to which the job allows the worker to have freedom, independence and full personal authority in planning work or determining how to work. Feedback is the extent to which a job can provide direct and clear information about the level of effectiveness of one's performance (J. Hackman & Oldham, 1975; J. Hackman & Oldham, 1976; J. R. Hackman & Oldham, 1974).

The relationship between job embeddedness and job characteristics

Job characteristics theory, also known as job design theory, provides a set of principles that enrich job in organizations (J. Hackman & Oldham, 1975). Job engagement theory recognizes the relationships between organizational factors and the positive contribution of these factors to employee retention (Mitchell et al., 2001). Among organizational factors, job characteristics have been proven by many studies to have an impact on employee outcomes. Increasing job meaning (skill diversity, task identity, task significance) as well as increasing autonomy and receiving more feedback on work results will increase satisfaction, increase organization commitment, work engagement (Agarwal & Gupta, 2018; McKnight, Phillips, & Hardgrave, 2009; Slattery, Selvarajan, Anderson, & Sardessai, 2010).

JE is also one of the outputs of employees (Mitchell et al., 2001). Currently, there have been a number of studies investigating the relationship between JE and JC. Research on 292 employees of state-owned companies in Hanoi, Vietnam by Vinh, Q. N. (2015) shows that JC include a combination of 5 aspects of skill diversity, task nature, and task significance. service, autonomy, and feedback have a positive effect on JE (Vinh, 2015). Research on 433 health workers (including nurses, pharmacists, doctors, nutritionists...) in Thailand by Dechawatanapaisal (2017) also gave similar results (Dechawatanapaisal, 2017).

Considering each aspect of JC, there is evidence that task significance has a positive impact on JE through the study of Ferreira et al (2017) on 525 employees working at hotels in Portugal (Ferreira et al., 2017) and a study by Amir Mohammad Fakoor & Nosrati (2021) of 510 employees at Iranian universities (Amir Mohammad Fakoor & Nosrati, 2021) There is few evidence on the relationship of other dimensions such as autonomy, skill diversity, task nature and feedback to JE.

Based on the results of the research review, a research model on the relationship between JC and JE was built. In which the dependent variable is JE, the independent variable is JC and 5 aspects constituting JC. The specific research model is presented in Figure 1.

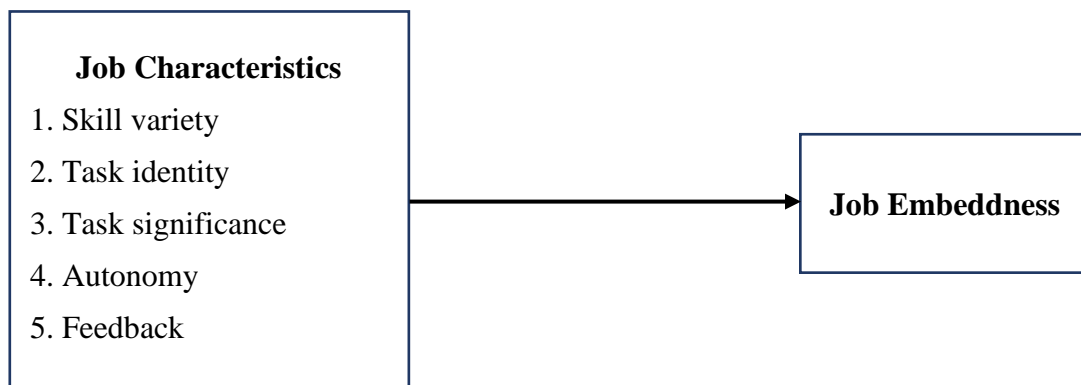


Figure 1. Research model

H1: Skill variety will be positively related to Job embeddness

H2: Task identity will be positively related to Job embeddness

H3: Task significance will be positively related to Job embeddness

H4: Autonomy will be positively related to Job embeddness

H5: Feedback will be positively related to Job embeddness

H6: Job characteristics will be positively related to Job embeddness

3. Method

3.1. Participants and data collection

A cross-sectional study was conducted to collect data from health worker at public health facilities who were studying at Hanoi University of Public Health. Convenient sampling was applied in this study to ensure a minimum sample size for quantitative analysis. A self - report questionnaire was send to participants from classes held in different areas in the North (Hanoi, Phu Tho), Central (Dak Lak) and South (Ho Chi Minh City).

The total number of survey questionnaires collected was 189 records, after removing 19 invalid records, a total of 170 records were included in the analysis. The characteristics of the survey sample are presented in Table 1.

Table 1. Survey sample characteristics

Characteristic	Frequency (n = 170)	Percentage (100%)
Sex		
Male	82	48.2
Female	88	51.8
Age group		
Under 30 years old	15	8.8
From 30 to 34 years old	40	23.5
35-40 years old	57	33.5
Over 40 years old	58	34.1
Occupation		
Doctor	49	28.8
Nursing/Midwife/Technician	39	22.9
Administrative specialist	48	28.2
Other	34	20.0
Education		
Intermediate/College	19	11.2
Graduation	121	71.2
After graduation	30	17.6

Source: Authors

3.2. Instruments

Job embeddedness was measured with Clinton et al's (2012) twelve-item scale, which divided into 3 dimensions: fit, links and sacrifice; each dimension apply both on- and off-the job embeddedness (Clinton et al., 2012)

Job characteristics were measured using Job Diagnostic Survey (JDS) of Hackman & Oldham (1974) including 5 aspects: skill variety, task identity, task significance, autonomy, and feedback. Each aspect was measured by three items (J. R. Hackman & Oldham, 1974)

The study was used a Likert scale with 7 levels from 1 - "Strongly disagree" to 7 - "Strongly agree".

Control variables: previous studies have shown that age, gender, education influence to JE (Ferreira et al., 2017; Karatepe & Avci, 2019; Vinh, Taylor, & Bergiel, 2017). Because in Vietnam, there are different treatment between doctor and other professions in the health care sector, therefore this study gathered information of occupations as the control variable beside age, gender and education.

Cross-cultural adaptation procedure

The questionnaire was translated from English to Vietnamese by one of the authors of this study. The translated version was back-translated in English by a bilingual Vietnamese linguistic teacher. The two translators discussed the inconsistencies and reached an agreement. Then a committee included one sociologist, two medical doctors checked all translations to make sure of the semi-final instrument being fully comprehensible to verify cross-cultural equivalence.

4. Results

4.1. Scale reliability and validity analysis

The result shows that all the observed variables have a total correlation coefficient greater than 0.3. Cronbach's coefficient alphas with the factor of JE is 0.9, showing that the scale has good reliability. Cronbach's coefficient alphas with aspects of JC is from 0.6 and above which is at an acceptable confidence level (Hair, 2009). The reliability values of all scales are reported in Table 2.

Table 2. Results of testing the reliability of the scale in the research model

Factor	Encode	Indicator number	Cronbach's Alpha
Job embeddedness	JE	12	0.906
Job characteristics	JCcha		
Skill variety	JCskill	3	0.727
Task identity	JCtask	3	0.716
Task significance	JCtasksig	3	0.677
Autonomy	JCauto	3	0.695
Feedback	JCfeed	3	0.667

Source: Authors

To test the validity of the scale, exploratory factor analysis (EFA) was used. The results of KMO and Bartlett's Test show that the KMO coefficient is within the allowable range ($0.5 < \text{KMO} < 1$) with $p < 0.001$. This indicates that the observed variables are correlated with each other on the whole and are suitable for analyzing factor accumulation. The results of EFA factor analysis with Varimax rotation show that the Loading factor of the indicators measuring the variables in the model are all > 0.5 . This indicates that the observed variables can be used because of ensuring the convergence of each scale (Hair, 2009).

4.2. Hypotheses testing

To examine the influence of each aspect of job characteristics on JE of Vietnamese healthcare workers, models 1, 2, 3, 4, 5 were implemented. The influence of JC in general on JE is shown in model 6. The results of regression analysis are reported in Table 3.

Table 3. Research model results

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Control variable						
Gender	-0.295	-0.290	-0.296	-0.269	-0.272	-0.277
Age group	0.319***	0.320***	0.324***	0.321***	0.321***	0.336***
Occupation	0.020	0.023	0.026	0.044	0.043	0.029
Education	0.118	0.111	0.094	0.115	0.116	0.152
Independent variables						
JCSkill	0.462***	0.477***	0.423***	0.403***	0.406***	
JCTask		-0.039	-0.068	-0.115	-0.118	
JCTasksig			0.146	0.082	0.072	
JCAuto				0.178*	0.170*	
JCFEED					0.026	
JCCHA						0.508***
R² correction	0.246	0.243	0.250	0.274	0.269	2.20
F	12,034***	10.017***	9,035***	8,955***	7,923***	10,526***

Note: * and ***: correlation coefficients have statistical significance at 5% and 0.1% level.

Source: Authors

The models include control variables such as gender, age, occupation and education, in which the analysis results show that the age has a positive impact on JE. Specifically, if increasing by 1 age group, the average JE score of medical staff will increase by approximately 0.3 points.

Models from 1 to 5 test the relationship between each aspect of JC and JE under the control of variables of age, gender, education and occupation. In which, the aspect of skill variety and autonomy have a positive impact on the JE of health workers. Specifically, jobs with skill variety increase by 1 point, the level of JE of medical staff increases by approximately 0.4 point. Autonomy is increased by 1 unit, the level of job commitment of medical staff increases by approximately 0.17 units. Hypothesis H1 and H4 are supported with significance level of 0.1% and 5%, respectively.

The results of the study also rejected the hypothesis H2, H3, H5, which did not find a relationship between task identity, task significance and feedback with JE of public health workers in Vietnam.

Models 1 to 5 examine the influence of each aspect of JC on JE. The F-test results of all models are statistically significant at the 0.1%, indicate that the models have a suitable regression function and the models can be used. In which, the estimated results of regression model 4 explain 27.4% of the variation in JE ($F = 8,955$; $p < 0.001$). Model 6 shows that having general JC (combined from all 5 aspects) has a positive impact on JE. For every 1 point that JC increase, the level of JE of health workers increases by approximately 0.508 ($F = 10,526$; $p < 0.001$).

4. Discussion and Conclusion

The purpose of this study was to examine the impact of JC and each aspect of JC on JE among health workers in public health facilities in Vietnam under the control of variables of gender, age, occupation and education.

Model 1 results show that age has a positive impact on JE. This result is different from the results of Vinh, QN (2015) and Ferreira et al. (2017) when no relationship was found between age and JE (Ferreira et al., 2017; Vinh, 2015) but is similar to the results of Felps et al. (2009)(Felps et al., 2009). In fact, the increase in JE with age is understandable because, according to the definition of Mitchell et al. (2001), JE is made up of employees' connections with colleagues, with the organization and with many other things (Mitchell et al., 2001). The older you get, the longer you work and the more embedded you will be with your job.

Hypothesis H1 and H4 are supported that mean skill variety and autonomy have a positive impact on the JE. Currently, according to the review from the author's knowledge, no research has published evidence on the relationship between skill variety and JE or autonomy and JE. So, this can consider a new finding of this research. The relationship skill variety, autonomy and JE can be explained because the job requires more diverse skills, it will need to contact more colleagues, perform more types of activities, so it will create a job link better. At the same time, to be able to do a job with a variety of skills, it requires medical staff to put in effort to learn and gain experience, creating a greater price if they have to sacrifice if they give up their job. Besides, having autonomy will also make health workers feel more suitable, more fit for their current job. Link, fit and sacrifice are also components of JE (Mitchell et al., 2001). Therefore, if the job design requires diverse skills and increases the autonomy of workers, it will have a positive effect on increasing the JE of health workers.

While research of Ferreira et al. (2017) on hotel workers in Portugal and Amir Mohammad Fakoor & Nosrati (2021) on people working in public universities in Iran found that task significance has positive impact to JE (Amir Mohammad Fakoor & Nosrati, 2021; Ferreira et al., 2017), this study show difference. There are no relationship between task significance and JE of public health workers in Vietnam. Such difference may be due to the different of contexts and needs further exploration in future studies.

This study also confirmed that job characteristics in general, synthesized from 5 factors of skill variety, autonomy, task identity, Task significance and feedback have a positive impact on JE. This result is similar to other studies by author Vinh, QN (2015) on employees of state-owned companies in Vietnam ($\beta = 0.522$; $p < 0.01$) (Vinh, 2015) and Dechawatanapaisal on subjects health workers in Thailand ($\beta = 0.302$; $p < 0.01$) (Dechawatanapaisal, 2017).

JE is still a relatively new concept introduced in 2001 and attracted much attention. This study tested and contributed to providing more evidence on the relationship between JE and JC and aspects of JC.

The results also have suggested for managers in public health facilities in Vietnam to increase the level of JE of medical staff. Specifically, in job design and assignment, managers need to expand and diversify activities, diversify types of tasks, giving health workers the opportunity to use and learn many skills that avoid them falling into a boring job situation. In addition, managers should also give more autonomy to health workers so that they have more opportunities to choose their own working time, working location and working method while still ensuring requirements on safety, in accordance with professional and technical procedures in healthcare.

Although there are certain theoretical and practical contributions, this study also has some limitations. First, the sample size is small. Although the participants of this study were chose from health workers who are studying in different programs, from bachelor to master, CKI, CKII with classes held in many different areas from the North (Hanoi, Phu Tho), Center (Dak Lak), and South (Ho Chi Minh City) however, the sample is small, so it is still not possible to ensure the best requirements for representativeness and generalization for public health facilities in Vietnam. Second, the scale used to measure the variables in the model is a perceived scale, so it may be affected by the respondents' subjective opinions. The above limitations are also suggestions for future research to contribute more evidence and expand understanding on the topic of JE in general and the relationship between JE and job characteristics in particular.

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PERCEIVED BARRIERS, SELF-EFFICACY, AND SOCIAL ENTREPRENEURIAL INTENTION: AN EMPIRICAL STUDY AMONG VIETNAMESE UNDERGRADUATES

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Abstract

Based on the Social Cognitive Career Theory (SCCT), the present study investigates the impacts of perceived barriers (lack of support, fear of failure, and lack of competence) on social entrepreneurship intentions among undergraduate students, with the mediating role of self-efficacy. The partial least squares structural equation modeling (PLS-SEM) method was used to test the proposed model with empirical data collected from 476 Vietnamese undergraduate students through structured questionnaires. The results indicated a positive relationship between perceived lack of support, fear of failure, and social entrepreneurial intentions, whereas there was a negative relationship between a perceived lack of competence and social entrepreneurial intentions. In addition, the mediating role of self-efficacy in the relationship between perceived lack of support, fear of failure, and social entrepreneurial intentions was supported at a confidence level of 95%; the mediating role of self-efficacy in the relationship between perceived lack of competence and social entrepreneurial intentions was marginally supported (at the confidence level of 90%). The empirical findings imply that stakeholders in social entrepreneurship should be aware of the factors that may hinder and/or foster social entrepreneurial intentions and take actions to govern these factors. The limitations and future direction were also discussed in the last sections of the paper.

Keywords: *entrepreneurship, perceived barriers, social entrepreneurship intentions, self-efficacy.*

1. Introduction

Social entrepreneurship has significantly aided the eradication of poverty and unemployment and the resolution of other social problems and environmental challenges (Ambad, 2022). Although it attracted much attention from the academic community, studies

on predicting the intention to become a social entrepreneur are still in their infancy (Ambad, 2022). Scholars have attempted to investigate perceived barriers as an antecedent to social entrepreneurial intentions, but results are inconclusive, stressing the necessity of more examination into this relationship. Social Cognitive Career Theory (SCCT), initiated by Lent et al. (1994, 1996) and his associates, states that in the progress of career development, humans always encounter barriers that might inhibit their aspirations to embrace that profession. Standing on the same viewpoint as Dolarslan et al. (2020), our study specifies three aspects, including lack of support, fear of failure, and lack of competency, as perceived barriers to social entrepreneurial intentions. In particular, *lack of support* includes the scarcity of environmental and family/network support, indicating the assistance of diverse stakeholders in the prospective entrepreneurs' surroundings (Dölarslan et al., 2020). The inability to gain institutional backing for budding entrepreneurs, acquire family support, obtain money from lenders, establish supplier relationships, and/or develop a strong consumer base can all be challenges to entrepreneurial intention (Shinnar et al., 2012). *Fear of failure* is mostly referred to as a hindrance to entrepreneurial behavior and functions as a barrier to entrepreneurship (Cacciotti et al., 2016), even when students have a good business idea, it may still be on paper if they are not confident in their ability and are always afraid of failure (Dölarslan et al., 2020). *Lack of competency* includes a lack of skills, training, and knowledge. Dölarslan et al. (2020) combined these three elements into one because of their interaction with entrepreneurs' characteristics and their close association with competencies involving personal background. Operating businesses requires entrepreneurs to possess competencies (Ambad, 2022); Thus, this study aims to fill in this gap proposed by previous studies by examining perceived barriers as a predictor of social entrepreneurial intentions.

SCCT also provides insight into the interactions between perceived barriers, self-efficacy, and career-related outcomes. Self-efficacy is the trust in one's capabilities to establish a brand-new company endeavor (Ambad, 2022), and it functions as an essential element in the career selection procedure. Lent et al. (2000) illustrate that barriers will not refrain people from transforming their interest in a specific career into the intention to choose that profession if they believe in their capabilities of overcoming hindrances and taking responsibility. The effect of perceived barriers has been much found in the career development field, yet not much has been witnessed in the social entrepreneurial intentions. In this research context, we used the metric developed by Schlaegel et al. (2015) and Dölarslan et al. (2020) to measure perceived barriers, which include three specific dimensions: perceived lack of competence, lack of support, and fear of failure. The link between perceived barriers and social entrepreneurial intentions is under-exploited, let alone examining it in relation to SE. Until now, Dolarslan et al. (2020) were regarded as the pioneers in exploring this mechanism. This study, thus, plans to inspect and enrich the empirical knowledge about the linkage between perceived barriers and social entrepreneurial intentions and its mediator - self-efficacy.

Therefore, this study aims to achieve the following objectives: examining the relationship between perceived barriers (lack of support, fear of failure, and lack of

competence) and social entrepreneurial intentions; unboxing the underlying mechanism of the relationship between perceived barriers (lack of support, fear of failure, and lack of competence) and social entrepreneurial intentions with the mediating role of self-efficacy.

Previous theoretical and empirical research identified and tested a wide range of internal and external inhibiting factors preventing the intention to start a new business venture. In this research context, we used the metric developed by Schlaegel et al. (2015) and Dölarslan et al. (2020) to measure perceived barriers, which include three specific dimensions: lack of support, fear of failure, and lack of competence, to investigate the relationship between these factors and social entrepreneurial intentions. Although much research has been conducted to investigate the negative impact of the perceived barrier to social entrepreneurial intentions, however to social entrepreneurial intentions are not much and clear. In other words, research on the impact of perceived barriers on social entrepreneurial intentions is notably underdeveloped and needs more investigation (Liñán & Fayolle, 2015/2014). Thus, we formulate the following hypotheses:

H1: Students' perceived barriers are associated with their social entrepreneurial intentions.

H1a: Students' lack of support is associated with their social entrepreneurial intentions.

H1b: Students' fear of failure is associated with their social entrepreneurial intentions.

H1c: Students' lack of competence is associated with their social entrepreneurial intentions.

Self-efficacy was first introduced by Albert Bandura (1977) in his work about the social learning theory. Instead of measuring one's ability level, perceived self-efficacy refers to one's perception of what he or she can accomplish with their current set of competencies in various kinds of circumstances (Bandura, 1997). The effect of barriers' perceptions on self-efficacy has been much confirmed in the career development field (Dolarslan et al., 2020). These existing studies (e.g. Lent et al. (2018); Mejia Smith and Gushue (2017); Sheu et al. (2010), Lopez and Ann-Yi (2006)) have shown the impact of perceived barriers on self-efficacy, suggesting that people will see fewer obstacles to reaching their career objectives because they believed they were capable of completing particular career responsibilities and had the capability to overcome these vocational difficulties. In other words, perceived barriers serve as a deterrent component for self-efficacy, which demonstrates that people with a high level of self-efficacy will still pay attention to and might be fearful of perceived barriers. Being an entrepreneur is also an occupation so there is an expected adverse relation between perceived barriers and self-efficacy during the process of career development.

Regarding social entrepreneurial intention literature, social entrepreneurial self-efficacy is the most used predictor of social entrepreneurial intentions (Ambad, 2022). A systematic literature review by Ambad (2022) confirms that, on the whole, self-efficacy typically has a beneficial impact on social entrepreneurial intentions, regardless of the situation across many countries, such as China, Brazil, Vietnam, and Singapore. Besides, many scholars have been investigating the mediating effect of self-efficacy as a direct and

indirect variable in the entrepreneurship and social psychology area (as cited in Jiatong et al., 2021). McWhirter (1997) found that if self-efficacy aspirations are strong, actual evaluations of many hurdles might not diminish interest-choice harmony. Besides, Dolarslan et al. (2020) investigated the relationship between perceived barriers and entrepreneurial intention and suggested that perceived barriers negatively influence entrepreneurial intention, and self-efficacy marginally mediated the above relationship. Since social entrepreneurship encompasses business endeavors that combine the terms "social" and "entrepreneurship," it is regarded as a sub-discipline of entrepreneurship literature (Peredo and McLean, 2006). Based on the above discussions, we postulate the following hypotheses:

H2: Self-efficacy mediates the relationship between perceived barriers and social entrepreneurial intentions.

H2a: Self-efficacy mediates the relationship between lack of support and social entrepreneurial intentions.

H2b: Self-efficacy mediates the relationship between fear of failure and social entrepreneurial intentions.

H2c: Self-efficacy mediates the relationship between lack of knowledge and social entrepreneurial intentions.

The conceptual research model is presented in Figure 1:

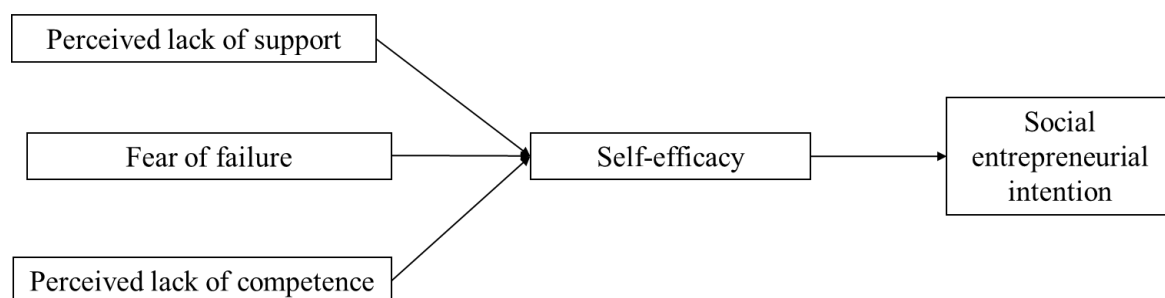


Figure 1. The conceptual research framework

2. Method

2.1. Participants

This present study's target respondents consist of third- and fourth-year undergraduate students majoring in business or IT/engineering. Since those students have a clear understanding of their goals and intentions are at a stage of considering entrepreneurial careers (Liñán & Chen, 2009), as well as possess a desire to make a positive impact on society with a strong belief in the importance of social responsibility (Ashour, 2016).

Before the mass survey between October and December 2022, a pilot study was conducted with 60 participants to evaluate the questionnaires. Three items with peripheral loadings below 0.5 were revised by providing additional explanations. According to Hair et al. (2017), a minimum sample size of 200 observations can be adequate in many cases with

PLS-SEM, and larger sample sizes can be necessary for more complex models or when estimating high levels of precision. A mix of online and offline questionnaires was administered in physical and online classes. After cleaning and removing unqualified data due to a lack of information and assigning the same number of points to all queries (23 samples), 476 samples were retained for further analysis. Among 476 usable samples (262 responses from an online survey accounting for 45.0% and 214 hardcopies responses), males accounted for 51.1%, and females accounted for 48.9%. Concerning the major of students, 60.1% of respondents are business-related, 39.9% respondents are IT/Engineering-related. Regarding the school years of students, 55.7% respondents are third-year students, 44.3% respondents are fourth-year students. Accordingly, respondents aged from 20 to 21 years old constitute the largest proportion 85.3%, while only 1.0% of respondents aged 19, and above 22 years old with 4.0%. Concerning the locality of students, 58.8% respondents have been from urban, and 41.2% respondents have been from rural. Additionally, 56.7% respondents had working experience. Concerning family's monthly average income per person, 41.8% from 2.3 to 8.4 milVND, 30.2% from 8.4 to 19.6 milVND, and only 9.5% respondents had over 19.6 milVND.

2.2. Measures

In this study, all measurements were adopted from previous relevant studies and scored on a five-point Likert scale (ranging from 1 - strongly disagree to 5 - strongly agree).

All items of perceived barriers are based on Shinnar et al. (2012) and adopted in the special context of the study. Lack of support was based on four items, and Cronbach's alpha value for this variable was 0.767. Fears of failure were based on six items, and Cronbach's alpha value for this variable was 0.844. Lack of competence was based on four items, and Cronbach's alpha value for this variable was 0.842. Self-efficacy was measured by eight items developed by the scales of Chen et al. (1998) and the revised scales of Chen et al. (2011). Sample items included 'I will be able to achieve most of the goals I have set for myself' Cronbach's alpha value for this variable was 0.876.

The dependent variable, social entrepreneurial intention, was measured by six items developed by Linñan and Chen (2009) and adopted in the context of social entrepreneurship. Cronbach's alpha value for this variable was 0.914.

2.3. Data analysis

Data was analyzed by the use of Partial Least Squares - Structural Equation Modeling (PLS-SEM) with the support of SmartPLS 3.3, which contains two main steps (Ringle et al., 2020): (1) measurement model evaluation and (2) model estimation and results evaluation. In the first step, the validity and reliability of research constructs were assessed. The common method bias and multicollinearity were also checked. In the second step, model estimation, and hypotheses were tested with the bootstrapping procedure of 5000 resamples to obtain the values R^2 (explained variance), and f^2 (effect sizes), the Q^2 value (the model's predictive power), path coefficients, t-values, and p-values (Hair et al., 2019; Ringle et al., 2020).

3. Results

3.1. Measurement model assessment

Following Hair et al. (2019) and Ringle et al. (2020/2019), we assessed the measurement model. First, the validity of measurement models was assessed with a two steps approach, i.e., convergent validity and discriminant validity. In order to assess convergent validity, Composite reliability, Cronbach's alpha, and average variance extracted (AVE) values were observed. Cronbach's alpha and Composite reliability have values from 0.767 to 0.914 and 0.851 to 0.933, respectively, higher than the recommended level of 0.7. The values of AVE for the researched constructed ranged from 0.537 to 0.700, which is higher than the critical threshold level of 0.5 (Fornell & Larcker, 1981). Moreover, Fornell-Larcker criterion, Heterotrait-Monotrait Ratio (HTMT), and cross-loadings were assessed for evaluating discriminant validity of measurement models. The results revealed that the square root of the AVE should be higher than the correlations between the constructs, the values of the Heterotrait-Monotrait Ratio (HTMT) were all smaller than 0.85, and the factor loading of variables should be higher than all the cross-loadings (Fornell & Larcker, 1981). All these three principles were met which demonstrates the discriminant validity of our measures.

3.2. Structural model assessment

In PLS-SEM model, the first criterion for the goodness of the structural model is assessing the explanatory power - R^2 . In this study, the R^2 of social entrepreneurial intentions was 0.262, it indicated moderate explanatory power (Cohen, 1988). R^2 of Self-efficacy was 0.099, quite small. According to Hair et al. (2019), the qualified these figures and suggested results is also dependent on research contexts. The effect sizes - f^2 of all relationships is relatively small which indicate the relatively similar roles of all predictor constructs (Cohen & Diamant, 2019). Q^2 value measures the model's predictive power or is considered a measure of an out-of-sample prediction (Henseler et al., 2009). The results of using the reusing sample technique to calculate the Q^2 showed that all exogenous variables have predictive relevance (Q^2 of Self-efficacy was 0.050, and of social entrepreneurial intentions was 0.079).

Table 1. Results of structural equation model estimation

Hypothesis	Path	Original Sample (O)	Sample Mean (M)	SD	t	P	Decision
Total effects							
H1a	Lack of support ==> Social entrepreneurial intentions	0.172	0.174	0.054	3.195	0.001	Supported
H1b	Fair of Failure ==> Social entrepreneurial intentions	0.183	0.190	0.049	3.743	0.000	Supported
H1c	Lack of competence ==> Social entrepreneurial intentions	-0.106	-0.105	0.055	1.931	0.050	Supported

Hypothesis	Path	Original Sample (O)	Sample Mean (M)	SD	t	P	Decision
Indirect effects							
H2a	Lack of support ==> Self- efficacy ==> Social entrepreneurial intentions	0.056	0.058	0.021	2.700	0.007	Supported
H2b	Fair of Failure ==> Self- efficacy ==> Social entrepreneurial intentions	0.035	0.037	0.015	2.310	0.021	Supported
H2c	Lack of competence ==> Self- efficacy ==> Social entrepreneurial intentions	0.026	0.027	0.016	1.670	0.095	Marginally supported
Direct effects							
	Lack of support ==> Social entrepreneurial intentions	0.116	0.116	0.056	2.061	0.039	
	Fair of Failure ==> Social entrepreneurial intentions	0.148	0.153	0.050	2.955	0.003	
	Lack of competence ==> Social entrepreneurial intentions	-0.133	-0.132	0.054	2.463	0.014	

Table 1 presents the results of the structural equation model estimation. Hypotheses 1a, 1b, and 1c proposed the relationship between perceived barriers (lack of support, fear of failure, and lack of competence) and social entrepreneurial intentions. The results indicated that the relationship between perceived lack of support and social entrepreneurial intentions was not statistically significant at $b = 0.172$ ($t = 3.195$, $p = 0.001$). Thus, Hypothesis 1a was supported. The relationship between perceived fear of failure and social entrepreneurial intentions was positively significant at $b = 0.190$ ($t = 3.742$, $p = 0.000$). Thus, Hypothesis 1b was supported. The relationship between perceived lack of competence and social entrepreneurial intentions was negatively significant at $b = -0.106$ ($t = 1.960$, $p = 0.050$). Thus, Hypothesis 1c was supported.

Similarly, hypotheses 2a, 2b and 2c tested the mediating role of self-efficacy in the relationship between perceived barriers (Lack of support, Fair of Failure, and Lack of competence) and social entrepreneurial intentions.

As seen in Table 1, the relationship between perceived lack of support and social entrepreneurial intentions through the mediating role of self-efficacy was positively significant at $b = 0.056$ ($t = 2.700$, $p = 0.007$). The direct effect between perceived lack of support and social entrepreneurial intentions was still significant ($b = 0.116$, $t = 2.061$, $p = 0.039$). In other words, self-efficacy partially mediates the relationship between perceived lack of support and social entrepreneurial intentions. Thus, Hypothesis 2a was supported.

The relationship between Fair of Failure and social entrepreneurial intentions through the mediating role of self-efficacy was positively significant at $b=0.035$ ($t=2.310$, $p=0.021$). The direct effect between perceived lack of support and social entrepreneurial intentions was still significant ($b=0.148$, $t=2.955$, $p=0.003$). In other words, self-efficacy partially mediates the relationship between perceived lack of support and social entrepreneurial intentions. Thus, Hypothesis 2b was supported.

The relationship between perceived lack of support and social entrepreneurial intentions through the mediating role of self-efficacy was positively significant at $b=0.026$ ($t=1.670$, $p=0.095$). The direct effect between perceived lack of support and social entrepreneurial intentions was still significant ($b=-1.333$, $t=2.463$, $p=0.014$) In other words, self-efficacy partially mediates the relationship between perceived lack of support and social entrepreneurial intentions. Thus, Hypothesis 2c was marginally supported at the confidence level of 90%.

The result of PLS-SEM model testing is presented in Figure 2 below.

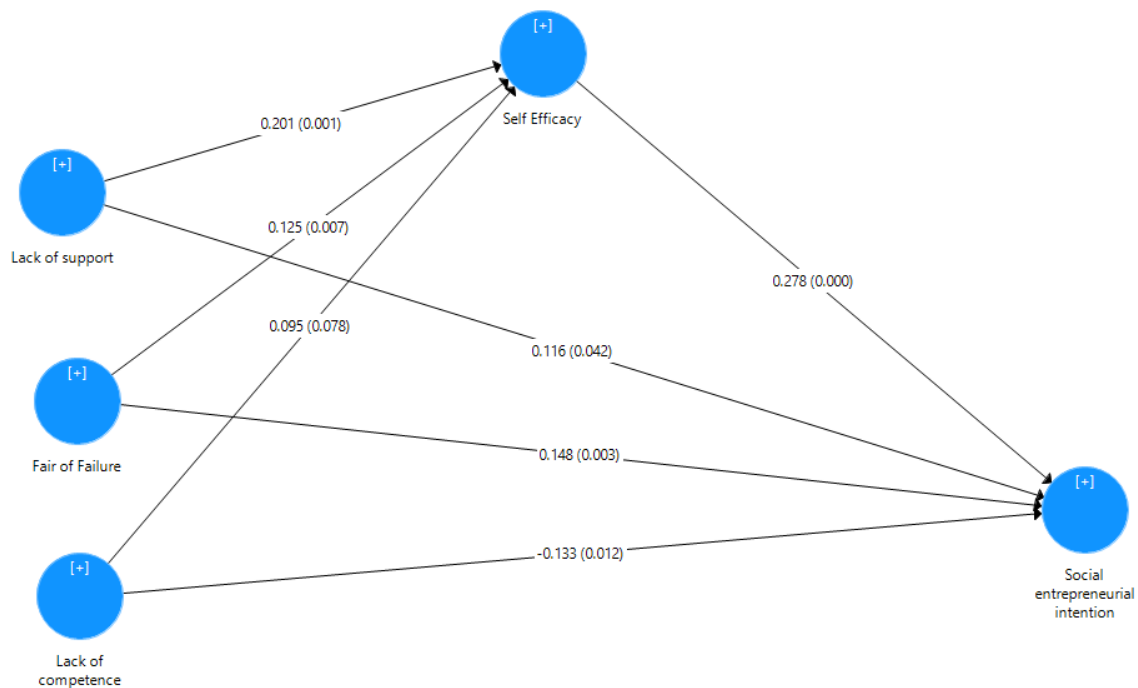


Figure 2. The results of structural equation model estimation

4. Discussion and conclusion

4.1. Discussion

Aiming to investigate the linkage between perceived barriers and social entrepreneurial intentions with the mediation of self-efficacy, this study contributes to the extant literature by demonstrating that three components of perceived barriers have different impacts on social entrepreneurial intentions with separate mechanisms. In contrast to Dolarslan et al. (2020), who found the negative effect of perceived barriers on social entrepreneurial intentions as a

whole, this study shows that lack of competence negatively affects, while fear of failure and lack of support positively affects social entrepreneurial intentions. Consequently, the mediating role of self-efficacy in each interconnection is distinctive.

The finding showed that self-efficacy boosts one's perception of control over a potential circumstance (Bandura, 1977), and a strong belief in one's ability and skills to tackle situations successfully (Zajacova et al., 2005) results in a sense of coping. In an environment without much support, coping efficacy is why students believe they can overcome this lack and initiate their social entrepreneurial intentions. In general, the finding suggests that in the initial stage of forming social entrepreneurial intentions, students believe lack of support merely challenges to their potential and it does not intervene with their plan to become social entrepreneurs in the future.

The study also indicates that a lack of competency is negatively associated with social entrepreneurial intentions, which conforms with findings from other scholars (i.e., Tukamushaba et al., 2011; Shahverdi et al., 2018). Business gifts and abilities are crucial for effective business operations (Ambad, 2022), so when students observe no such knowledge and capabilities in themselves, they are prone to leave their social entrepreneurial intentions behind. Interestingly, this investigation cannot find the mediation of self-efficacy in the correlation between lack of competency and social entrepreneurial intentions. However, it seems understandable because entrepreneurial competencies include specialized and general knowledge, abilities, roles in society, motivations, characteristics, and self-perception that contribute to the emergence, maintenance, and growth of businesses (Bird, 1988). Because students cannot believe in something they themselves do not possess, self-efficacy plays no mediating role in the relationship between lack of competency and social entrepreneurial intentions. This circumstance is antithetical to lack of support since lack of competency consists of internal elements and refers to one's inner self.

The dominant literature body believes that irrespective of desire levels, fear of failure discourages aspirations when determining whether to start a business (Morgan and Sisak, 2016). Surprisingly, this study shows no hindering but motivational effects of fear of failure in the relationship with social entrepreneurial intentions. Accordingly, Vietnamese students consider failure a motivating source in forming their intention to establish social enterprises in the future. Possibly, social entrepreneurship is just an option among various careers to them (Cacciotti et al., 2016). When presented with choices, people more inclined to avoid failure choose a degree of ambition that is entirely contradictory to people who are more willing to pursue achievement (Atkinson, 1957). In the scenario that students have various choices, failure acts as an encouraging ingredient boosting students' intention to become social entrepreneurs. Furthermore, this linkage is marginally mediated by self-efficacy, which illustrates that students perceive fear of failure as a driving force lifting their self-efficacy and exciting them to overcome in their journey to become social entrepreneurs.

According to findings from this research, lack of support and fear of failure no longer play the role of damaging factors and barriers to the start-up process as before; these factors are now considered important driving forces to promote social entrepreneurial intentions. In

practical terms, the study contributes to explaining the strong growth of youth entrepreneurship activities in developing countries like Vietnam in recent years. Despite the difficulties and lack of many things, although the failure rate in starting a business is very high, it does not make them feel afraid or falter. In addition, the role of entrepreneurs' self-efficacy is critical in forming social entrepreneurship.

4.2. Limitations and further research

This study could not be free of limitations. Firstly, the study has not considered the heterogeneous impact of different groups by gender or individual characteristics (family background and region). Therefore, further research should investigate this relationship in different groups for more insights. Second, this study overlooked the effects of boundary and contextual factors in interest relationships. Therefore, it is a fruitful research direction for further studies. Third, this study is conducted with empirical data collected from Vietnamese students in a cross-sectional survey. Thus, the generalizability of the findings is affected. Thus, it calls for further studies with longitudinal design with a larger sample in different regions to reinforce the research findings.

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THE IMPACT OF ELECTRONIC WORD OF MOUTH ON DESTINATION PERSONALITY

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Abstract

Based on theory of brand personality, this paper evaluates the impact of Electronic Word of Mouth (EWOM) on the destination personality of Vietnamese tourists. A sample with 510 observations were used and the data were analysed by using Structural Equation Modelling (SEM). The findings of multi-variable analysis have shown that EWOM has a direct impact on destination personality. Moreover, with the analysis of the research model according to unidirectional variables, the research results show that Electronic Word of Mouth has a positive impact on the factors of destination personality as: (1) Competence and (2) Contemporary. However, in the context of Vietnam's tourism, Electronic Word of Mouth has a greater impact on the Competence trait than the Contemporary characteristic.

Keywords: *Brand Personality, Destination Personality, Electronic Word of Mouth, Travel.*

1. Introduction

In this day and age, tourism is not only a popular activity but also a key economic sector, contributing 10.3% to global GDP, bringing huge financial resources to many countries and territories (World Travel and Tourism Council, 2021). With the advantage of being an attractive and safe destination for domestic and foreign tourists, Vietnam's tourism has recently had a strong and quite steady growth. Specifically, Vietnam's tourism has grown continuously, especially in the period of 2015-2019, reaching a growth rate of 22.7% per year, ranked among the highest in the world by the World Tourism Organization (Vietnam National Administration of Tourism, 2020). Tourism creates many jobs, promotes the development of service industries in general, develops infrastructure and is also a means of promoting peace and cultural exchange (Nguyen Thi Bich Thuy, 2010). Therefore, tourism has always been an attractive topic that scholars in Vietnam and around the world are interested in researching.

Diverse information sources on the Internet facilitate users to collect information about any product or service, including the information about tourism. Previous studies have shown that travelers have consulted from various sources of information on the Internet before making a decision to choose a destination for their trip (Farrukh et al., 2022; Litvin et al., 2018). Research by Chang and Wang (2019) indicates that about 60% of potential travelers use the Internet to gather information from travel forums and personal blogs about

post-travel experiences, comments, and reviews, information from these sources is called Electronic Word of Mouth (EWOM). According to Bickart and Schindler (2001), comments on the Internet have the potential to reduce the risk, uncertainty and ambiguity associated with a product or service. EWOM helps travelers develop an image of a destination as well as a set of expectations before visiting a destination (Usakli and Baloglu, 2011). They form a mental picture of the destination through their reasoned and emotional interpretation (Kavoura and Bitsani, 2013).

The strong development of the tourism along with the fierce competition of destinations around the world has created challenges for destination marketing. Besides, the attraction of previously popular tourist destinations such as beaches, hills or sunsets does not make a difference among destinations (George and Anandkumar, 2014). Therefore, focusing on the personality of the destination will create greater brand recognition for destinations when the personality of the destination is emphasized (Hosany et al., 2007). The concept of destination personality as a solid foundation for differentiating different travel destinations because travelers with different personalities will choose different travel destinations (Murphy et al., 2007).

Although there have been many studies on EWOM and some studies on destination image in Vietnam, most studies related to Electronic Word of Mouth are usually conducted to examine the relationship of EWOM with components of the planned behavior model of travellers (Ha Nam Khanh Giao, 2022; Ngo Dinh Tam, 2019). There are not many studies on destination personality in Vietnam, most of them only focus on identifying the personality of specific destination such as Da Nang or Ho Chi Minh City (Bui Ta Hoang Vu, 2021; Pham Thi Lan Huong and Nguyen Minh Huy, 2014). According to the research of the authors, currently, there are very few studies on the relationship between EWOM and Vietnamese travel destination personality. In addition to research methodology, studies in this field in Vietnam and in around the world often stop at analyzing unidirectional variables so it is not possible to assess the overall impact of all EWOM factors on destination personality. Therefore, this study uses both unidirectional and multi-directional analysis methods for the variables in the research model. The use of and multi-directional variables will help assess the overall impact of EWOM on destination personality. The unidirectional analysis will help assess the impact of EWOM on each factor of destination personality in order to provide appropriate solutions for managers in the tourism sector. The objective of this study is to provide an integrative approach to examine the causal relationship between EWOM and destination personality.

2. Literature review and Research hypothesis

2.1. Definitions

2.1.1. Electronic word-of-mouth - EWOM)

Word of Mouth is gradually seen as an important source of information influencing consumer behavior (Chevalier and Mayzlin, 2006). Studies by Bickart (2001) and Kumar (2016) indicate that with the strong development of the Internet, it has provided a good

method for people to gather product information and consumption-related advice from other consumers by Electronic Word of Mouth. Consumers can share and exchange information with relatives, friends or even unfamiliar people through social media, which has led to the creation of a very diverse online oral community (Chon and Olsen, 1991). Research by Litvin et al. (2008) defines EWOM as all informal consumer-oriented communication through Internet-based technology that involves the use or information about the characteristics of particular goods and services or about the seller. According to Hennig-Thurau et al. (2004), EWOM is any positive or negative statement made by a former customer, current or potential customer about a product or business and is made available to people and organizations via the Internet. Thus, EWOM can basically be understood as the views, comments, reviews of users about products, services or organizations through the Internet environment.

EWOM is playing an important role in the tourism industry and therefore has a great influence on tourism marketing (Litvin et al. 2018). Wang (2015) has claimed that word of mouth provides travelers with more information about the destination and can influence a traveler's decision in choosing a destination. Furthermore, Farrukh et al. (2022) have emphasized that most travellers use EWOM to identify other people's experiences, gather opinions about a certain destination, and get recommendations. EWOM uses the large, anonymous, unsustainable nature of the Internet and introduces a new method to capture, analyze, interpret and manage the influence of communication in hotel and tourism marketing (Litvin et al., 2008). Research by Vermeulen and Seegers (2009) conducted an experiment and revealed that exposure to online reviews increased awareness of hotels, that those positive reviews improved travelers' attitudes towards hotels. Therefore, it can be concluded that EWOM plays an important role in the tourism sector.

2.1.2. Destination personality

Destination personality is considered an important factor explaining the decision-making process of tourists. According to Kavoura and Bitsani (2013), travellers make purchasing decisions based on their mental images of a particular destination. Destination personality refers to brand personality in the tourism sector (Chen and Phou, 2013). Ekinçi and Hosany (2006) define a destination personality as a set of personality traits that are related with a destination. According to Souiden et al. (2017), the concept of destination personality is still new and has received little interest from travel studies. According to Feli et al. (2016), travellers develop strong emotional ties to certain places and even assign human traits (personality traits of destinations) to destinations. Brand personality influences consumer priorities and trust levels, thus leading to improvement of trust and loyalty. A good destination personality will develop a positive impression and can attract tourists to visit. Destination personality can help travelers see the similarities between their personalities and destination personalities (Chi et al., 2018). The use of additional characteristics for the destination such as personality can contribute to differentiation for tourist sites and encourage travellers to choose a destination (Ekinçi and Hosany, 2006; Usakli and Baloglu, 2011). Destination personality is becoming a viable metaphor for destination positioning and branding (Chen and Phou, 2013). And destination managers are working hard to build their

own personalities for their destinations. Thus, destination personality can be defined as a brand personality referred to in the context of travel and using human personality traits to describe a destination.

2.2. Literature review

According to Aaker (1997), each brand, when it has a strong personality, has the ability to persuade people to consume products bearing that brand. Although the brand is related to the product, people view it as having human characteristics. Aaker (1997) proposed Brand Personality Scales (BPS) consisting of five elements: (1) Sincerity, (2) vibrancy, (3) competence, (4) delication, and (5) wind and dust. Each element consists of many different criteria, with 42 criteria in all. In particular, the sincerity component includes practical criteria, family cohesion, closedness, honesty, frankness, honesty, health, originality, cheerfulness, sentimentality, friendliness; Vibrant includes bold, trendy, exciting, stylish, lively, youthful, imaginative, unique, trendy, independent, modern; competence includes reliability, hard-working, safety, intelligence, achievement, rules, collectivity, leadership, confidence; delication includes upper-class, beautiful, charming, graceful, gentle, flexible; wind and dust includes the criteria of openness, masculinity, style, endurance, strength. The BPS scale has been used in many different fields, Ekinici and Hosany (2006) were the first authors to use it in the field of tourism, and since then the scale has been used quite a lot to explore issues in the context of tourism (Feli et al., 2016).

Ekinici and Hosany (2006) described the European destinations having 3 components: sincerity, excitement and fun. Developed from the research of Ekinici and Hosany (2006), Usakli and Baloglu (2011) announced the Las Vegas destination personality consists of 5 elements: Vividness, delication, power, modernity, sincerity. In Vietnam, Pham Thi Lan Huong and Nguyen Minh Huy (2014) identified Da Nang tourist destination according to international tourists, including 12 personality traits classified into 3 groups: sincere, vibrant and gentle - competence. Bui Ta Hoang Vu (2020) identified Ho Chi Minh City destination personalities into 8 groups: Vivid, Safe, Friendly, Playful, Excited, Open, Vibrant, Forward-looking. As such, the elements that constitute a destination's personality may vary depending on each travel context. A well-constructed destination personality enhances the image in the minds of customers, is instrumental in emphasizing differentiation between destinations (Murphy et al., 2007), help attract tourists to revisit and spread word of mouth of destination features (Stokburger-Sauer et al., 2012).

With the strong development of the Internet, virtual interactions between travellers have become popular, which has led some travel researchers to point out that EWOM plays an important role in attracting and retaining travelers in the age of e-commerce (Litvin et al., 2008; Vermeulen and Seegers, 2009). Some study have analyzed the relationship between EWOM and destination image, concluding that EWOM positively and directly impacts destination image (Doosti et al., 2016; Jalilvand and Samiei, 2012; Ha Nam Khanh Giao, 2022). The concepts of brand image and brand personality have been used interchangeably in a few studies (Graeff, 1997; Upshaw, 1995). Or as the study by Hosany et al. (2006) has investigated the link between destination personality and destination image,

the results have proved that the two concepts of destination personality and destination image are related. Therefore, many studies have shown that if EWOM affects the image of the destination, it can also affect the personality of the destination. This conclusion is consistent with the publication of Feli et al. (2016), according to which, word of mouth positively and significantly influences destination personality. Word of mouth is an important tool in creating and developing a tourist destination personality.

2.3. Research hypothesis

Based on the theory of brand personality of Aaker's (1997), Jalilvand et al. (2012) in their study of 264 international travellers revealed that EWOM positively influences destination image, travelers' attitudes, and travel intentions. Doosti et al. (2016) showed that EWOM indirectly influences visiting intentions through image of the city and attitude towards the city. Abubakar (2016) used a sample of 308 customers in Cyprus and came to the following conclusions: (1) Electronic referrals affect brand image, (2) EWOM affects brand image, and (3) EWOM and brand image influence purchase intent. Research by Graeff (1997), Upshaw (1995), Hosany et al. (2006) has investigated and concluded that there is a relationship between destination personality and destination image, even in some contexts, the two terms are used interchangeably. Thus, the majority of research in the world focuses on the relationship between EWOM and destination image, not much research has explored the relationship between EWOM and destination personality. The results of the study by Feli and Azizi (2016) are that it is rare to demonstrate a direct and positive relationship between word of mouth and destination personality, however this study has not been placed in an internet environment, word of mouth is direct.

In Vietnam, a small number of studies only stop at understanding destination personality characteristics in certain destination such as Da Nang, Ho Chi Minh City (Bui Ta Hoang Vu, 2020; Pham Thi Lan Huong, 2014), has not studied the relationship between destination personality and travelers' behaviors such as destination selection intention, return intention or word of mouth. With a very new study of Ha Nam, Khanh Giao (2022) when conducting a survey with 280 domestic tourists in Ho Chi Minh City about travelling to Da Nang. The results stop at the content that EWOM positively impacts the image of the destination. Therefore, the study exploring the direct relationship between EWOM and destination personality in the context of Vietnam tourism is an interesting content to be explored. From the overview of works in Vietnam and in around the world, the research hypothesis is as follows:

H: EWOM positively and directly affects the personality of the destination.

3. Method

3.1. Study design and study template

The main goal of this study was to examine the relationship between EWOM and destination personality. To do so, the researchers conducted qualitative and quantitative research.

The qualitative study was conducted from September to November 2020 in Hanoi with 2 focus group discussions (100- minute discussion) and 14 in-depth interviews (average time is 40 minutes each) with subjects are Vietnamese. The selected subjects have differences in age, gender, income, qualifications and marital status. Qualitative research serves the objective of checking the suitability of the research model and the suitability of the scale in the context of Vietnam tourism. The research results showed that the interviewees understood the characteristics of domestic tourism, gave their views on the personality characteristics of Vietnamese destinations and commented on the influence of Electronic Word of Mouth on destination personality.

After a preliminary quantitative study in Hanoi and Ho Chi Minh City, the author found that for Vietnamese tourists, travel thinking and behavior are basically homogeneous, therefore, the official survey was conducted in the inner city and suburbs of Hanoi for convenience and cost savings. The paper survey was issued between January and March 2021. The authors designed convenient sample selection, the reason is that because the respondents are easily accessible and willing to answer the survey questionnaire, many researchers have affirmed that convenient sample selection also ensures the reliability of the study (Boo, 2005). The number of respondents was 550, of whom 510 (92.7%) were valid.

In the analysis, the three main contents performed in this research step are: (1) Exploratory Factor Analysis (EFA), (2) Reliability analysis of the Cronbach's Alpha scale, (3) Confirmator factor analysis (CFA) and (4) Regression analysis using the maximum rationalization method on the Structural Equation Modeling (SEM). Data analysis is done through SPSS 23 and AMOS 23 statistical processing software.

3.2. Research scale

3.2.1. Independent variables

The scale of Electronic Word of Mouth was used in the study of Jalilvand and Samiei (2012), which consists of 6 indicators, ranging from Electronic Word of Mouth one to six. All independent variables are evaluated on a Likert scale from 1 to 7, where level 1 is "strongly disagree" and level 7 is "strongly agree".

3.2.2. Dependent variables

The Aaker Brand Personality Scale (1997) was not originally developed to measure destination personality, so some personality traits applied to a person or a product brand were considered unsuitable for certain countries or regions (Souiden et al., 2017). In other words, the relevance and stability of the 5 uncertainties are applied to cities, countries or destinations in general. Inheriting from the scale of Aaker (1997), Usakli and Baloglu (2011) proposed a destination personality that also includes 5 traits: Vividness, delication, competence, epochality and authenticity. The results of a number of studies in Vietnam on destination personality lead to the following conclusions: sincerity, enthusiasm, gentleness - competence (Destination Da Nang) (Pham Thi Lan Huong, 2014) or exciting, lively, safety, friendly, open, vibrant, playful, forward-looking (Ho Chi Minh City) (Bui Ta Hoang Vu, 2020).

After conducting preliminary qualitative and quantitative research, the authors found that the majority of Vietnamese do not distinguish clearly and are confused among delicate characteristic, vivid characteristic and sincerely characteristic. Respondents are confused among the criteria, according to which, the criteria of attractiveness, femininity, grace, good-looking (belonging to delicate characteristics) are confused with each other and are confused with charm, sensuality, energy, liveliness, vitality (belonging to vivid characteristics) and the criteria of friendliness, cheerful (of the sincerely characteristic).

Therefore, in the official quantitative study, the authors used the research scale of Usakli and Baloglu (2012), retaining some of the following destination personality which are suitable for the domestic tourism context of Vietnam:

A domestic tourist destination is considered as a person:

Table 1. Destination personality scale

BPS1: Competency characteristics	BPS2: Epochal characteristics
BPS1.1: Leader	BPS2.1: Unique
BPS1.2: Success	BPS2.2: Modern
BPS1.3: Confident, Assertive	BPS2.3: Daydreaming
BPS1.4: Independent	BPS2.4: Youthful
BPS1.5: Intelligent, quick-witted	BPS2.5: Trendy

Source: Self-synthesized author group

All dependent variables use a Likert scale from 1 to 7, where level 1 is "strongly disagree" and level 7 is "strongly agree".

4. Results

4.1. Data descriptive statistics

After cleaning the data, the result had 510 votes included in the statistical analysis of the sample description to check the suitability and representativeness of the sample.

Table 2. Descriptive statistics of the survey sample

Characteristics	Classify	Number of respondents (people)	Percent (%)
Living and working area	Hanoi Inner City	296	58,0
	Suburban Hanoi	211	41,4
	Other	3	0,6
Gender	Male	243	47,6
	Female	265	52,0

Characteristics	Classify	Number of respondents (people)	Percent (%)
	Other	2	0,4
Education	Not graduated from high school	26	5,1
	Graduated from high school	142	27,8
	Intermediate - College - University	197	38,6
	Postgraduate	145	28,4
Job	Student	73	14,3
	Freelancer	106	20,8
	Housewife	1	0,2
	Civil servants, public employees and officials at State Agencies/Organizations/Enterprises	93	18,2
	Employees, Managers at Private/Foreign organizations/Enterprises	135	26,5
	Senior Manager/Business Owner	18	3,5
	Teacher, Scientist	32	6,3
	Others	52	10,2
Total		510	100

Source: Self-synthesized author group

Regarding the **living and working area**, out of a total of 510 samples meeting the analysis standards, 296 people live and work in the inner city of Hanoi, accounting for 59.0%. And there were 211 people living and working in the suburbs of Hanoi, accounting for 41.4%, 3 people from other areas, accounting for 0.6%. This result is consistent with reality, showing that the majority of respondents live and work in the inner city of Hanoi. In terms of **gender**, 243 people are male, accounting for 27.6%; There are 265 women, accounting for 52% and 2 people, accounting for 0.4%, of other gender. This reflects the reality of Vietnam in general and Hanoi in particular when the proportion of women is always slightly higher than the proportion of men. In terms of **education**, the majority of respondents answered that they graduated from intermediate-college-university, accounting for 38.6%. At least the number of people who did not graduate from college was only 26, accounted for 5.1%. In reality, the level of education does not affect much on Internet access to search for information in general and tourist destination selection information in

particular. In terms of **job**, 26.5% of people worked as employees and managers at private/foreign organizations/enterprises. Many people living and working in the suburban area of Hanoi worked in industrial parks, while those living and working in the inner city of Hanoi do many different jobs: office workers, managers, technicians ... for private/foreign enterprises. The second highest proportion was self-employed with 106 people, accounting for 20.8% of the total 510 respondents. Only 1 respondent worked as a housewife, accounting for at least 0.2%.

4.2. Scale reliability

The personal characteristics include: Competency characteristics and epochal characteristics with Cronbach's Alpha reliability are: 0.847 and 0.747 > 0.7, respectively; At the same time, the indicators all have a total variable correlation coefficient > 0.3, so they have good reliability.

Electronic Word of Mouth is only a single factor with Cronbach's Alpha reliability of 0.886 > 0.7 and total variable correlation coefficients > 0.3, making it highly reliable (Hair et al., 1998).

4.3. Exploratory Factor Analysis (EFA)

For the research model, the authors used factor extraction method based on Eigenvalue > 1 index, Principal Components method and Varimax rotation. The results of EFA analysis with 2 independent variables and 1 dependent variable have a KMO coefficient of 0.847 > 0.8; Bartlett's test has a p-value of 0.00 and cumulative explained variance of 63.658, demonstrating that the three extracted factors explain 63.658% of the data variation of 15 observed variables. In addition, the observed variables all have a factor load factor of > 0.5, so good results are achieved (Hair et al., 1998).

Table 3. EFA analysis and scale reliability

	Cumulative explained variance		
	32,968	53,014	63,658
Electronic Word of Mouth			
EWOM2. To make sure I choose the right destination, I often read other people's travel reviews/comments on the Internet	0,868		
EWOM3. I often refer to other travellers' online travel reviews/comments when choosing an attractive destination	0,867		
EWOM4. I regularly gather information from other travellers' online travel reviews/comments before arriving at a certain destination.	0,845		
EWOM1. I regularly read other people's reviews/comments on the Internet to get an idea of which travel destinations impress people well	0,832		
EWOM6. When I travel to a destination, the online reviews/comments of visitors make me confident to travel there	0,731		

	Cumulative explained variance		
EWOM5. If I don't read traveler reviews/comments, then when traveling to a certain destination, I will worry about my decision	0,645		
Competency characteristics			
BPS1.5. The domestic tourist destination is seen as an intelligent and quick-witted person		0,806	
BPS1.2. The domestic tourist destination is considered as a successful person		0,802	
BPS1.3. The domestic tourist destination is seen as a confident and decisive person		0,798	
BPS1.1. Domestic tourism destination is recognized as a leader		0,734	
BPS1.4. The domestic tourist destination is seen as an independent person		0,717	
Epochal characteristics			
BPS2.2. The domestic tourist destination is seen as a modern person			0,833
BPS2.4. The domestic tourist destination is considered as a youthful person			0,829
BPS2.5. The domestic tourist destination is seen as a trendy person			0,656
BPS2.3. The domestic travel destination is seen as a daydreaming person			0,581
Cronbach's Alpha	0,886	0,847	0,747
KMO = 0,843; $\chi^2 = 1.788,770$; df = 36; sig. = 0,000			

Source: Authors' calculations

4.4. Affirmative Factor Analysis CFA

4.4.1. Unidirectional model

For the first-order construct, the CFA analysis showed that the normalized regression weight of the observed variable BPS2.3 < 0.5 was removed. Cmin/df indicators = 2.768 < 3; GFI = 0.952; CFI = 0.967; TLI = 0.957; RMSEA = 0.059 < 0.08 so the model has a good fit.

At the same time, the epochal characteristics (BPS2), competency characteristics (BPS1) and Electronic Word of Mouth (EWOM) factors had Composite Reliability (CR) of 0.816, respectively; 0.847 and 0.886 > 0.7; at the same time, the Average Variance Extracted (AVE) > 0.5 should ensure convergence. In addition, the MSV coefficients < AVE, and the square root of AVE is greater than the pair correlation coefficient of the factors, thus ensuring the differentiation (Hair et al., 1998).

Table 4. Reliability, convergence, differentiation analysis table (first-order construct)

	CR	AVE	MSV	EWOM	BPS1	BPS2
EWOM	0,886	0,573	0,919	0,757		
BPS1	0,847	0,527	0,859	0.292***	0,726	
BPS2	0,816	0,600	0,840	0,092	0,474***	0,775

***: Statistically significant at 1%.

Source: Authors' calculations

4.4.2. Second-order construct

For second-order construct, CFA analysis results show that the normalized regression weighting of observed variables > 0.5 should be satisfactory. Cmin/df indicators = $2.768 < 3$; GFI = 0.952; CFI = 0.967; TLI = 0.957; RMSEA = $0.059 < 0.08$ so the model has a good fit.

At the same time, destination personality (BPS) and Electronic Word of Mouth (EWOM) had Composite Reliability (CR) of 0.757 and 0.911 > 0.7 , respectively; at the same time, the average deduction variance index (AVE) > 0.5 should ensure convergence. In addition, the $MSV < AVE$, root 2 coefficients of AVE are larger than the pair correlation coefficients of the factors, thus ensuring differentiation (Hair et al., 1998).

Table 5. Reliability, convergence, differentiation analysis table (second-order construct)

	CR	AVE	MSV	EWOM	BPS
EWOM	0,886	0,573	0,919	0,757	
BPS	0,884	0,829	1,559	0,237***	0,911

***: Statistically significant at 1%.

Source: Authors' calculations

4.5. Results of regression analysis

4.5.1. First-order construct

The results of the analysis of the first-order construct have an index: Cmin/df = 3.917; CFI = 0.944; GFI = 0.934; TLI = $0.929 > 0.9$; RMSEA = $0.076 < 0.08$ so the model has a good fit (Hair et al., 1998). In addition, the impact of electronic word of mouth (EWOM) on competency characteristics (BPS1) and epochal characteristics (BPS2) is 0.000 and 0.042, respectively, so electronic word of mouth positively impacts competency characteristics and epochal characteristics. At the same time, the normalized β coefficients of competency characteristics and epochal characteristics are 0.297 and 0.104, respectively, so Electronic Word of Mouth affects the competency characteristic more than the epochal characteristic.

Chi-square/df=3.917
 GFI=.934
 CFI=.944
 TLI=.929
 RMSEA=.076
 PCLOSE=.000

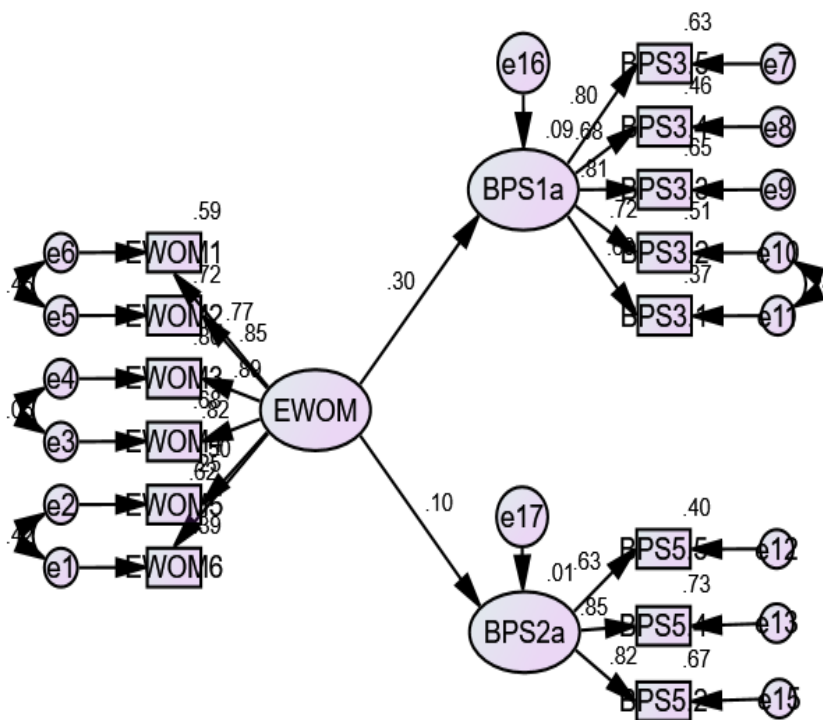


Figure 1. SEM analysis results for unidirectional variables

Source: Authors' calculations

4.5.2. Second-order construct

The results of the second-order construct analysis show the indicators: $C_{min}/df = 2.768$; $CFI = 0.967$; $GFI = 0.952$; $TLI = 0.957 > 0.9$; $RMSEA = 0.059 < 0.08$ so the model has a good fit (Hair et al., 1998). At the same time, the impact of electronic word of mouth (EWOM) on destination personality traits (BPS) has a p-value factor of 0.000 and a normalized β coefficient of 0.237, so electronic word of mouth positively impacts destination personality traits in Vietnam.

Chi-square/df=2.768
 GFI=.952
 CFI=.967
 TLI=.957
 RMSEA=.059
 PCLOSE=.066

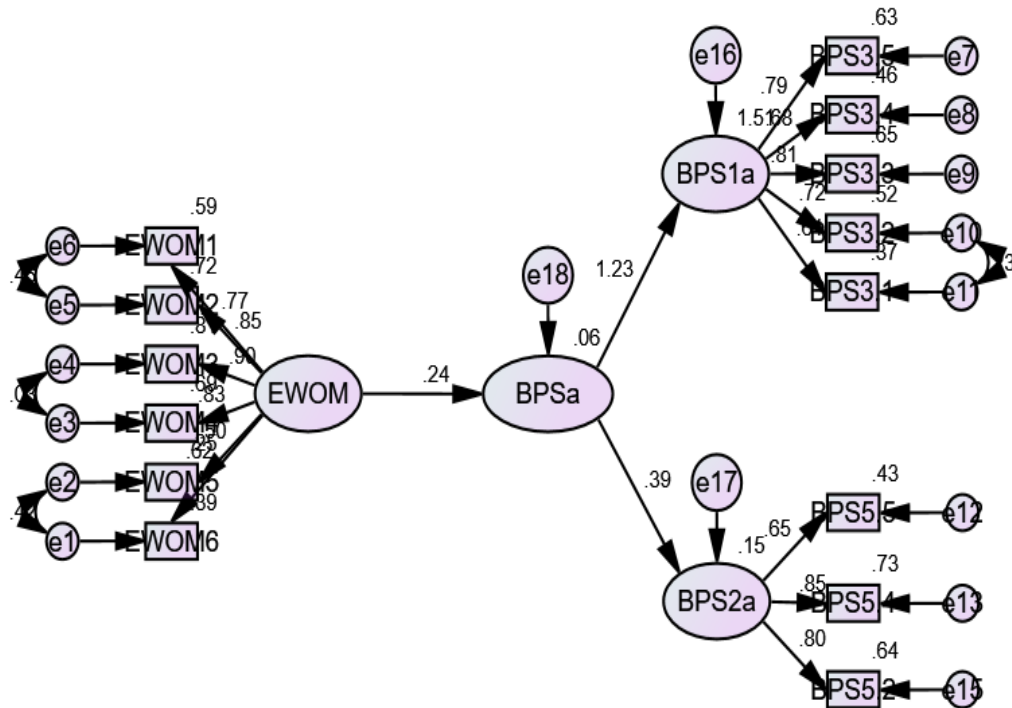


Figure 2. SEM analysis results for multicast variables

Source: Authors' calculations

5. Discussion and Conclusions

This study still has some limitations, (1) the study has not provided an intermediate or regulatory relationship between Electronic Word of Mouth and destination personality, (2) the study subjects live and work in inner and outer Hanoi, not representing the overall number of Vietnamese and international visitors to Vietnam. Further studies can carry out a survey with the ratio of domestic and international tourists to examine the relationship between EWOM and Vietnamese destination personality. Or analyze the impact of destination personality on traveler behaviors such as: destination selection intent, destination loyalty, or intent to return to the destination. In addition, it is also advisable to conduct a comparative study to better understand the factors related to destination personalities or personalities of different destinations in Vietnam.

There have been measurement studies on destination personality such as Usakli and Baloglu (2011), Kumar (2016), Bui Tá Hoang Vu (2021) or studies on EWOM in the field of tourism (Feli et al., 2016; Doosti et al., 2016; Abubakar, 2016), but have not found research exploring the relationship between e-word of mouth and personality in Vietnam, which is a new contribution to the current study. Based on reviews and feedback from past travelers, potential tourists have an idea of the destination, forming in their thoughts the destination personality. This discovery helps planners come up with ideas for businesses to use online platforms to share information about tourism activities, the uniqueness of destinations on the Internet, thereby helping potential tourists access information. Destinations must consider the natural landscape, facilities and people when planning strategies to develop the desired characteristics of the destination in the traveler's mind. Destination managers should try to encourage travelers to participate in discussions on online communities. When the number of reviews of tourists about a destination is high, then more and more information about a certain destination will be popular among potential tourists and, as a result, the likelihood of destination selection will increase.

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RESEARCH ON TRAFFIC AND ENVIRONMENTAL IMPACTS ON THE CHOICES OF WORKING PLACES BY GRADUATES OF ECONOMICS IN HANOI

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Abstract

The research aims to analyze the influence of traffic and environmental pollution on the intention of economics students in Hanoi to choose a place to work. The data was collected through a survey of 452 economics students from five universities in Hanoi: Foreign Trade University, National Economics University, Banking Academy, Thuongmai University, and the Academy of Finance. Based on data analyzed by IBM SPSS 26 software, combining qualitative and quantitative research methods by linear regression, the results show that the evaluation variables of pollution and traffic congestion, job opportunities and income, cost of living, adapting to traffic congestion, service quality, family support, and relationships all influence the graduates' intention to choose a job location. From the research results, several solutions have been proposed to help attract local talent and improve the quality of life in Hanoi.

Keywords: *Environmental pollution, Graduates, Intention, Traffic congestion.*

1. Introduction

Vietnam's capital, Hanoi, the country's major economic, commercial, and service hub has a high labor force density, particularly for skilled local workers. This puts intense pressure on the city, exacerbating problems related to environmental pollution and traffic congestion. With fine dust levels five times higher than WHO criteria and 3.5 million people affected, Hanoi is currently one of the most polluted cities in the world. The city's water source is heavily polluted, and the districts here have received much negative feedback from

people about the quality of domestic water. Besides, on a daily basis, people in the capital have to endure hours of traffic jams during rush hour. All of the above has a significant impact on the health and quality of life of people living in the city, partly affecting their intention to choose a place to work, especially after graduation.

Numerous studies have been done thus far to demonstrate the elements influencing students' decisions to select a place to work, both domestically and internationally. Employment opportunity is the factor most included in previous studies when considering this intention (Ferry, 2006; Hao et al., 2020; Nguyen et al., 2020; Tran, 2006). Besides the diversity of job opportunities, a lucrative income will also attract workers, leading to migration to higher-salary places (Lewis, 1954; Torado, 1969). Wages in urban areas are often assessed as more attractive than local incomes, thereby attracting young people to stay and work (Ferry, 2006; Huynh & La, 2011). In addition, the quality of urban services is also a decisive factor in a person's settlement in the city (Lin et al., 2019), including the quality of education (Zhou et al., 2020), entertainment, and health care (Zhang & Yu, 2022). Good urban public resources will be a positive signal to increase the likelihood of students staying in the city to work (Hao et al., 2020; Nguyen et al., 2020). The cost of living, including housing costs (Liu & Huang, 2023), transportation costs, and grocery shopping (Hao et al., 2020), has been shown to affect the intention of students to stay in the city after graduation (Hao et al., 2020). Besides, family and university relationships also play a huge role in students' career orientation. Graduates with strong ties to parents, siblings, and extended family are more likely to return to their home country (Tansel & Gungor, 2002). Meanwhile, students who have no obligation to take care of elderly relatives in their homeland are less likely to intend to return home (Morathop et al., 2010). Young people from less disadvantaged families tend to move to cities to gain more job opportunities with more competitive wages and greater equity (Du, 2017). Support from professors and friendships during university studies have a positive impact on the intention to stay (Cui et al., 2016). The social relationships of local relatives also influence the decision of graduates to return to their hometown (Huynh & La, 2011; Nguyen, 2020). Environmental pollution was also mentioned when considering students' intentions to choose a place to work (Khanna et al., 2021; Nguyen et al., 2020).

As can be seen, the above studies only consider familiar factors such as job opportunities, income, service quality, cost of living, family, and relationships. Environmental pollution has also been mentioned, but only in the scope of foreign research focusing on air pollution; Vietnam has not had any research that considers air pollution as an independent factor. Groups of factors such as water pollution or traffic congestion are not mentioned at all when studying the intention to choose a place to work after graduation. From the studies of Higa (2022) and Musumba et al. (2011), which talk about the impact of water quality and traffic congestion on population health, the research team decided to add these two groups of factors to assess the extent of their influence on students' intentions to choose a place to work.

2. Method

2.1. Data collection

The authors collected data from students currently at 5 economics universities in Hanoi, Vietnam by using the online questionnaire through Google Form. After the process of data collection and preliminary processing, processing of blank data, the final obtained data includes 452 responses, the research team comes to the process of regression analysis and statistics by exploiting the SPSS 26 software.

2.2. Sampling method

In this study, the authors selected the survey with a random sample on the basis of determining the sample size of the Exploratory Factor Analysis (EFA) (Hair et al., 2010) and multivariate regression analysis (Tabachnick & Fidell, 2006). The students selected for the survey are studying at five economics universities in Hanoi, Vietnam. The formula determines the minimum sample size for the study to be reliable. A sample size of approximately 500 observations was deemed appropriate, following the rule of thumb of multiplying by 5 for EFA and the minimum rule for multivariate regression.

2.3. Regression model

The author used regression with the dependent variable as Intention (YD) to assess the effect of variables on intention of students from economic universities in Hanoi, Vietnam. The factors described in the exploratory factor analysis (EFA) above are the independent variables affecting. The following is regression model:

$$YD = \beta_0 + \beta_1 * CH + \beta_2 * TN + \beta_3 * MG + \beta_4 * DV + \beta_5 * MQH + \beta_6 * GT + \beta_7 * KK + \beta_8 * NU + u$$

Where as, CH refers to Job opportunity, TN presents Income, MG refers to Living cost, DV indicating Service quality, MQH refers to Family and social support, GT represents Traffic Congestion status, KK refers to Air pollution and NU indicates Water pollution. The values β_i ($i = \overline{1,8}$) are regression coefficients, which represent the impact of each independent factor on the dependent variable's fluctuation. When the regression coefficients are significant (as determined by measuring the significance of the regression coefficient) and them is large, the regression model is considered suitable. In this study, we use regression models to reflect the influence of the independent variables on Intention.

2.4. Scale of variables

Researchers designed a questionnaire with 42 observed variables dividing into 1 dependent variable and 8 independent variables, using the 5-level Likert scale (Score 1: Absolutely disagree, Score 5: Absolutely agree). Dependent variable is Intention to work in the local area (YD), including 3 observed variables.

In this study, the independent variable is the variable that affects the dependent variable or in other words the dependent variable is decided by the independent variable. In this study, there are eight (8) variables considered with eight factors, namely Job

opportunities (CH) with 4 observed variables, Income (TN) with 5 observed variables, Living cost (MG) with 3 observed variables, Service quality (DV) with 3 observed variables, Family and social support (MQH) with 5 observed variables, Traffic Congestion status (GT) with 7 observed variables, Air pollution with 5 observed variables and Water pollution with 4 observed variables. Variable scales are inherited from previous studies of Nguyen et al. (2019), Tansel & Gungor (2002) Nguyen et al. (2020) and Weerasinghe & Subashini (2020)) along with some observed variables developed by the author.

3. Result

3.1. Descriptive Statistical Analysis

The general information related to the demographic information of economics students in Hanoi such as gender, hometown, university is illustrated in the below table.

Table 1. Demographic information of respondents

Group	Categories	Observation	Percentage
Gender	Male	173	38.3%
	Female	279	61.7%
Hometown	Hanoi	112	24.8%
	Other	340	75.2%
University	Foreign Trade University	272	60.2%
	National Economics University	59	13.1%
	Thuongmai University	48	10.6%
	Academy of Finance	39	8.6%
	Banking Academy of Vietnam	34	7.5%

Source: Data processing result by authors

3.2. Reliability Analysis- Cronbach's Alpha

The Cronbach's Alpha coefficient for all items of the final scale is higher than 0.6. The Corrected Item- Total Correlation of each observed independent and dependent variable is greater than 0.3. Therefore, the study's scale remained all 39 observations for subsequent EFA review.

Table 2. Cronbach's Alpha result

Variables	Symbol	Number of observed variables	Cronbach's Alpha
Dependent variable			
Intention	YD	3	0.884
Independent variables			
Job opportunity	CH	4	0.870
Income	TN	5	0.771

Variables	Symbol	Number of observed variables	Cronbach's Alpha
Living cost	MG	3	0.815
Service quality	DV	3	0.797
Family and social support	MQH	5	0.749
Traffic Congestion status	GT	7	0.785
Air pollution	KK	5	0.840
Water pollution	NU	4	0.824

Source: Data processing result by authors

3.3. Exploratory Factors Analysis

After proceeding EFA at first, 7 observed variables were removed from the scale because they are extracted into 2 and 3 factors, the rest is appropriate with factor loading > 0.5 . In the second EFA process, the KMO coefficient computed from the sample is $0.908 > 0.5$. The Barlett test has a p-value of $0.000 < 0.05$, % of variance = $64.707 > 50\%$, the factor loading is greater than 0.5 and the coefficient Eigenvalue is $1.022 > 1$. Thus, the criteria for using the EFA discovery analysis shows that the factors are consistent with the data set of study. Therefore, the survey sample size is sufficient for factor analysis.

Table 3. Rotated Component Matrix

	Component					
	1	2	3	4	5	6
KK1	0.797					
NU1	0.786					
NU3	0.717					
KK3	0.707					
NU2	0.702					
KK2	0.694					
GT1	0.691					
KK4	0.690					
KK5	0.673					
NU4	0.653					
GT2	0.650					
CH2		0.808				
CH4		0.800				
TN4		0.703				
CH3		0.677				
CH1		0.672				
TN3		0.630				

	Component					
	1	2	3	4	5	6
MG1			0.879			
MG2			0.798			
MG3			0.728			
GT5				0.767		
GT3				0.752		
GT4				0.705		
DV1					0.748	
DV2					0.697	
DV3					0.632	
GD2						0.814
GD4						0.691
GD3						0.648

Source: Data processing result by authors

The analysis results show that with 29 observed variables to evaluate the intention of working places by economics students, there are 6 factors that can be extracted. According to the calculation results from the sample, these factors explain 64.707% of the variation of the dataset.

As these observed variables are extracted into factors different from our prior ones, we propose new dependent and independent variables as follows:

Dependent variable: Intention of working in hometown (YD)

Independent variables:

- Awareness of pollution and traffic congestion (DG)
- Job opportunity and income (CH_TN)
- Living cost (MG)
- Readiness for traffic congestion (TNGT)
- Service quality (DV)
- Family and social support (MQH)

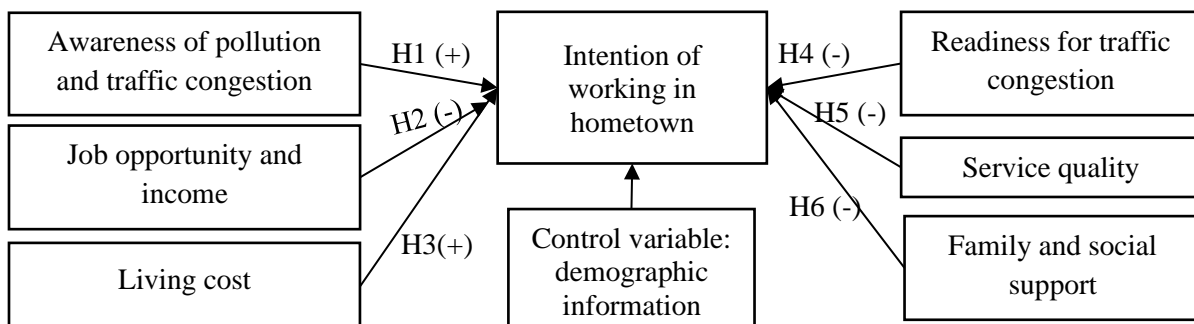


Figure 1. The final model

Source: Author's Compilation

3.4. Regression analysis

Table 3. Coefficient

	B (Unstandardized Coefficients)	Beta (Standardized Coefficients)
(Constant)	4.333*** (0.329)	
DG	0.420*** (0.089)	0.261***
CH_TN	-0.295*** (0.084)	-0.212***
MG	0.300*** (0.053)	0.269***
TNGT	-0.244*** (0.064)	-0.190***
DV	-0.390*** (0.077)	-0.290***
MQH	-0.145** (0.059)	-0.114**
Observations		452
Adjusted R - squared		0.208

*** p<0.01, **<0.05, *p<0.1

Source: Data processing result by authors

The value of determination coefficient Adjusted R Square is 0.208 which indicates that the six main factors explain 20.8% of the variation in the dependent variable (YD). The Sig. values of all independent variables are less than 0.05, indicating that the coefficients are statistically significant at a 5% level. All hypotheses are accepted: the DG and MG have positive effect on the dependent variable, Intention to work in the local area; while the CH_TN, TNGT, DV, and MQH have negative effect on this dependent variable. Based on the above analysis results, the regression equation of the YD is as below:

$$\widehat{YD} = - 0.290 * DV + 0.269 * MG + 0.261 * DG - 0.212 * CH_TN - 0.190 * TNGT - 0.114 * MQH$$

4. Discussion and conclusion

4.1. Discussion

Traffic congestion and environmental pollution are the main factors in the research group's objective, which is also a new point compared to previous studies. The research results indicated that as the evaluation of air pollution, water pollution, and traffic congestion in Hanoi increased, the intention to work in hometown of undergraduates would rise. This

result aligns with studies by Y Hao et al. (2020), Liu & Yu (2020), and Khanna et al. (2021). However, there has been no previous study that directly assesses the direct impact of congestion on the intention to choose a workplace. Previous studies such as Kamruzzaman & Rumpa (2019), and Higa (2022) mainly focused on evaluating the impact of congestion on work efficiency, working time, etc. These indirect impacts influenced the choice of workplace. Currently, the air quality index (AQI) in Hanoi consistently reaches hazardous levels, and people are exposed to PM_{2.5} fine particulate matter concentrations exceeding 45 µg/m³, posing health risks to workers and directly affecting the desire for stability in the lives of migrants and sensitive individuals, who are heavily affected by air pollution (Liu & Yu, 2020).

Readiness for traffic congestion is a negative factor that affects the intention to return to the local area for work among students. However, this factor has a relatively small impact compared to other variables. This is consistent with the theory of reasoned action (Ajzen & Fishbein, 1975) and the theory of planned behavior (Ajzen, 1985, 1991). This result acknowledges and reflects the findings of the previous study by Weerasinghe & Subashini (2020) on the impact of adaptation to congestion on the intention to choose a workplace. Currently, students in Hanoi, as young workers with health and enthusiasm, are willing to accept congestion to work in Hanoi, where they will work for a few years before deciding whether to return to their hometown.

The living cost in Hanoi is the second most influential factor in the intention to choose a local workplace among students in the Hanoi area after graduation. This factor has a positive influence on the intention of students. Therefore, as prices in Hanoi increase, students are more likely to have the intention to work in their hometown after graduation. According to the Spatial Cost of Living Index (SCOLI), Hanoi had the highest prices in the country in 2022, which somewhat reduces the intention to stay in Hanoi for work.

The factor that has the greatest impact on students' intention to choose to work in Hanoi after graduation is the services quality. When the services quality in Hanoi improves, it reduces students' intention to return to their hometowns. Hanoi has many hospitals with excellent doctors, modern equipment, schools with good quality training, developing soft skills and improving foreign language proficiency for students, diverse entertainment areas, and cinemas. These factors will attract young people (especially students) to stay in the city, reducing the likelihood of them returning to their hometowns.

Regarding job opportunity and income, the research results show that this factor has a negative impact on students' intention to work in their hometowns after graduation. Hanoi concentrates on many small and medium-sized enterprises, providing diverse jobs for students. They have a greater chance to improve their skills and use foreign languages in their work, which makes them tend to stay in Hanoi instead of returning to their hometowns.

In addition, the family and social support also have an impact on students' intentions to work in their hometowns. This factor has a negative impact on students' intentions, meaning that when students receive support from their families and relationships in Hanoi, they will reduce their intention to work in their hometowns. It can be seen that students still

depend on their families, but this dependence is decreasing gradually compared to before. This shows that students are becoming more active and independent to demonstrate their abilities, assert themselves, and seek the best and most suitable opportunities for themselves.

4.2. Conclusion

In conclusion, the research results provide valuable information to support stakeholders in providing and developing solutions for local governments, city governments, schools, and students themselves. To attract students who are about to graduate to return to their hometowns to work, local governments need to apply the following solutions based on the strong or weak impact of the factors that affect students' intentions to work in their hometowns, along with the relationships between these factors:

(i) Solutions for government and management agencies:

- Solution to attract graduates to work in the local area:

Government and management agencies should:

(1) Improve service quality and upgrade infrastructure:

Expand and upgrade transportation routes; invest in advanced facilities for hospitals and invite specialized doctors; construct and repair schools, provide new technological tools for teaching and learning; build parks for local residents.

(2) Provide more career development opportunities for workers:

Provide administrative procedure support, preferential tax and interest rate policies, and attract investment capital for local businesses' development, which can attract graduates to work in the area. Establish scholarships and support funds for financially disadvantaged students. Collaborating with businesses to organize career counseling workshops for students helps them understand suitable job opportunities in the local area.

(3) Enhance environmental protection:

Raise public awareness about pollution issues; encourage tree planting; closely manage factories' waste discharge into the environment; control the use of plant protection substances and fertilizers in agriculture to prevent groundwater pollution.

- Solution to ensure a better living environment for graduates working in Hanoi:

The authority should take measures to ensure the most favorable living conditions for graduates working in Hanoi, such as:

(1) Improve air quality in Hanoi:

Increase the number of air monitoring stations in suburban areas; propose measures to limit the sources of air pollution, such as raising community awareness, banning traditional stoves, managing crop residues and agricultural by-products; conduct emission tests for motorcycles and old motorized vehicles circulating in the area; address the existing waste problem and impose severe penalties for businesses causing significant air pollution.

(2) Ensure clean water supply for residents:

Establish regulations for water exploitation units to protect the quality of domestic water sources; listen to feedback from residents regarding the quality of domestic water. The Ministry of Natural Resources and Environment will continue to review and supplement mechanisms to enhance water resource management effectiveness and have legal sanctions for activities polluting domestic water sources.

(3) Solve traffic congestion issues in Hanoi:

Deploy additional traffic police officers to regulate traffic during peak hours; study the expansion of transportation infrastructure, such as installing traffic lights at intersections, increasing investment in constructing overpasses at major intersections; learn from the experiences of other countries in developing public transportation systems; enforce penalties for smuggling and vehicles that do not meet the required standards; promote traffic law compliance and encourage people to avoid peak hours if possible.

(4) Stabilize prices in Hanoi:

Regarding price stability for goods, the Department of Industry and Trade needs to inspect and control the factors influencing prices; impose legal sanctions for violations related to prices; continue to organize tax and price inspection teams at enterprises; provide interest-free capital support for businesses with a significant market share on the local area, and maintain balanced supply and demand by ensuring sufficient reserves of goods.

In terms of housing, it is necessary to implement housing planning for low-income workers, conduct inspections of student rental services, and maintain public order.

Regarding energy prices such as gasoline and oil, the Ministry of Finance and relevant departments need to manage and control the supply of petroleum products, as well as timely understand the energy needs of the population, ensuring a balance between supply and demand, and considering reasonable petroleum taxes.

(ii) Solutions for educational institutions:

Educational institutions and teachers should:

- Educational institutions should regularly organize career workshops and counseling sessions for students; establish a connection between businesses and students, organizing practical visits to businesses.

- Teachers should support students, provide advice on employment opportunities.

(iii) Solutions for students themselves:

Students need to be proactive in considering different intentions for their work location choices. They should focus on improving fundamental skills such as foreign languages, computer literacy, as well as soft skills such as communication, presentation, and interpersonal skills. They should explore their own potential and actively reach out to their teachers for career advice based on their current abilities and qualifications.

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IMPACT OF CAREGIVING - WORK DEMANDS AND SOCIAL SUPPORT ON CAREGIVING BURDEN IN VIETNAM

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Abstract

The population of Vietnam is rapidly aging as a result of decreasing fertility rates and increasing life expectancy. Besides, the elderly mostly live with their children and grandchildren, so the burden on their children, relatives, and friends in caring for the elderly is enormous. This burden can directly affect the quality of life of caregivers. Therefore, it is important to understand how the demands of work and caregiving contribute to caregiving interferes with work conflict and caregiving burden for caregivers who are both employed and unpaid family caregivers. From a theoretical perspective, two factors some theories have pointed out as related to the level of burden on the caregiver, which is social support and role conflict in caregiving, has not been extensively studied. Therefore, this study will clarify the theoretical gap through testing several hypotheses related to work and caregiving demands, social support, caregiving interferes with work conflict, and caregiving burden to identify strategies for improving the lives of caregivers who balance these dual roles and help policy-makers to better support family caregivers, the primary resource for caring for the elderly in Vietnam and other aging countries.

Keywords: *caregiver burden, family caregiving, older people*

1. Introduction

The population of Vietnam is rapidly aging as a result of decreasing fertility rates and increasing life expectancy. The number of people with chronic diseases is also increasing along with the aging trend of the population. The proportion of deaths from chronic diseases increased from 41.6% in 1986 to 61.6% in 2006. Furthermore, this proportion is increasing rapidly, especially in the elderly population (Mwangi et al., 2015). Chronic diseases in the elderly will become a significant burden for families, communities, and the social welfare system. Especially with the traditional cultural values in Vietnam, the elderly mostly live with their children and grandchildren, so the burden on their children, relatives, and friends in caring for the elderly is enormous. This burden can directly affect the quality of life of caregivers. Therefore, it is important to understand how the demands of work and caregiving contribute to caregiving interferes with work conflict and caregiving burden for caregivers who are both employed and unpaid family caregivers.

From a theoretical perspective, factors that affect the burden of caring for the elderly have been demonstrated in some studies. These studies mainly focus on the direct impact of factors related to the caregiver's characteristics, the care recipient's characteristics, and their

impact on the burden of care. However, two aspects that some theories have pointed out as related to the level of caregiving burden, which is social support and role conflict in caregiving, has not been extensively studied. According to Pearlin's (1990) theory of the stress process, the role of social support and role conflict can affect the outcome of potential stressful events. According to this theory, the outcome of potential stressful events depends on the resources of the caregiver, such as social support, and the limits of those resources - the level of role conflict. Therefore, this study will clarify the theoretical gap through testing several hypotheses related to work and caregiving demands, social support, caregiving interferes with work conflict, and caregiving burden to identify strategies for improving the lives of caregivers who balance these dual roles and help policy-makers to better support family caregivers, the primary resource for caring for the elderly in Vietnam and other aging countries.

2. Theoretical Framework

2.1. Some Definitions

Older people

Older people is defined differently depending on the average life expectancy as well as the level of socio-economic development of each country. For international organizations, the United Nations or World Health Organization defines older people as people over 60 years old. According to the classification of World Health Organization, the ages 60-74 are classified as old, 75-89 as elderly, and 90 and over as senility (Tran Ngoc Tu, 2009). In Vietnam, Law on the Elderly defines elderly as Vietnam citizens over the age of 60 years. Therefore, in this study, elderly people are also considered as people over 60 years old.

Family caregiver

Informal family caregivers are people who often provide care without payment or without specialized training. Meanwhile, professional (formal) caregivers include nurses, home health aides, and other professional care workers. Informal carers are usually spouses or adult children, or sometimes other relatives or friends (UNFPA). In this study, the author will focus on the carers who are family members (including spouse, or children, other relatives) of the older people.

Caregiving Burden

George and Gwyther (1986, p. 253) defined caregiver burden as “the physical, psychological or emotional, social, and financial problems that can be experienced by family members caring for impaired older adults.”. Caregiving burden will affect the quality of life of caregivers as mentioned by the study of Wijngaart et al (2007). In this study, caregiving burden is considered as a caregiving outcome that reflects the negative emotional or physical feeling of carers when they confront with both physical and mental difficulties in taking care of an elder person.

Caregiving demands and Work demands

Caregiving demands are driven by the needs of the care recipient. Older persons who need more care put significant demands on their caregivers, in terms of the amount of care

required and the time needed to provide this care. Work demands, on the other hand are inherent to the employment position a person holds and include work conditions, workload, and exposure to risks (Cooper, Dewe, & O'Driscoll, 2001; Schaufeli & Bakker, 2004).

2.2. Conceptual Model and Hypotheses

Demands and Caregiving Outcomes

Caregiving demands may exhaust employees' mental and physical resources, again resulting in role conflict and strain or, as conceptualized in this study, CIW and caregiving burden. Caregiving demands can be understood as stressors in the process of caring for elderly individuals at home. According to the model developed by Johns and colleagues (2011), caregiving needs encompass factors such as the care recipient's health status, caregiving activities, and role demands. Research shows an inverse relationship between caregiving demand and negative caregiving outcomes such as caregiver burden and stress. Kim and colleagues (2012) found that the care recipient's health status is a critical factor explaining the burden of caregiving. Using a national sample of caregivers in the United States, the study included 302 participants randomly selected from a database. The results showed that the care recipient's health status was positively related to the hours of care and caregiver burden. Conde-Sala (2010) investigated caregiver burden comparing spousal caregivers and adult child caregivers of Alzheimer's patients. The study found no differences in caregiver burden between the two groups, and neither age nor the care recipient's health status was related to caregiver burden.

Another study by Morley and colleagues (2012) examined the impact of care recipient health status and contextual factors related to caregiving demands on the caregiver's quality of life. The sample included 238 caregivers with a mean age of 68.2 years in the UK. The results showed that caregiving hours directly affected the caregiver's quality of life. In addition, factors such as the care recipient's level of cognitive impairment and disease severity also influenced the caregiver's quality of life.

As such, the following hypotheses are posited:

Hypothesis 1a: Caregiving demands will be positively associated with CIW.

Hypothesis 1b: Caregiving demands will be positively associated with caregiving burden.

Supports and Caregiving Outcomes

Research approaches have focused on social support variables mainly towards negative caregiving outcomes such as caregiving burden, exhaustion or anxiety levels for caregivers. Typical author groups in this approach include Han et al. (2014), House et al. (1988), Taylor (2012), Rodakowski (2012), and Shieh (2012). According to Han et al. (2014), the author group studied types of social support that could reduce the psychological and non-psychological burdens of caregivers of people with dementia and explored the mechanisms of social support on caregiving burden. The study was evaluated through five types of social support (emotional support, informational support, tangible support, positive social interaction, and emotional expression support) among 731 patients with dementia and their caregivers using a scale. The results showed that positive social interaction and

emotional expression support directly and indirectly reduced the psychological burden of caregivers. Tangible support reduced non-psychological burdens through both direct and indirect pathways. Informational support and emotional support did not have any effect on reducing psychological or non-psychological burdens, and informational and emotional support were not helpful in reducing any type of caregiver burden.

Sherbourne and Stewart (1991) approached social support from two aspects: perceived social support and received social support. The research results showed that received social support was related to caregiving burden. In addition, this author group also identified factors that could predict other burdens such as demographic characteristics, caregiving time, cohabitation status, etc., but received social support was the most significant contributor to caregiving burden reduction, helping to minimize the burden on caregivers. The authors found that caregivers with high levels of social interaction and received social support would reduce the caregiving burden. Meanwhile, Shieh (2012) in his study showed the relationship between perceived social support and caregiving burden. Caregivers who perceived a high level of social support reported lower levels of burden. Based on this overview, this study will test two hypothesis as below:

Hypothesis 2a: Caregiving support will be negatively associated with CIW.

Hypothesis 2b: Caregiving support will be negatively associated with caregiving burden.

Caregiving interfering Work and Caregiving Burden

According to the stress process theory of Pearlin and colleagues (1990), work-family conflict is considered a stressor that negatively affects caregiving outcomes. This impact has been mentioned in several studies, including Opie & Henn (2013) and Wang et al. (2010). Caregivers who have to take on both roles at the same time are likely to experience work-family conflict, which leads to the formation of stressors that negatively impact caregiving outcomes, specifically the burden of care, as mentioned in this study. Over time, the responsibilities associated with caring for an older individual often become increasingly onerous, which can lead to a highly demanding experience for those who simultaneously work and provide care. Therefore, the study focuses on the following hypotheses based on these findings.

Hypothesis 3: CIW will be positively associated with caregiving burden.

Recent studies indicate that the effect between work demand and caregiving domain is vice-versa. The stress process theory proposed that caregivers often face cross-pressures and dilemmas when balancing their caregiving duties with their occupation. The competing demands hypothesis suggests that individuals who encounter difficulties in fulfilling their work obligations may experience a reduction in their family life quality and vice versa, as noted by Frone, Barnes, and Farrell (1994) and Stephens and Franks (1999). Therefore, I propose the following hypotheses:

Hypothesis 4a: Work demands will be positively associated with CIW.

Hypothesis 4b: Work demands will be positively associated with caregiving burden.

Hypothesis 4c: Workplace support will be negatively associated with CIW.

Research on the mediating role of work-family conflict or family-work conflict in the relationship between antecedents and outcomes related to both work and family of family members has been addressed in several studies, such as the research models of Aycan (2008), Greenhaus, Collins, Singh, & Parasuraman (1997); Guerts, Kompier, Roxburgh, & Houtman (2003); O’Driscoll, Ilgen, & Hildreth (1992). For instance, Aycan's (2008) model explores the impact of culture on well-being in the family domain through the mediating variable of work-family conflict. This research model focuses on cultural variables such as individualism, collectivism, etc. The study reveals that individuals who tend to be collectivistic are more likely to feel capable of balancing their work and family roles, thereby increasing their level of happiness in the family domain.

Based on the stress process theory of Pearlin, this study will concentrate on examining the mediating role of care-related work conflict in the relationship between care needs, care support, and care burden. I propose the following mediation hypotheses:

Hypothesis 5a: CIW mediates the relationship between caregiving demands and caregiving burden.

Hypothesis 5b: CIW mediates the relationship between caregiving support and caregiving burden.

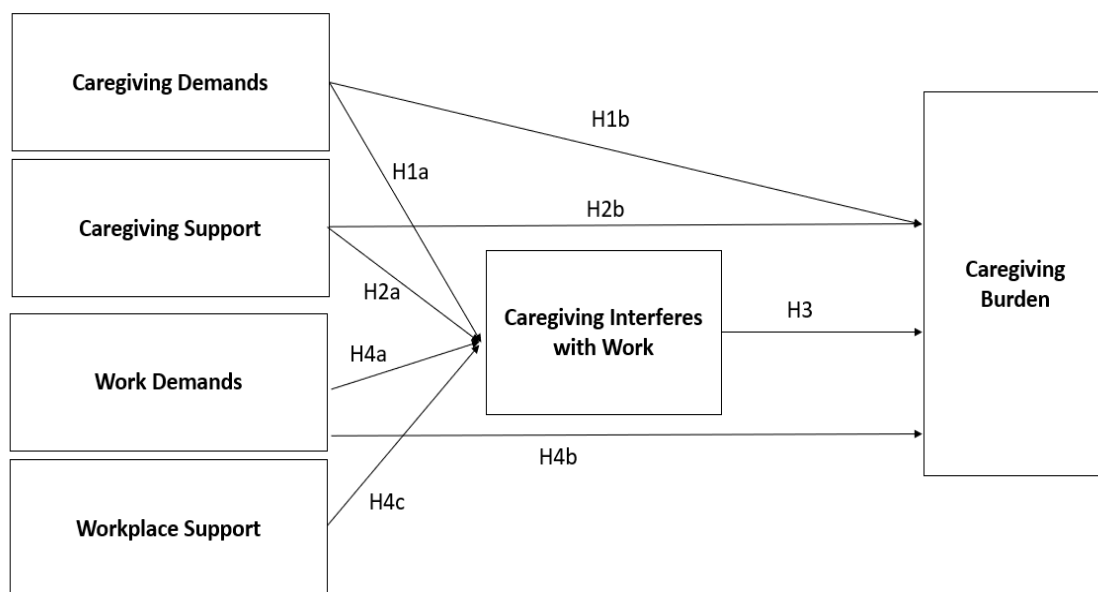


Figure 1. Theoretical framework addressing the factors affecting the burden of elderly family caregivers

2. Method

Sample

The study was conducted in two provinces: Hanoi and Thabinh where having a proportion of elderly population of 8% or higher according to the UNFPA's distribution of elderly population by province in 2011.

The sample size of the study was based on the actual proportion of elderly population in the six aforementioned provinces and the number of observed variables in the study. Based on the calculated results, the minimum sample size needed to ensure statistical power is 104. With a non-response rate of 20%, the estimated sample size would be around 124. However, as the study focuses on the group of caregivers who are children, according to the Institute of Population, Health and Development (2018), the proportion of children caregivers is 79.27%. Therefore, the study will survey at least 156 current caregivers of elderly individuals at home to ensure an adequate sample size for the group of caregivers after the survey.

Data collection and analysis

The study uses SPSS software to process data collected from 180 caregivers, currently caring for the older people at home in two provinces: Hanoi and Thai Binh - those with a high proportion of older people in Vietnam.

The data source is provided by the Elderly Association of wards and communes in Hanoi and Thai Binh. The Elderly Association is the main organization which obtain the information related to the health status, the caring situation for the older people at home. Therefore, using this data source will bring high reliability for the research. The survey will be conducted in three forms: handing out questionnaires, phone surveys, and online surveys. Out of 200 survey questionnaires collected, all 164 answers were valid and used to analyze the research model.

Measures

Caregiving demands

The caregiver demand variable is measured based on two basic measures: the health status of the elderly individual and the time spent providing care each week in hours. These two criteria include information on the number of hours the caregiver is engaged in caregiving; the health status of the elderly individual based on their ability to perform daily tasks such as preparing meals, ability to self-administer medication, etc.; and the number of hours per week that the caregiver spends caring for their parent(s). These criteria are constructed using a 6-level Likert scale.

Caregiving support

Caregiving support was assessed with two measures. First, respondents were asked to name the people in addition to the designated caregiver who helped the care recipient without receiving pay within the past month (informal helpers). The measure was the count of other unpaid helpers who assisted the care recipient. Second, respondents indicated the number of hours of help each of these individuals provided. The measure (informal help hours) was the total number of hours of unpaid help received by the care recipient from anyone other than the identified caregiver.

Work demands

Work demands were measured with the five-item psychological job demands scale (job demands) taken from Karasek's (1985) Job Content Questionnaire. Each item was rated on a 6-point scale from completely disagree (1) to completely agree (6).

Work support

Workplace support included two components: supervisor support and coworker support. Supervisor support was assessed with a four-item scale developed using three items from Clark's (2001) measure of family-sensitive supervision. Respondents rated each item on a 6-point scale from completely disagree (1) to completely agree (6). Coworker support was assessed using a parallel four-item scale and identical response format.

CIW

Measures of CIW were based on questions developed by Carlson and Frone (2003). Respondents used a 6-point Likert-type scale ranging from completely disagree (1) to completely agree (6). Higher scores indicated more conflict.

Caregiving Burden

Many studies use a variety of different measures, such as the Perceived Stress Scale (S. Cohen, Kamarck, & Mermelstein, 1983; 10 studies) and the Screen for Caregiver Burden (Vitaliano, Russo, Young, Becker, & Maiuro, 1991; 8 studies). However, the level of burden in caring for elderly individuals is most commonly measured using the Zarit Burden Interview (Gratão et al., 2019) with 58 different studies. Therefore, this study also used the Zarit Burden Interview to assess the perceived burden of caregivers.

3. Results

Descriptive statistics of caregivers

The average age of the respondents was 43.8 years. The personal annual income reported was as follows: less than 5 million VND (16%), 5.1-10 million VND (33%), 10.1-20 million VND (42%), more than 20 million VND (6%), and not reported (3%). About 45% of the sample reported working 40 hours per week, while 55% worked more than 40 hours a week. Most of the care recipients (63%) were female, with a mean age of 72.5 years. Approximately 59% of the sample were married, and their education levels included less than high school (4%), high school (20%), some college (21%), college degree (33%), and master's degree or more (22%). The care recipients' relationships with their caregivers were as follows: mother (67%), spouse or male partner (9%), father (7%), mother-in-law (5%), sibling (6%), other relative (4%), and other (2%). Half of the care recipients were living with their caregivers. The caregivers provided assistance with an average of 4.9 IADLs and 1.2 ADLs for the care recipients. The majority of the sample (71%) did not receive any paid help with their caregiving responsibilities.

Table 1. Descriptive statistics of older people

Indicators	Classification	Number	Percentage (%)
Gender	Male	68	34,7%
	Female	128	65.3%
Age	50-below 60	18	9,2%
	60- below 70	45	22,9%
	70- below 80	65	33,1%
	Above 80	68	34,8%

Source: Data from research results

Model related Findings

The initial test of the model, depicted in Figure 1, indicated a model fit as follows: CFI = .803, TLI = .72, RMSEA = .066, Hoelter = 124 ($p = .00$), chi-square/df ratio $208.346/30 = 4.315$. All paths were significant with the exception of the following: from caregiving demands to WIC. This path were removed from the model, one at a time. The fit of the model did not change substantially (CFI = .801, TLI = .726, RMSEA = .071, Hoelter = 183 [$p = .05$], chi-square/df ratio $221.708/40 = 3.667$). Table 1 presents unstandardized and standardized estimates from the final model. We tested mediation by removing the direct paths from caregiving demands and supports to caregiving burden. This resulted in a decrement in fit. Specifically, the chi-square rendered was 350.542 (47) as compared with 208.711 (43) in the final model.

Table 2. Model related Results - Impact of factors on the caregiver burden for the older people

	Estimates	SE	Critical Ratio	Standardized Estimates
Caregiving Demands				
CIW	2.871	0.387	4.333	0.214
Caregiving Burden	2.995	0.489	8.221	0.569
Caregiving Support				
CIW	-.845	0.389	-5.223	-0.043
Caregiving Burden	-1.752	0.256	-2.658	-0.369
Job Demands				
CIW	0.337	0.055	3.897	0.378
Caregiving Burden	0.176	0.087	5.444	0.089
Workplace Support				
CIW	-1.365			
Caregiving interferes with Work				
Caregiving Burden	0.199	0.043	7.002	0.118
R2				
CIW	0.345			
Caregiving Burden	0.621			

4. Discussion and Conclusion

This study has contributed to the theoretical aspect by combining Pearlin's stress process theory (1990) and role conflict theory (Goode, 1960; Stephens & Franks, 1999) to develop a research model that examines the impact of caregiving on workers who have to juggle two roles simultaneously. The study has shown that work-family conflict is an important factor in explaining the effects of caregiving responsibilities at home and work on caregiver burden.

The results also indicate that social support plays a critical role in reducing stress for workers who have caregiving responsibilities for elderly family members. Social support for work and caregiving can help reduce pressure and improve the quality of both work and care. Additionally, this study also suggests that work-family conflict may be a mediating factor that explains how social support reduces work-related stress.

Currently, the social support system for elderly caregivers mainly relies on volunteers from non-governmental organizations or through group associations such as the Elderly Association and the Caregiver Union, which focus primarily on provinces with high percentages of elderly people. However, to ensure the quality of care and cope with the rapidly aging population, it is necessary to develop a paid caregiving workforce in households. The cost of wages can be contributed by both the household, non-governmental organizations, and the state to reduce the burden of care. The caregiving workforce can be diversified from people around, such as friends, neighbors, and even professional caregiving teams. Diversifying the caregiving workforce will help households have appropriate options based on their family situation and the health status of the elderly. Research results have shown that social support can reduce the burden of caregiving. Therefore, developing caregiving as a profession, increasing income sources for not only professional caregivers but also those around, will contribute to improving social welfare policies and developing community-based elderly care.

On the other hand, workplace support combined with caregiving support can reduce the conflict between work and family as well as the role strain for workers who are also responsible for caring for elderly family members at home. Organizations can encourage managers and colleagues to support workers through programs that offer appropriate salary and benefits, helping them reduce stress and the burden of caregiving for older adults.

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PROPOSED SUSTAINABLE ORIENTATIONS AND OPTIMAL DEVELOPMENT MODEL FOR THE NATIONAL PUBLIC HEALTHCARE SYSTEM IN CONTEMPORARY VIETNAM

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Abstract

Despite numerous achievements and efforts towards innovation, Vietnam's public healthcare system is encountering significant challenges due to the rising demand for healthcare services. This study aims to provide insights into the role and challenges faced by the healthcare sector in Vietnam and propose a new public health model and solutions to enhance the quality and efficiency of current public non-business healthcare units.

Keywords: *sustainable development, national healthcare system, and Vietnam's public healthcare model.*

1. Introduction

Arising from the significance of human health in the context of sustainable development and the ongoing transformations in the contemporary global landscape, there is a pressing need to reform the public healthcare system in Vietnam. This necessitates the identification and implementation of appropriate strategies and frameworks.

Health and healthcare, as crucial factors in human life, are inextricably linked to the well-being and prosperity of a nation. Recognizing health as a valuable asset for individuals and a vital resource for national progress, it transcends medical boundaries and encompasses social and humanitarian dimensions. Investments in health signify investments in human capital, productivity enhancement, opportunity creation, sustainable development, and future growth, thereby rendering the promotion, protection, and improvement of public health a paramount objective for developed nations worldwide.

Vietnam's public healthcare system, through improved management and administration, has made significant contributions to healthcare services for the people. It has been successful in many areas, including project management, prevention, examination and treatment, population health, and the application of science and technology, as well as medical digital transformation. Vietnam currently has attained numerous accomplishments in promoting public health, emerging as a notable exemplar in realizing the United Nations Millennium Development Goals. Nevertheless, the nation faces a myriad of contemporary challenges, including population aging, shifting disease patterns, food insecurity, global climate change, escalating healthcare demands, biosecurity threats, and potential destructive biological warfare. Hence, persevering in the efficacious restructuring of the national public

healthcare system shall empower Vietnam to augment its extant successes and competently navigate the evolving impediments it confronts.

In the contemporary global landscape, the healthcare sector transcends traditional boundaries, becoming a vital component of white security forces (biomedical-pharmaceutical security) that significantly contribute to overall national security and public well-being. This force requires enhanced organization, equipment, and coordination to address growing security demands. Moreover, establishing a foundation for scientific and technological advancements, particularly in the biomedical-pharmaceutical industry, is imperative for proactive epidemic management, vaccine production, and economic growth, ultimately contributing to humanity's collective progress. Recent shifts in COVID-19 prevention and control strategies highlight the necessity for achieving equilibrium between cutting-edge technologies and advanced techniques within medical facilities to enhance health and safety. The expertise of the medical profession, encompassing both fundamental and sophisticated skills, plays a crucial role in managing a wide range of disease scenarios. Consequently, Vietnam must implement more robust and comprehensive reforms in the structure and operation of public health to adequately address these objective demands.

Another attention is directed toward the distinct challenges within Vietnam's grassroots health network. This system plays a crucial role in providing primary healthcare services and ensuring universal medical accessibility within the community. However, it is observed that human resources in healthcare at grassroots levels, particularly in underdeveloped regions, are often inadequate in quality, and there is a significant shortage of specialized physicians, including those in emergency medicine, obstetrics, paediatrics, anaesthesiology, and other specialized fields. Furthermore, the need to address the disparities in various domains, such as expertise, facilities, usage, remuneration, financial regulations, and training and retraining programs, has been underscored by recent healthcare practices and epidemic prevention measures. These challenges necessitate robust structural and operational reforms within the current public healthcare system.

Innovation is strongly demanded in the organization of the national public healthcare system at the macro level.

In Vietnam, a public health service unit refers to an organization that is established and administered by a competent state agency in compliance with legal regulations. These units are responsible for providing public services and/or supporting state management in specialized medical domains, including but not limited to: preventive medicine, medical examination and treatment, nursing and rehabilitation, medical assessment, forensic medicine, forensic psychiatry, traditional medicine, pharmaceuticals and medical equipment testing, food safety and hygiene, population and family planning, reproductive health, and health education communication. Public non-business units in the health sector can be classified based on various criteria such as their administrative level (central, provincial, district, or commune), sector of operation (e.g., army, police, transportation), specialty of examination and treatment, and their functions, tasks or coordination in specific regions such as border areas or islands. Public healthcare units hold a pivotal position in safeguarding,

preserving, and enhancing people's health and implementing social security policies, thus making significant contributions to national construction and defense in the current context.

While there are various classification methods for public health care units, the classification based on the state administrative apparatus, specifically the central and local health care levels including provinces, cities, districts, towns, communes, wards, agencies, and schools, holds a predominant position despite its drawbacks. The current classification method of public health care units is based on administrative units rather than the characteristics of industry, field, region, and the pathology of prevention, examination, and treatment activities. Moreover, the unitary state model, the division of functions between the central and local government, and the combination of state management by sector and territory have resulted in a mechanism of bilateral subordination in the division of power and responsibility in the health sector. For instance, many medical facilities are under the management of both the Ministry of Health and the local administration in terms of organization, personnel, and administration. The Minister of Health holds the position of industry commander but is not solely responsible for the quality and effectiveness of health care. The classification method is problematic and is currently facing even greater challenges in similar contexts to that of COVID-19. These factors contribute to the presence of numerous focal points, functional and task overlaps, challenges in defining public duties, as well as issues related to staffing and budget allocation optimization. These factors ultimately lead to a lack of efficiency in internal governance that fails to meet demand.

Another issue that has emerged is the discrepancy in the quality of healthcare between the central and local levels. Various aspects of the health system, including health personnel, equipment, financial investment, and insurance policies, tend to gradually decline from the central level to the lower levels. This discrepancy prompts people to bypass local healthcare facilities, leading to overcrowding at higher levels (especially at the central health care level) and the potential underutilization of local medical centres, health stations, medical staff, and doctors.

The need for non-linear medical care and smart healthcare has become increasingly apparent due to recent practical developments, especially during the peak period of the Covid-19 pandemic, which has led to a high demand for medical examination and treatment.

This non-linearity has provided medical staff with more opportunities to effectively manage the epidemic, improve the efficiency of prevention, examination, and treatment, and increase patient access to optimal medical conditions. The current system of medical examination and treatment requires multiple examinations at various levels, resulting in time and cost inefficiencies and missed opportunities for timely treatment. This can lead to more complicated and expensive treatments with unsatisfactory results. Timely examination and treatment, with services of adequate quality to meet the potential and needs of the people, is an essential requirement for reforming the organization and management of the public healthcare system. Therefore, there is a need for continued reform with the implementation of non-linear mechanisms that are more suitable for present and future contexts.

The COVID-19 pandemic highlights the necessity of developing smart healthcare as an inevitable trend in healthcare. This approach combines interdisciplinary advantages,

leveraging information technology alongside medical, biological, and pharmaceutical technology. It holds great potential for centralized management, efficient information handling, multi-party connections from doctors to technical experts, personalized healthcare processes, and enhanced forecasting capabilities. The reformation of healthcare system organization and management, along with innovative service delivery models that embrace this trend, are objective and significant demands for fulfillment.

In addition, the step-by-step reform of Vietnam's public health system in the current context can bring significant humanitarian and economic benefits, particularly to the disadvantaged populations who are often concentrated in rural, mountainous, remote, and economically undeveloped areas with limited access to quality and affordable medical services. Improving the state's management of healthcare can enhance their chances of leading a healthy and longer life. Effectively addressing this challenge can also create new opportunities for preventing and treating diseases, including those that lack specific treatments, such as cancer and certain social diseases, for other populations, including those with economic means or high-ranking positions in the Vietnamese government. The transition from the current public health model to a new one that addresses existing challenges has the potential to stimulate the early development of an interdisciplinary medical, biological, and pharmaceutical industry with significant economic and humanitarian implications. This transition is crucial to Vietnam's sustainable development and progressive advancements.

Furthermore, the phenomenon of transferring healthcare professionals to managerial positions in healthcare is a problem that needs to be addressed in terms of the proper relationship between healthcare professionals and healthcare managers. Both healthcare management and healthcare professional work require proper training. Therefore, the lack of professionalism in healthcare personnel management and the phenomenon of experienced healthcare professionals being transferred to managerial positions have many profound consequences on the current public healthcare system in Vietnam.

In subsequent phases, the public healthcare model should build upon its successes and experiences while pursuing novel avenues and approaches to address the mounting demands for safeguarding, caring for, and enhancing public health amid unparalleled challenges. Despite ongoing progress in the healthcare sector and continual changes to state management of health, there remain numerous challenges that must be addressed to ensure comprehensive healthcare coverage for the entire population and enhanced protection against medical emergencies. This requires the development of new and improved solutions. The key question is: which areas should Vietnam's state health management prioritize in order to effectively address and overcome these new challenges and requirements?

The crucial demand for continual innovation in the public health system is to enhance its ability to respond to emergencies, ensure universal and equitable access to medical care, provide top-quality medical services to the most impoverished and isolated areas, and position Vietnam as a leading country in biomedical security. This represents a significant requirement and a promising opportunity for advancement, particularly in the context of the COVID-19 pandemic and future similar pandemics.

2. Literature review

The healthcare sector plays a crucial role in fulfilling the objective of safeguarding, attending to, and enhancing human health, with the goal of ensuring that every individual can enjoy a long and healthy life, and that society as a whole can thrive with vigor, stability, and resilience. As a result, numerous scholars are continually drawn to this field of study. Various aspects of the institutional framework and organizational models of the healthcare system have been explored, including the theoretical and organizational management systems, the operational mechanism of Vietnam's healthcare system, the quality of medical diagnosis and treatment, the scientific and technological healthcare workforce, the quantity and quality of healthcare services, healthcare regulations and practices, healthcare financing, as well as global integration and collaboration in healthcare.

Prominent works in this area include: Do Nguyen Phuong, an author who has published three notable works with Medical Publishing House (Hanoi), including "Developing the Healthcare Career in Vietnam in the Present Period" (1996), "Some Issues Regarding the Construction of the Developing Healthcare Industry in Vietnam" (1998), and "Vietnam Healthcare in the Renewal Process" (1999). These publications delve into topics such as medical ethics, medical professions, Ho Chi Minh's perspective on healthcare, and the moral principles of medical practitioners. In addition, the author provides recommendations for promoting healthcare development, such as enhancing the deployment of healthcare personnel to grassroots levels. Pham Manh Hung led an author group that published "Vietnam Healthcare in the Renewal Process" (Medical Publishing House, Hanoi, 1999), which evaluated the outcomes of deploying doctors to work in rural areas and the training of healthcare personnel at the university and postgraduate levels. Medical Publishing House (Hanoi) published the compilation of works titled "55 Years of Development in the Vietnamese Revolutionary Healthcare Career" (1945-2000), which discusses numerous issues related to the healthcare sector's mission of caring for, protecting, and enhancing people's health. Several updated works cover various aspects related to the state management of the healthcare sector, including "Healthcare Organization and Management" (Medical Publishing House, 2016) and "Healthcare Policy" (Medical Publishing House, 2017), edited by Truong Phi Hung, "Socialization of Education and Healthcare Services in Vietnam's Renewal Era" edited by Le Van Chien (2017), "Competition Policy in Healthcare Service Provision in Vietnam" by Truong Bao Thanh (2018), the thesis "State Management of Public Investment Projects under the Ministry of Health" by Tran Van Son (2017), and the thesis "The Current Legal Framework for Healthcare Services Provided by Private Healthcare Facilities in Vietnam" by Dinh Thi Thanh Thuy.

The preliminary analysis and evaluation of previous research from monographs, theses, related works, and articles regarding healthcare innovation suggest that there is a substantial body of research with a significant quantity, content, and accomplishments. The research has provided valuable historical insights that serve as a foundation for the study of healthcare model innovation and people's healthcare models. However, despite this research, there is a dearth of in-depth investigation that explicitly identifies the key challenges in the state management of healthcare in Vietnam today and offers novel and inventive solutions for

the renewal and reform of state healthcare management. Considering the current research landscape and the pressing need for healthcare innovation in Vietnam, it is imperative to conduct a study that addresses the gaps in the literature and presents effective and feasible solutions to aid in the revitalization of state healthcare management. Such a study would be a scientifically and practically significant product with significant humanitarian implications.

3. Method

This study implements an interdisciplinary perspective, integrating domains such as historiography, medical science, political science, administrative science, and management science, while employing the methodology of dialectical materialism and historical materialism. The core research methodologies consist of historical and logical approaches, which are complemented by an array of auxiliary scientific research techniques, encompassing analysis, synthesis, statistical evaluation, comparative analysis, benchmarking, and interdisciplinary cooperation, among others. These multifaceted methodologies are judiciously utilized to effectively meet the specific needs of each research problem addressed within the study.

4. Results

4.1 The Primary Directions for Reform in Vietnam's Contemporary Public Healthcare System

The Vietnamese public health system encompasses several solution-oriented approaches, which can be contemplated as follows:

First and foremost, enhancing the preventive medicine system remains a crucial strategy for Vietnam's public healthcare. Proactive disease prevention, grounded in scientific evidence, offers superior outcomes compared to addressing an epidemic after its emergence. This approach optimizes socio-economic and human efficiency by minimizing health and social costs, as well as alleviating the pain and suffering experienced by patients and their families. To achieve this, it is essential that preventive healthcare facilities bolster their capacity to anticipate, monitor, and mitigate epidemics, paying particular attention to vulnerable populations (such as the elderly and children) and potential threats from hazardous infectious diseases and environmental pollution.

Secondly, it is imperative to foster the growth of the grassroots health network and institutions associated with this level of healthcare. A grassroots healthcare network marked by robust innovation will persist as the front line, providing direct and efficacious support for COVID-19 prevention and control measures as well as the national vaccination campaign in a safe, scientifically grounded, and efficient manner. Key aspects requiring sustained investment attention encompass transitioning towards family medicine, concentrating on the proficiency of physicians and medical personnel, enhancing training and technology transfer, and revamping the financial mechanism based on market rules and the humanitarian nature of the medical industry. This ensures that income serves as a potent incentive for medical staff to work and elevate their qualifications, while simultaneously promoting coordination and integration mechanisms with other public health service levels.

Thirdly, the future healthcare strategy emphasized in this thesis entails building upon existing accomplishments and strengths, overhauling core institutions, and progressively transitioning from the current public healthcare model to a novel paradigm characterized by medical zoning, interactive nonlinearity encompassing regional medical centres, regional clinic systems, and related interdependent structures—commonly referred to as the healthcare region model. The proposed healthcare system model retains the successes and advantages of the extant health system while capitalizing on the established healthcare infrastructure and primarily basing its structure on the objective attributes of prevention, examination, and treatment processes. This innovative model holds the potential to comprehensively address numerous prevailing governance challenges in Vietnam's health sector, including public-private partnerships in healthcare, prompt prevention, classification, and treatment of patients, mitigating healthcare level skipping and overloading, and fostering integration and connectivity in prevention, examination, and treatment. Moreover, it addresses the typical limitations of the grassroots healthcare network, financial concerns, employment and compensation policies, professionalization with a focus on the expertise of medical staff and healthcare staff-managers—particularly the appointment of top positions to prevent resource wastage and mitigate associated legal risks.

Furthermore, the implementation of comprehensive solutions should be pursued in conjunction with other measures, such as leveraging internal strengths and external resources to promote research and application of science and technology, vaccine and drug production, and medical equipment development. This lays the foundation for the growth of Vietnam's medical and pharmaceutical industry. A forceful digital transformation within the healthcare sector should be executed, focusing on enhancing a unified health information system that involves various ministries, departments, sectors, and levels, and is based on cutting-edge technologies. The development of remote healthcare models can be facilitated through the application of modern technologies.

Additionally, diversification of media and health education content should be emphasized, with particular attention given to addressing psycho-psychiatric issues, especially in regions heavily impacted by the COVID-19 pandemic. Close international collaboration with partners possessing significant potential can strengthen Vietnam's healthcare position. The relationship between health insurance agencies, medical facilities, and the public should be revamped, with special consideration given to budgetary and insurance payment concerns. This ensures that healthcare financing operates in accordance with the law and upholds humanitarian principles.

4.2 The Proposed Framework for the Present Public Healthcare System in Vietnam

Firstly, Regarding the General Structure and Principal Operational Mechanism:

The Vietnamese government should conduct a nationwide planning into Health Zones/Regions based on an administrative nonlinearity and interaction model that covers multiple localities. The design of each region should be based on scientific criteria such as

the number of inhabitants, population density, geographical and pathological characteristics, and transportation accessibility. The focus of the health care region should be on disease prevention, examination, and treatment, with equal operational capacity in each region, serving approximately 5-10 million people. Vietnam's experience in managing the COVID-19 pandemic highlights the importance of this approach.

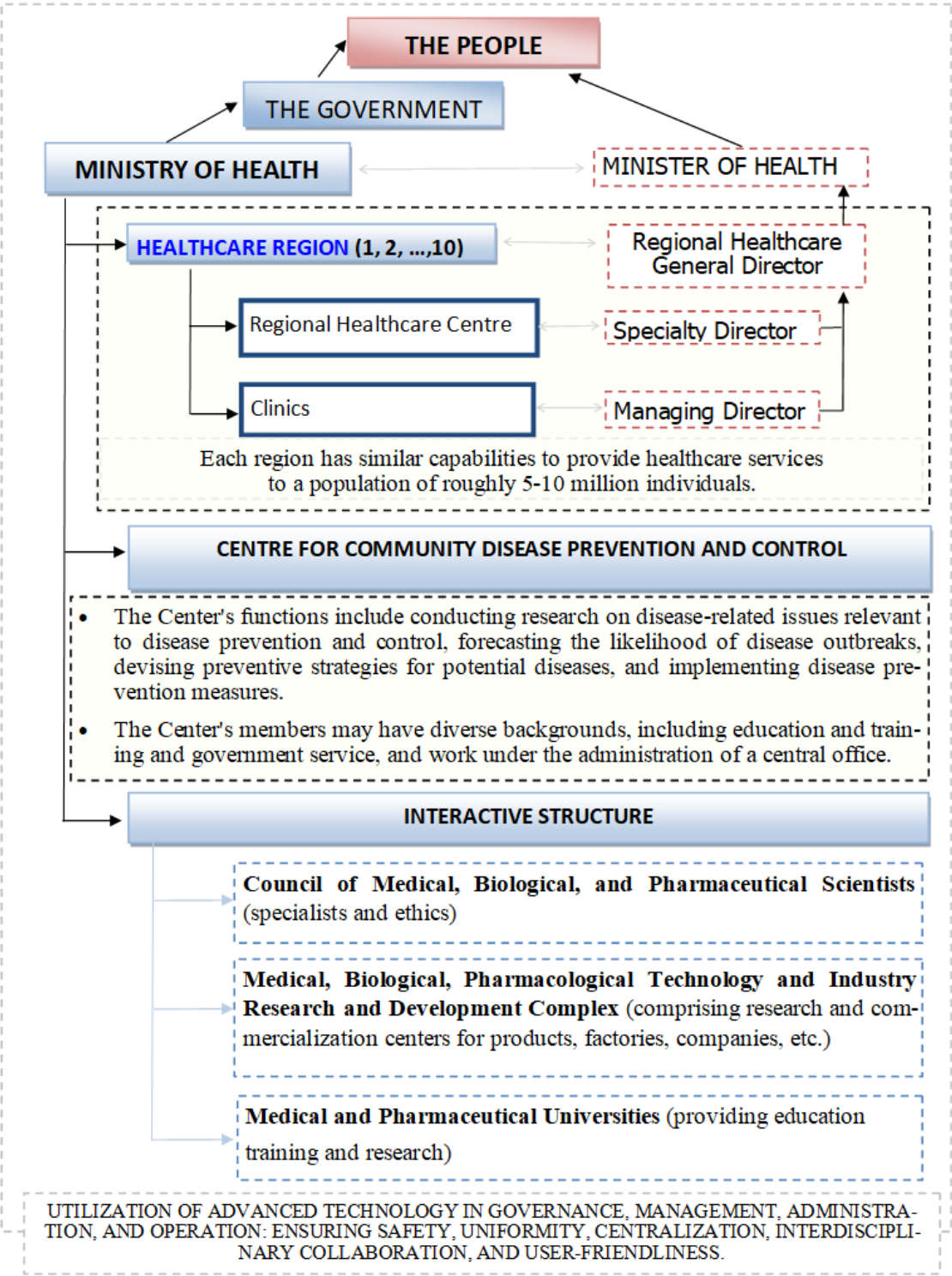


Figure 1. Overall structure of the health care region

Source: The author

The proposed model for the Vietnamese public healthcare system comprises three primary elements: (1) the Health Care Region, consisting of a Regional Health Care Centre with departments, and a network of clinics encompassing general and specialized clinics; (2) the Community Centre for Disease Prevention and Control, with a new organizational structure; and (3) the Interactive Structure, including three branches: the Research and Development Complex for Medical-Biological-Pharmaceutical Technology Industry (comprising centres for applied research and commercialization of products, factories, companies, etc.), the Council of Medical, Biological and Pharmaceutical Scientists (comprising specialists and ethicists), and the Medical and Pharmaceutical Universities (comprising training and research facilities). These departments operate under a professional, modern, and efficient management model that utilizes advanced technologies as a foundation.

The Ministry of Health holds the highest responsibility for health care issues in Vietnam, with the direct person in charge being the Minister. As the state management agency, it assumes the role of regulating health and related administrative issues and coordinates the operation of the entire system. The Council of Medical, Biological and Pharmaceutical Scientists decides on technical matters and professional ethics. The Minister of Health has the power to make strategic, personnel, and financial decisions for the entire system and is responsible for ensuring the quality and effectiveness of health care.

Each Health Region is headed by a General Director who reports directly to the Minister of Health and is responsible for all health care activities in their region. A Health Care Region Assistant may support the General Director in their role. Regional Health Care Centres are managed by Specialty Directors, while Managing Directors oversee Regional Clinics and report to the General Director of their affiliated Health Care Region. The Medical, Biological, Pharmacological Technology and Industry Research and Development Complex and Medical and Pharmaceutical Universities play leading roles in training, research, application, technology transfer, and product commercialization.

A noteworthy aspect of the Health Care Region model's operational mechanism is the importance of professionalism in the planning of specialists and managers. Health care management is a profession that demands a high degree of professionalism, requiring expertise in management sciences such as human resource management, fiscal management, legal management, crisis management and integrated problem-solving methods. Improper planning between these two groups, and the misuse of professionals for management work, is likely to undermine their focus on their profession, while professional managers are not utilized effectively. This tendency may cause competent professionals to seek management positions, leading to a decline in professional human resources. Therefore, at the macro level, the Health Region model must ensure that planning and training of these two groups is carried out methodically, to establish a mechanism for job distribution, job efficiency, and equitable evaluation of labor results between managers and professionals. The reform of emulation and commendation should be based on professional attributes, work efficiency, and avoidance of competition between leadership and management activities and professional activities.

In addition, the financial system of the Health Care Region model should prioritize fairness between dedication and compensation, taking into account the productivity and efficiency of medical staff and in accordance with financial laws, as well as the non-profit and humanitarian nature of healthcare activities. This includes aspects such as medical expenses, medical staff income, insurance payments, and other related financial matters.

Overall, The Health Care Region model is intended to be a professional, modern, and effective management model that employs an administrative nonlinearity and interaction approach combined with advanced technology. The model prioritizes disease prevention, examination, and treatment, and operates under a financial regime that is fair, balanced, and in line with financial laws, as well as the non-profit and humanitarian aspects of healthcare activities.

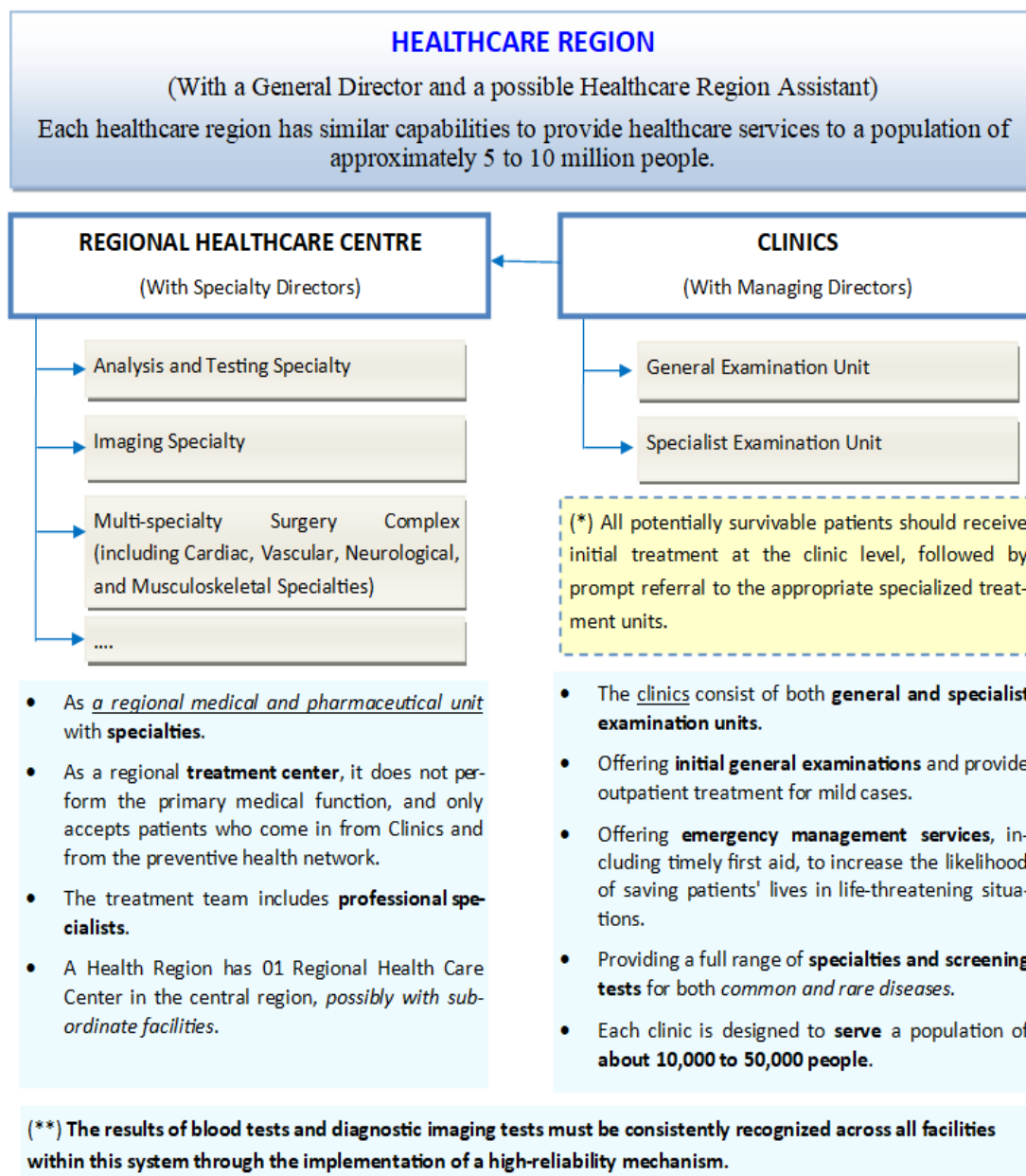


Figure 2. Structure of health care region

Source: The author

Secondly, Regarding the exceptional characteristics of the structure of Regional Health Care Centres

Each Healthcare Region is equipped with a single centralized Regional Health Care Centre, which may have subordinate facilities. It serves as a specialized and centralized medical-pharmacological unit for each Health Region, offering a range of specialties such as analysis-laboratory (Labo), imaging specialists, and complex multi-specialty surgery for cases including cardiac, vascular, and neurological issues. The Healthcare Region manager should be a Health Care Region General Director, possibly with a Health Care Region Assistant. Regional Health Care Centres can be established based on the consolidation of several provincial hospitals, divided into many small groups, with clear specialties, with Specialty Directors as managers.

The Regional Health Care Centre serves as a specialized and centralized medical-pharmacology unit, primarily for treatment rather than initial examination, and should only receive patients transferred from the Clinics and the preventive health network.

Regional Health Care Centres are required to have uniform capacity in terms of surgical expertise, equipment and machinery, financial investment, regulations, policies, and compensation. Furthermore, each centre should cater to a population of 5 to 10 million individuals. The establishment of Health Care Region borders should be based on comprehensive research into factors such as disease characteristics, socio-historical background, transportation, and natural influences.

The healthcare staff at the Regional Health Care Centres should comprise specialized specialists who are experts in treating specific diseases, performing specific techniques, and adhering to their professional authority in treating those diseases. These specialists should not be permitted to open private clinics, as it may distract them from their specialized mission. However, they may serve as lecturers at Medical and Pharmaceutical Universities.

The Regional Health Care Centres are envisioned to serve as the primary medical force with diverse and specialized treatment capabilities ranging from common to advanced techniques. The Centres' specialization in the treatment function and equivalent capacity, along with their reasonable distribution throughout the country, serve as a solid foundation for effectively addressing complex and challenging medical situations such as pandemics, including COVID-19.

Thirdly, Regarding Outstanding Features of the Clinic Structure within each Health Region

In the healthcare and management field, it is recommended that a Health Care Region must have multiple Clinics that are distributed evenly within a population area that ranges from 10,000 to 50,000 people. Each Clinic that follows this model must include both a general examination unit and a specialized examination unit.

The Clinic system primarily serves two functions, namely providing an initial general medical examination and outpatient treatment for mild cases and emergency situations. To minimize the need for interventional treatments, Clinics should be designed with a focus on medical examination functions.

The primary objective of this system is to allocate resources rationally, to accurately diagnose patients and determine the severity of the disease. Severe cases requiring intervention should be referred to a Regional Health Care Centre, while mild cases can be treated as outpatients. Private clinics have effectively provided healthcare services to patients using this method, and this model can serve as a useful reference for establishing a comprehensive network of Clinics in each Health Care Region.

The Clinic model has a crucial function beyond medical examination, which is to provide timely emergency care in life-threatening situations to improve the possibility of saving patients' lives. The Clinic must be equipped with appropriate resources and designed meticulously to ensure that seriously ill patients can be transported promptly and safely to the Regional Medical Centre for further treatment. The staff working in the Clinics must possess comprehensive training and proficiency in first aid, enabling them to provide initial emergency care to critically ill patients, including those experiencing cardiac arrest, surgical emergencies, or bleeding. In essence, every patient who has the potential to survive must be rescued from the Clinic level and expeditiously transferred to specialized treatment units within the Health Region.

To ensure comprehensive healthcare services, it is essential for each Clinic to offer an extensive range of specialties and disease detection investigations that address both common and infrequent ailments. These investigations must include clinical examination and testing for conditions such as blood disorders, cancer, cardiovascular and infectious diseases. Furthermore, the Clinic should possess advanced ultrasound equipment that can conduct ultrasounds for general, heart, pulse, fetus, thyroid, and mammary gland areas. The Clinic should also be equipped with endoscopy equipment for examining the general, stomach, colon, ear, nose, throat, bladder, and other areas. Additionally, the Clinic should have facilities for general tomography, general radiography, modern five-sensory examinations, and an emergency department to provide comprehensive care.

It is crucial that equipment and machinery used in clinics have a high degree of accuracy to enable the transfer of examination results to the treatment center for immediate use, eliminating the need for retesting and reducing costs as well as patient mistrust. Moreover, it is vital that the report of blood and imaging tests be universally recognized across all medical facilities in the system. Each healthcare worker must have a unique identifier that is recorded in the patient's medical record. Although the testing facility need not be specified in the test reports, the answer sheet should explicitly state equipment and operator information such as the equipment name, manufacturer, year of manufacture, chemical substance used, operator's name, and date. This approach facilitates the identification of problems that arise during medical examination and treatment, enabling prompt and thorough resolution.

According to this model, clinics can be set up by reorganizing commune health stations and district hospitals under the supervision of Managing Directors.

The newly proposed model for organizing grassroots healthcare facilities is characterized by a scientific distribution nationwide and the capacity to provide effective

emergency medical care. This model is expected to play a vital role in the early stages of treatment, and such facilities will not be passive or lacking in resources during pandemics or other potential biomedical disasters that may occur in the future.

The Last Elements consist of Preventive Medicine and Interactive Structures:

As emphasized previously, enhancing preventive medicine remains a crucial approach for every nation. Consequently, besides the layer of health examination and treatment, an independent Community Centre for Disease Prevention and Control should be established. This medical entity is responsible for investigating various factors, such as social, economic, natural, climatic, geographical, and biological aspects related to diseases, forecasting the probability of disease emergence, and suggesting preventative measures in the absence of diseases or managing disease prevention. The Centre's members may have backgrounds in education, training, or administration, and it may operate under the supervision of a Central Office. This office will gather comprehensive information (from local, governmental, or global sources), conduct research, make decisions, and guide preventive efforts in the Health Regions. Relevant authorities at all levels must take responsibility for coordinating and supporting this centre.

The Council of Medical, Biological and Pharmacological Scientists operates as an interactive entity within the Health Care Region Model framework, primarily providing consultation and decision-making on professional and ethical matters to support the Ministry of Health in enhancing its management processes. The mission of the Medical, Biological, and Pharmaceutical Technology Industry Research and Development Complex involves concentrating on applied research, innovation, technology transfer, international collaboration, and the commercialization of relevant products. Medical and pharmaceutical universities serve as essential pillars for educating and cultivating professional medical personnel while also acting as fundamental and comprehensive research entities.

5. Discussion and Conclusion

Despite the current healthcare system's adequacy in terms of state management and infrastructure, Vietnam has the potential to establish a novel healthcare region model that addresses past limitations, shortcomings, and challenges while remaining adaptable to evolving healthcare needs, particularly in pandemics such as COVID-19. The new healthcare organization and management system has a notable feature in that it utilizes the current medical resources available in Vietnam. Furthermore, the healthcare units within the healthcare regions have equivalent functions and capacity to serve the population, thus eliminating administrative divisions in healthcare. The financial system will be equitable and proportionate to productivity and efficiency, in accordance with financial regulations and the non-profit and humanitarian nature of healthcare activities.

The efficacy of the proposed healthcare region model can be augmented through the synchronous implementation of solutions in various other domains. These include: promoting transparency and civility in the relationships among health insurance agencies, healthcare units, and the public, thereby ensuring healthcare financing adheres to the

principles of a civilized society; diversifying and modernizing healthcare education and media; enhancing the capacity of preventive medicine units to predict, track, and avert epidemics, especially those originating from environmental pollution; establishing a foundation and fostering continuous growth of Vietnam's medical and pharmaceutical industry; and prioritizing the improvement of the unified information system from the Ministry to healthcare units, incorporating state-of-the-art technologies.

The COVID-19 pandemic and other similar ones, both now and in the future, significantly impact a country's overall development and all levels of society in various aspects, highlighting the need for preparedness in facing future pandemics. Therefore, Vietnam's public health sector must continue to build upon its achievements and gradually transform the current public healthcare model into a healthcare region model while working in tandem with other healthcare solutions. This approach will enable the sector to operate more effectively, better meet the population's healthcare needs, and address biomedical security challenges in the new context.

Ensuring humanity, equity, and equality in the face of disease risks, as well as providing optimal conditions for healthcare examination and treatment for every individual, is a significant challenge. Nevertheless, it is also an opportunity for Vietnam's state healthcare management to courageously seek innovative solutions and contribute to the successful implementation of Resolution No. 19-NQ/TW of the 6th Conference (12th Term, October 25-23, 2017). This resolution aims to continue the renovation of the healthcare organization and management system, improve the quality and performance of public non-business units, and contribute to the creation of sustainable physical and spiritual assets for future generations. Through such efforts, Vietnam's state healthcare management can make a crucial contribution to building and defending a democratic and civilized Vietnamese nation.

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EVALUATING THE EFFECTIVENESS OF SOCIAL WORK ACTIVITIES IN SCHOOLS THROUGH PREVENTION AND INTERVENTION MEASURES TO SUPPORT SECONDARY SCHOOL STUDENTS

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Abstract

School social work goes beyond providing knowledge, values, and skills necessary to address various barriers to students' educational progress. It also aims to achieve equal education goals for all members of society. This article assesses the effectiveness of social work activities in schools based on survey data from a sample of 300 students at Hermann Gmeiner High School in Hanoi, focusing on two main components: prevention activities and intervention measures. The effectiveness of social work through prevention activities (5 items) demonstrated a reliability coefficient of $\alpha = 0.84$, while intervention measures (3 items) exhibited a reliability coefficient of $\alpha = 0.93$. Survey results indicate that the majority of students perceive intervention measures to be more effective than prevention activities in school social work. The study also reveals significant correlations between evaluating the effectiveness of prevention activities, intervention measures, and assistance provided, with demographic characteristics such as gender, grade level, geographical region, and academic achievement. Therefore, adopting a comprehensive approach to school social work is essential in achieving equal educational objectives and promoting sustainable development in education.

Keywords: *school social work, intervention measures for students, prevention activities for students.*

1. Introduction

To date, school social work has been well established in many countries globally and keeps being introduced and implemented in other countries to effectively address educational barriers such as students with disabilities, physical and mental health issues, drug use, adolescent pregnancy, learning difficulties, and family issues including domestic violence, divorce, child abuse, homelessness, and family illnesses affecting students. Discrimination, bullying, and inappropriate disciplinary measures by teachers and school staff are also among the issues within the school system. Even in developed countries with widely accessible and free education, there is still much work to be done to ensure educational equality, particularly for marginalized social groups, students with disabilities, ethnic minorities, and students from the LGBTI community. Therefore, Article 24 of the

United Nations Convention on the Rights of Persons with Disabilities (UN, 2006) requires member states to provide an inclusive education system at all levels. The 2020 Global Education Monitoring Report, *Inclusion and Education*, emphasizes the need to ensure quality inclusive and equitable education for all disadvantaged student groups, including disabled students, as well as those affected by poverty, ethnicity, or other factors.

Additionally, abrupt social changes have posed numerous obstacles for students to earn success in their studies, even for those who are academically talented and high-achieving. These barriers include challenges arising from the students themselves, their families, the school system, and other social issues. Personal problems often manifest through physical and mental health difficulties, substance abuse, and adolescent pregnancy. Family issues including domestic violence, poverty, divorce, child abuse, homelessness, and various other influences undoubtedly affect students' learning process. On the other hand, school system issues are commonly seen as a lack of professionalism in teaching, inadequate infrastructure, ineffective classroom management, bullying, and prejudice, all of which significantly cause negative effects on many students. Therefore, many countries around the world are seeking ways to mitigate the impact of these barriers on students' learning.

Particularly, in the context of the Covid-19 pandemic in 2020/2021, the role of school social work has demonstrated activities on a wide scope but has been significantly affected by serious challenges. As of April 2020, up to 188 countries worldwide had closed schools, ranging from early childhood education to university, and 91.3% (approximately one and a half billion) of enrolled learners were affected by the pandemic and encountered various difficulties in their psychological well-being and learning process (UNESCO, 2020). Moreover, in the rapidly changing social context, the school system has shown increasing obstacles faced by students, leading to physical and mental detrimental consequences. Hence, many school social work practitioners have actively engaged in school safety programs implemented in schools (R. Astor, Meyer, Benbenishty, Marachi, & Rosemond, 2005). However, research on the effectiveness of school social work and school safety from the perspective of contemporary school social workers is still limited (Cuellar, Elswick, & Theriot, 2017a). Previous studies related to school social work and school safety have primarily focused on theoretical foundations and practices to deal with school violence (A. Astor, Behre, Wallace, & Fravil, 1998), the activities and involvement of school social workers mainly demonstrated in bullying prevention programs (R. Astor et al., 2005), and the role of school social workers within a specific intervention framework (Kelly et al., 2016).

In Vietnam, the prevalence of students experiencing violence, sexual abuse, dropping out, truancy, etc. tends to increase and originates from various dimensions such as self-perception, relationships with peers, teachers, and family. However, there are many obstacles which hinder the progress in addressing school-related issues. School social work activities in general, and assistance and prevention efforts in specific, have not adequately met the needs of students in terms of service models, professional levels, and accessibility. Therefore, on January 25, 2017, the Ministry of Education and Training issued Decision No. 327/QĐ-BGDĐT, which outlined a development plan for the profession of school social

work in the education sector during the period 2017-2020. The plan aimed to gradually establish and develop a nationwide professional school social work service system, thereby promoting the improvement of education and training quality and providing high-quality human resources for sectors with a high demand of professional school social workers. Currently, although the school social work model has been implemented in a number of secondary schools in the area, it is relatively autonomous and not well organized without guidance documents from the Ministry of Education and Training and the Departments of Education and Training related to the conditions for establishing the school social work model. Thus, on December 28, 2018, the Ministry of Education and Training issued Circular No. 33/2018/TT-BGDĐT, providing guidance on school social work, outlining the principles, content, and responsibilities for implementing school social work, marking an important development step for school social work in Vietnam.

Particularly, Circular No. 33/2018/TT-BGDĐT on school social work highlighted the role of school social work through intervention and assistance activities, as stated in Article 6, which emphasizes three content areas. However, this study focused on the first content area, which is "Disseminating, promoting, warning, and guiding learners about special situations, risks of being harmed, violence, dropping out, and legal violations. Actively coordinating with media organizations, radio, television, and mass media to disseminate information promptly to the community, reflecting incidents related to learners, and participating in building safe and healthy school environments." Article 7 included (1) receiving notifications and conducting initial assessments of student issues, (2) conducting interventions and providing assistance to students at educational institutions, and (3) engaging in community-based interventions and assistance. Therefore, this article primarily focuses on the effectiveness of prevention activities and intervention assistance, using a Likert scale with five levels proposed by the research group for result evaluation, in parallel with the two content areas in Article 6 and Article 7 of Circular No. 33/2018/TT-BGDĐT. The entire data assessment of the effectiveness of school social work activities, through the prevention and intervention assistance dimensions, will present a comprehensive picture for policymakers and researchers to propose school social work models that are effective and suitable for the Vietnamese context and culture.

2. Method

2.1. The Characteristics of Study Subjects

Survey data from a sample of students were used to assess the effectiveness of school social work activities in terms of intervention and prevention. The survey included a total of 300 high school students, with an equal distribution of 50% rural students and 50% urban students. Correspondingly, there were 33.3% of students in each grade level (10, 11 and 12), and the gender distribution consisted of 52.3% of males and 47.7% of females. In terms of academic performance, student characteristics show the following ratios: 38.0% rated very good (the highest rate), 36.0% good, 14.3% average, 14.3% poor and 9% outstanding. The mean age of the study subjects was $M = 17.00$, $SD = 0.81$. Additional features are presented in the table below.

Table 1. The Characteristics of Study Subjects

		Number	Percentage
Region	Rural	150	50.0
	Urban	150	50.0
Gender	Male	157	52.3
	Female	143	47.7
Grade	10	100	33.3
	11	100	33.3
	12	100	33.3
Academic performance	Poor	26	8.7
	Average	43	14.3
	Good	108	36.0
	Very good	114	38.0
	Outstanding	9	3.0

2.2. Evaluation Content and Assessment Tools

This article focuses on assessing the effectiveness of school social work activities through two main interventions: intervention and prevention, using a 5-point Likert scale proposed by the research group and evaluated based on the content outlined in Circular No. 33/2018/TT-BGDĐT on school social work guidelines. The measurement scale for the variables used in the survey was a 5-point Likert scale (1 = Very ineffective, 5 = Very effective). The questionnaire was divided into three main sections: (1) Information about the respondents, which concentrated on providing details about the purpose and significance of the survey, as well as basic information about the participating respondents; (2) The primary survey responses, which included questions and options for responses at different levels regarding the effectiveness of prevention and intervention activities; and (3) Additional open-ended questions to gather expanded opinions and evaluations aimed at enhancing the effectiveness of school social work activities.

3. Results

In Vietnam, social work in general, and specifically social work in the school setting, are gradually receiving comprehensive attention and development. In 2010, the Prime Minister signed a decision approving the Development Plan for Social Work for the 2010-2020 period, with the aim of establishing social work as a profession in Vietnam and raising societal awareness of the social work profession. Based on this fundamental idea, the Ministry of Education and Training has also issued various documents to develop the field of social work in schools. Specifically, Circular No. 31/2017/TT-BGDĐT provides guidance on implementing psychological counseling for students in general education schools, and Circular No. 33/2018/TT-BGDĐT provides guidance on social work in schools. These are considered important legal documents that set a milestone for the establishment and development of social work in schools in Vietnam. This not only addresses the practical difficulties faced by students but also contributes to enhancing the overall quality of social work in schools, particularly the effectiveness of prevention, intervention and assistance activities.

3.1. Current situation of students' difficulties identification

In recent years, there has been a noticeable increase in the challenges faced by students in educational systems worldwide, including Vietnam. Consequently, the role of social work within schools has taken on a significant focus on addressing these issues and developing targeted intervention and prevention strategies. Circular No. 33/2018/TT-BGDĐT, specifically Article 4, plays a pivotal role in shaping the content and direction of social work in schools. Article 4, Clause 1, places a strong emphasis on the identification of risks that may arise within and outside educational institutions, posing potential harm to students. Furthermore, it highlights the importance of promptly detecting incidents involving students in special circumstances, such as instances of abuse, violence, dropping out, and law violations. This proactive approach aims to safeguard the well-being and overall educational experience of students.

To gain a comprehensive understanding of the obstacles encountered by students, a survey was conducted to investigate the challenges that students within the school have faced or are currently facing. The survey specifically targeted students who are at a high risk of experiencing various difficulties, such as gaming addiction, internet addiction, social media addiction, learning difficulties, frequent absenteeism, and those with special personal circumstances. By identifying these challenges, school social workers can develop tailored approaches to support and address the specific needs of these students. Gaming addiction has emerged as a pressing concern in recent years, affecting students' academic performance and overall well-being. With the proliferation of digital entertainment and online gaming platforms, students are increasingly drawn to these activities, sometimes at the expense of their educational commitments. Social work interventions in schools aim to mitigate the negative effects of gaming addiction and provide students with the necessary skills and support to manage their screen time effectively.

Internet addiction is another significant challenge faced by students in the digital age. With the advent of smartphones and easy access to the internet, students are prone to excessive online activities that can impede their academic progress and social development. School social workers play a crucial role in raising awareness about healthy internet usage, providing guidance on responsible online behavior, and offering support to students struggling with internet addiction. In recent years, social media addiction has emerged as a prominent concern among students. The pervasive influence of social media platforms has the potential to disrupt students' focus, self-esteem, and overall mental well-being. School social workers collaborate with educators and families to educate students about the potential pitfalls of excessive social media usage, promote digital well-being, and foster healthy relationships both online and offline.

Learning difficulties, such as academic underperformance or specific learning disabilities, present unique challenges for students. School social workers work alongside teachers and other professionals to identify and address these difficulties through individualized support, specialized interventions, and collaboration with relevant stakeholders. By implementing appropriate strategies, students with learning difficulties can

be provided with the necessary tools and accommodations to optimize their academic potential. Frequent absenteeism can significantly hinder students' educational progress and social integration. School social workers employ a multi-faceted approach to tackle this issue, which involves understanding the root causes of absenteeism, addressing any underlying problems or barriers, and implementing targeted interventions to improve attendance rates. By fostering a positive school environment and establishing strong connections with students and their families, school social workers can help mitigate absenteeism and promote a culture of regular attendance. Students with special personal circumstances require additional support to navigate the challenges they face. This may include students from low-income families, those who have experienced trauma or loss, or students with disabilities. School social workers play a crucial role in providing these students with the necessary emotional support, connecting them with appropriate resources and services, and advocating for their rights and inclusion within the school community. By fostering a nurturing and inclusive environment, school social workers contribute to the overall well-being and academic success of these students.

School bullying remains a persistent issue that can have severe consequences for students' physical and emotional well-being. Social work interventions aim to create a safe and supportive school environment through proactive measures such as anti-bullying campaigns, workshops on conflict resolution, and the establishment of reporting mechanisms for students to seek help. By addressing the root causes of bullying and providing support to both victims and perpetrators, school social workers strive to eliminate bullying behaviors and cultivate a positive school climate. As the survey was conducted to investigate the aforementioned challenges, the results show that approximately 80% of students are at risk of facing special circumstances, over 70% related to drug use and law violation, while the lowest percentage of risk is abuse.

Table 2. Identification of students' difficulties

Identification of students' difficulties:	Percentage %
Students addicted to games, internet, social networks	90
Students with learning difficulties	89.7
Student with frequent absenteeism	87.7
Students with special circumstances	87
Students suffering from school violence	85.7
Students at risk of dropping out	84.7
Students at risk of falling into special circumstances	81.3
Students with drug abuse/use	77.7
Students violating the law	74.3
Students being abused	50
N=300	

Therefore, the research results partially demonstrate the diversity of the ongoing issues related to student difficulties. Consequently, social work in schools plays a crucial role in addressing the school's problems and serves as a bridge between students, families, and educational institutions to help students have the best learning conditions and unleash their potential, as well as address their mental crises and difficulties they currently face.

3.2. The effectiveness of school social work for high school students

Based on the factor analysis results mentioned above, two activity contents were identified to measure the effectiveness of social work through intervention and prevention activities. The analysis of average scores revealed that "the effectiveness of social work through intervention measures" had the highest mean score, $M = 2.79$ ($SD = 0.94$), followed by "social work in schools through prevention activities" with $M = 2.53$ ($SD = 1.06$). The evaluation of the effectiveness of social work through intervention, assistance, and prevention activities is specifically demonstrated through the following analysis:

3.2.1. The effectiveness of social work in schools through prevention activities

The results of scoring the effectiveness of social work through prevention activities indicate that the activity with the highest average score is "*Dissemination, promotion, warning, and guidance for students regarding risks of falling into special circumstances, being harmed, experiencing violence, dropping out, and violating the law*" ($M = 2.62$, $SD = 1.12$). This is followed by the activities of "*Active coordination with relevant parties to publish information related to students and participation in building a safe and healthy school environment*" ($M = 2.61$, $SD = 1.08$) and "*School providing psychological counselors meeting for students*" ($M = 2.57$, $SD = 1.09$). Among them, the prevention activity with a relatively low average score is "*Providing information, materials, skills, and methods for identifying students' issues*" ($M = 2.52$, $SD = 1.08$), and the lowest is "*Guiding students, parents or guardians, teachers, and educational administrators to access social work services in the community*" ($M = 2.51$, $SD = 1.03$).

In examining the disparities in the assessment of social work efficacy in schools through preventive measures, variables such as gender, grade level, and academic performance were tested. All three variables exhibited a statistically significant level with $\text{Sig} < 0.05$, signifying substantial homogeneity in variance between the effectiveness of preventive activities and the aforementioned factors. The results of the ANOVA analysis further demonstrated the significance of the F-test values associated with gender, grade level, and academic performance, yielding respective Sig values of 0.04, 0.05, and 0.00, all below the critical threshold of 0.5. Consequently, it can be deduced that disparities exist in the evaluation of the effectiveness of social work through preventive activities based on gender, grade level, and academic achievement.

Based on the mean values analyzed from the research results, female students ($M = 2.55$, $SD = 0.93$) evaluate the effectiveness of prevention activities higher than male counterparts ($M = 2.51$, $SD = 1.16$). Pertaining to the aspect of grade level, grade 12 students ($M = 2.72$, $SD = 1.23$) evaluate the effectiveness of prevention activities higher than grade

11 students ($M = 2.53$, $SD = 0.98$) and grade 10 students ($M = 2.36$, $SD = 0.92$). Similarly, with respect to academic achievement, excellent students ($M = 4.0$, $SD = 1.41$) denote the highest level of appraisal concerning the effectiveness of prevention activities, followed by average students ($M = 2.83$, $SD = 1.61$), good students ($M = 2.64$, $SD = 0.85$), low-performing students ($M = 2.30$, $SD = 1.12$), and the lowest evaluation is from satisfactory students ($M = 2.23$, $SD = 0.76$).

3.2.2. The effectiveness of school social work through intervention and assistance activities

The research analysis results reveal three indicators to assess the effectiveness of activities related to receiving difficulties reports, intervening, and assisting students. These indicators are "*The school has comprehensive intervention and assistance plans based on the challenges faced by students*" ($M = 2.85$, $SD = 0.94$) and "*The school collaborates with relevant parties to develop specific assistance plans for students when their issues exceed the scope of school intervention*" ($M = 2.83$, $SD = 0.94$). Among these, the activity of addressing students' difficulties received the lowest average score, "*The school provides a place to address students' difficulties*" ($M = 2.77$, $SD = 0.96$).

The analysis of variance (ANOVA) reveals that the F-test statistics for academic performance and geographical region exhibit significant results, with corresponding significance (Sig.) values of 0.00, all below the threshold of 0.5. This statistical evidence allows us to assert that there exist notable and statistically significant disparities concerning both academic performance and geographical region in the assessment of the effectiveness of social work in schools through intervention activities.

Delving into the examination of academic performance, it is observed that students who demonstrate excellence ($M = 3.0$, $SD = 1.32$) assign the highest evaluation to intervention activities, followed by high-achieving students ($M = 3.05$, $SD = 0.68$), moderately performing students ($M = 2.68$, $SD = 0.73$), while average-performing students ($M = 2.51$, $SD = 1.53$) and low-performing students ($M = 2.46$, $SD = 1.06$) indicate the lowest levels of appraisal. Furthermore, based on the mean values extracted from the research findings, urban students ($M = 2.95$, $SD = 0.74$) evaluate the efficacy of intervention and preventive activities more favorably compared to their rural counterparts ($M = 2.62$, $SD = 1.09$).

4. Discussion and conclusion

4.1. Discussion

The education system is one of many institutional frameworks that will undergo changes alongside other structures, creating new roles and opportunities for school social work. Thus far, due to educational reform policies that emphasize improving socio-emotional learning in schools, the role of school social work has been evolving continuously to provide diverse solutions to school-related issues (Sosa, Cox, & Alvarez, 2017). However, the shift towards prioritizing academic outcomes over the provision of social services has impacted the effectiveness of school social work, necessitating the exploration of effective intervention forms and models (Sosa et al., 2017).

According to the National School Social Work Practice Guidelines, an effective school social work model must support students who are disadvantaged due to unequal access to resources by adopting a social justice lens to eliminate barriers for students. Research findings indicate that students value the effectiveness of school social work through intervention and assistance activities more than preventive measures. In fact, Hermann Gmeiner Hanoi High School has a counseling department that emphasizes the importance of school social work, resulting in increased awareness among students. While preventive activities have been implemented to some extent, they are not as extensive or diverse in attracting students and enhancing effectiveness. This could be attributed to financial constraints and the focus of school counselors on individual student issues rather than large-scale preventive measures. This limitation is also evident in current school social work practices. This is partially reflected in specific studies such as Kelly et al.'s (2015) survey of over 3,700 school social work staff, which showed that they spend the majority of their time working individually with high-risk and identified students. However, in reality, if school social work professionals aim to make significant contributions to the education equity movement, their activities must go beyond micro-level strategies. This is also an aspiration expressed by school social work staff in their reports (Kelly et al., 2015).

Furthermore, the research results also demonstrate statistically significant correlations between the evaluation of school social work effectiveness through preventive activities and variables such as gender, grade level, and academic performance. Additionally, regarding the dimension of school social work effectiveness through preventive activities, there are differences in evaluation related to variables such as geographical region and students' academic performance. These findings serve as important indicators to shed light on students' difficulties through independent variables. Therefore, school social work professionals need to examine students' challenges within the school system based on the current needs of the school system and the available resources of social work personnel. However, schools should also allow social work professionals flexibility in addressing all barriers to the school's success and utilize a systemic approach involving the school, family, and community to address students' issues.

4.2. Conclusion

The school social work encompasses knowledge, values, and skills that are essential for addressing various obstacles hindering students' educational progress and supporting the goal of equitable education for all individuals. It is evident that social work makes significant contributions to educational institutions by addressing students' difficulties and serving as a vital link between students, families, and schools. The results partially demonstrate the significance of school social work in general, particularly the effectiveness of preventive and intervention activities in assisting students. Moreover, the evaluation of the effectiveness of preventive and intervention activities reveals statistically significant correlations between the assessment of prevention activities, intervention efforts, and characteristics such as gender, grade level, geographical region, and academic performance.

However, the relatively low evaluation of the effectiveness of preventive activities also indicates limitations in the current state of school social work. Therefore, school social work needs to prioritize comprehensive attention to students' issues, with an emphasis on effective prevention strategies to mitigate students' difficulties. However, preventing and addressing school-related issues and student challenges entails more than the involvement of education professionals, schools, teachers, or social work personnel alone. It necessitates collaboration among various agencies, departments, and specialized entities. The role of school social work professionals deserves particular emphasis, as they possess the appropriate knowledge and training to integrate social work activities into the school setting in a professional and effective manner.

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ORGANIZATIONAL IDENTIFICATION, PUBLIC SERVICE MOTIVATION AND ORGANIZATIONAL COMMITMENT OF LECTURERS

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Abstract

The purpose of this paper is to explore organizational identification, public service motivation and organizational commitment of lecturers in a public university. This exploratory qualitative research was carried out with 24 interviewees, who are lecturers of a public university. Results showed that lecturers' organizational identification and public service motivation are affected by university identity. The positive relationship between teachers' organizational identification and their public service motivation is reciprocal. Both of them have positive effects on organizational commitment, work performance and job satisfaction: Lecturers with strong organizational identification and public service motivation tend to be satisfied with their teaching career, showing a strong commitment to the university and making outstanding performance. Managerial implications were also grasped.

Keywords: *lecturers' performance, organizational identification, public service motivation, university identity, Vietnam.*

1. Introduction

Group/organizational identity is the characteristics of a social group or an organization. The subject of identity is not just the person as an individual; the subject of identity can be a group of people. An organization is a collection of people made into a whole that works for common interests, mistaken for a common purpose, as a type of social groups. Organizational identity is the characteristics that members and others know about the organization (Cornelissen et al., 2007). Similarly, Cornelissen et al. (2007) also defined that corporate identity is the values and image of the company that members and others know about the company. Thus, the values and images that the members of a university and outsiders know about the university are considered the identity of the university, at organizational level.

Social identification is an individual perception when identifying himself in a group: one thinks he/she has the same fate as the group; succeed with the group and fail with the group (Tolman, 1943). Individuals have a feeling of belonging to an organization/social structure (Ashforth & Mael, 1989), thinking that they have typical characteristics of the group (Van Knippenberg, 2000).

Organizational identification is a case of social identity, since society can be understood as an organization in which the people belong to this organization and share the same interests. The term organizational identification can be used interchangeably with social identification (Chughtai & Buckley, 2010; Lee et al., 2015) as the social structure of this study is an organization - a public university.

This study examines lecturers' identification of an organization, which is a public university, defining organizational identification as "the extent to which an organizational member defines himself/herself with reference to his/her organizational membership" (Ashforth & Mael, 1989), cited in the paper by He and Brown (2013, p. 14). Organizational identification occurs when lecturers perceive oneness with their university and feel that they belong to the university.

Previous studies have shown that organizational identification affects his/her attitude and behaviors in the organization (Lee et al., 2015). Individuals with a high organizational identification are those who tend to think about themselves as members of the group (Spears et al., 1997). They also feel closer and more like other members (Doosje et al., 1995), they stick with the group to overcome difficulties (Ellemers et al., 1997), to behave with other groups (Tropp & Wright, 1999) and behave in a way that benefits their-owned group (Smith & Tyler, 1997). Lee et al. (2015) also show that organizational identification affects individuals' attitudes through job involvement, job satisfaction, and affective organizational commitment.

In terms of behavioral management, organizational identification affects job performance: both *in-role performance* and *extra-role performance*. In-role performance is the result of formal actions in the job description that directly serve the organization's goals (Van Knippenberg, 2000). In-role performance includes productivity, job performance, customer-oriented service behavior, and work effort. Extra-role performance is the results of jobs involving actions outside of formal jobs (Podsakoff et al., 2000), such as organizational citizenship behavior, helping behavior, voice behavior, and safety performance.

Previous empirical evidence abroad shows the influence of organizational identity on employee attitudes and performance. The influence of organizational identification on work attitudes is confirmed by the research of Cheng et al. (2016) at Australian public health services, Cassar et al. (2017) at an insurance company, Ding et al. (2017) at an insurance and securities company, Ding et al. (2017) in infrastructure projects in China. The influence of organizational identification on work performance is found in a number of studies such as: Walumbwa et al. (2008) conducted at 6 banks in the United States, Herman and Chiu (2014) in 5 Chinese banks, and Schwarz (2017) at Chinese manufacturing companies. It can be seen that there is a lot of evidence regarding the influence of organizational identification on attitudes as well as individual work performance. Strong organizational identification can lead to positive outcomes, such as employee compliance and job satisfaction (Mael & Ashforth, 1992; Pratt, 1998); and there are also results showing that strong organizational identification can lead to stress and depression when the organization is faced with external criticism (Dutton et al., 1994).

The relationship between organizational identification, public service motivation and performance of public servants needs to be clarified. Rho et al. (2015) argue that the role of image and identification within members of public organizations has been overlooked and needs to be analyzed in more detail. Miao et al. (2019) hypothesized that public servants have a high degree of organizational identification if they believe that their organizations are similarly motivated to serve the public well. Research results of Rho et al. (2015) show that organizational identification plays a mediating role in the relationship between public service motivation and public servants' job performance. This shows that, in public organizations, the motivation to serve the public is a determinant of organizational identification. The willingness of public servants to serve in response to the underlying motivations of public organizations (Perry & Wise, 1990) strengthen the organizational identification of public servants in public organizations. It can be said that public service motivation has a positive relationship with organizational identification. The theoretical basis for the studies of Rho et al. (2015) and Miao et al. (2019) has not clarified the causal relationship of public service motivation with organizational identification recognition. Meanwhile, Ellemers et al. (2004) make a convincing argument for this causal relationship. Therefore, it is necessary to clarify the relationship between organizational identification recognition and public service motivation with work results in this study.

A review of the literature on public service motivation in Vietnam, presented below, has not found studies on public service motivation in education in databases such as Google Scholar and ProQuest. Studies on public service motivation have been found for union cadres, civil servants and many studies for cadres and civil servants at all levels in the state-owned sector. Therefore, studying the motivation of public service in the Vietnamese education sector is also necessary

2. Theoretical Framework

University identity (UID)

Identity is the set of meanings of a person that determine who one is when he or she occupies a particular role in society, as a member of a group, or is distinct to identify this person as a unique individual, different from other individuals (Burke & Stets, 2009). This definition shows that an individual's identity is the set of meanings associated (1) with the role that the individual occupies in the social structure, for example a person may play different roles such as teacher or teacher. teacher, father, member of a music club, called *role identity*; (2) with groups to which individuals identify and belong, called *group identity*; (3) meanings that an individual considers unique, called *personal identity*. The social identity theory of Tajfel and Turner (1979) views group identity as an instance of social identity (Luhtanen & Crocker, 1992). Thus, an individual's identity includes: (1) Social identity: People as members of society/social groups share common characteristics, such as ethnic communities, businesses, universities. Social identity includes role identity and group identity; and (2) Personal identity: Man as a unique individual with his own values, ideas, goals, feelings.

Social Identity is a concept used since the 1970s. The concept of social identity was developed from the original works Social Identity Theory (SIT) of Tajfel (1978) and Tajfel

and Turner (1979) and Self-categorization Theory (SCT) of Turner et al. (1987). Social identity is also known as collective identity in America.

Group/organization identity is the meaning of a social group or an organization. The subject of identity is not just the person as an individual; yet the subject of identity can be a group of people. An organization is a collection of people made into a whole that works for common interests, mistaken for a common purpose, as a type of group. Organizational identity is the meaning that members and others know about the organization (Cornelissen et al., 2007). Similarly, Cornelissen, Cornelissen et al. (2007) also define that corporate identity is the values and image of the company that members and others know about the company. Thus, the values and images that the members of a university and outsiders know about the university are considered the identity of the university, at the level of an organization. In other words, a university is an organization which has its own identity, called **university identity**.

Organizational Identification (OID)

Social identification is an individual's perception when identifying himself/herself in a group: he/she thinks that he/she has the same fate as the group; succeed with the group and fail with the group (Tolman, 1943). Individuals have a feeling of belonging to an organization/social structure (Ashforth & Mael, 1989), thinking that they have typical characteristics of the group (Van Knippenberg, 2000).

Organizational Identification (OID) is a case of social identity identification, since society can be understood as an organization to which the people belonging to this organization share a common number. concerns. Accordingly, individuals form personal identities when they are members of an organization, arguing that organizational characteristics create self-concepts (Dutton et al., 1994). Organizational identity can be used interchangeably with social identification (Chughtai & Buckley, 2010; Lee et al., 2015) when the social structure of the study is an organization. This study examines the identity of faculty members to a university, consistently using the term organizational identification as the extent to which a member of an organization identifies himself or herself as belonging to the organization (Ashforth & Mael, 1989), cited by He and Brown (2013, p. 14): Organizational identification occurs when employees perceive their own unity with the organization they work for and feel they belong to the organization. In general, the term refers to the extent to which a member of an organization defines himself as a member of the organization. Although the stated definitions and measured concepts may be different, organizational identification is generally understood as the individual's perception of self-identity in a group/an organization, as defined by Tolman (1943).

Public Service Motivation (PMS)

Public service motivation emerged in the early 1980s and was discussed both in the public and private sectors. Later, this concept was formally described by Perry and Wise (1990), according to which "public service motivation is an individual's tendency to react to the main or only motives in the public institutions. and public institutions". Individuals

working with a high motivation to serve the public may for the sake of society give up their own interests, disregarding their own safety in order to wholeheartedly help others, and thus would prefer to work in the public sector than in the private sector (Christensen & Wright, 2011; Perry & Wise, 1990).

Since its appearance, a number of studies on public service motivation has continuously increased over time, diversified in research objectives and methods, however, in the last 5 years, experimental research designs are more interesting (Mensah & Amegavi, 2022). Regarding the research content, it can be divided into two main trends: determinants and effects of public service motivation. Considerable determinants of public service motivation include learning opportunities, industry operating environment (Bright, 2016); knowledge base (Sarnacchiaro et al., 2019); workplace spirituality; leadership (Schwarz et al., 2020); culture of well-being (Hassan et al., 2021); organizational support, potential for social influence (Hassan et al., 2021). Major effects of public service motivation are organizational citizenship behavior (Sarnacchiaro et al., 2019); job satisfaction (Crucke et al., 2022; Kjeldsen & Hansen, 2018; Prysmakova & Vandenabeele, 2020); work performance (Schwarz et al., 2020); psychological empowerment (Miao et al., 2018).

Public service motivation is not only interesting in the public sector but also in the private sector. As a result, an interesting research direction is to compare effects of public service motivation in public vs. private sectors (e.g., Kjeldsen & Hansen, 2018). Also, it is interesting to study employees' choice between public and private sectors (e.g., Ko & Han, 2013). In addition, there were various studies on the effects of public service motivation (e.g. job satisfaction) across different regions (e.g., Prysmakova & Vandenabeele, 2020).

In education, the research on public service motivation focuses on the impact of public service motivation on the outcomes of educational service providers. A prominent research by Jin et al. (2018) examined the effects of public service motivation on the work performance of lecturers in public universities, in which the performance of lecturers was measured by many aspects such as service delivery capacity, teaching productivity, research productivity. Research results show that public service motivation has a positive impact on organizational citizenship behavior, yet a negative impact on research productivity of lecturers, mediated by commitment to the organization. Another study by Andersen et al. (2014) shows more clearly the role of public service motivation in educational institutions by asserting that students taught by teachers with high public service motivation get better academic results than the rest of the students. The significant contribution of the author team is to measure the teacher's work performance through the student's learning outcomes, that is, the customer measurement, an objective measurement scale rather than subjective ones. In addition, public service motivation also affects students' tendency to choose a place to work after graduation Ko and Han (2013). Students with high public service motivation prefer working for the public sector. On the other hand, when surveying students enrolled in a graduate program in public policy, Bright (2016) found that learning opportunities and certifications at public policy schools have the effect of promoting student's public service motivation.

In Vietnam, studies on public service motivation have only received recent attention, and the number of published studies has increased in the period 2021-2022. These studies were carried out in public sectors such as public universities, administrative agencies, and state-owned organizations. Research in the private sector was not found in Vietnam.

3. Method

Research process

According to Corbin and Strauss (2015) and Okoko et al. (2023), this qualitative study was conducted to explore organizational identification, public service motivation and organizational commitment and around these themes and not actually derive a conclusion from them. Face-to-face interviews were done for in-depth information on the subject being studied. Interviews were used within a study framework of themes, e.g. organizational identification, public service motivation and job satisfaction, performance and organizational commitment. For developing grounded theory, interviewers listened to what lecturers are saying and doing, and asked questions that can break through their conventional thinking (Corbin & Strauss, 2015).

This qualitative study follows these steps, as suggested by many researchers such as Corbin and Strauss (2015), Sandelowski (1995) and Townsend et al. (2016):

- (1) Designing interview framework, sample and sampling method
- (2) Training of interviewers
- (3) Inviting lecturers to participate in interviews (1 person at a time)
- (4) Conducting in-depth interviews
- (5) Data processing: content analysis
- (6) Going back to step (3) until the answer shows signs of repetition or sufficient numbers design quantity.

Interview guide

A set of open-ended questions by topic (concepts) and relationships among the concepts in research. It is to encourage lecturers (interviewees) to present their perceptions, feelings and evaluations. The researcher (interviewer) narrates, evoking, following the interviewee's flow of information to explore different aspects of the topic.

Sample and sampling

This is an exploring qualitative study to describe in detail the concept, so the sample is selected conveniently (non-probability) with an expected sample size of 24. During the sampling process, this study considers a relative balance of (1) male and female ratio, (2) the voice of lecturers from various faculties, (3) lecturers' degree and qualifications and (4) duration at work of lecturers, providing a comprehensive and objective picture. Statistics show that 58% of interviewees is male; 29% are with doctorate degree; interviewees' years at work range from 2 to more than 25. Interviewers sent an introductory letter and invitation

to lecturers as informants with strong anonymous commitment: all personal information is kept confidential; data obtained through interviews is guaranteed to be voluntarily provided by participants in accordance with research ethics standards.

Data and data processing

The interviews were recorded with the consent of informants. The interviews were conducted face-to-face after the COVID-19 pandemic, as agreed between the interviewer and the informants at office or the refreshment spot near the university. All interviews were recorded as data for the next step of content analysis. NVIVO 20 software was used. Interpretive analysis was performed to investigate how lecturers make sense of their working environment, through sharing their experiences; especially how the lecturers make meaning from their experiences in relation to discussion about organizational identification, public service motivation and organizational commitment (Okoko et al., 2023).

4. Results

The interview results showed that, when discussing organizational identification and public service motivation, the university identity influences lecturers' organizational identification and public service motivation. There is a reciprocal relationship between organizational identification and public service motivation. Both organizational identification and public service motivation affect lecturers' job satisfaction, performance and their commitment to the university. The results of the interviews will be presented in turn by topic.

The effect of university identity on organizational identification and public service motivation

There are various reasons why lecturers choose a teaching career and work for a public university. Many lecturers said that they chose the teaching career because of the convenience for their family life and the flexibility in working hours. Lecturers can actively arrange time and work. The lecturers shared their reasons for choosing the career, and the current university as follows:

“The current university is also a state-owned one. I chose to work here so that I have many opportunities to study more and to apply my knowledge. The second reason is that teaching is my family tradition”, said GV03FNP.

GV02MKT also added that “The goal when I decided to work for the university is to be close to family. I had many job opportunities here, yet I chose to work for this university because I think, while teaching, I am able to meet many people, students. It is more attractive than working as a desk job, e.g. working for State Treasury or the Service of Finance, where I would mostly do office work.”

“I saw the job advertisement on TV. Then my friend encouraged me to apply for this job. I also really love being a teacher. I also read information about the university on its website, looking for key information such as the year of establishment, and the teaching staff. I also asked my acquaintances about the university features, which was really attractive to me at that time” (GV10FVN)

On the one hand, lecturers assumed that a university is an attractive working environment for those who love teaching. This is because teaching career is a noble job; teachers are respected by society as motivation for public service.

On the other hand, lectures were attracted by the university itself. The most interesting image to lecturers was a very well-known professor of the university, who was the Rector of the University at the time they applied for the job. All of the lecturers who applied for the job at the time this professor worked as the Rector agreed that this feature was very attractive to them. Due to the leadership of this Rector, lecturers were eager to work for the university. As a result, they loved to identify themselves as a member of this university.

In addition, lecturers loved the university with a noble ideal when serving the public, when working for the university with its own identity.

“At that time, the leaders of the province very much wanted to have a university in the AKD area (e.g. provinces of An Giang, Kien Giang, Dong Thap, serving mainly for poor students who could not afford studying in Can Tho City or Ho Chi Minh City. That was the enthusiasm to establish this university. That was why I also urged myself to apply for a job at this university when I had just graduated. I also wanted to make a certain contribution to the university and our community. That was the university image, which I drew in my head. It is a university of the province but it still reaches certain quality levels”, said GV01MKT.

Most of the interviewed lecturers did not need to find much information about the university they chose to work for since they believed in the image of universities. In other words, lecturers believed that a university is a good working environment, so it is not necessary to learn much about the university. Only when they became a member of the organization, did the lecturers have a better understanding of the university and its identity. Those who can be integrated with the university would increase their level of organizational identification. However, organizational identification might be unstable as individual goals keep changing, and when lecturers' perception on the university identity becomes unsuitable to individuals.

“The goals of the university are the same, but the goals of individuals change from time to time. For example, in the early stage, when I was young, and I still had a lot of enthusiasm, my goals at that time were very simple, for example, to ensure basically my life. I felt satisfied with such a low payment from the university. Yet when it comes to a more developed stage, for example, when I get married, I have children, it is clear that the income from salary can no longer guarantee a living, then surely I have to take into account the fact that I need some other sources of income for my family and of course, I am unable to spend 100% of my time and thoughts focusing on university work”, said GV01MKT.

Organizational identification and public service motivation change over time at the university. At first, many lecturers chose to work at the school for the convenience of themselves and their families. They did not have much motivation to serve the public. But later, the lecturers continued to engage with the university, have a stronger organizational identity. The change in organizational identification and public service motivation comes from many reasons, including pride in the university identity.

The relationship between organizational identification and public service motivation

It can be seen that organizational identification and public service motivation are positively correlated in the interviewed lecturers. Lecturers with a high degree of organizational identification are also highly motivated to serve the public. The relationship between public service motivation and organizational identity is reciprocal rather than causal. Public service motivation might be weakened due to various causes: getting older with less enthusiasm, psychological and physical problems, work stress, students' studying attitude. However, public service motivation may increase due to strong organizational identification. On the one hand, while perceiving strong organizational identification, lecturers have strong public service motivation:

"I am keen on understanding students, finding ways to motivate students, applying modern teaching methods, reading more to update my knowledge ... I am always renewing myself to teach students effectively, to serve our community, not to show off, not to earn much money or not to get higher promotion. I want to find the best ways to share knowledge with students ... I believe that scarification is necessary for lecturers, for example in terms of finance. Lecturers do not work for money, yet we work for the community.", said GV02MKT.

On the other hand, as increasing public service motivation, lecturers perceive stronger organizational identification:

"I do not think that I am making sacrifices! I accept what I am given, the pay from the university, which is not low, also not high. I can earn for my life since I can apply my knowledge for formal jobs outside the university, for example doing projects, consultancy for enterprises. These jobs bring considerable income for me. I am proud of these jobs, which bring not only incomes but also practical skills that I can share with students and colleagues.", said GV23FNP.

By saying not to consider what she is doing are sacrifices, this respondent means that she has a very strong public service motivation. This lecturer really identifies herself in this university that she has the same fate as the university; succeed with the university and fail with the university, as the definition of organizational identification by Tolman (1943). These evidences imply that public service motivation and organizational identity is reciprocal.

Job satisfaction, performance and organizational commitment as outcomes of organizational identification and public service motivation

The interview results show that lecturers' organizational identification and their public service motivation have positive impacts on organizational commitment, job satisfaction, performance of teaching and doing research. Lecturers with strong public service motivation and organizational identification feel very satisfied with their work, have a high level of commitment to the organization, and perform very well their teaching and doing research. Most of the interviewed lecturers are eligible ones with a lot of passion for the teaching profession, who define themselves as members of the organization. Similar results can be found easily in previous empirical studies on outcomes of organizational identification and public service motivation.

“I have a big, big love for this university... I also give this love to all of my co-workers, and also local people in this province. I am really grateful for them. I decide not to leave this university, although my family has various difficulties as my parents are too old, my older sister is sick and weak. I also have opportunities at another university, which is near my hometown. This is very similar to the case of my co-worker. Yet we stay with the university despite difficulties. In spite of much more convenience and benefits at another university, we don't want to leave this because of something that is not easy to explain.”, said GV15FS.

As a result of this study, the relationship among university identity, organizational identification, public service motivation and their outcomes such as job satisfaction, performance and commitment, was shown in Figure 1 below.

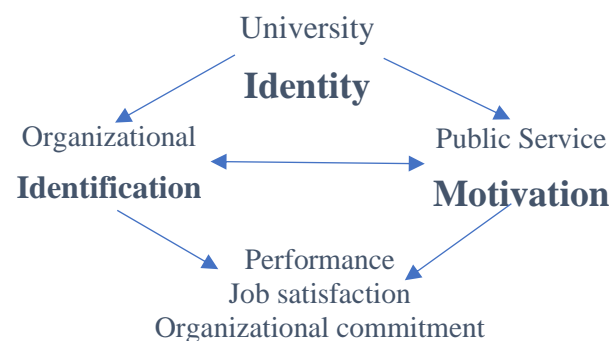


Figure 2. The effects of university identity, organizational identification and public service motivation

5. Discussion and Conclusion

5.1. Discussion

This qualitative study presents an investigation of determinants and outcomes of organizational identification and public service motivation of lecturers in a Vietnamese public university. A theoretical framework showing is suggested in Figure 1, showing the relationship among university identity, organizational identification, public service motivation and their outcomes such as job satisfaction, performance and commitment. The positive outcome of university identity on lecturers' organizational identification was found as in a study by Witting (2006). Although one has his/her owned public service motivation, university identity might change individual public service motivation. Bednarczuk (2018) also suggests paying more attention to the prominence and salience of public service motivation within different types of bureaucrats, e.g. bureaucrats than non-bureaucrats, as public service motivation may be more salient to some than to others. This means that university identity might play a role in strengthening or weakening lecturers' organizational identification. Finally, the outcomes of lecturers' organizational identification and public service motivation (i.e., job satisfaction, performance and commitment) were found, which was mentioned in the literature on organizational identification (He & Brown, 2013), and public service motivation (Ritz et al., 2016).

This research contributes to the extant literature by exploring organizational identification, public service motivation in a public university in Vietnam, which has not been conducted before in this developing country. Research results show that there is a reciprocal rather than a causal relationship between organizational identity and public service motivation, which can be found in the literature on public service motivation (Ritz et al., 2016). Reviewing literature on public service motivation, Ritz et al. (2016) reported that antecedents of public service motivation include organizational socialization, employee's perception of the organization, organizational commitment, organizational culture. This implies that organizational identification might be an antecedent of public service motivation. On the other hand, Ritz et al. (2016) also reported that outcomes of public service motivation include organizational commitment, organizational citizenship behavior, organizational attraction. This means that organizational identification might also be an outcome of public service motivation. As a result, the positive relationship between organizational identity and public service motivation could be reciprocal.

5.2. Implications

This implication aims at strengthening organizational identification. Lecturers tend to have an obligation to reciprocate their university when the university has benefitted them with fulfillment of some socioemotional needs. Lecturers are more likely to have stronger organizational identification, and hence engage in improving job performance (e.g., doing more research, innovating teaching methods) when they perceive higher procedural justice in the organization, when they find a rigorous development strategy, and when they feel pride in their university identity. This implies that universities need to have a sound development strategy of research and teaching quality management, in addition to building a strong and successful identity.

It is very important to build relationships in universities. Results also show that leader-member exchange, i.e. how leaders develop meaningful and long lasting personal relationships with lecturers, is another important antecedent of organizational identification, which is similar to results by Tangirala et al. (2007). Also, other relationships, e.g. relationships among lecturers, relationships between lecturers with students are very vital to lecturers. Apart from pay, most lecturers expect good relationships. This implies that building good relationships in universities is another considerable way to strengthen lecturers' organizational identification.

5.3. Limitation and further research

The present exploratory qualitative study has some limitations. First, the study was conducted only in a public university, which could affect the generalizability of its results. Second, the measurement model in the study needs to be validated in Vietnamese contexts, and research fields, e.g. educational organizations. Finally, it is necessary to conduct quantitative research to confirm results of this qualitative research. These limitations, however, suggest directions for further research on organizational identification in Vietnam.

This calls for quantitative studies to validate measurement scale of organizational identification, and to test possible theoretical models of organizational identification in

relation with public service motivation and their outcomes. It is because the present qualitative study aims at exploring concepts and potential relationship between the concepts, which was conducted with 24 interviews, which has limitations due to convenient sampling and small sample size. Further studies can be done in Vietnamese organizations, including educational organizations. Further studies are to provide better understanding about organizational identification, public service motivation, and their outcomes.

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OPPORTUNITIES AND CHALLENGES FOR LABOR EXPORT TO JAPANESE MARKET

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Abstract

Compared to others, the Japan markets offers a higher income for workers with a good working environment. This is also a challenge for us, because the Japan labor market is open and is recruiting from almost every country. The level of competition is quite high there. The following article shows the strengths, the weaknesses, the opportunities and the threats for our country in exporting labor to the Japan market. (i) Regarding strengths: The Vietnam government has a longstanding with the Japanese. Labor export activities from Vietnam to Japan was conducted for a long period of time, with respectable standing compared to other countries. (ii) Weaknesses: The quality of labor is not very high in term of qualifications, work ethics and social skills. (iii) Opportunities: Japan has a low proportion of young population with very low natural birth rate, in the future Japan will have a serious labor shortage. Currently in Japan, 47.1% of men and 32% of women are still unmarried in their 30s, while in the 1970s, 90% of population was married by 30. (iv) Challenges: There is significant competition from other countries. The development of technology partly reduced the demand for labor, such as robot that can replace human labor in production. Based on the SWOT analysis, the authors will offer possible solutions to promote the Vietnam's labor export activities to the Japan market.

Keywords: *Challenges, Opportunities, Labor export, Japanese market*

1. Introduction

After opening up its economy, Vietnam has strengthened international cooperation in all fields, and applied multilateral policies in its relationship with other countries. In which, labor export is one of the important connection factors. With the advantage of a country of nearly 100 million people and a young population structure, labor export is one of the important fields, bringing economic benefits as well as social benefits.

From 2019 to 2021, labor export in general and labor export to the Japanese market in particular have been heavily affected by the Covid-19 global pandemic. In 2022, the economic recovery after the pandemic along with the promotion of strategic cooperation between Vietnam and Japan has brought great opportunities for labor export to the Japanese market (*GSO, 2022*).

During the meeting of the Vietnam - Japan Cooperation Committee on May 30, 2022, representatives of the Vietnamese and Japanese governments discussed regional and international issues of mutual concern and agreed to strengthen coordination closely at international and regional forums such as the United Nations, ASEAN, Mekong, etc.; closely coordinate the implementation of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership. Also in this meeting, the governors of Kanagawa and Gunma provinces affirmed to continue to encourage their enterprises to promote investment and business in Vietnam; expand the reception of Vietnamese workers, strengthen local cooperation and continue to regularly organize cultural exchange activities with Vietnam.

The new policy on cooperation in the labor sector provides clear opportunities for labor export to the Japanese market with broader subjects, including low-skilled workers with more diverse industries and longer visa duration corresponding to higher requirements. The new points in this policy also pose great challenges not only to export labor enterprises to the Japanese market, but also to the functional agencies of the two countries in implementation, training and management of labor.

To assess the importance of labor export activities to the Japanese market in all aspects, especially opportunities and challenges. Also, proposal the solutions to promote and improve the efficiency of this activity is very necessary.

2. Literature Review

There are many research projects on labor export in the world. Typically, the research report of the ILO (2013) specifically stated about the rise of the economic crisis in 2013. In 2011, the world witnessed a decline in growth, four million unemployed people was increased throughout 2012. The report also shows quantitative and qualitative indicators of the global and regional labor market, combined with macro-analytical factors to make appropriate policies.

Yumiko Nakahara (2017) referred the research of all aspects of labor export. The export of skilled labor is an area that has not been researched carefully, although it is important for economic growth in developing countries. In this research, Professor Yumiko Nakahara clarified the aspects of labor export. The number of foreign unskilled workers working in the industrial and home care sectors in Taiwan has increased significantly. The research also clarified various controversial issues such as: Cost of using foreign workers, costs related to foreign labor force, etc. This can be considered as a valuable document in the author's research process.

Futaba Ishizuka (2013) said that: labor export is one of the socio-economic development strategies of Vietnam since the beginning of the Renovation period. In recent

years, Vietnam sends about 80,000 workers abroad each year. Vietnam has become a country providing a major source of foreign unskilled workers to high-income East Asian countries. However, in these receiving countries, the defection rate of Vietnamese workers is quite high compared to other countries. This research examines the impact of the policies of accepting foreign workers of Korea and Japan applied and implemented in Vietnam, as well as the impact of the system of sending in Vietnamese workers and the issue of escape by workers.

Patrick Belser (2000) has shown the process of change, structure, quality, labor movement between industries, and the situation of labor export in Vietnam in general in the period of 1993-1998. In addition, the research also analyzed in-depth regulations related to workers, salary and bonus, and necessary procedures when terminating labor contracts, thereby making judgments on whether it is necessary to reform the labor law or not.

In Vietnam, labor export in general and labor export to Japanese market in particular are developing strongly. Researches related to labor export are very rich.

Nguyen Thi Hong Bich (2007) pointed out that in the current globalization process, labor export in Southeast Asian countries is playing an increasingly important role in the development of many countries. Labor export is both a means of attracting foreign currency through deposits of workers working abroad, as well as an opportunity to increase employment and reduce unemployment in the country. Labor export is considered as one of the development strategies of many Southeast Asian countries, including Vietnam. Based on the research result on labor export situation, the book has shown that the process of labor export in Southeast Asian countries faces similar problems in the following stages: Development and marketing of foreign labor market; Protection of migrant citizens in the recruitment and employment process; Policy and legal framework; Structure and mechanism of managing migrant workers; Training and orientation before exporting; Management of workers' deposits; Programs of re-integration and inter-country cooperation through bilateral agreements with labor-importing countries; Regional cooperation mechanisms and multilateral talks, etc...From there, many common lessons can be drawn for countries in Southeast Asia. It can be said that the book has contributed a lot of knowledge around this market. Thereby, it is possible to see the most realistic picture of the current labor export situation in some Southeast Asian countries and see the basic problems they are facing.

Nguyen Tien Dung (2010) gave the theoretical basis of labor export, actual situation of Vietnam labor export in some potential markets such as Taiwan, Japan, China, etc... Through that, the author evaluated results, achievements and limitations and solutions for development are proposed to develop Vietnam's labor export activities in the context of international economic integration.

Dinh Trung Thanh (2017) researched on "Economics of high-quality labor export of some countries and lessons learned for Vietnam". The objective of the study is to analyze the work done by some countries such as China, Taiwan, Singapore... from which to draw

experience for Vietnam in high-quality labor export activities. The study also uses data collection and analysis combined with the comparative method. The data is collected from many rich sources but still limited in the research time. The author has not assessed where Vietnam training high-quality human resources for labor export in the category of human resource training in the world.

Nguyen Thi Tuyet Van and Vu Thi Thanh Huyen (2018) showed the current state of state management of labor export activities in Vietnam and propose some solutions to strengthen the state management of this activity. The authors use descriptive statistics, combined with comparative methods, from the statistical data, the author has made an accurate assessment of the current state of state management of labor export activities. The limitation of this study is that it has not provided solutions corresponding to the analyzed shortcomings for state management. It is necessary to have specific solutions and focus on management according to groups of labor importing countries and regions in order to achieve high state management efficiency with labor export activities.

Vu Thi Nguyet Nga (2019) pointed out that labor export is one of the external economic sectors that bring great economic benefits to many countries, including Vietnam. Among the markets, Taiwan is a fertile market where many Vietnamese workers want to work. The article focuses on analyzing the current situation of Vietnam's labor export to Taiwan market in the period of 2012-2019, thereby showing the results on the strengths and weaknesses of Vietnamese workers in foreign markets. At the same time, propose some solutions to boost Vietnam's labor export to the Asian market in the coming time.

Thus, there have been many studies on labor export, which clearly show the importance of labor export as bringing great values to the development of the country's economy. In general, the studies have generalized the actual situation and offered solutions. However, in the volatile world economic conditions, Japan is always a market containing constantly changing factors that have large and small impacts on foreign labor export. Labor export activities still have many potential problems, difficulties and complicated developments that have not been resolved. Since the beginning of 2020, the Covid-19 epidemic has occurred in many countries around the world, affecting many aspects of life.

3. Method

3.1. SWOT analysis method

In this study, the SWOT analyzes labor export activities with four aspects of Strengths, Weaknesses, Opportunities and Threats; thereby having a more comprehensive view, especially the opportunities and challenges associated with the current Vietnamese context.

The main objective of a SWOT analysis is to raise awareness of the variables that influence company decisions or the formulation of business strategies. SWOT analyses the internal and external environments as well as the variables that may affect the viability of a choice in order to achieve this.

Strengths 🖱️ <ul style="list-style-type: none"> - Someone speaks another language in your team - You have spare manufacturing capacity - You have good financial planning - You have an easy process to change product or packaging 	Weaknesses 🖱️ <ul style="list-style-type: none"> - You will need additional pay for production - You're already tight on working capital - No one understands export docs in your team - Time is often short
Opportunities 🖱️ <ul style="list-style-type: none"> - Your competitors are already active in other markets - Additional staff can be brought cost effectively - You have the ability to access cultural marketing through staff - Trade association trade missions 	Threats 🖱️ <ul style="list-style-type: none"> - There is a lot of activity in your market - Competitors are aggressively pricing - ROI return on investment needs to be short term - Exchange rates vary a lot

Figure 1. SWOT framework for Vietnam - Japan labor export market

3.2. Data analysis

The data is collected through the use of methods of synthesis, analysis to systematize issues related to labor export. Thereby, making a judgment on the current situation and analyzing the strengths, opportunities and challenges of Vietnam's labor export to Japan in order to discover the advantages and disadvantages and propose solutions for this activity.

Data are collected from: Vietnam Legal documents on labor export to Japan; statistical data on labor export of our country to Japan; statistics about Vietnam and Japan

4. Results

4.1. Current situation of Vietnam's labor export to Japan

Although labor export has been carried out since the 1980s, the Japanese market has only really been exploited since 1993, after our country opened up its economy and established the JITCO. The process of bringing workers to Japan is associated with the Japan's economic growth as well as regulations on labor export and the relationship between Vietnam and Japan. The process can be divided into 3 phases: 1993 - 2005; 2006-2013; and 2014-present

Table 1. Statistics of Vietnam's labor export market in the period of 2014-2019

<i>Unit: person</i>						
Year	Total	Taiwan	Japan	Korea	Malaysia	Other
2014	106,840	62,124	19,766	5,500	5,139	14,311
2015	115,980	67,121	27,010	6,109	7,354	8,476
2016	126,296	68,244	39,938	8,482	2,079	7,553
2017	134,751	66,926	54,504	5,178	1,551	6,592
2018	142,860	60,369	68,737	6,538	1,102	6,114
2019	148,000	54,480	80,002	7,215	454	5,849

Source: Department of Overseas Labor, 2020

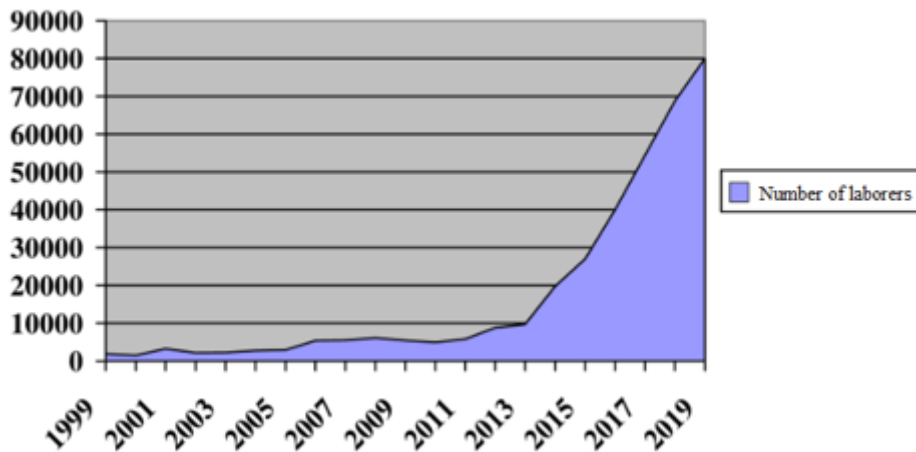


Figure 2. Number of exported people to Japan over the years

Source: Department of Overseas Labor, 2020

Period of 1993 - 2005: This is the period when Vietnam approaches the Japanese market. Unlike the Korean market, the Japanese market does not allocate quotas according to the needs of companies but stipulates the number of trainees according to the size of the receiving company.

Labor export activities of Vietnam to the Japanese market in this period are generally stable but not much. During this period, due to affected by the Asian financial crisis in the late 1997 and early 1998, the labor force exported to Asian countries decreased. Until 2001, the economy recovered, the Japanese market grew very slowly, in 2003 it grew by 2.4% compared to 2002, in 2005 it increased by 7.3% compared to 2004. By 2005, the number of labor export to Japan only accounts for 4% of the total number of Vietnamese people going to other countries.

Period of 2006-2013: This period marked major changes in the Japanese market with many regulations issued on labor export of Vietnam and regulations on labor import of Japan. Since 2006, Vietnam has sent an average of 5,500 workers to Japan each year. Only in 2008, it reached a record level of 6,142 people. That sudden growth is thanks to the positive impact from both Vietnam and Japan. From 2011 to 2013, along with the recovery of the world economy, the Japanese economy gradually recovered and Japan received more Vietnamese workers, in 2013 the number of Vietnamese workers went to Japan exceeded 10,000 people. On the other hand, Tsunami disaster in 2011 caused great damage to Japan, reducing the GDP of the world's third largest economy by 3% and causing a large deficit of human resources.

Period of 2014 - 2019: This period recorded a sharp increase in the number of workers went to Japan. 2014 marked a milestone as the first year that Vietnam sent over 100,000 workers to work abroad, of which the number of labor exports to Japan accounted for nearly 20%. For the Japanese market only, 2014 was a year of outstanding growth with more than 19,000 workers. Comparing the number of Vietnamese workers working in Japan

with the total number of Vietnamese workers working abroad, we see a strong growth over the years. If in the years of 2014 - 2017, the Taiwanese market always ranked first in attracting Vietnamese workers, since 2018, Japanese workers accounted for the majority, and Taiwan was second.

There are many reasons affecting the change in the above labor rate such as the new policy and regulations of the State. Programs to strengthen cooperation between Vietnam and Japan, expand programs to receive Vietnamese workers in addition to the previous programs (notably the program to bring nurses and paramedics to Japan). Among the countries that are partners of Japan, Vietnam is the second country after China in terms of importing labor

4.2. Labor export activities of Vietnam to Japan market according to SWOT model

4.2.1. Strengths

The Vietnamese government has a long-standing cooperative relationship with Japan. Labor export activities of Vietnam to Japan have also been conducted for a long time, creating its own position compared to other countries. In 2014, the number of Vietnamese workers in Japan accounted for only 4-5% of the total number of foreign workers in this country, when this proportion in China was over 77%, Indonesia was over 9%, the Philippines was about 5.4%. Up to now, Vietnam has risen to the second position after China. Moreover, the Japan market has existed for a long time, the appearance of new potential competitors is very unlikely.

Vietnam's population is young, so Vietnam has a large supply for labor export. With a population of over 90 million people, Vietnam is the 14th most populous country in the world, the 8th in Asia and the 3rd in Southeast Asia. Vietnam has entered the period of "golden population structure" with the highest proportion of young people in the history, the young population from 10-24 years old accounts for nearly 40% of the population (GSO, 2022). This is not only an abundant labor supply for domestic production activities but also a surplus to be able to export to foreign countries.

The number of labor export enterprises is large and quite effective. If in 2010, there were only 167 enterprises operating in labor export field, this number reached to 350 enterprises by 2019 (average increase of 10% per year). In which, according to the evaluation report of the second year of implementing the Code of Conduct for labor supply enterprises, the number of enterprises with excellent performance accounted for 92%, 8% of enterprises with good performance, there is no enterprises with average performance(GSO,2022).

More and more policies clearly regulate the implementation as well as support and investment policies for labor export. With the introduction of the Law on Vietnamese guest workers and guiding documents, created a synchronous legal corridor to regulate labor export activities, in line with domestic and international realities, facilitate the operation of enterprises and protect the legitimate rights of workers. However, this law has many limitations that do not meet the changing needs of reality.

4.2.2. Weaknesses

Labor quality is not really high in terms of qualifications, working style, life skills. Vietnam's labor productivity in recent years has improved significantly, but if the average labor productivity growth rate of the countries remains unchanged as in the period of 2007 - 2012, then until 2038 that Vietnam will only catch up with the labor productivity of the Philippines, and will not catch up with the labor productivity of Thailand until 2069. Notably, if compared with China and India, our country's labor productivity increases more slowly. Specifically, Vietnam's labor productivity was 1.3 times lower than China's in 1994; by 2013 it increased to 2.8 times. Between India and Vietnam, this number increased from 1.6 times to 1.7 times. These are all our competitors in the labor export market to Japan (*Vu Hoang Manh Trung, 2017*).

In addition, there was a time when our labor broke the law quite a lot, causing a bad image and impression. The supply is still not diversified in terms of quality, industries and forms. Especially for occupations that require high qualifications, we have not yet met the needs of the host country.

The activities of enterprises are still small, fragmented and unconnected. In addition to the achievements, it should be noted that labor export enterprises are mostly small-scale enterprises, with little capital investment and have not paid much attention to skills training for staff in the field of labor export so the labor export activities are still ineffective. Some businesses do not pay attention to management, causing damage to employees' benefits, even violating the law, and losing employees' trust.

Support policies, management are still limited and education and training, information dissemination do not have a certain standard, lacks consistency. Although there are many regulations on activities related to the education and training of workers before going to work in the host country, there are no standards frameworks, each enterprise and organization self-drafts and self-trains according to their content. Most of the training content focuses on language training to be able to meet the control of the receiving party without equipping employees with socio-cultural understanding, working processes or laws of the host country.

4.2.3. Opportunities

Japan's young population and natural birth rate is low, so Japan will have a serious shortage of labor in the future. The trend of getting married and having children later and the high rate of single people living in Japan are directly causes for the decline in the birth rate of Japan's population. In Japan, 47.1% of men and 32% of women in their 30s are still unmarried, compared with married in the 1970s is 90%. Japan's population growth rate has fallen below 1% since the 1980s and was at -0.2% for the first time in 2005. Old population: 22.7% of the population is over 65 years old, the number of Japanese under 14 years old last year accounted for only 13.6% of total population, a rate is too low to guarantee human resources in the future. With the above figures, it can be said that Japan will have a serious labor shortage in the coming years. Moreover, with the rebuilding of the country after the tsunami and hosting the Olympics, Japan will need more labor. Therefore, this is clearly an attractive market for labor export.

Cooperation programs with Japanese business organizations are being expanded and entered into the common process. The Vietnamese government encourages labor export and has taken many actions to support for this activity. Japanese enterprises as well as the government always highly appreciate Vietnamese workers and always create favorable conditions such as increasing cooperation programs, signing treaties and agreements on labor with Vietnam.

Labor export enterprises are proactive in finding markets, negotiating and signing contracts, organizing recruitment, training, and managing overseas workers, contributing to the development of new markets and large numbers of workers, having high quality, stable income, timely solving arising problems. The enterprises are very dynamic to quickly adapt to new difficult conditions, especially those that have cooperated with foreign partners to train according to market requirements...

4.2.4. Threats

There is competition from the labor export of other countries. The Japan market is an attractive market for many reasons. It is not easy for other countries with a surplus of labor to ignore the market with many factors both in terms of income, working and living conditions like Japan. In fact, compared with other countries, our diplomatic relationship with Japan cannot have a long history, not to mention that competitive countries all have experience in sending workers to export, including the countries specializing in labor export such as China and the Philippines.

We also face with difficulties due to Japan's policy of restricting labor import and entry procedures. Although, there are many improvements and openings in the immigration law; in fact, the workers have to go through many stages, applying for a visa is not easy.

The development of technology makes the demand for labor also partly decrease, robot technology develops to replace human labor in production. Especially, for a country that develops science and technology, especially robot manufacturing technology, the replacement of humans with machines is predictable in the future. Currently, robots have participated in taking care of the elderly and children, helping the family.

5. Discussion and Conclusion

5.1. Discussion

5.1.1. Solutions by State

➤ Develop the market in the direction of diversification

Diversification can be done in two ways: diversification of occupations and diversification of workers' qualifications. The Japan market has so far received mainly the unskilled labor force of Vietnam. However, in reality, the Japan market also needs high-quality labor. Therefore, Vietnamese labor export needs to understand these things to diversify types of workers to work in Japan. In addition, it is possible to diversify labor export industries, only restricting occupations that are especially dangerous and toxic or not suitable with Vietnam's fine customs and traditions.

➤ *Develop a financial support program for labor export*

Financial support for labor export activities is necessary but has not been properly focused and implemented. When going to work in Japan, workers need to pay a lot of fees lead to limit the workers with no financial conditions. Therefore, financial support for this activity is extremely necessary.

5.1.2. Solutions by enterprises

➤ *Expand markets and partners*

Enterprises need to comprehensively research, collect different information on demand, quantity, type, and procedures for receiving in Japan, study the competitiveness of labor export enterprises of competitive countries. At the same time, it is advisable to establish close relations with representative agencies in Japan, with the Department of Foreign Labor in deploying markets, looking for partners, signing contracts.

➤ *Promote compulsory training and education activities for employees*

Japan is also an Asian country, but Japan's living culture and business principles and regulations in production have many differences with Vietnam. Japan always has high requirements for Japanese language proficiency, punctuality, standardization, and respect for hierarchy at work. Therefore, workers need a good training before going to work in Japan. The skills that need to be trained for workers are: vocational and language skills, life skills. However, it is very difficult to fully train the above skills because businesses often have new contracts to recruit and educate workers with only 3, 4 months; this is too short a time to master all of the above skills.

5.1.3. Solutions by the workers

➤ *Equip with the most basic knowledge about labor export activities*

Equipping themselves with the most basic knowledge about labor export includes professional knowledge, foreign languages, culture and laws of Japan's labor export. This action helps employees to ensure their rights as well as be aware of their responsibilities and obligations.

➤ *Look for reputable, responsible, open-operated labor export enterprises*

In fact, there are many companies that do not have the function of labor export activities but still post recruitment information in order to take advantage of customers' trust to scam money. Employees must know how to protect themselves against inaccurate information by thoroughly researching the business, can go directly to the enterprise for the most accurate information

5.2. Conclusion

Our labor export activity began in 1980 and it has spent nearly 40 years to gain many results than expected. Although there are many limitations, it is undeniable that the positive aspects of this activity bring to employees, businesses and national interests.

The Vietnamese government has always identified labor export as an economic activity that needs to be focused on promoting development. In recent years, Vietnam has

always increased the number of workers going abroad. In many markets, Vietnam's labor export has created its own place and it can be mentioned to some familiar markets such as: Malaysia, Korea, Japan....

Japan is a traditional market and gives Vietnam certain preferences based on the good relationship between the two countries. Vietnam's labor export to the Japan market has steadily increased over the years, especially from 2014 to 2019, with a strong growth rate. Japan rose to become the most attracting country with Vietnamese workers, followed by Taiwan ranked second. Vietnamese workers gradually improve their quality to meet the requirements of the market.

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HUMAN CAPITAL IN VIETNAM BY ECONOMIC REGION USING AN EDUCATION-BASED APPROACH

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Abstract

Using an education-based methodology, this study assesses the situation of human capital in all regions of Vietnam and suggests policy recommendations for sustainable human capital development. The majority of regions have a favorable golden population structure, and locations with high human capital tend to have a significant labor force, urban areas, cities, and industrial zones. However, the Mekong River Delta lags behind in terms of educational attainment, which is worsened by the outmigration of young workers to other regions. Focusing on secondary and postsecondary education, Vietnam's human capital development plan has to change from quantity to quality. Improving the quality of general education should be a top priority in regions with low human capital quality.

Keywords: *Education-based Approach, Human Capital, Scio-economic Regions, Vietnam*

1. Introduction

In the period of economic recovery and development, after the COVID-19 epidemic is under control, the quality of human capital is an important factor in helping countries stabilize and develop production and business. Human resources are a decisive factor in the realization of socioeconomic goals, and it is also decisive in the process of accelerating industrialization and modernization of the country in order to quickly integrate our country's economy with the regional economy and internationally because, in the end, it is people who are the most basic and important factor of the entire productive force. However, for a long time, the issue of human resource training has not been given due attention and appropriate steps have not been taken. The rapid population growth pressures society to allocate and train a high-quality workforce to meet the economy's needs. Vietnam has advantages with a

large labor force and a young labor structure. However, human resources are still weak in quality: there is a shortage of skilled workers, not meeting the needs of the labor market and integration; the gap between vocational education and the needs of the labor market is getting bigger and bigger, labor is lacking in dynamism and creativity, professional style.

The International Labor Organization (ILO) forecasts that in the next 5 years, one-third of jobs will change according to practical requirements, of which 40% of workers are unlikely to meet new requirements when Labor skills are not improved. According to the Ministry of Labour - Invalids and Social Affairs, in Vietnam, the country's human resources in general have increased in size, from 50.4 million people (in 2010) to 56.2 million people (in 2020). Regarding the quality of human resources, also according to this Ministry, the percentage of trained workers also increased from 40% (in 2010) to about 65% (in 2020); in which there are a number of industries reaching regional and international levels including healthcare, mechanics, technology, construction...

According to the Ministry of Labour - Invalids and Social Affairs, what concerns us today is the quality of labor. According to statistics, the trained workforce is currently only about 66%, of which only 26% have diplomas and certificates. In addition, working style, skills and professional sense are also important to mention because these are also the factors that make up a high-quality labor.

Economic regions are specific economic and territorial divisions of the national economy with production specialization combined with overall development. An economic zone is a place that can really engage customers with a territorial division of labor. The territorial division of labor is both the basis and the driving force of the formation of economic zones. The basic characteristics of an economic region are systematic, hierarchical, specificity, synthesis and organization. Human resources are one of the most important factors to the development of each economic region. Population growth, training and development of high-quality human resources can provide labor force for each economic region, improve labor productivity, improve product and service quality, and make positive contributions to economic growth.

Vietnam's socioeconomic areas are increasing according to the national trend, while the economic structure is shifting toward industrial and agricultural applications. In addition to the construction and expansion of industrial zones and clusters, business, commerce, service, and tourism institutions, socioeconomic development necessitates human capital of sufficient quality to meet the demand for human resources. Because human capital is one of the most important contributors to economic growth. Human capital plays an increasingly vital role, especially in the context of the economy's continuous shift to a knowledge-based economy and the trend toward globalization. Recent economic growth theories have revealed that, in order for an economy to grow rapidly and at a high rate, it must be supported by at least three key pillars: the application of new technologies and the expansion of infrastructure. Human capital-centric and contemporary. Which characteristic human capital is the most important aspect in sustaining economic development? (Becker, 1964).

2. Literature review

Economic scholars have argued for millennia, as portrayed in numerous economic literature, that human capital is a key ingredient of economic growth (Romer, 1986; Mankiw et al., 1992; Barro and Sala-i-Martin, 2004; Qadri and Waheed, 2014; Abdouli and Omri, 2021). Economist Theodoe W. Schultz first proposed the human capital theory in the 1960s. The premise of this theory is that investing in one's own education and training might eventually boost one's productivity and financial potential. In Schultz's opinion, people's knowledge, skills, and abilities as a result of their education and training are referred to as human capital. These skills and abilities can be viewed as a form of capital that people can invest in themselves in order to boost their future earnings, much like physical or financial capital.

The Organization for Economic Co-operation and Development (OECD) in 2011 defined Human capital can be broadly defined as the stock of knowledge, skills and other personal characteristics embodied in people that helps them to be productive. This article identifies several general approaches to measuring human capital: cost-based, income-based, and education-based.

The cost-based measure of human capital assesses human capital based on the quantity of inputs. In essence, human capital is computed as the aggregate of investments in the accumulation of human capital; hence, an individual's human capital is the sum of his or her investments or expenditures in human capital. According to Fraumeni (2021), human capital is comparable to the cost of investing in people, such as child raising, education, on-the-job training, and health care. In addition, the author explains that human capital is approached following individual elements at work, such as knowledge, skills, capacity, and personality.

The education-based measurement approach is a common way to estimate human capital. The simplest way to describe the education level of a population is the proportion of the population that has completed formal education. This indicator shows how many people complete each level of education. According to Alizera Behroozni et al (2016), human capital can be expressed by macro parameters, in her study, Alizera Behroozni compared the school attendance rate of primary school students, the attendance rate school of middle school students, attendance rate of students entering college.

Similar research by Faisal Sultan Qadri et al (2014), also relies on macro-parametric variables to represent human capital such as: School attendance rate of primary school students, attendance rate of students secondary school and the attendance rate of higher levels. However, this method does not fully reflect the skills or knowledge of workers.

The school enrolment rate, on the other hand, is a number that is important solely for students and has minimal bearing on the labor market. Years of education can legitimately represent the workforce's human capital stock, but this just represents the quantity of human capital and does not indicate the workforce's skill level. This takes us to test scores, a measure of human capital proposed by Hanushek and Kimko (2000) that indicates educational quality and is closely associated with individual competence. Test results make it exceedingly challenging to obtain a measurement that can be accurately extrapolated to the full workforce. In fact, Hanushek and Kimko (2000) and later Hanushek and Woessmann (2009)'s country-level measures of average

cognitive skills are not based on a random selection of schools or students and may not be nationally representative of the skill level of students, much less of the workforce.

In addition, human capital is also measured by criteria such as literacy rate. The literacy rate, which counts the percentage of the population that can read and write, is a crucial indicator of well-being but it does not account for the level of education or skill of the labor force. Usually defined as the proportion of the population aged 15 years and over who can "read and write a simple sentence about their daily lives" (UNESCO, 1993, p. 24), the percentage of adults who are literate with meaningful information about the general educational status of a country. This index has been used in early empirical studies controlling human capital in growth equations, including Romer (1989) and Azariadis and Drazen (1990). Unsurprisingly, such a defined human capital variable has shown limited explanatory power in cross-country growth regressions. One reason, perhaps minor, is that literacy is not objectively and consistently determined across countries and thus creates biases in international comparisons. A more important reason is that, while reflecting a fundamental component of human capital, adult literacy rates ignore most human capital factors beyond that basic level, including calculus, logical reasoning and analysis, and scientific and technological knowledge. Thus, using adult literacy as a proxy for human capital ignores the contribution of more advanced skills and knowledge to productivity. As Judson (2002) assesses, literacy rates can be a good proxy for human capital accumulation in countries where people have low levels of education, but not for those with low levels of education primary school universalization.

3. Method

Education-based metrics of human capital, such as literacy rates, school enrollment rates, and average years of schooling, are simple to calculate and have extensive data coverage across regions. These indicators provide a rough estimate of a country's or region's human capital.

3.1. Adult literacy rates

Typically defined as the percentage of the population aged 15 and older who can "read and write a short statement on his or her everyday life" (UNESCO, 1993), adult literacy rates provide valuable insight into a country's educational standing. This indicator has been utilized in early empirical research that compensate for human capital in growth equations, such as Romer (1989) and Azariadis and Drazen (1990).

As expected, the so-called human capital variable has demonstrated minimal explanatory power in cross-country growth regressions. The fact that literacy is not objectively and uniformly defined across countries generates biases in international comparisons, albeit a minor one. Despite reflecting a vital aspect of human capital, adult literacy rates omit the majority of characteristics that go beyond the elementary level, such as numeracy, logical and analytical reasoning, and scientific and technological knowledge. Using adult literacy as a proxy for human capital disregards the importance of higher-level skills and knowledge to production. According to Judson (2002), literacy rates may be a suitable proxy for human capital in nations with low levels of education, but not in nations with universal primary education.

3.2. School enrolment rates

The school enrollment rate is the ratio of the number of pupils enrolled at a certain grade level to the age-group population that, according to national law or tradition, should be attending school at that grade level. The ratio's numerator distinguishes net and gross enrollment rates. Gross enrolment rates account for the entire number of students enrolled at a specific grade level, whereas net enrolment rates exclude pupils who do not fall within the specified age range.

Barro (1991), Mankiw et al (1992), Levine and Renelt (1992), and Gemmell (1992) are studies that use school enrollment rates as proxies for human capital in enhanced growth models (1996). Such an application is justified because the enrolled population reflects the flow that adds to the existing stock of education to establish subsequent stocks. In other words, enrollment rates represent the current investment in human capital that will eventually be reflected in the stock of human capital.

However, enrollment rates do not adequately represent the current stock of human capital. First, as measures of flows, enrollment rates represent only a portion of the continual accumulation of human capital stock. Second, there is a lengthy lag between investment in education and additions to the human capital pool; hence, present enrolment rates are indicative of the schooling level of the future labor force, not the current one. Thirdly, the education of present students may not completely contribute to the (future) stock of productive human capital since graduates may not enter the labor force and investments may be largely wasted due to grade repetition and dropouts. Fourth, the change in the stock of human capital is the difference between the human capital of those who enter and leave the labor force; however, school enrollment rates do not account for those who leave the labor force. Enrollment rates do not adequately reflect even future flows of the human capital stock, let alone current flows or the stock itself.

Moreover, enrollment numbers in poor nations are frequently unreliable. According to Barro and Lee (1993), UNESCO enrollment statistics are derived mostly from annual surveys of educational institutions in each nation, and reporters frequently inflate enrollment figures for the benefit of their schools. In addition, there may be a reverse causal relationship between enrollment rates and productivity increase; high enrollment may be a result of high productivity growth, rather than the other way around (Wolff, 2000).

In some countries, school enrollment rates can serve as acceptable surrogates for human capital, whereas in others, they cannot. For instance, secondary enrollment rates will only be reliable indicators of human capital accumulation in nations where secondary education is expanding the quickest (Judson, 2002). In fact, the author detects positive correlations between growth and human capital accumulation at the primary level for low-income nations, at the secondary level for middle-income countries, and at the tertiary level for high-income countries, but no link is observed for the pooled sample.

Vietnam was one of the world's poorest nations in 1990, with a per capita gross domestic product of \$98 US dollars. The World Bank classifies Vietnam as a middle-income country based on its per capita gross domestic product (GDP) of \$1,024 in 2008 (Ohno, 2009).

3.3. Average years of schooling

The average number of years spent in school has various advantages over literacy rates and enrollment ratios. First, it is a genuine measure of stock. Second, it measures the current labor force's accumulated educational expenditures. Under certain plausible assumptions, Wachtel (1997) demonstrates that the number of schooling years is equivalent to cost-based metrics of human capital.

Psacharopoulos and Arriagada (1986) were the first to assemble information on the average number of years countries spend in school. By employing a projection method, Kyriacou (1991) attempted to address the shortcomings of Psacharopoulos and Arriagada's (1986) work. He regressed the years of schooling data available from Psacharopoulos and Arriagada (1986) for 42 countries in the mid-1970s (from 1974 to 1977) on the UNESCO Statistical Yearbook's lagged gross enrolment ratios. Lau et al. (1991) utilized a perpetual inventory technique, which calculates the stock of education S at year T by adding the enrollments E at all grade levels g for all age cohorts.

The average number of years spent in school is determined by dividing the total number of years spent in school by the total population aged 25 and older (in full age) (UIS, 2013).

4. Results

Vietnam has a large population, a relatively young population pyramid, and is in the "golden population structure" period with abundant human resources (Tu et al., 2021). Population growth in recent years has led to an increase in the labor force. As of 2019, Vietnam's labor force reached 65.4 million people (accounting for 68.0%, more than 2/3 of the total population). In general, each year Vietnam has more than 500,000 people entering the working age, this is an important advantage of Vietnam in socioeconomic development (see Table 1).

Table 1. Labor force and labor force participation rate by scio-economic region

Scio-economic regions	Year 2009		Year 2019	
	Labor Force	Labor Force Participation Rate	Labor Force	Labor Force Participation Rate
Entire Country	59,338,939	69.1%	65,420,451	68.0%
Northern Midlands and Mountains	7,449,155	67.4%	8,484,236	66.1%
Red River Delta	13,615,971	69.5%	14,871,968	66.0%
North and South-Central Coast	12,522,820	66.5%	13,350,802	66.1%
Central Highlands	3,265,841	63.8%	3,831,469	65.6%
Southeast	10,403,702	74.0%	13,168,971	73.9%
Mekong River Delta	12,082,450	70.3%	12,013,005	69.5%

Source: General Statistics Office

Table 1 shows that the labor force is still most concentrated in the Red River Delta, followed by the North and South-Central Coast, and the Southeast. These are areas with large land areas, concentrated in many big cities, urban areas and many industrial zones, which are convenient for production and business, so they attract a large number of workers to concentrate in these areas. The Southeast is an example of attracting labor force in industrial development, mostly young migrant workers, increasing by nearly 3 million workers after 10 years, accounting for 17.5% of the labor force in 2009. growth of the whole country to 20.1% per year. Areas with a low percentage are areas with narrow land area, many hills, few urban areas and industrial zones, so they do not attract many workers here. The Mekong River Delta is the only region in the country that tends to reduce the number of workers.

The labor force participation rate decreased by 1.1% nationwide. Except for the Central Highlands, this rate decreased in the remaining 5 socioeconomic regions, in which the largest decrease was the Red River Delta (see Table 1). This shows the trend of population aging, increasing dependency ratio in Vietnam. This trend is not uniform across socioeconomic regions.

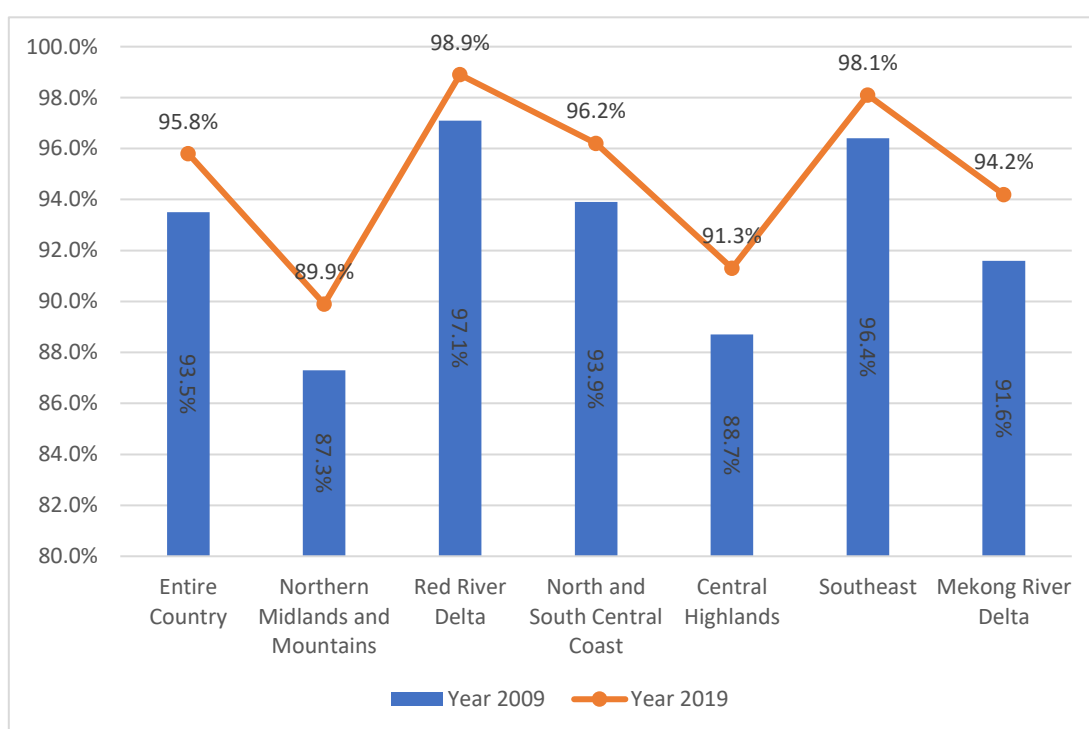


Figure 1. Adult literacy rates by socio-economic regions

Source: General Statistics Office

The results of the 2019 Census show that the literacy rate of the population aged 15 and over is 95.8%, an increase of 2.3 percentage points compared to 2009. This proves the policy of universal primary education and eradicating illiteracy effectively. The Red River Delta has the highest literacy rate (98.9%). The Northern Midlands and Mountains have the lowest literacy rate (89.9%). The Red River Delta, North and South-Central Coast, and Southeast are regions with higher literacy rates than the national average (see Figure 1).

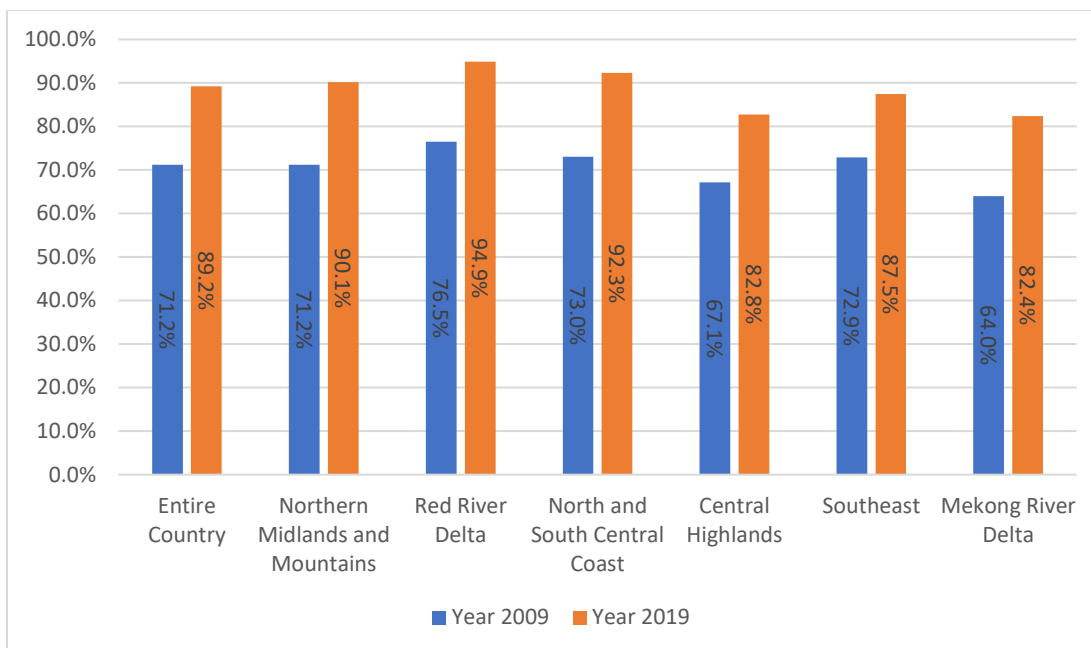


Figure 2. School enrolment rates in secondary school by socio-economic regions

Source: General Statistics Office

Efforts to send children to school have contributed to a significant increase in the enrollment rate at the right age for lower secondary schools nationwide and in all regions. The North and South-Central Coast are a typical example of increasing the school attendance rate at the right age at lower secondary level (increasing by 19.3%). The school enrolment rate at the right age at lower secondary level is highest in the Red River Delta and North and South-Central Coast. This rate is lowest in the Mekong Delta and the Central Highlands. The highest disparity between socioeconomic regions is 12.5 percentage points at the lower secondary level (see Table 2).

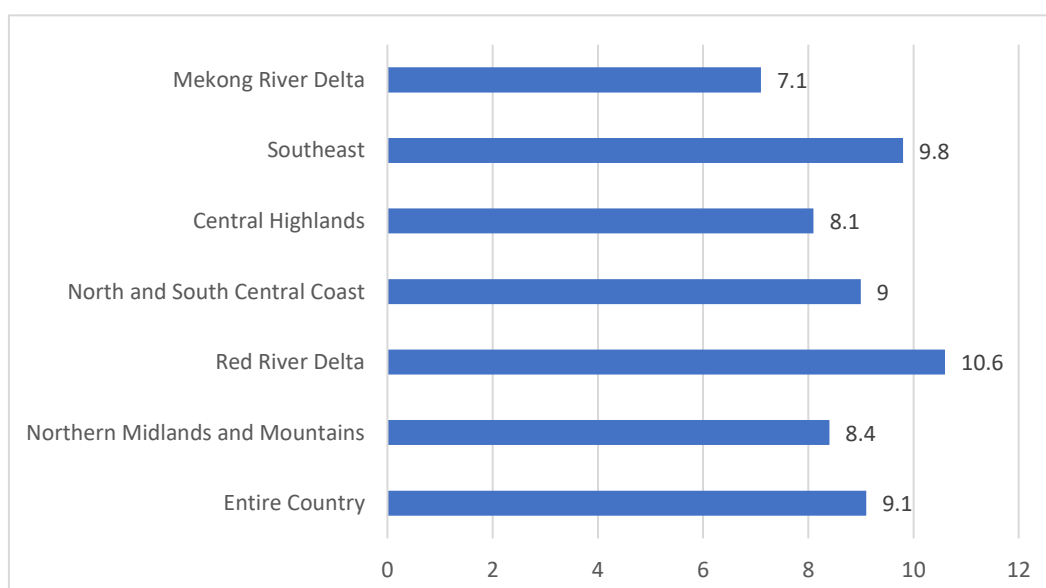


Figure 3. Average years of schooling by socio-economic regions

Source: General Statistics Office

The average years of schooling in the entire country is 9.0 years, corresponding to the number of last years of secondary education. The Red River Delta has the highest average years of schooling (10.6 years), 3.5 years more than the Mekong River Delta, which has the lowest average years of schooling (7.1 years). The Southeast and North and South-Central Coast have the 2nd and 3rd largest number of years of schooling.

4. Discussion and Conclusion

Statistical results show the similarity between human capital indicators by socioeconomic region based on access to education. Most regions have a golden population structure. Areas with high human capital index are those with a large labor force, concentration of large cities, urban areas and many industrial zones, which are favorable for production and business. However, the Mekong Delta is an exception, with an abundant labor force, qualities that are not commensurate with the size, the rate of attendance at the right age in lower secondary level and the average number of years of schooling, lowest army in the country. Migration of young workers to the Southeast for a long time has significantly reduced the quantity and quality of human resources in the Mekong Delta. Besides, the trend of decreasing labor force participation rate and population aging are reality for Vietnam's human capital, leading to many social security consequences.

In order to take advantage of the golden population structure for socioeconomic development and further human capital development, the following policy solutions should be implemented:

- Vietnam's human capital development strategy needs a change, gradually shifting from quantity to quality. To become a developed, high-income country, Vietnam must shift its focus to secondary and tertiary education to increase quantity and quality. The first and more favorable socioeconomic regions will focus resources on developing higher education and vocational education, creating high-quality human resources. While socioeconomic regions with low quality of human capital need to persevere to send children to school and improve the quality of general education.

- The favorable conditions for the three socioeconomic regions with abundant human capital are the Red River Delta, the Southeast, the North Central and the Central Coast. High-quality human resources, digital human resources, vocational education innovation associated with regional strengths and development orientations, consider this as one of the breakthroughs for regional development. Invest in building facilities and improve the quality of operations of a number of large universities to become prestigious training centers in the region and the world. Review and rearrange the vocational education network. Focus on prioritizing investment in vocational education schools in the region to perform the country's and region's central function in terms of high-quality vocational training and practice. Strengthening scientific research, technological development and innovation activities.

- The quality of education from high school and below in Vietnam is very good, especially in natural subjects. But higher education remains a dilemma and impractical. It is an easy to see fact that higher education today is still heavy on theory and lacking in practice.

Recruit faculty and professors from different agencies, companies, and organizations in the labor market to provide diverse student experiences. Do not only hire teachers who are excellent graduates of the school. In addition to specialized knowledge, teach students everyday but important working skills such as communication, foreign language, thinking, analytical, and problem solving skills. urgent. On the macro side, the state should have special incentives for talented people so that they have the opportunity and environment to serve the country. If we can do the above, investing in human capital will be more efficient and bring prosperity to an individual and the whole country.

- It is necessary to develop planning and reasonably organize the national territorial space, best to promote the specific advantages of each region and locality, and to strengthen the inter-regional and inter-regional linkages to participate in global value chains, creating new development space... Develop holistically, organically, closely linking localities in the region into a unified whole.

The study uses data from the 2009 and 2019 censuses to analyze Vietnam's human capital by socioeconomic region based on access to education. Research results show that there is a difference in human capital between socioeconomic regions associated with the development conditions of each region. In order to develop human capital, besides the overall solutions on regional linkage, education and training solutions should pay attention to the specificity of each region and locality.

Education-based human capital metrics, such as literacy rates, school enrollment rates, and average years of schooling, are quantifiable and have extensive international data coverage. However, they have been criticized for failing to capture essential human capital characteristics fully and for placing a premium on number over quality. By relying on a rudimentary proxy for past education, these measurements neither represent the depth of knowledge embodied in persons nor quantify the flow of future advantages earned via education. In fact, it has been determined that they are applicable to one group of countries but not to another group at a different stage of development. Inadequacies in the data have also hindered the application of these indicators. Recent data demonstrates that how they are measured, as opposed to what they measure, makes these indicators poor surrogates for the underlying stock of human capital.

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AN OVERVIEW OF THE WORLD'S POLICIES FOR PROMOTION OF CHILDREN AND LEARNINGS FOR VIETNAM

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Abstract

After many decades of applying population control policies, countries have begun to develop and implement policies that encourage childbearing. In developed countries of Europe and Asia. Measures adopted by governments were financial support, paid maternity leave, and child allowances to support families to raise fertility. However, the effectiveness of these policies were not high despite huge costs. This challenge faced by developing countries including Vietnam. Vietnam has begun to enter the period of the Total Fertility Rate (TFR) drops below the replacement level (2.1 children/woman) with a continued downward trend. Especially, this happen in urban areas. The question is, if there were possible solutions to raise fertility in developing countries including Vietnam, that can be implemented inspite of limitation of country's resources. This article will attempt to answer questions through an overview of childbearing promotion policies implemented in Europe and some East Asian countries, thereby drawing lessons that can be applied in Vietnam in the current period.

Keywords: *Population Policy, Childbearing Promotion, Total Fertility Rate, Vietnam*

1. Introduction

The world population explosion in the early years of the 19th century (Van Bavel, 2013) led countries to promote birth control, and by the second half of the 20th century, the birth control movement spread worldwide. (Robinson, 2007). However, when the fertility rate began to decline and when it was below 1.5 and the population began to age rapidly, governments began to formulate policies with the goal of restoring and increasing fertility. Population policies in this period were built on socio-economic measures (Davis, 1967) on

the basis of integrating gender approaches (Bongaarts (1994), culture (Robinson, 2007). and economic-political science (Lush, 2000). However, the pioneers in Europe and Asia with long-term costly reproductive incentives are seen as having little effect, difficult to quantify (Sobotka et al., 2019; Luci, 2011).

After nearly 20 years of implementing the population control policy, Vietnam began to see a fertility rate below 2.1 since 2007. Although the country's fertility rate is still higher than 1.9 so far, there are some regions, especially in areas with a developed economic level, the fertility rate will only reach 1.6 in 2020. This figure in Ho Chi Minh City - the most developed urban area in the country will only reach 1.53 in 2020 (Tổng Cục thống kê, 2022). This fact has attracted the attention of the Vietnamese government and transformed its population strategy from the point of view of population control to the point of view of population development with the goal of maintaining a replacement fertility rate of 2.1 children/woman. In particular, recently, Prime Minister Nguyen Xuan Phuc signed Decision No. 558/QĐ-TTg dated April 28, 2020 approving the "Program to adjust fertility levels to suit regions and subjects until 2030". This program aims to maintain replacement fertility in Vietnam until 2030 and avoid falling into an aging population like today's developed countries (E-Newspaper of the Communist Party of Vietnam, 2020).

The question is, how can Vietnam apply lessons learned from population policy in the direction of encouraging childbearing in the world in the context that the country belongs to the low-middle-income group? Could there be a cost-effective solution that is feasible and has measurable performance? Those are the main research questions of this article.

2. Method

The data is processed by thematic analysis method according to the following procedure:

1) Identify key research questions. The question is how are policies to encourage childbearing in the world implemented (in the world, in the European region, in the Asian region)? What are the policies to encourage childbirth in Vietnam through history? What can Vietnam learn from policies around the world to apply to its own country?

2) Search for suitable documents. Materials from scientific journals on demography and sociology as well as from the website of the General Statistics Office of Vietnam were used. Most of the articles are studies describing the situation of population and family policy in the world and in Vietnam. Selected articles are from reputable experts in the field of population policy, published as early as 1967 until as recently as 2022.

3) Categorize by topic. Information from the articles is categorized under the following topics: 1) Global population issues and population control policies, 2) Birth promotion policies in the world, Europe, and Asia. and Vietnam.

4) Analyze information. Based on the classified topics, the article attempts to select the birth promotion policies that have been proven to be successful and can be applied in the current socio-economic conditions in Vietnam.

3. Result

3.1. Population explosion and population control policies

The world population explosion in the early years of the 19th century (Van Bavel, 2013) led countries to promote birth control, and by the second half of the 20th century, the birth control movement spread worldwide with the World Population Conferences in 1974, 1984, 1994 (Robinson, 2007). The successes of countries in Asia, America and Africa have shaped the family planning program for the whole world. The first phase of population control policies focused on educating and supporting people to access family planning methods and created the "Contraceptive Revolution" around the world. (Thévenon, 2012). Subsequently, policies aimed at increasing fertility have resulted in governments using more socio-economic measures (Davis, 1967) on the basis of mainstreaming gender approaches (Bongaarts (1994), culture (Robinson, 2007) and economic-political science (Lush, 2000).

There is a longstanding scholarly debate about the real effectiveness of fertility reduction policies. Some researchers, such as Lush (2000), Caldwell (2005) are skeptical and argue that state funding has no impact on fertility decline. Tsul (2001) has a more positive view, arguing that population programs are the main factor reducing fertility but asserting that modernization is an intrinsic driver and population programs are only a means. However, despite disagreements about the causes of fertility decline as well as the effectiveness of population programs, most scientists and policymakers assume that population growth is danger to development. As a result, there are few voices expressing concern about population decline and its consequences. People only realized this when humanity entered the early years of the 21st century.

3.2. Global population decline and population-family policies

In the 2010s, countries, especially developed and newly industrialized countries, began to notice the growing prevalence of fertility decline and gradually changed their population policies. During the first three decades of the 21st century, countries with fertility rates below replacement level accounted for half of the global population. Facing this change, more and more countries are developing population policies towards the goal of increasing fertility. The number of countries pursuing policies that encourage childbearing has increased from 19 to 55 (Sobotka et al., 2019). Typically, countries begin to shift towards fertility targets when fertility is below 1.4 children (Van Dalen & Henkens, 2020).

The policies considered most effective to increase fertility are: 1) Promoting work-parenting harmony combined with financial support for low-income families, 2) Providing comprehensive child care services (widespread, accessible, high quality), 3) Ensuring policy consistency, stability and predictability criteria. This practice is applied consistently in Nordic countries, France, Belgium, Germany, and S. Korea. Some other policies considered less effective and only effective in the short term include paid leave, providing financial rewards for childbirth (Sobotka et al., 2019; Luci, 2011). Suggested future policies to increase the fertility rate are recommended: 1) Adapting to diversity (of family types, childbearing preferences) and change (in terms of gender roles as well as economic

inequality) towards creating a family-friendly society (Sobotka et al., 2019), 2) Focusing on supporting the socialization of children (support child-rearing funding) (Kolk, 2021). Thus, measures to raise fertility in the future should not only focus on childbearing but should also include child-rearing support. In other words, effective policies should go beyond the framework of population policy and need to approach an approach within socio-economic policy.

Policies that are considered effective to varying degrees are quite expensive. However, the difficulties in formulating and applying policies depend not only on the national budget but also from the approach point of view. It is the contradiction between the views of globalization and nationalism, between the left and the right. Population globalists will be concerned with ensuring that fertility is kept low so that the global population does not exceed the world's tolerance level while keeping in mind the low fertility rates present in their country. Therefore, they cannot take a definitive position on the fertility limit from which the reproductive incentive policy should be applied (Van Dalen & Henkens, 2020). In situations where there is a choice between the global interest and the national interest, nationalism often prevails because politicians will often act on the basis of the votes of the electorate in their country. Therefore, creating consensus among countries in population policies creates stable population sizes at the national and global levels as suggested by Kolk (2021) although a noble goal. but it seems too idealistic and not feasible. Another polarization is the conflict between left and right in population policy. As Thévenon (2012: 200) puts it: "Demographic issues are not analyzed pragmatically, [but] are often framed by the traditional antagonism between the Left and the Right". But the Leftists often expect the government to intervene in the reproductive affairs of citizens while the Right opposes State intervention in this matter of their own personality (Dailen, 2020). The Left view is deeply rooted in the interventionist position, which holds that everything cannot be left to nature and that the state needs to take measures to regulate social processes. In contrast, the Right-wing view derived from liberalism believes in the theory that the "invisible hand" - natural processes - will gradually regulate social problems and state intervention is not necessary and even harmful (Thévenon, 2012). Faced with this contradiction, Thévenon (2012) proposes a conciliatory view for this contradiction, arguing that while formulating population policies, the government should develop population programs so that they work in sync. with other socio-economic changes in the country.

3.3. Policies to encourage childbirth in Europe

In Europe, population policy is designed to address three main issues: 1) Fertility below replacement level, 2) Population aging, 3) Immigration (Thévenon, 2012). Policies to encourage childbirth in Europe are based on three main solutions: 1) Financial incentives: Financial transfer for the cost of childbirth, 2) Maternity leave: Apply to both parents, 3) Provide childcare, including pre-primary child care (Davies, 2013). Among European countries, France is considered a prominent country because of its high and relatively stable birth rate. Many researchers believe that one of the important causes of the above phenomenon is the French government's application of consistent, long-term, diverse and universal family policies (Thévenon, 2012). Sweden also contributes a unique approach to

fertility solutions. The country has a fertility rate higher than the European average, but its policies are not directly aimed at encouraging childbearing. The Swedish government focuses on supporting women's participation in the labor market (with measures to help women reconcile family and work life) and promoting gender equality (in public and private life) (Andersson, 2008). The situation is more complicated in Central and Eastern European countries due to budget constraints. This leads to many shortcomings in family support policies to promote childbearing in these countries (Frejka & Gietel-Basten, 2016).

Despite certain successes, the implementation of policies to raise fertility in the euro area still faces many difficulties. The first is the issue of funding. The three solutions of financial support, maternity, and child care services require huge financial resources and sometimes the effectiveness is unclear or not high (Davies, 2013). That makes it difficult for all countries to have the same determination and long-term implementation as France or the availability of a high-welfare state environment like Sweden. It is evident that these costly policies do not work well in Central and Eastern European countries and thus lead to many shortcomings in family support policies to promote childbearing in these countries (Frejka & Gietel-Basten, 2016). In addition to financial difficulties, the dominant multiculturalism in the minds of Western rulers has also contributed to a reduction in the determination to build strong reproductive incentive programs. With the idea of encouraging cultural diversity in the context of strong immigration to Europe, politicians have little incentive to implement policies that raise fertility in their countries despite the risk of "reverse colonization" creates the risk of shrinking demographics. The lack of long-term demographic vision combined with fragmented agendas by lobbying groups with divergent policy goals has caused "leaders as well as the public to turn a blind eye." to the pressing problems" of demographics (Thévenon (2012: 172).

3.4. Policies to encourage childbirth in Asia

Faced with similar population problems as European countries, developed Asian countries such as Japan, S. Korea, and Taiwan have developed policies to encourage childbirth similar to Western models but with stronger determination because of the importance of preserving national identity and social cohesion. (Thévenon, 2012). The specific measures to be applied are: child allowance, maternity and childcare leave, child care services, bonuses for large families, housing allowance, job support for the mothers, work-life balance. However, as in Europe, the effectiveness of these measures is weak, difficult to quantify and consumes a large amount of government financial resources.

Japan started to develop a policy to encourage childbirth when the fertility rate among Japanese women reached 1.57. Japanese policies went through stages from supporting child care (1994-1999) to improving gender equality (1999-2004) to focusing on work-family compatibility (2004) -2007). Although the above measures are considered to have a very small effect on fertility, they also help to convey the message that the government wants to support parents in raising children. The population policy of S. Korea is divided into three periods: the anti-birth period (1962-1996), the neutral period (1996-2004), the assisted-birth period (since 2004) with similar measures. in Japan. A special feature is that there are

communication methods aimed at reinforcing family values (Suzuki, 2013). Singapore has a rather unique policy to encourage fertility, but it also causes a lot of controversy. The country went from a comprehensive fertility reduction strategy (phase 1: 1965-1986) to a stage of encouraging eligible Singaporeans to have more than one child (phase 2: 1987-2012) to the current policy is a complement to phase two. These policies are seen as having a lot in common with selective reproductiveism when the government gives many incentives and focuses on supporting women who have graduated from university and is somewhat less interested in those who are poorer and less educated (Yap, 2015).

3.5. Policies to encourage childbirth in Vietnam

Population policy in Vietnam began in 1961 and was built into a population development strategy through the following stages: 1) Period 1961 - 1975 with the goal towards "family size of three children" (Le Hong Hanh, 2010), 2) The period 1975 - 1992 with the goal of reducing the natural population growth rate (Le Hong Hanh, 2011), 3) The period 1991 - 2010 changed to "stop at two children to raise pawns" (Le Hong Hanh, 2010), 4) The period from 2017 - now moves from population control strategy to population development with the goal of maintaining replacement fertility (Ha Viet Hung & Tran Thi Minh Ngoc), 2020).

The fertility rate of Vietnamese women has decreased from 3.8 children (1989) (Ha Viet Hung & Tran Thi Minh Ngoc, 2020) to 2.11 children (2005-2006) and from 2007 onwards has always been lower than 2.10 children (lower replacement fertility) but higher than 1.9 children. Except for the years 2013, 2015 and preliminary 2020 there are 2.1 children. This shows that the fertility rate in Vietnam is quite stable and does not seem to have reached an alarming level. However, when looking at fertility rates in Vietnam by location, some disturbing data emerged. Preliminary calculation in 2020, the birth rate of provinces in the Southeast region is 1.62 and the Mekong River Delta is 1.82 which is the lowest in the country. (Tổng Cục thống kê, 2022).

Faced with this situation, some scientists, such as Huynh Pham Dung Phat (2015) recommended maintaining low fertility until 2020 because the population size and population growth rate in Vietnam are still high. compared with some countries such as Japan and the United States (Huynh Pham Dung Phat, 2015). However, some other demographers such as Nguyen Duc Vinh (2017:53) suggested that "consider easing and diversifying the current policy of birth restriction" when considering the risk of population aging. as well as regional differences in fertility rates in Vietnam. This is similar to the point of view of some population experts in Ho Chi Minh City when they think that the city should allow people to have a third child and need to introduce a new slogan, "Every married couple is free. to decide how many children they have". (Thuy Duong, 2019).

4. Discussion and conclusion

After a period of implementation of population control policies, in the last years of the 20th century, concerns about the decline in birth rates and population aging in developed countries promoted population policies. shifted to the goal of increasing fertility. Common

solutions offered are: 1) Financial transfer for the cost of childbirth, 2) Maternity leave, 3) Child care provision, 4) Other support policies such as: providing housing, supporting employment for mothers, encouraging a working environment to create a harmony between work and family life. Despite some certain success, the costs of these policies are enormous, and their effectiveness is unclear and difficult to quantify. The competition between demographic views between globalism and nationalism, Left and Right, makes the process of policy formulation and implementation more complicated, inconsistent and unstable.

Policy implications

It is very difficult to develop and implement a population policy with the goal of increasing fertility at a low cost in developing countries like Vietnam. However, rapid population transformation and ongoing population aging force us to act quickly. Based on the experience of countries around the world, we make some recommendations as follows:

Population policy makers need to be more open-minded in their approach to population development. Stemming from the ideological tradition of communism, Vietnam's population policies have traditionally been more interventionist in the leftist tradition. While that may be appropriate during a period of large population growth and rapid population growth, it is now necessary to select from Right-wing liberal views in order to design measures to raise fertility. After all, the decision to have a child is still a personal decision.

Focus on supporting women, including job support for them during their youth and after maternity leave. With limited financial resources, Vietnam cannot apply the same measures as the developed countries in Europe and Asia mentioned above. Not to mention the quantitative effectiveness of such costly solutions remains in doubt. Preferably policies in the immediate years should focus on supporting mothers with finances, maternity, childcare and other ancillary services. This is both budget-saving and in line with the current tradition of childbirth and child-rearing in Vietnam.

Focus on disseminating the value of large families. The decision to have children and the decision about the number of children are heavily influenced by economic conditions and living values. At the stage of industrialization and modernization in Vietnam, the increasing proportion of nuclear families and small families can spread the model of small family quickly into society as a new cultural norm. However, the mentality of having multiple children (from 2-3 children) still exists and it needs to be encouraged through appropriate communication measures through mass media, social networks and social media. art products, movies, etc. This is an inexpensive, easy-to-implement and measurable way of doing and contributes to preserving the normative values of traditional marriage.

Policies need to be flexible but consistent. Although the effectiveness of policies that encourage fertility can be frustrating for those in charge, their implementation needs to show a high degree of consistency over the long term. Because having a baby is a big decision and couples will have to raise a child for a minimum of 18 years, it's reassuring to see supportive policies that the government shows interest in helping. long-term support for families with children. After all, people's trust is one of the key factors that makes policy and government work successfully.

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QUALITATIVE RESEARCH: THE ROLE OF ELDERLY SCHOOL FOR HEALTH PROMOTION OF THE ELDERLY IN NORTHERN THAILAND

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Abstract

Healthy elderly people can prolong their life, and also reduce the risk for diseases, medical and public health expenditures. The study employed qualitative research. In-depth interview was chosen to obtain data from ten elderly school leaders in five provinces: Chiang Rai, Phrae, Lamphun, Mae Hong Son, and Phayao. Obtained data were analyzed by using content analysis. This study was certified for human research ethics code number PYU_REC 65/003. The results of the study revealed that the elderly school has launched activities according to elderly's interest in order to improve their knowledge and life skills. After participating in various activities, the elderly maintained good physical, psychological, social, and spiritual health. Since the activities aimed to educate about the appropriate consumption, physical exercise, psychological care, and vocational skills. Lastly, to achieve the sustainable development for the elderly school, it is necessary to work collaboratively with both the elderly members and the authorities.

Key words: *Elderly School, Health promotion, Elderly*

1. Introduction

There are about 1,000 million of aging people worldwide which accounts for 10 percent of the world population. In ASEAN region, the population adding 60 years and above accounts for 11 percent and 7 countries in this region become to be the aging society. Singapore is the first county of the complete aging society (20-30 % aging people). Also, Thailand will become to the complete aging society like Singapore and Japan in 2031 (28% aging people). This is because Thailand has a birth rate due to successful contraception and people live longer. During 1963-1983, the country's birth rate was more than 1 million per year and the next 20 years a number of aging people will reach 21 million people. This is especially in northern Thailand where it is leading to be a complete aging society, in fact, Chiang Mai province ranks third of the country behinds Bangkok and Nakhon Ratchasima province in terms of the aging society. In other words, its number of aging people was 394,273 on 31th December, 2022. As a whole, a number of aging people in upper northern

Thailand (Chiang Mai, Chiang Rai, Phrae, Nan, Phayao, Lamphun, Lampang and Mae Hong Son province) was 1,348,005 (Department of older persons, 2022)

The preparation to cope with the aging people situation is an important issue since the aging people is a group at risk for chronic health. This will result in many expenses for medical treatment with continuity. The research office for the Development of Thai Health Insurance has estimated that the budget required for long-term care for the elderly in dependency on average is about 15 billion baht a year (0.1% of GDP) (Department of Health, 2020). Furthermore, the occurrence of aging society has impacts on. Share of the labor force: elderly people: Children originally is at 4:1:1 and expected to be 2:1:1: in 2036 (Office of National Higher Education Science Research and Innovation Policy Council, 2021). Indeed, keeping older people healthy is one way to enable them to deliver social and economic benefits.

The elderly school can be regarded as a tool used to develop potential of aging people. Its knowledge transfer is systematic which enhance skills in self-care taking and reliability. It mainly arises from group forming of aging people in the society. The school has diverse activities-no fixed pattern. This depends on local context, need of aging people, and coordination of all concerned parties i.e. the public sector, the private sector and the government sector (Thai Health Promotion Foundation, 2021). In 2022, Thailand had 2,303 school for the elderly which 828 schools were in northern Thailand (Department of older persons, 2022).

The promotion of aging people to be health in terms of body, mind, socialization and spirit is one way to help them slow down the deterioration of the body (Pender, 2002; Kantamoon & Wongsawat, 2016). Factors determining health including human biology, health care delivery, life-style and environment. However, the factors on human biology and health care delivery account for 10 percent only (US Department of Health and Human Services, 2000). This article is interested in roles of schools for aging people to promote their health in northern Thailand. Roles of schools for aging people may help them be in a good health which reduces their medical treatment expenses.

2. Method

This study employed qualitative research. Data were collected from organizational information provider - organizational informant leaders of aging groups president of the sub-district elderly club, vice-president and/or secretary. They lived in the following northern provinces: Chiang Mai, Chiang Rai, Lamphun, Lampang, Phrae, Nan, Phayao, and Mae Hong Son province. All of them were obtained by purposive sampling (16 persons).

In-depth interview and focus group discussion were used for data collection. Questions used in the interview and focus group discussion were examined by three experts. Data were collected during March - November 2020 which was the time of COVID-19 pandemic. However, the team of researchers followed public health measures to prevent and reduce the risk during data collection (sanitary gel, face mask, vaccination, and detection by ATK).

Content analysis was done by bringing the tape recorder in the interview to transcribe word by word. There was individual interview separation as well as individual group conversation together with validation. The texts or contents gained from review of related

literature were coded and organized to group for research objectives. Incidentally, this research had been approved for human research ethics number PYU_REC No.65/003.

3. Results

The aging people school context

Schools for aging people are different from ordinary schools which mainly focus on the teaching/learning facilitation as measurement/evaluation. In contrast, schools for aging people focuses on doing activities together and aptitude such as wickerwork, flower cone, playing music, norther dialect writing, etc. Meanwhile there are resource persons joining activities of aging people without wages or compensation.

“...Talking about the school, it make me think about activities provide. There were drawing sewing, flower cone making, cooking, etc. with assistance of resource person or local scholars...”

Aging people participating in activities of the school do not pay money but they must inform their purposes and the school will prepare provide them materials/equipment for doing activity.

“...Everything is free. Sometimes, there are public minded persons providing many things beneficial to group activities such as pen, pencil, book, t-shist, etc....”

School for aging people in each area have different opening day such as on the first Friday of each month, the last Friday of each month, on every Wednesday, on every Sunday. However, the opening day schools for aging people is from collective agreement of member of the school, depending on their convenience or available day. Schools for aging people have 2 types of the teaching/learning facilitation system: 1) open for application and management of leaching in each batch. The school curriculum is different depending on area context but its common goal is life subjects as knowledge and skills beneficial to those who have accomplished school training and 2) There is no division of senior school students into batches but those who come to train can continue to do activities in the school (Lifelong learning). However, there is no awarding of certificates.

“...Senior’s school are unlike any other in that they have completed coursed and received a certificate. But there are no courses because it is a lifelong learning course; that is, if no one dues, they will continue to study...”

Roles of schools for aging people in the promotion of their health

School for aging people in each area play vital roles in the promotion of health of their health. It arises from need of people in the community to have senior school for group forming, learning and promoting their health. There is group leader and community’s selection for doing aging people activates or school project implementation. It aims to promote good health of aging people supported by the government or public sector for the development of quality of life. Concerned agencies include Department of Older Persons, Ministry of Social Development and Human Security, local administrative organization, etc.

“...Here, there is a group of senior citizens and the municipality has come to promote it until the establishment of a school for senior citizens, with admission for people aged 55 years and over, each generation having about 50 people and above. Learning in the school involves various activities promoting good health and quality of life development in the form of academic based recreation. It tritely focuses on good health of the elderly. It is like to invite the elderly out of the house to improve their quality of life with a group of friends at school...”

Carrying activities in school for aging people is part of the enhancement of an opportunity to do activities according to their aptitude and interest. Meanwhile, there are activities for enhancing professional skills facilitated by resource persons. This includes; physical health care, food consumption, physical exercise, physical therapy, epidemic prevention, etc. In this respect, staff of the district hospital in the area are responsible for it. An old man said:

“...In the senior school, it teaches exercise methods, eating healthy food and others. For example, if you have a headache or back pain, there will be a nurse with knowledge of physiotherapy to teach you how to prevent it...”

Getting the knowledge from resource person makes the elderly can apply acquired knowledge to use in their daily lives. This is particularly on self-health care such as consuming vegetable and easy-to-digest, low-fat meat.

“...For the first week of the school training, the district hospital will suggest about healthy food which is easy to digest such as vegetables or avoid food that is difficult to digest...”

Aside from the training about health care and disease prevention, the school for aging people facilitates activities promoting its member to acquire knowledge about occupations such as cooking, mushroom culture, non-toxin vegetable production, wickerwork, etc. This aims to encourage aging people to do actual practice and exchange accumulated knowledge/experience as an elderly said:

“...as taught and then can really do it such as food preservation and wrapping snacks. Sometimes, there is a change of knowledge of each person's secrets, which the cooking of each person is shared with each other...”

The promotion of aging people in the school to perceive about physical/mental health care is happened next to the participation in activities of the elderly group. Having an opportunity to meet the elderly of the same as aerates social networks which helps reduce stress, loneliness and lonesome as some of the elderly said:

“...It is good for older people to join on be member of the school for aging people. It is because are need not to be stressful. The elderly life is uncertain based on fussy problems, financial problems, undesirable behavior of offspring. Thus, it is good to go to the school for aging people...”

“...The elderly group forming to do activities makes them be happy and have unity. In the morning, the school director usually meet and inform us about interesting news or

information. Besides, it will be told in case of illness or some of us are alone since their off springs have to go to work in another place...”

Another activity suggested by the school for aging people is bringing lunch meal to eat together. This aims to promote a close relationship among aging people. It truly gives an opportunity for aging people to show their cooking capability. Meanwhile, sharing or exchange of food enhances good relationships among them as an elderly said:

“...Going to school for aging people makes us gain more knowledge, meet friends and have fun. Actually, sitting at home smiling alone is lonely but when coming to school everyone is happy and beaming...”

Roles of schools for aging people in upper northern Thailand to promote health can be concluded as shown in Table 1

Table 1. Roles of schools for aging people in upper northern Thailand

Roles of schools for aging people in upper northern Thailand to promote their health			
Physical health	Mental health	Social health	Spiritual health
Gaining knowledge about health care through actual practice	Doing wanted activities for relaxation and lonely reduction	Having social network for knowledge/experience exchange	Self-accepting and understanding perceiving self-value and letting go of happiness

Management for sustainability of the school in health promotion of aging people

Schools for aging people in part of locale of the study are well supported by concerned agencies in the area such as the local administrative organization, municipality and other agencies. The support includes budgets, materials/equipment and resource persons. Consequently, schools for aging people can carry out activities continually and effectively. Aside from the said support of are mentioned, the schools for aging people provide transportation of aging people from home to the school (Back and forth), medical and public health services, including other welfare care as one old person said:

“...The municipal truly takes part in support. It is a hub that everyone loves. And every community loves the municipality because it takes good care of us...”

Some schools for aging people have limitations in budget and equipment support. This makes their schools cannot fully promote good health of aging people. Besides, another one obstacle of schools for aging people’s activities is continual participation in activities of aging people. Main problems may be health problem, earning a living and home responsibility of some aging people.

Therefore, to get support from concerned agencies is very important to make the school for aging people keepable to facilitate activities continually. At the same time, school members who are aging students must be willing to participate in activities continually to promote sustainability to the school for aging people.

4. Discussion and Conclusion

Most of the schools for aging people in this study arrange activities to promote good health of aging people in terms of physical, mental, social and spiritual health. There are resource persons extending knowledge and skills of aging people through interesting activities. It aims to encourage aging people to show their potential, knowledge and skills through activity participation. They also have an opportunity to exchange knowledge and experience with their friends. Activities provided for aging people include medical checkup, health focusing on participation, knowledge/experience exchange, and other educative activities (Patsat & Rujiranukul, 2022). Importantly, the school plays crucial roles in the promotion of lifelong learning of aging people. Hence, activities occurring in the school are based on interest and aptitude of aging people which are beneficial to their livelihoods-increased knowledge and needed skills (Department of Older Person, 2016). This implies that schools for aging people play crucial roles in the facilitation of activities promoting good health and quality of life of aging people. Examples are extension of knowledge and skills about cooking, mushroom culture, physical exercise, non-toxin, vegetable production, illness prevention, wickerwork, etc. (Kongjareon & Boriboon, 2019). Thus, the promotion of aging people to attend training in the school for aging people or the establishment of the school for aging people can be a mechanism to develop good health and quality of life of aging people. According to forecasting by the Thailand Development Research Institute, it is estimated that seniors with average income in urban areas must have about 4.3 million baht after retirement. In rural areas, however, they must have about 3.4 million baht. In addition, expenses for the elderly who only stay at home is about 120,000 baht and that of those who only stay in bed is about 230,000 baht (Thailand Development Research Institute, 2019).

The management for sustainability of schools for aging people to promote their good health-support from concerned agencies is very important to enhance the school to carry out activities continually. Meanwhile, members who are aging students must understand and want to join school activities continually to help sustain the school for aging people. A study of Srisupan, Thammigwon and Krisanajutha (2017) found that factors effecting the school planning on activities; aging people who are the school's member do not have enough available time; inadequate supporting budgets; and inconvenience to go to the school.

Meanwhile, schools for aging people play crucial roles in quality of life development of aging people in the community. This is because the school is a place promoting lifelong learning, self-value, health care, illness prevention, occupational skills, use of technology, innovation, etc. For social interaction, it puts the importance on working as a volunteer (Srisupan et al., 2017). Likewise, a study of Homsombut, Ketnakhon, Fangkham and Sorousakda (2022) found that important roles of the school for aging people are the enhancement of lifelong learning and good health.

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A REVIEW OF FLOOD DISASTERS VOLUNTEERING AMID CORONAVIRUS SURGE IN KUMAMOTO PREFECTURE, JAPAN

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Abstract

Building a sustainable society by strengthening disaster resilience is a common goal in the world. It is crucial to promote cooperation between the general public and the science community by sharing data, information, knowledge, experiences, and ideas. Japan has routinely been beset by catastrophic floods caused mainly by destructive typhoons and critically active seasonal fronts. With the turn of the 21st century, changes in climate and society required additional realignment into the standardized procedures that had evolved over the previous half-century. In early July extensive flooding struck southern Kumamoto and other parts of Kyushu. The evacuation and disaster recovery measures since then have been the nation's first in the midst of the COVID-19 pandemic. Only Kumamoto residents are allowed to volunteer for the recovery work, and online meetings to make up for the resulting labor shortage are part of a new style of disaster response for the coronavirus age.

Keywords: *Flood response; Disaster management; Kumamoto; Japan*

1. Introduction

Flood management and control have been key issues in Japan's policy history due to its unique climatological, meteorological, and hydrological conditions. Japan experienced severe flood damage particularly in a period immediately after World War II. Serious flood disasters claiming more than 1,000 deaths occurred almost every year (Takahasi, 2009). After each disaster, new approaches, methods, and design standards were introduced, including improvements to methods for flood frequency analysis, changes in economic assessment procedures, and various structural measures such as dams, embankment, erosion and sediment control, sewage systems, as well as high-level embankment and comprehensive flood control. As a result, the number of victims and flooded areas decreased drastically in the rapid economic growth period during the 1950 and 1960s. However, recent climate changes, causing more frequent and severe torrential rainfall events, have increased human losses and economic damage. In addition, due to the outbreak of COVID-19 pandemic, Japan's society becomes increasingly vulnerable (Suppasri et al., 2021).

On July 4th, 2020, the southern prefectures of Japan, particularly Kumamoto and Kagoshima, experienced record-breaking heavy rain, which caused devastating floods and landslides in many areas of these prefectures. The disaster, which was officially

named as “Reiwa 2-Nen 7-Gatsu Gou” (meaning heavy rain of July 2020), killed 83 people, 65 of whom were in Kumamoto prefecture. Beyond these most devastating losses of life, the latest data notes 15,335 buildings destroyed by this disaster (Surya Satria Ridwan et al, 2022).

The flood of July 2020, unfortunately, happened at a time when the whole country, as well as most other countries of the world, was fighting a pandemic. Japan has been relatively successful in keeping the spread of the Covid-19 virus somewhat in control compared to other developed countries, which could be related to its culture (such as non-touch greeting and sanitation practice since childhood), food habits and advance healthcare system. However, Japan has been managing the response to COVID-19 under a separate structure from the one used for dealing with natural disasters, instead of adopting a multi-hazard approach recommended in the Sendai Framework for Disaster Risk Reduction (SFDRR, widely known as “the Sendai Framework”) (Busayo et al, 2020). The state of emergency that went into effect in April was declared on the basis not of the Disaster Countermeasure Basic Act that covers natural disasters but of the Special Measures Act to Counter New Types of Influenza. The pandemic affected both the preparation and the response of the July 2020 flood, highlighting the importance of a multi-hazard approach as called for by the Sendai Framework.

2. Method

Volunteering is a well-established approach in environmental management. This review of literature revealed a development in volunteering in connection with floods in Kumamoto Prefecture. Evidence from the local reports and publications, along with secondary sources provided examples of plans across the Prefecture, which involved volunteers in flood disasters management, were collected and summarized.

3. Results

3.1. Why engage volunteers in flood disasters management

Benefits to local communities: volunteers and flood groups provide communities with communication channels to the authorities associated with flooding. They help communities become more aware of flood risks and the likelihood that flooding will occur again in the future. Communities benefit from the skills, experience, leadership and commitment of volunteers, e.g. by helping them to organize into groups, prepare flood plans, and share knowledge, information and support (Simm, 2016).

Benefits to partner organizations: volunteers can ensure flood plans and community emergency plans are prepared realistically, have local buy-in, and are implemented effectively. Volunteers can work alongside emergency services, e.g. to provide awareness and training that helps evacuations run as smoothly as possible (Simm, 2016).

3.2. The importance of matching victims' needs with aid potential

The evacuation and disaster recovery measures since then have been the nation's first in the midst of the COVID-19 pandemic. Only Kumamoto residents are allowed to

volunteer for the recovery work, and online meetings to make up for the resulting labor shortage are part of a new style of disaster response for the coronavirus age. Every evening at six, a group of people gather in front of their computers to do the voluntary works. They include volunteers who've just finished their work on-site; officials from Kumamoto's prefectural government, as well as those from the national cabinet office, Ministry of Environment, and more; and staff from nonprofit and nongovernmental organizations. After everyone exchanges greetings, each organization offers a report on their situation and discusses any needs that arise. Individuals or residents who want to help are also welcome to the voluntary group. Floods related issues discussed at the 90-minute meetings can be quite specific and come directly from workers in the field. They include points as diverse as the removal of mud and ruined floors from flooded homes, provision of drinking water supplies, and refuse disposal consultation, all the way down to supplying people with air conditioners and wireless routers.

With "once-in-a-century" natural disasters coming every year recently, modern disaster response could not function without intermediary support organizations, which help to match the needs of disaster victims with the support capabilities of volunteers and organizations. The Kumamoto Disaster Volunteer Organization Network (KVOAD), which is an organization that coordinates disaster relief and sustainable recovery/reconstruction, strengthens cooperation among related organizations, and develops human resources, was established to fill that function after the Kumamoto earthquakes of 2016, and ever since it has served as a hub for volunteer organizations inside and outside the prefecture.

3.3. The Importance of Intermediary Support

Regular meetings were held twice a week at the Kumamoto Prefecture Welfare Center but moved the meetings online as an anti-COVID-19 measure. Once the voluntary organization began meeting virtually, they found the format offered benefits not found offline. Not only can they match needs with support more quickly, but they can share information with members all over Japan in real time and receive advice immediately. People can even join while they're on the move in the disaster area using their smartphones. It's also easier to join or leave part-way through. Every participant introduces themselves and shares information at each meeting, so everyone learns to recognize everyone else's face. Meeting notes are kept in real time, date-stamped, and posted to the organization's website. Only recently, the group had been discussing how difficult it would be if a natural disaster struck amid the pandemic, and then came the torrential rains of early summer 2020. On July 7, KVOAD held a meeting to specifically discuss the July 2020 flooding, and NGOs from all over Japan took part. It has met every single evening since then, and has seen participation grow to include government organizations, research bodies, and the mass media.

3.4. Care Going Beyond Supplies

Experience has shown that that the victims of disaster need more than just daily supplies. Mental health care is also vital. The Kumamoto city NPO Keicho Net Key Station offers volunteers to help counsel the elderly and disabled, as well as those who help prevent

dementia. However, the current COVID-19 crisis makes it difficult to visit the evacuation centers in person. Another consultation came regarding a large number of high school girls who came to the disaster volunteer briefing. They wished to join but were unsure if they could be of help or would just end up getting in the way.

3.5. Increasing Requests to Allow Outside Volunteers

There are many people from outside the prefecture hoping to volunteer. Around 80 percent of recovery volunteers after the 2016 earthquakes were from outside Kumamoto, and they brought enormous help. On July 25, there was an emergency symposium online that included calls to allow volunteers from outside the prefecture. However, KVOAD is not rejecting volunteers from outside the prefecture across the board. Those in the so-called pro volunteer sector, or those with professional skillsets like heavy-equipment licenses, can be approved on request from local government in the disaster area, and from late July two such groups have joined the relief efforts. However, individual volunteers are still only allowed from within the prefecture as an effort to stem the spread of the COVID-19 pandemic. The reasoning behind this is that the PCR tests are not 100 percent accurate, and outbreaks among volunteers and evacuees must be avoided at all costs. On July 29, the Kumamoto Nichinichi Shinbun published the results of a survey of prefectural residents. It showed that 70 percent of residents, and 80 percent of those in disaster areas, support the limiting of volunteers to those from inside the prefecture. It implies that anxiety over the spread of the pandemic outweighs recovery delays that lack of volunteers may bring.

3.6. Approaches to volunteering

Capture the value of volunteering: Decisions about the allocation of resources to flood disasters volunteering are made on the basis of cost-benefit analyses, which fail to capture the often intangible, indirect and unseen ways in which flood disasters volunteers avoid losses associated with flooding.

Training of volunteers and staff: Training and guidance is provided inconsistently to volunteers with similar roles in different parts of the country. Training to a recognised standard can support volunteers in their roles, and in some cases help them obtain insurance cover. While training is provided internally within the environmental agency on issues around engagement, there may be a need for training that is designed specifically to help staff engage with volunteering.

4. Conclusion

Flooding disaster has given local authorities an opportunity to rethink what disaster volunteering can be. In August, the typhoon season begins in earnest, and now all of Japan is dealing with anxiety about flooding. There will be no dramatic end to the COVID-19 pandemic. It will continue at least through two or three years, and recovery work is also going to drag on; therefore, there has been a great need of volunteers and the ability to do that is what really determines a community's strength.

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COMMUNITY SPORTS INSURANCE IN VIETNAM OPPORTUNITIES AND CHALLENGES OF A PRIMITIVE MARKET

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Abstract

In recent years, the community sports market has thrived with events of thousands of people. This development opens up a new market: community sports insurance. With much larger scales and much lower risk than professional sports, this customer group is attracting the attention of insurance companies. This study explores the current situation and finds factors supporting the development of the community sports insurance market. The study used the method of synthesizing information and in-depth interviews with experts in organizing running events and the insurance field to understand the current supply-demand situation of the market. The study also proposes the role of state management in the sustainable development of this market.

Keywords: *sports insurance, community sports, insurance market, risk management.*

1. Introduction

In recent years, along with the development of the economy, community sports events have also grown enormously in size and number. Many community sports activities involve amateur athletes, such as running, cycling, swimming, and triathlon (swimming - cycling - running). Thanh (2021) made statistics on the size and number of running races in the country in 2021, which shows a very fast growth rate of running races. Research also shows many positive impacts of community sports on the economy and society (Thanh, 2021).

Sports always come with risks. Research by Dugalić (2011) lists the types of risks that may be encountered when organizing large-scale sports events: (1) Risks from event equipment and infrastructure; (2) risks in event strategy and operation; and (3) risk in the perception and behavior of managers. Risk can also come from the nature of the sport. For example, skating has a higher injury rate than football (Fuller & Drawer, 2004). In addition, the risk can come from the personal problems of the participants themselves. Community sports such as marathons involve many amateur athletes, making the risk even higher. Unlike professional athletes, amateur athletes may not be trained or have no awareness of the problems of injury and sports risks when participating in physical activities. Therefore, to operate a sports tournament, risk management needs a detailed scenario: possible problems, manageable problems, and level of risk that must be accepted (Leopkey & Parents, 2009).

Recognizing the possible risks, sport event organizers must have plans to avoid and minimize damage from the risks. The Sport Safety Risk Decision Model of Spengler et al.

(2006). generalizes the safety options used by sport event organizers. According to Spengler et al. (2006), five main groups of factors directly affect risk management in sports events (see Figure 1): (1) Liability Issues; (2) Legal Mandates; (3) Self Evaluation; (4) Risk Evaluation; and (5) Management Issues. In detail, risk management includes cost management, support from higher management levels, information management, education and training, and forms of insurance.

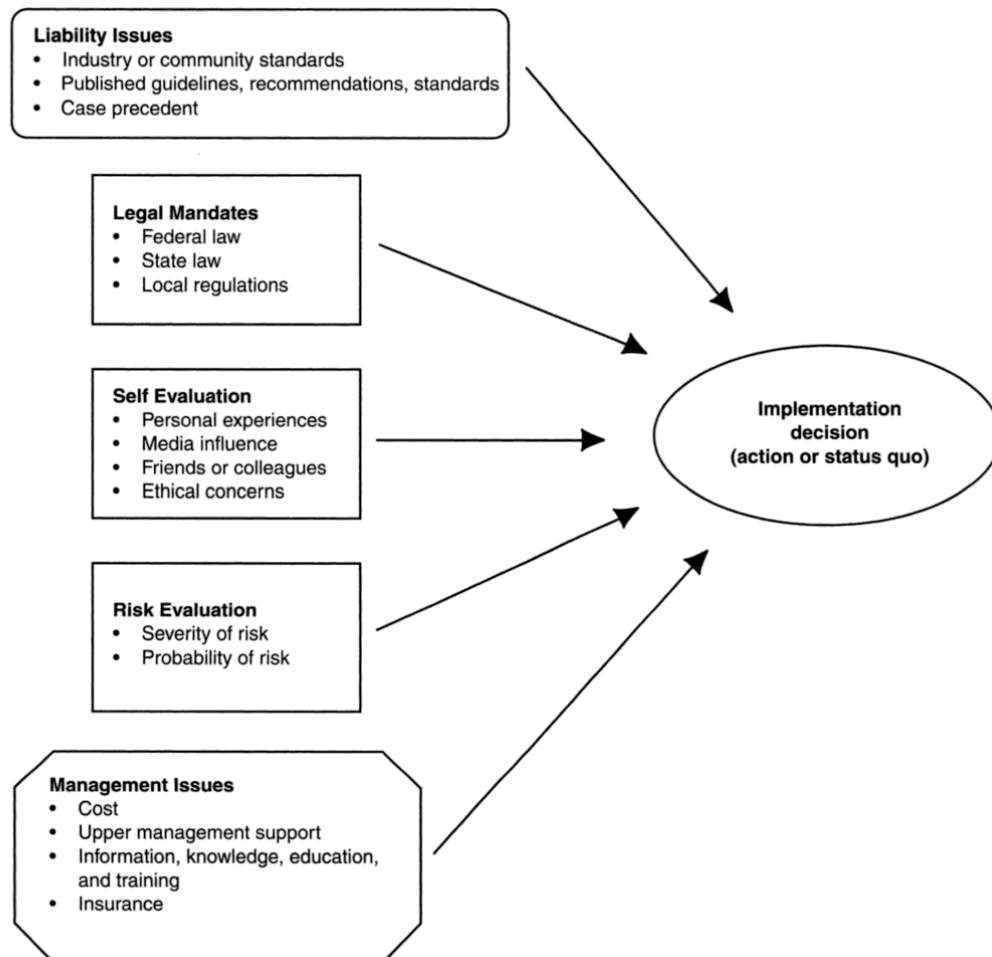


Figure 1. Sport Safety Risk Decision Model (Spengler et al, 2006)

According to Xu's research (2013b), organizers can transfer risks from their responsibilities in many ways: (1) Share risks with partners: selecting professional partners is a good option to limit risks; (2) transfer the risk to athletes by requiring them to sign a waiver of liability in the event of an accident, and not to take responsibility of caring the athlete's valuable goods; and (3) transferring the liability of the risk to a third party, usually the insurance provider. Xu (2013a) considers that the purchase of insurance is a win-win situation between sports event organizers and insurance companies. Through purchasing insurance, organizers can pass the damage to professional service providers. Insurance companies, relying on their expertise, can profit from a large customer base from sporting events. In addition, athletes also feel more secure when participating in large-scale sporting events.

While the need for sports insurance is essential, the market faces challenges. Lubell (1987) points out that running event organizers have problems negotiating insurance policies for their races. From insurance providers' perspective, sports are too risky to cover. Even if insurance contracts are signed, they are unreliable by themselves. The amount of liability coverage may be so significant that some companies cancel their contracts or increase the insurance premium. There were many case study (Lubell, 1987). Besides, the legal system does not protect sports participants. According to Lubell (1987), the American judicial system considered sports insurance a normal purchase agreement, not a mandatory condition. This view is contrary to the social welfare. In the modern view, governments need to develop legal frameworks on sports insurance to ensure social safety, in general, and ensure risk management for sports events, in particular (Xu, 2013a).

In the sports insurance market, what hinders the sustainable development of the market is the asymmetry information between the parties (Akerlof, 1970). Asymmetric information is a common problem in transactions. This happens when one of the trading parties does not know all and exactly what information needs to be known about the other parties to make the right decisions in the transaction. Then, the market price will be greatly deviated, possibly too low or too high compared to the market equilibrium price (Rothschild & Stiglitz, 1976).

This situation creates significant impacts on the involved parties (Stiglitz, 1987) (Rothschild & Stiglitz, 1976):

- *Adverse selection*: refers to the situation where a party with private information selects a transaction that is unfavorable to the other party. This situation arises when one party has more information about the quality of the good or service being exchanged, and the other party is unable to do so. This situation leads to some market failures: the party with better quality information may take advance in the transaction, or the suppliers may not provide good service due to the fear of being treated as low-quality.

- *Moral hazard*: occurs when a party takes actions that are in their best interest but are not in the best interest of the other party due to the lack of complete information. This situation creates passive mental of the group with information, pushing risks and losses to other parties. In the long term, this lead to unsustainable business environments.

- *Signaling*: is a mechanism by which a party can convey private information to the other party to increase their benefit in the transaction. By providing a signal, sellers deliver the message to buyers that the quality of the good or service is high.

- *Screening*: an action used by the party with less information to obtain information from the other party to make more informed decisions.

In general, sports insurance, especially community sports insurance, is still a new and undeveloped market. There are very few insurance products available for community sports. Mechanisms to enforce the rights and obligations of community sports are still not specific in insurance contracts. The legal regulations lack behind the development of this market. This study asks questions to assess the current community sports insurance market: How are the demand forces? What products are being supplied in the market now? Which barriers block the development of the market? And what are the supporting factors for the development potential of the insurance market?

2. Method

2.1. Research subjects

The study only focused on analyzing long-distance running events, namely, marathons, half marathons, and triathlon events, because of their large scale. These events scale up to thousands or even tens of thousands of participants. The fast development of their scale and numbers is a recent social phenomenon (Thanh, 2021), and it has significant social impacts. On the other hand, these events are at great risk from many factors: weather, infrastructure quality, and diverse participants' capabilities. Especially the level of risk of these events also fluctuates complexly: it can be only a minor injury requiring rest or a serious one, which impacts life permanently, and if the rescued action is slow, life will not be saved.

In Vietnam, there are a number of other community sports activities with high risks, such as cycling, swimming, or community football. However, the major prestigious bicycle races in Vietnam have too few participants, about 100 people. Most community football tournaments are locally organized. The scope of the events is in the small space of the football field, which dramatically reduces the risk factor from the uncertainty of the external environment. Besides, football players and society are aware that this sport has a high probability of injury but not a high risk to life, so most of them accept the way of the game, traditionally. In addition, the trekking services of sports companies may be rated as a high-risk community sport. Some professional trekking services also have an insurance policy. However, the scale of trekking is relatively small and does not have enough liquidity for a fully functional market. Therefore, the study only focuses on running events such as marathons, half marathons, and triathlon events.

2.2. Research instruments

The research uses the method of synthesizing data on sports insurance products available in the market. Information sources are obtained from mass news sources through the Internet. Information related to death in sports is often reported by many press agencies very quickly and objectively. Through published information about sports accidents, the research learns about the existence of sports insurance products, as well as existing problems related to sports accidents. Online information is fast and catches the focus of society; thus, the top of the problems about sports accidents can be detected.

Besides, by the method of document synthesis, the study reviews the legal provisions on the issue of insurance in sports. Through the review, the study shows the point of view of state management in this regard. State regulations play an important role in the market development orientation, especially the insurance market, so understanding the state management situation is an essential part of the research on the sports insurance market, in general.

Second, the study uses in-depth interviews with experts in the fields of organizing sports events and sports insurance. The study interviewed two running event organizers and one sports insurance service provider. Based on this qualitative method, the study finds out the current state of the sports insurance market and the existing problems hindering market development. The experts interviewed requested anonymity and information related to their

work and events to ensure confidentiality. Insurance and sports accidents are sensitive issues, so they do not allow official numbers to be released. Also, their number is subjective, estimated by their experience. Therefore, the research only used them to understand the current changes based on the relative comparison.

In order to analyze the potential risks and opportunities of sports insurance, the research uses Porter's Five Forces framework. This tool was created by Harvard Business School professor Michael Porter in 1979 and was developed further in 2008. It is used to analyze the level of competition within a certain industry (Porter, 1979). According to Porter (2008), there are five forces that represent the critical sources of competitive pressure within an industry. They are: (1) Competitive Rivalry. (2) Supplier Power. (3) Buyer Power. (4) Threat of Substitution. (5) Threat of New Entry. The collective strength of these forces determines the potential of an industry. Therefore, many managers in the insurance industry use the tool to evaluate the attractiveness of the sports insurance market. This research also used this framework as a guideline for interviewing about company market strategy.

3. Results

3.1. Sports risk management from the perspective of state management

First, the study reviews the legal provisions related to insurance in the sports sector. Through the review, most of the regulations on insurance related to sports only focus on the field of professional sports and high-performance sports. There is no clear provision for insurance for community sports.

Particularly, the state considers athletes and coaches to be a specific, high-risk profession: According to Article 15 of the Law on Social Insurance (2014), athletes and coaches have the same rights in social security as ordinary workers when they are participating in the sport during their career: participating social insurance and health insurance. In addition, athletes and coaches are protected by their rights under the Law on Physical Training and Sports (2006) and the Law amending and supplementing a number of articles of the Law on Physical Training and Sports (2018) No. 26/2018/QH14, which includes additional rights for high-performance coaches and athletes: participating the regimes of occupational accident and occupational disease insurance, health insurance, social insurance, and voluntary insurance. Detailed instructions are mentioned in Decree No. 152/2018/ND-CP dated November 7, 2018, of the Prime Minister. In addition, Decree 36/2019/ND-CP of the Prime Minister gives details on health care and treatment of injuries. High-performance sports athletes may receive health care and treatment for injuries at domestic medical facilities. In exceptional cases, the Minister of Culture, Sports, and Tourism decides for high-performance sports athletes to have treatment abroad.

In community sports, although there are no legal provisions on compulsory sports insurance, insurance companies have been providing insurance for athletes in community sports events for many recent years. Through public media sources, the study collected a number of sports events mentioning insurance for participants:

Table 1. Summary of insurance companies that have participated in providing sports insurance products up to now (2022)

Insurance companies	Years	Events - Detail about insurance coverages	Sources
Post and Telecommunications Insurance Joint Stock Corporation (PTI)	Many years (until now)	<ul style="list-style-type: none"> - Paying for medical expenses incurred due to injury treatment during training and competition in the National Professional Football League System. - The highest coverages: 300 million VND/person/case 	Thu (2022)
VASS Assurance Corporation (VASS)	2016 2017/2018	<ul style="list-style-type: none"> - Sponsor to buy insurance for athletes, coaches, referees and members of the organizing and operating committee of the National Table Tennis Championship - Maximum coverages: 200 million VND/person/case. - Scale: nearly 200 people 	Khai (2018)
Baoviet Insurance (BHBV)	2016	<ul style="list-style-type: none"> - The official insurer for the entire Vietnamese sports team to attend the 5th Asian Beach Games (ABG 5) - Maximum coverages: 200 million VND/person/case. - Scale: 450 athletes 	Baoviet Insurance (2016)
Baoviet Insurance (BHBV)	2019	<ul style="list-style-type: none"> - Sponsor insurance for the national running championship Tien Phong Marathon 60th - 2019, held in Vung Tau city, Ba Ria Vung Tau province - Scale: nearly 2,500 professional and amateur athletes 	Anh (2019)
Military Insurance Corporation cooperates with F.I.S Vietnam Consulting Service Co., Ltd	2021	<ul style="list-style-type: none"> - Olympic Insurance Program: A specialized insurance program for athletes to protect against sports injuries. - The program is designed to be flexible and applicable to many sports such as marathon, swimming, hiking, badminton, tennis, table tennis... - Coverages: from 50 to 500 million VND/person/case, depending on the insurance package. 	Military Insurance Corporation (2021)
Baoviet Insurance (BHBV)	2022	<ul style="list-style-type: none"> - Sponsor for all members of Vietnam Sports Delegation at the 31st Southeast Asian Games (SEA Games 31). - Scale: 1,341 members 	Huy (2022)

In short, these are some insurance regulations for professional sports. In this field, athletes are treated like workers, operating in high-risk fields with a high probability of occupational accidents. The law also favors athletes with good performance. This is a mechanism that uses to encourage performance in athletes. In the field of community sports, there are no clear regulations relating to sports insurance. However, in recent years, many insurance companies have appeared in the sports insurance market, accompanied by the emergence of large-scale community sports events.

3.2. The demand for community sports insurance is clear

Through interviews, sports event organizers are always interested in insurance issues for athletes. Long-distance running: 10km, 2km - half-marathon, 42km - marathon, and triathlon are endurance sports activities with high risks of sports accidents: heart attack, heat stroke, or injury related musculoskeletal. The causes can be objective such as weather or infrastructure conditions. There are also many subjective reasons: athletes lack sleep, use alcohol or stimulants before participating in competitions, or they do not have a suitable training plan for their competition goals.

Based on event organizers' experience, they estimate that the probability of cases requiring medical assistance for a 10km race is 1/2000, most of which are minor problems such as cramps or sudden muscle spasms. For the half marathon - 21km, this probability doubles with the estimated ratio of medical assistance at 1/1000, and for the marathon - 42km, this probability quadruples, up to about 1/500. Especially for long distances like marathons, the risk of serious medical problems can occur, requiring actions of emergency teams to take athletes to the hospital. From there, medical costs arise emergency costs, hospital beds for recovery, special service costs, and overall examination costs.

According to the event organizers, the biggest expectation when they buy insurance is peace of mind when they organize the event. This is one of the risk management tools in sports events mentioned in the Sports Safety Risk Decision Model by Spengler et al. (2006). The action of buying insurance shows that the organizers have been very thoughtful and carefully evaluated the risks. The organizers may rarely activate insurance benefits, even if there are medical expenses, but buying insurance helps the organizers create peace of mind for participating athletes. As a result, participants feel the security of the sporting event, so the scale of events continues to grow, creating direct benefits for the organizers.

Another considerable driving force of sports insurance demand comes from the need to exempt the Organizing Committee from liability when a sports accident occurs. The running event organizers are aware of the risk of severe accidents because running is an endurance sport with a long running time. This sport requires participants to have a long-term accumulation of physical training, but this is too easy to join for newbies, including many people without running knowledge and experience. Hence, it makes the race more vulnerable. Additionally, it scales up to thousands or tens of thousands of people, making it impossible to eliminate risk completely. Therefore, the organizers need to prove that they have done all they can to ensure safety. Agreed with Xu's study (2013b), many risk

management options are adopted by the sport event organizers: designing a detailed medical plan, recommending athletes take care of themselves, and even requiring athletes to sign waivers. Therefore, event organizers do not have to take serious responsibility if something goes wrong. As an additional layer of disclaiming responsibility for the organizers, they actively buy insurance for athletes as a form of risk prevention, especially the financial risk if any serious injury may occur. In other words, the event organizers are actually buying insurance for themselves. They want to prove to the community and participants that they have foreseen the possibility of a risk and have taken measures to mitigate the damage by purchasing insurance.

On the other hand, one reason the event organizers have to buy insurance is the pressure from the local government. Running races are considered a sociocultural activity under the responsibility of the local authorities. As a member of the organizing committee, the local government pays special attention to the safety of the events. Currently, there is no legal corridor that regulates the responsibility and scope of authority of the local government in organizing large-scale events. Therefore, with a fear of responsibility, local authorities put pressure on event organizers, asking them to buy insurance as a move to show the best possible preparation for such situations. Large-scale events, especially community sports, require support from senior management. Building trust between management levels will make administrative procedures and development vision easier (Spengler et al., 2006). In this case, the support of local governments plays an important role in the success of large-scale sports events at the moment and in the future.

3.3. Supply force appears and tends to develop

According to statistics from public media sources, there are four major insurance companies that are implementing community sports insurance products: Post and Telecommunications Insurance Joint Stock Corporation (PTI), VASS Assurance Corporation (VASS), Baoviet Insurance (BHBV), and Military Insurance Corporation (MIC) (see Table 1).

Especially in recent times, there has been the participation of MIC in cooperation with F.I.S Vietnam Consulting Service Co., Ltd to launch Olympic insurance program, the sports insurance product. The package is designed in detail. Products are also segmented according to customer needs: basic program, bronze program, silver program, gold program, diamond program, and platinum program; and the risk characteristics of sports: low-risk sports (running, hiking, swimming, athletics, badminton, table tennis, tennis) and high-risk sports (climbing, bike racing, horse racing, football, boxing, Ping-Pong, sailing, skydiving, paragliding) (Military Insurance Corporation, 2021). This shows that the insurer already has deep research into the product and market when approaching this new market.

In addition, another motivation for insurance companies to participate in community sports events is the potential customers. According to Linh (2020), taking a comment from an insurance business leader, insurance businesses have sponsored large-scale sports events with the main purpose of brand promotion, not for revenue. Sports insurance is an unique

product that often generate compensation and also has a high compensation rate, so it is not effective for doing business. In fact, MIC also utilized the launch of a sports insurance product to introduce the company's "super speed" digital insurance service (Military Insurance Corporation, 2021).

Using the large-scale race in the brand communication strategy has been applied by many insurance companies worldwide. Examples include Standard Chartered Singapore Marathon, ING New York City Marathon, and Generali Milano Marathon. In Vietnam, Manulife Co., Ltd. has been a brand sponsor for the Manulife Da Nang International Marathon (Manulife DNIM) for many years. The customer base of the running events is very suitable for the target customer group of insurance companies: those who care about health, are of working age and have good financial capacity. In 2022, the scale of Manulife DNIM was about 5000 participants (Manulife, 2022). This scale is a successful communication strategy for Manulife. "The trend of sponsoring the race, promoting the brand image through running events will be continuing in Vietnam in the coming years," a running event expert said.

3.4. Existing problems in the sports insurance market

3.4.1. Demand: There are many remaining obstacles in the design of sports insurance products

Through interviews with running event organizers, children under 15 years old and older adults over 60 years old are usually denied by insurance companies. The insurance company considers them too risky. However, the event organizers share that it is normal for them to participate in sports activities in Vietnam and the world. In fact, from the organizers' experience, they obtained that there was little medical support for senior runners because they knew their strengths and did not push themselves beyond their limits. Therefore, the event organizers think that they can be covered by sports insurance. This not only ensures safety responsibility for all athletes equally but also makes insurance contracts easier.

The procedure for paying insurance coverage is also not clear in detail. The circumstances of sports insurance are unpredictable and unclear in contracts. The characteristic of the marathon events is open-air, wide-ranging events. Thus, there are many objective impacts on athletes, such as weather, road surface quality, and people around the events. The anticipation of risks and the design of insurance payment procedures are mostly handled case by case. Many negotiations must take place to reach a decision. Hence, more time and costs incurred lead to a decrease in the quality of insurance services and an increase in the price of insurance products.

In addition, the insurance coverage is still low. Currently, MIC Olympic sports insurance product pays 50 million VND/case for the bronze package and 500 million VND/case for the platinum package, which is the most advanced package (Military Insurance Corporation, 2021). Table 1 shows the highest coverage levels are 200 million VND/case and 300 million VND/case. In fact, PTI Gia Lai agency paid 15 million VND for a case of death during a sports competition in 2018 (Ministry of Finance, 2018). Hence, this level of payment compared to the cost of sports accidents is not commensurate. Some serious sports accidents can leave permanent sequelae for people who are of working age and maybe

the main labor force of their family. Therefore, insurance buyers demand higher insurance coverage products.

3.4.2. Supply: Insurance products are still very difficult in pricing

For insurance providers, market data is still very limited to design various products suitable for different target groups. Accessing historical data is very difficult. Most of the medical data of sports events had not been reported nor published by the organizers. Only severe cases, customarily related to death, had been reported to the media. Minor incidents but still incur costs: ambulance, emergency assistance, and special monitoring had not been reported. Getting data directly from the organizers also does not guarantee the reliability and quality of the data because medical issues are always a sensitive issue in the organization's work. This information affects the quality of their services.

In addition, large-scale outdoor sports events are influenced by too many different objective variables. Weather changes by season or by day. Athlete health is concerned with individual habits, genetics, or what they did the previous day. The running track also has many unpredictable variables because of outdoor sports characteristics, stretching over a large space. These variables vary greatly. Therefore, it is difficult to design optimal insurance packages.

Besides, the price of the product depends on the demand of the market. There will be no suppliers when the market has not accepted high prices for good products. Sporty people gradually understand the importance of insurance but have not experienced it. They have not experienced much of the severity of the sports injuries. Hence, it is difficult to get them to go to the next step: paying for insurance products. Educating customers about insurance products takes a long time, insurance experts said. For sports insurance products, the market still needs a lot of time to be trained and explored.

4. Discussion and Conclusion

4.1. Quantitative changes lead to qualitative changes in the sports insurance market

The change in market size: Market size is an important factor affecting the decision to enter the market of companies. Large markets, and many buyers, help increase supplier power (Porter, 1979). In the past, community sports events only involved a few hundred athletes, so this scale was not attractive to designing many sport-supporting products. Since 2015, marathon events have increased rapidly in number and scale. Marathon events have appeared more and more. The scale has also increased significantly. Major marathon events in Vietnam have reached tens of thousands of people (Thanh, 2021). According to the interviews, the event organizers admit that the growth rate of the number and the scale of running events are unprecedented, up to 100% annually. With the current fast growth rate and large scale, the perception of the sports market has completely changed.

The changes in financial capability: The races have attracted a set of customers who have good financial situations. According to an organizer, runners aged 30 to 50-year-old make up the majority. In particular, the race is a fee-based event, pricing about 500,000 VND/participant, excluding accommodation, travel, and support expenses. Therefore, those

who participate in running events have good financial status. This is a big move. In the past, community sports were mostly launched by the state, serving political and cultural goals. Therefore, most community sports events were free to participants. An event organizer said: "Old people were shocked when they knew about how much runners paid for their races". In addition, the interest and ability to pay for health-related problems increased markedly. Insurance companies are well aware of this change. The change in customer financial capability for activities related to health and health-related entertainment is an essential factor affecting the demand for sports insurance products. According to Porter (1979), the increase in buyers' financial ability helps improve sellers' position. Therefore, insurance companies are seeking more opportunities in this market, shared by the insurance company representative.

Increased financial ability means that customers can buy better-quality products. According to the perception of a leader from an insurance company: "This is a very high-risk segment, so it is understandable that the insurance company is not interested. Sometimes, insurance companies exclude athletes from buying personal accident insurance" (Linh, 2020). However, the recent entry of insurance companies into the market is a testament to the change. The representative of the insurance company said: "The problem here is not that they do not dare to cover high-risk customers. The core issue here is whether customers are aware of the risk and willing to pay for "premium" products, worth to covering their risk".

The change in the level of risk: One of the difficulties in designing sports insurance products is the lack of historical data on sports risks. However, over the years, the running movement has evolved, and the market has more and more historical data. As a result, insurers can set prices and design different insurance packages. In fact, MIC Olympic insurance product has calculated in detail the different insurance levels according to the needs of customers (6 levels) and the risk level of sports (2 levels). The product also details the compensation for death, permanent disability, inpatient treatment costs, and emergency expenses (Military Insurance Corporation, 2021). This is a big step forward in the sports insurance market. Future products have a good case study to rely on.

In addition, sports insurance products are difficult to expand because almost no reinsurers want to accept insurance policies for professional athletes. The compensation rate is too high (over 50% / revenue) (Linh, 2020). It is a risky situation in the professional sports environment, where athletes see it as a lifelong career, so they play hard to achieve their goals. In contrast, the risk in a community sports environment is reasonably low. According to experts, the rate of medical assistance is estimated at 1/500 for a marathon distance - 42km, a tough race. The probability of using medical services, such as emergency or inpatient treatment, is much lower. This is due to differences in the participants' motivation to play sports. Amateur athletes mostly participate in sports to maintain good health, so they exercise moderately and usually pay attention to their own safety first. With a much lower risk ratio than professional sports, sports insurance products will be able to be designed at a more reasonable price.

4.2. State management should take an active role in supporting the sustainable development of the market

Insurance is a specific industry related to risk management. Because the law of supply and demand lags in practice, the organic development of the market will be distorted, causing many market failures. Therefore, for the market's sustainable development, state management intervention is required. The state needs to have specific regulations on community sports activities, with a large scale and wide influence, ensuring the safety of athletes is necessary. The state needs to make synchronous regulations so businesses can compete fairly and equally.

On the other hand, state regulations also need to be open, transparent, and reasonable to avoid becoming a barrier for new businesses to enter the market. The sports insurance market is growing rapidly and has great potential. The insurance companies that have participated in the market are large enterprises; once this market takes shape, they will take action to protect their market positions. Barriers to entry, especially legal barriers, have always been a good tool used by large firms (Porter, 1979). Legal barriers are state management tools to protect the right of citizens, but too many barriers will reduce market competition, lead to increased prices, and affect the interests of consumers. Therefore, the state needs to have clear and reasonable policies so as not to destroy competition and avoid becoming a tool to protect the market share of large enterprises.

4.3. Conclusion

Using the data synthesis method and in-depth interviews with experts, the research obtains that the sports insurance market is undergoing rapid qualitative changes, leading to a quantitative transformation.

The size of the potential customer base increases rapidly. The financial capability of customers improves significantly. Customers have better awareness about insurance. The community sports environment has a lower level of risk. Consequently, the sports market is being better and better. Insurance businesses are aiming to enter the market. Currently, some insurance companies have considered the sports environment as a brand communication channel and reach for further future steps.

Currently, big buyers are large-scale event organizers, especially in marathons, half-marathons, and triathlons. Besides the need for hedging insurance, their buying motivation is to be exempt from liability when the risk occurs. They are not obligated to buy by any legal provision, but they actively buy insurance to prove to their customers that they have fulfilled their responsibility for sporting events, which are perceived as high-risk activities in general.

Some difficulties still exist for insurance product providers. Designing suitable products is not easy. Product pricing requires a lot of historical data. The reinsurers do not cooperate well. Awareness of the need for sports insurance is low. Educating the market about the price and value of products takes time. Therefore, insurance products are still in the research and development stage. Insurance providers take a long time to test, get feedback, and, most importantly, get customer acceptance.

In short, the sports insurance market is still in its infancy but full of potential. Demand is changing markedly. The suppliers are also making moves to explore the market. For state management, this is a specific market affecting social benefits, so the state needs to design the legal system for community sports insurance. Policies need to ensure fairness and publicity to protect the best interests of citizens and avoid becoming a policy tool to protect the interests of large enterprises. For researchers, this market has a lot of problems to continue studying because this is a multi-disciplinary field, combining the market mechanism and state management, involving many stakeholders: people, consumers, organizers, insurance providers, and the state. Hence, further researches are needed.

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VIETNAM-US RELATIONSHIP AFTER NORMALIZATION

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Abstract

After the establishment of bilateral relations in 1995, the U.S and Vietnam are trusted partners with a friendship grounded in mutual respect. U.S.-Vietnam relations have become increasingly cooperative and comprehensive, evolving into a flourishing partnership that spans economic, political, security, and social ties. At present, the two countries' economies are complementary and are each other's top trading partners, with two-way trade turnover in 2022 reaching 123.86 billion USD, an increase of 275 times compared to the time when the two countries normalized relations in 1995. The United States is Vietnam's second largest trading partner. In 2022, it becomes the first export market of Vietnam to surpass the 100 billion USD and ranked 11th out of 140 countries and territories having FDI in Vietnam. Two countries also facilitate cooperation in areas including political and diplomatic relations, defense and security, science and technology, education and training, environment and health, humanitarian assistance/disaster relief, etc... Vietnam is a developing country in the globalization process, searching for relationship with diversity, substance, efficiency and harmonized interests. The U.S is becoming more and more important in the development strategy of Vietnam.

Keywords: *Normalization, Relationship, U.S, Vietnam*

1. Introduction

The world context is undergoing many changes, as competition between major countries increases, the world situation is being reshaped, global and regional issues are complicated, ... Each country needs to have more flexible foreign policies in order to take advantage of the advantages of integration for the country's socio-economic development. After 27 years of normalizing relations since 1995 and 9 years of implementing the Comprehensive Partnership, Vietnam and the U.S have gained huge achievements in many sectors. The cooperation on the basis of equality, mutual benefit, respect for independence each other's sovereignty, territorial integrity and political institutions, compliance with the United Nations Charter and basic principles of international law is the right choice of Vietnam and the United States. This is an inevitable trend and completely consistent with the common interests of the two peoples, demonstrating the efforts, determination and strategic vision of the leaders of the two countries. Over the years, the relationship between the two countries has made important developments in the economic field with the signing of the Bilateral Trade Agreement (in 2000); The United States adopted the Permanent

Normal Trade Regulations for Vietnam (2006); the two countries signed the Framework Agreement on Trade and Investment (2007); established the Vietnam - US Comprehensive Partnership (2013). The achievements of the relationship between the two countries are reflected in the many areas.

2. Method

The authors combine various methodology to analyze the Vietnam-US relationship after normalization such as: Interest analysis method to assess the interests of Vietnam and US in cooperation; Method of history, chronology to organize information, learn about the history of international, regional and domestic contexts of Vietnam and US after many events; Comparative - contrast method to show the changes before and after Vietnam and US established the diplomatic relationship; Forecasting method to make a forecast about the Vietnam-US relationship; Besides, many techniques such as logical analysis, statistics, synthesis, data processing...etc. are used to clarify the research arguments and the author's judgment.

3. Results

3.1. Economic relationship

About volume of trade, Vietnam and the USA witness a surprisingly low value of trade volume in the period before 2000. However, it was when the BTA was signed in 2000 that observed the most dramatic leap in goods exchange between the two nations: the total trade value reached over 1 billion dollars for the first time. After years of negotiating, the two countries could ultimately reach a significant commitment that would create necessary conditions for the products, businesses, and nationals of the other side to have fair access to compete in the other's markets. The first BTA was finally published after almost five years of negotiations and covered trade in goods, intellectual property rights protection, trade in services, investment protection, business facilitation, and transparency.



Figure 1. Vietnam - US trade, 1992-2022

Source: Author self-complied

As soon as the trade agreement went into force in December 2001, the US, the world's largest economy, gave Vietnamese goods access to its market on the same terms as it did for other nations with which it had regular trading ties. The most significant reduction in tariff rates was seen in manufacturers (while the general tariff rate was nearly 47%, the MFN tariff rate was only 3.8% which was 16 times lower). On the other hand, there was no noticeable decrease in the MFN tariff rate and general tariff rate of oil, both were around 0.5%). Both of these products were in the top 10 of the most exported products to the US. As payment, to ensure that its laws are compatible with the BTA and international laws, Vietnam's National Assembly began the process of revising more than 170 laws, thus changing its trade and investment policies to provide a fair environment for American companies operating there. The process undoubtedly accelerated Vietnam's transition from a centrally planned economy to a market-based one and created the foundation for many further developments afterward. After the BTA, the trade value between Vietnam and USA continued to rise at a dizzying speed. Two-way trade reached 9.7 billion dollars in 2006, a six-fold increase over the figure recorded in 2001, the year that saw the BTA taking effect. More remarkably, from 1 billion dollars in 2001, Vietnam's export earnings from the USA rocketed to 8.6 billion dollars in 2006; meanwhile, the country's imports from the US stood at 1 billion dollars on average (Every CRS Report, 2002).

The normalization in 1995 also gave way to a milestone in the two nations' economic ties when Vietnam's entry into the World Trade Organization was successfully negotiated. It was worth note-taking that Vietnam had applied for WTO's membership in 1995 and had been through several ups and downs in joining this organization. The agreement with the United States was the last and, seemingly, the most difficult of the bilateral agreements that Vietnam had to negotiate. The WTO membership would grant Vietnam the Most Favoured Nation (MFN) status which reduced taxes on a wide variety of exchange products. Furthermore, becoming the 150th member of the trade body, the country was also given fair treatment in which every firm from Vietnam would be treated as equally as domestic firms when they entered the market. The US also adopted a bill to grant Permanent Normal Trade Relations status to Vietnam. The event was of primary importance in Vietnam-US relations, marking a full normalization in commerce and trade. This step would probably benefit both nations: while Vietnam was offered the best conditions to thrive, the US could also exchange goods much easier.

WTO's membership has proved to be the driving force behind Vietnam's growth. Since 2007, the volume of trade has shown nothing but a dramatic rise. This had so many things to do with the MFN - most favored nation treatment provided by the trade body, with which all companies in Vietnam had equal access to the markets of every other member of the organization. Also, the reduction of trade barriers, primary tariffs, and quantitative restrictions played a key role in boosting Vietnam's foreign trade. When joining the WTO, Vietnam had the opportunity to expand the export of products in which

the country has strengths, such as agricultural products, aquatic products, garments, footwear, handicrafts, and labor-intensive goods. Strictly complying with WTO frameworks, Vietnam's government adjusted to the new situation. All the firms and the economy had successfully adapted themselves and turned the new situation to their advantage without experiencing any trade shocks. The country has successfully expanded its trade footprint in almost all markets worldwide and actively participated in global value chains and production networks. During the Covid-19 pandemic, facing with a protracted Covid-19 epidemic and ongoing trade disputes, the US continued to be Vietnam's top export market in the 2020–2022 era, and Vietnam continued to rise to become the US' eight-largest trading partner, a significant rise in the pandemic condition. In 2022, The United States was the first export market to surpass the US\$100 billion with the overall bilateral trade between Vietnam and the United States was US\$ 123.86 billion, up 11% compare with 2021 (Vietnam financial times, 2023).

About the export structure, Vietnam's main exports to the United States have also changed in line with recent trends globally. Although Vietnam is an agricultural country, the top export categories were electrical machinery, furniture and bedding, knit apparel, and machinery. Since economic reforms were introduced in the 1980s, light manufacturing has dominated Vietnam's economic growth, but during the past ten years, the nation has been repositioning itself to become a prominent player in the global microelectronics sector. With the successful accession to WTO and the BTA, it is much easier for Vietnamese manufacturers to trade their products and introduce their newest technology to many countries worldwide. Vietnam was the fourth-largest supplier of electrical products and components to the United States in 2022. Based on goods exported under Chapter 85 of the Harmonized Tariff Schedule, exports have increased by 50% over the last four years and are now greater than \$19 billion, surpassing Taiwan, Japan, and Korea. The US government has furthermore levied tariffs of up to 25% on practically all furniture categories over the recent years, which led to a huge drop in some countries' furniture shipments to the US. Vietnam, on the other hand, witnessed an opposite trend, from just 4.2 billion in 2018, the value of furniture exports in Vietnam grew by more than half and reached over 11 billion in 2022. Even in the outbreak of the Covid 19 pandemic which reduced the need for furniture in many American households, the export value of Vietnam showed no sign of decrease, from 9 billion in 2020, it rose to 10.1 billion in 2021 and 11 billion in 2022 (VCCI, 2023). This trend has brought tremendous benefits to both Vietnam and the US. Vietnamese manufacturers can diversify their scope of potential customers, switching from only Vietnamese buyers to both domestic and international buyers. Consequently, these sellers can boost their revenue as they have access to a wide variety of markets in the world. As for the US, they can expand the range of electronic products on the market, enabling US citizens to purchase highly cost-effective and sophisticated products from Vietnam.

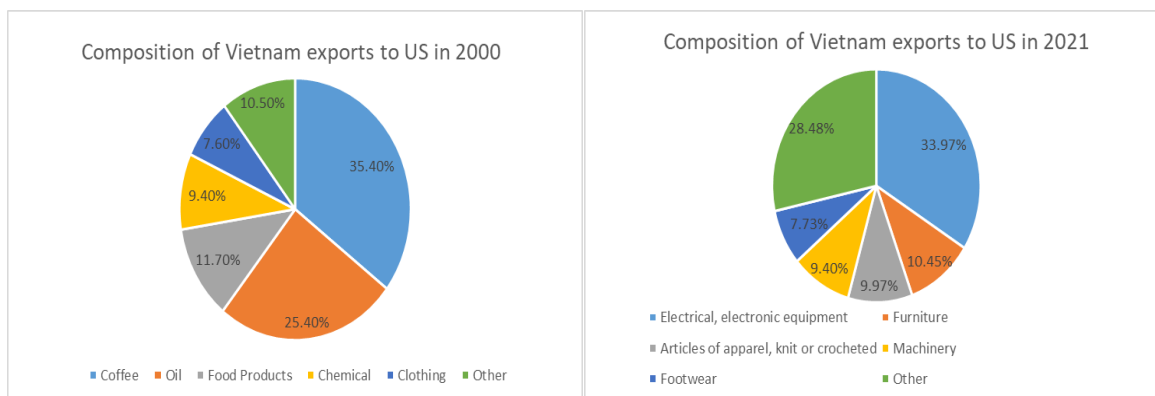


Figure 2. Comparison of Vietnam exports to U.S in 2000 and 2001

Source: Author self-complied

In comparison with the EU, although Vietnam had a long history of exporting furniture to this union, the export value was just around 500 million dollars, which was significantly lower than that of the US. Even though the trade of furniture has been established between the two nations for not so long time, it has reached several milestones, making it one of the most potential trading products of Vietnam and the US. In 1998, the US's imports of knit apparel were much lower than those of Japan and the EU and they grew slowly because of the high tariffs on many apparel items. The non-MFN tariff on many wearing apparel items was ten times the MFN rate. Therefore; during that time, Vietnam could not afford to boost apparel exports to the US, instead, Japan was the main destination. Japan imported 130 million dollars of these items, compared to 7 million in the US. As time passed by, Vietnam was granted reduced tariffs from US officials, which made the exchange of wearing apparel a lot easier in the country. In 2022, US imports of these rocketed to approximately 9.7 billion dollars, far overcoming that of Japan or European countries (VCCI, 2023).

Vietnam has grown to be the second-largest supplier of clothing and shoes to the United States after the country's trade embargo was abolished in 1994. Actually, during the past several years, imports of footwear from Vietnam into the United States have increased significantly, from more than 3 million dollars in 1995 to 7 billion dollars in 2021. The discrepancies between footwear MFN and non-MFN tariffs are a contributing factor to the rise in imports of footwear. While MFN duty rates for many footwear items are 20 percent, US tariffs for the majority of imported footwear are 35 percent or less. Additionally, Vietnam has a competitive advantage thanks to the high labor content in footwear. In 2021, Vietnam exported 19.9 billion dollars in footwear which that of the US accounted for 7.6 billion, making it the main destination for footwear exports of Vietnam. Also, the US held the place of the fastest growing market for footwear of Vietnam in that from 2020 to 2021, the value of footwear exports rose by over 1 billion dollars (T.V. Thuong, D.V. Toan, 2022).

About investment capital, Vietnam has transformed from one of the poorest and most remote countries in the world to a force to be reckoned with for foreign investment. Vietnam, a young, middle-income nation, offers a variety of options for firms looking to expand there. An increasing number of brands are willing to enter Vietnam as a result of the country's

expanding middle class, increased manufacturing, and increased exports. Before the embargo on Vietnam was removed by US President Bill Clinton on February 3, 1994, a number of US companies had made investments in Vietnam through the third nation. As a result of the Bilateral Trade Agreement (BTA) between the two nations, which went into force in 2001, Vietnam experienced a wave of American investment beginning in 1995. Since that time, both the registered and dispersed capital of US investments in this country have increased. Overall, the BTA opened the way for US companies to have a broader view of Vietnam’s potential and invest in many projects.

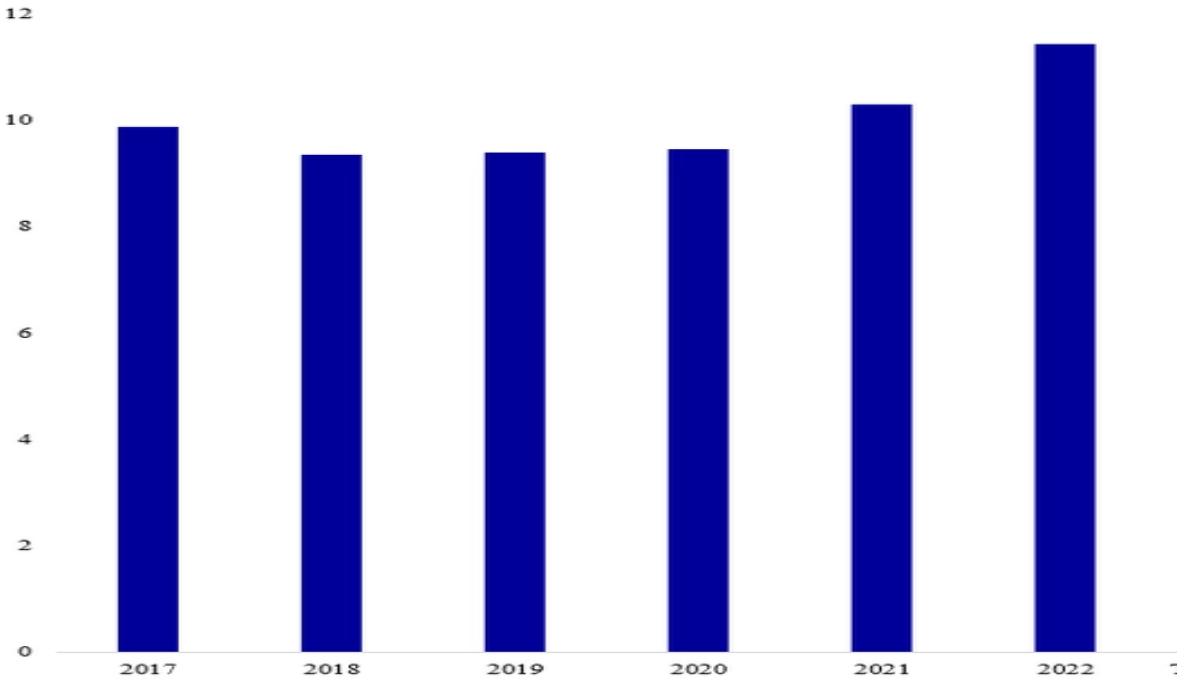


Figure 3. Accumulated FDI from US to Vietnam, 2017-2022 (billion \$)

Source: Author self-complied

In recent years to come, US’s total FDI in Vietnam has displayed a sharp growth. During the Covid 19 pandemic, the uncontrollable outbreak of the disease forced both countries to implement national lockdowns in order to prevent the spread of the virus. Existing investment initiatives have been hindered by the closure and social isolation measures implemented in several nations worldwide in reaction to the COVID-19 epidemic. Even worse, the possibility of a recession has forced international corporations to evaluate new initiatives. On a global scale, FDI inflows have decreased by 35% from \$1.5 trillion in 2019 to less than \$1 trillion in 2020, the lowest level since 2005 and less than 20% from the trough of 2009 during the global financial crisis (FIA, 2021). In Vietnam, things got even harder as the governments used to take the Zero-Covid solution which made many large firms close for a long time. However, US’s FDI to Vietnam still increased, even marginally, but it was such an unexpected achievement in the scene of Covid 19. This has come to show that however hard the condition is, US companies still had great faith in Vietnam and entrusted considerable investment to this country. This result could be attributed to mutual trust which has been built up and strengthened through the years after the normalization.

In 2021 and 2022, Vietnam had a quick recovery of the US's FDI after the two countries had successfully controlled the pandemic. From below 10 billion dollars in 2020, the total investment climbed to nearly 12 billion and 15 billion in 2021 and 2022, respectively. The volume of trade between the two countries partly contributed to this recovery. Although under stricter regulations, Vietnam's exports to the US still increased, making the country one of the biggest exporters and importers of the US. Furthermore, thanks to the US vaccine program, the rate of vaccination in Vietnam was considerably high, allowing workers to return to work earlier than expected. Not only the value, but the quality of investment projects also increases. Before the normalization in 1995, there was hardly any US cooperation appearing in Vietnam's market. But until now, a huge number of US multinational companies have come to Vietnam to lay the first foundation for long-term development opportunities such as Pepsico, Coca-Cola, Intel, P&G, Procter & Gamble (P&G), General Electric (GE).)... In the first two months of 2023 alone, the total newly registered capital, adjusted capital, contributed capital to buy shares, and purchased capital contributions from US investors reached 11.68 million USD. In which, there are 8 newly licensed projects with a total newly registered capital of more than 7 million USD; 11 projects contributed capital to buy shares, with the value of contributed capital reaching about 4.7 million USD (Investment news, 2023). Also, projects processed by the US are also of large size. For example, Steelman Partners, an American construction company, has helped design various projects in Vietnam. This includes Happy Land (a large entertainment complex) and The Grand Ho Tram Strip (a five-star resort with a spectacular beach view). Similarly, ExxonMobil, an US oil company, wants to invest in a series of liquefied natural gas (LNG) ports and warehouses and refining and petrochemical operations in the northern city of Hai Phong.

About investment sectors, manufacturing and processing attracts the most FDI. The reason for this trend is Vietnam's cheap labor costs. The minimum wage in Vietnam varies by location and is between \$140 and \$202 per month. Although these wages have been rising steadily, they are still less than the minimum wage in the US, which is approximately \$4000 per month. Vietnam is therefore particularly well-suited to manufacturing labor-intensive goods like shoes or clothing. And over the past ten years, businesses have slowly shifted where they produce these goods; even many US corporations now have plants in Vietnam. Furthermore, Vietnam's workforce is youthful and expanding, and the nation is now experiencing a "golden population" era that is anticipated to extend until about 2040. Apart from the manufacturing and processing sector, the US also invests in the energy sector. Due to its reliance on inexpensive resources like coal and hydropower, Vietnam has one of the most effective energy markets in Southeast Asia. In comparison to its neighbors, the nation has electrified about 99 percent of its population at a comparatively modest cost. Moreover, Vietnam has a wide variety of energy sources, including coal, oil, natural gas, hydropower, and renewable energy. 47,750MW of installed capacity was available as of November 2018. According to the 2018 Vietnam Electricity Annual Report, gas, and renewable energy were in second and third place, respectively, behind hydropower and coal-fired power.

US firms also invest in the real estate field. Since 2011, the urban population has grown by 2% annually along with the economy. Ho Chi Minh City and Hanoi, Vietnam's

two largest cities, have had growth rates of 4% and 3.8%, respectively. Due to the concentration of the majority of corporate activity, including foreign direct investment, a sizable section of the workforce is moving into these two cities, creating a significant demand for urban housing. VinaCapital estimates that by 2025, half of the world's population would live in cities, necessitating the construction of 5.1 million dwelling units. Also, the number of international tourists to Vietnam quadrupled to 10 million between 2010 and 2016 (VCCI, 2023). Particularly in popular tourist locations like Nha Trang, Da Nang, Phu Quoc Island, and many more specialized places, this growing tendency generates a huge potential for the real estate market for the tourism industry. *About investment location*, US's FDI mainly concentrates in large provinces and cities with relatively favorable infrastructure conditions. According to the Ministry of Planning and Investment, the provinces and cities receiving the most investment capital from the US include Ba Ria - Vung Tau (45.8%), Ho Chi Minh City (12.4%), and Binh Duong (9%). Ba Ria - Vung Tau, though not one of the biggest cities in Vietnam, comes first on the list. This city has significant competitive advantages due to its location near the ocean, which includes a deep-sea port and established technological and transportation facilities, particularly a favorable transport network. All five modes of transportation—land, railroad, inland waterway, maritime, and aviation—can reach the Southeast region. Other leading regions in attracting FDI are all big cities. It is understandable why investors tend to do their business in such major cities instead of remoted ones. Nowadays, people are likely to flock to big regions in search of opportunities for jobs with high salaries and chances of getting promotions. Therefore, foreign nations can take advantage of the fact that the elite tend to gather in big cities to get access to academic excellence and idea hub. Major regions are often the places where large domestic firms cluster. Ho Chi Minh City is home to a wide variety of leading companies which include Vietnam Oil and Gas Group while Binh Duong is where big industrial companies cluster.

Overall, the Vietnam-US economic relationship has grown at an unprecedentedly fast rate in term of quantity and quality. The word “spectacular” can be used to describe the development of economic cooperation between Vietnam and the US. Vietnam – US relations have made significant strides since 1995, with the most salient aspect being the economic cooperation.

3.2. Politics and defense

In the field of politics – diplomacy, the US and Vietnam upgraded the Liaison Office established in January, 1995 of the two countries into embassies on August, 1995. The relationship between the two countries is getting closer when there are continuous high-level visits. On the US side, four US presidents have visited Vietnam: Bill Clinton (2000), George W. Bush (2006), Barack Obama (2016) and Donald Trump (2017). Vietnam also has visits to the US by late Prime Minister Phan Van Khai (2005), President Nguyen Minh Triet (2007), Prime Minister Nguyen Tan Dung (2008), President Truong Tan Sang (2013), General Secretary Nguyen Phu Trong (in 2015), Prime Minister Nguyen Xuan Phuc (2017). These visits have enhanced understanding, created momentum for relations, through declarations to establish frameworks. framework of which the most important is the comprehensive partnership in all fields between the two countries.

In addition, many well-known politicians of the US and Vietnam attach great importance to this relationship and have made visits or organized activities to tighten ties between the two countries. On the Vietnamese side, typically Ambassador Le Van Bang, former Foreign Minister Nguyen Co Thach, former Foreign Minister Nguyen Manh Cam; the US side, typically Secretary of State John Kerry, Senator Patrick Leahy and Senator John McCain. Most recently, on August 27th, 2019, US Ambassador to Vietnam Daniel Kritenbrink visited Truong Son Martyrs Cemetery and Hien Luong Bridge. It can be affirmed that this is a symbolic visit of reconciliation and mutual respect. The two sides still strive to solve humanitarian issues and war legacy, such as searching for missing Americans, demining bombs and mines, dioxin decontamination, etc., towards a global development.

In the field of security and defense, cooperation between the two countries has developed rapidly, marked by the organization of more and more high-level military and political security dialogues to enhance mutual understanding, trust and support each other. Vietnam has been identified by the United States as one of the central countries in the "Free and Open Indo-Pacific" strategy. Along with that, with their favorable geo-economic and geopolitical positions, Vietnam and the United States cannot help but cooperate in defense and security to protect their interests in the East Sea, the region and the world. Defense and security cooperation have been actively maintained with diverse cooperation contents, notably the exchange of delegations, high-level contacts, cooperation in overcoming war consequences and improving maritime capacity. In December 2009, Vietnam's Defense Minister visited the US and in November 2019, US Defense Secretary Mark Esper visited Vietnam. The two sides had a memorandum of understanding on defense cooperation in 2011; statement on a shared vision for defense cooperation in 2015 and a defense cooperation plan for the 2018-2020 period with 5 major contents including: Strengthening policy consultation; cooperation in overcoming war consequences such as clearing mines and dioxins; United Nations peacekeeping cooperation; overcoming consequences of natural disasters, seeking relief; cooperation in the field of maritime security on the basis of international law and the laws of each party. In recent years, the United States and Vietnam have held 11 security dialogues to discuss security issues. bilateral security cooperation. These dialogues have fostered the growing bilateral relationship between the two countries and reflect the two countries' shared commitment to a free and open Indo-Pacific region.

Regarding the settlement of war consequences, Vietnam and the United States cooperated closely in the search for martyrs of the two sides. The United States is committed to solving humanitarian issues and overcoming war consequences, including a major project on cleaning Da Nang airport that has been completed from 2012 to 2018. After Da Nang airport Danang is Bien Hoa airport, the largest remaining dioxin pollution hotspot in Vietnam, which is also being treated with an estimated cost of over 300 million USD within 10 years for environmental restoration activities in the airport. and surrounding areas. In addition, activities to remove mines and explosives, and search for remains of soldiers during the war were also conducted as cooperation agreements. The United States is ready to support, share experience, information, and train personnel for Vietnam's maritime law enforcement forces, as well as provide Vietnam with some equipment for law enforcement

in the sea (providing ships and boats for patrolling the sea), cooperation in the field of military medicine and consultation on defense mechanisms among ASEAN countries.

In particular, in 2017, the US transferred to Vietnam a coast guard ship (Vietnam named the 8020 Coast Guard ship - the most modern Coast Guard ship in Vietnam). This was once the Hamilton-class Morgenthau Coast Guard Ship of the US Coast Guard, which was transferred by the US government to the Vietnam Coast Guard through the Redundant Defense Equipment Sale (EDA) Program. In March 2018, for the first time a US aircraft carrier (the USS Carl Vinson) visited Vietnam. Within 3 years (1917 - 2020), the US Coast Guard has transferred 24 patrol boats to Vietnam (Political - Military dock, 2021). In March 2020, the aircraft carrier USS Theodore Roosevelt entered Da Nang port, making a visit to Vietnam to conduct humanitarian and friendship exchanges on the occasion of the 25th anniversary of the establishment of diplomatic relations between the two countries (Communist Party of Vietnam, 2021).

3.3. Other cooperation

Cooperation in education - training and science - technology has achieved many encouraging results. Currently, the number of Vietnamese students and interns studying in the United States is about 17,000. Regarding science and technology, the two sides enhanced cooperation in the fields of environment and climate change, information technology, biotechnology, oceanography, and space technology. In particular, with the help of educational centers in the United States, such as the University of Portland and the University of Arizona, many Vietnamese students and lecturers have been trained methodically, contributing to the success of the university. long-term investment and development project of Intel Corporation in Vietnam. The signing of the Agreement on Cooperation in the Peaceful Use of Nuclear Energy by the two countries (Agreement 123) on May 6, 2014 (officially effective from September 10, 2014) has opened a new field of cooperation between the two countries. new cooperation, attracting the interest of many leading US technology companies in the development of civil nuclear in Vietnam.

Medical and humanitarian cooperation has been focused on by both sides with many practical projects. In June 2013, the two sides signed a Memorandum of Understanding (MOU) on cooperation in medicine and medical science. The United States continues to maintain and commit to aid Vietnam's Emergency Assistance Program for HIV/AIDS Prevention and Control (PEPFAR) until 2018, with an average value of nearly 100 million USD/year in the following years. recent years. Vietnam has been working hard to help the US Government inventory the cases of US soldiers missing during the war (MIA). The US side also provided information, helping Vietnam find over 1,000 remains of Vietnamese soldiers; at the same time, continue to maintain and increase the budget for activities to overcome the consequences of the war in Vietnam, including the project of decontamination of dioxin-contaminated hot spots, support for victims of dioxin contamination. Agent Orange/dioxin. In 2014, the United States disbursed \$29 million in the 2014-2016 budget of \$84 million for the Da Nang airport decontamination project and medical assistance for disabled people, including victims of poisoning. orange/dioxin. In addition, the United States also sponsored Vietnam projects on overcoming the consequences of mines and explosives

left over from the war with a total aid of \$94 million through non-governmental organizations (NGOs), from 1993 to present (Ha Kim Ngoc, 2023). During the Covid-19 pandemic, U.S government has sent nearly 40 million doses of COVID-19 vaccines to Vietnam, supporting Vietnam to overcome the difficulties and protect human's life (Tuoitre, 2022).

4. Discussion and Conclusion

The prospects for the development of relations between the two countries are great. Vietnam is a good partner for the United States to cooperate to implement the Indo-Pacific strategy. The United States is an important partner for Vietnam to develop and prosper, when we are lacking and weak in capital, science and technology, production methods and management, and labor productivity. In the coming time, in order to protect, preserve and promote the achievements that the two countries have achieved, it is necessary to raise awareness and act decisively.

The two countries continue to consolidate and strengthen mutual political trust, build a solid social foundation, and promote multifaceted cooperation between the two countries, focusing on improving efficiency and practicality.

Continue to strengthen the comprehensive partnership in the fields of economy, foreign affairs, national defense, security, people-to-people diplomacy, health care and education. The two sides need to contribute to important economic and business conferences such as the Vietnam-US Business Summit, the annual ASEAN Economic Ministers Meeting, including the role of the United States.

The two sides need to work together to implement commitments, international treaties, cooperation agreements on economy, investment, trade, especially digital economy and e-commerce; actively review, amend, or negotiate and sign cooperation documents to create a legal corridor in economic, trade and investment cooperation; attach importance to connecting the two economies, especially connecting information and communication technology, science and technology, operation methods, services...

Besides economic cooperation, it is necessary to pay attention to cooperation in defense and security. Accordingly, it is necessary to maintain a peaceful and stable environment in each country for development; strengthen information exchange and closely coordinate to jointly respond to developments, not to be passive in all situations with issues of national and regional sovereignty and security; strengthen coordination in patrolling, maintaining security and order, and rescue at sea; continue to coordinate well in overcoming war consequences and searching for martyrs; good international duty...

Continue to strengthen close coordination and mutual support at regional and international forums and institutions. Vietnam and the United States are both located in the Asia-Pacific region, so they have common interests. Therefore, the two countries need to strengthen close coordination and support for each other at regional and global forums and institutions for the benefit of both sides, for a peaceful, stable and developed world.

In summary, the relationship between Vietnam and the United States since the two countries normalized and resumed diplomatic relations has made strong and extensive

developments. With the goodwill of both sides, mutual understanding and respect, and mutual contribution to peace, stability and cooperation in the region, the Vietnam - US relations are entering a new stage of development, with strong, comprehensive and substantive progress in many fields of cooperation.

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THE EFFICIENCY OF JAPANESE KANJI INSTRUCTION FOCUSING ON THE COMPONENTS FOR VIETNAMESE LEARNERS OF JAPANESE

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Abstract

Learning kanji is one of the most difficult things for non-kanji background learners of Japanese. Therefore, how to enable learners to learn kanji comfortably and effectively is a constant challenge for all Japanese language teachers, including Vietnamese teachers. Various strategies are used in kanji learning. Among them, there is a learning strategy based on "Radicals", one of the components of kanji and appear repeatedly in many kanji. It is considered that knowledge of the components is useful for learners to be able to refer the sounds and meaning of the kanji. The purpose of this research is to consider whether the ability of kanji of the students will improve by being taught additional knowledge of the components. In particular, the author will conduct an experimental class of 17 students for seven sessions and investigate the changes in information processing skills of Vietnamese learners related to the shape, sound, and meaning of kanji. As the result, instruction of the components is not very effective in distinguishing similar kanji characters for short-term skills, but it has a meaningful effect for long-term skills. Besides, the learner's ability to guess the on-reading of newly introduced kanji improved and there is also a great effect in guessing the meaning of newly introduced kanji. Several suggestions: use the results of this study to make teachers and learners aware of the efficiency of focusing on the components, create appropriate teaching materials, create an effective teaching method.

Keywords: *Components, Japanese kanji, memory strategies, Vietnamese learners*

1. Introduction

According to their origin, Japanese vocabulary can be broadly divided into four types: Japanese words, Sino-Japanese words, foreign words, and hybrid words. Among them, Chinese language occupies a large proportion and plays an important role. Concretely, 47.5% of the words in magazines and 40% of the words in spoken language are different Chinese words (Akimoto Miharu, 2002). However, according to Hiroyuki Kaiho (2001), learning kanji is one of the most difficult things for non-kanji background learners of Japanese. Although Vietnam is considered to belong to the areas using Chinese characters, the usage of them has gradually declined since the national language was shaped in the Roman alphabet in the 17th century. Currently, only a few Chinese character researchers and the elderly are able to read and the general Vietnamese no longer use Chinese characters. For that reason, there are many Vietnamese learners of Japanese having worries such as "I'm not good at kanji" or "I don't like studying kanji". Therefore, how to enable learners to learn

kanji comfortably and effectively is a constant challenge for all Japanese language teachers, including Vietnamese teachers.

Various strategies are used in kanji learning. Sakano and Ikeda (2009) listed 10 strategies such as “Write kanji repeatedly”, “Associate kanji with visual images”, “Associate kanji with stories”, “Get similar kanji characters into group”, “Use cards” etc.. and considered effective learning methods based on them. Among them, there is a learning method based on “Radicals”. Radicals are one of the components of kanji, and appear repeatedly in many kanji. Kanji characters are numerous and complex in shape, but they have far fewer components such as radicals which are simpler in shape. Each kanji has multiple sounds and is difficult to remember, but the components are related not only to the sound of the kanji containing them, but also to the meaning. With the above characteristics, it is considered that knowledge of the components is useful for learners to be able to refer the sounds and meaning of the kanji. Therefore, in this research, I would like to focus on learning methods based on the components of kanji such as radicals.

In Japan, the teaching of radicals is introduced from the beginning of learning Kanji for Japanese students and it plays a major role in teaching kanji. However, in Vietnam, methods using knowledge of components such as radicals are not used much in learning kanji. The reasons for that can be considered as following. Firstly, it is the lack of appropriate teaching materials. Many researchers have originally been interested in materials for kanji education and developed kanji textbooks for various levels and purposes. However, the fact is that there are very few materials on kanji instruction that focus on kanji components such as radicals. Secondly, the time for kanji classes is limited compared to the time for other skills such as grammar, listening comprehension, reading comprehension, and conversation. Also, teachers and learners may not be fully aware of the efficiency of component knowledge on learning kanji. The reason for this is that although there are a lot of researches investigating the components, most of them are limited to knowledge about the essence of radicals and methods of teaching radicals. There is not many researches that examine the actual efficiency of kanji instruction that utilizes knowledge of components in learning kanji.

Based on the evaluation of the current state above, this research examines how the instruction focusing on the components affects Vietnamese learners when they learn Japanese Kanji.

2. Literature review

2.1. Relevant studies

In recent years, as the increase of the number of Japanese language learners, many studies have been conducted on kanji, which play an important role in the Japanese language. There are many studies on the components of kanji among them. Some representative studies are described below. First, I will take up researches that study the essence of the components of kanji and the obtained results are useful for teaching and learning kanji.

The first one is Taeko Ogawa (2013) “Study on the semantic similarity of groups of kanji that share parts (radicals) for educational kanji”. In this study, since many Japanese

kanji characters are divided into left and right, the researcher examined the semantic similarity of kanji groups with a common left radical for 1,006 educational kanji characters taught in elementary schools in Japan. The following results were obtained. (1) She reported the top 25 most used radicals in educational kanji. (2) She surveyed the top 25 radicals and reported on the extent to how the meaning of the left radical matched the meaning of the kanji that shared that radical. The degree to how the meaning applies varies from “does not apply at all” (1 point) to “strongly applies” (7 point). The results show that the top “Kanehen” (金) 6.31 point, “Tsukihen” (月) 5.79 point, “Kihen” (木) 5.52 point, and “Risshinben” (丩) 5.52 point are highly applicable. On the other hand, it became clear that the three lower ranks of “Ouhien” (王), “Nogihen” (禾) and “Kotozohen” (冪) were not very applicable. It was shown that when the semantic similarity is high, it is effective to understand the meaning of the whole kanji while recalling the meaning of the radical. However, when the semantic similarity is low, it was said that if the meaning of the radical is used, it may interfere with the understanding of the meaning of the kanji.

Next, Townsend (2011) "Phonetic components in Japanese characters" approached from the aspect of voice. She clarified that there are many kanji characters whose On-reading (Chinese-derived reading of a kanji) is determined by the right component or the upper-right component, and listed 92 components and the On-readings of kanji that have these components. Concretely, among the 92 components, the On-reading of 74 components and the On-reading of kanji that have those components are the same, and 18 are almost identical. This list is believed to help learn the On-readings of many kanji characters.

In addition, Yukihiro Ikeda (2009) “Basic survey of Kanji towards learning and teaching Kanji using components” conducted a survey to measure the efficiency of kanji learning focusing on the components of kanji and using them to connect multiple kanji characters. Concretely, from the aspect of the character shape of kanji, the radicals and components of the kanji used in the textbook "Genki for Beginners" were investigated, and the corresponding kanji and their quantity were considered. There, it was shown that it is effective for presenting newly introduced kanji characters in kanji education. Besides, it is effective for creating and implementing exercises as well. An example of kanji teaching using the components was also proposed. At the beginner's level, the number of kanji characters to be learned is few, so there are few components that can be presented. Therefore, it is said that teaching the components is not very effective at the beginner's level, but if you practice using the components, you will be able to become more aware of the shape of kanji from the beginner's level and the acquired knowledge will work effectively for learning from the intermediate level onwards. However, considering the most appropriate time to teach the components of kanji, the presenting of radicals should be done at a stage when the learner's learning of kanji has progressed to some extent (beyond the intermediate level).

Next is a study to verify the efficiency of kanji instruction using the components on kanji learning. Williams (2013) focused on the fact that radicals basically have the same meaning wherever they are placed in kanji so she developed videos as teaching materials

basing on radicals for English speakers. After using it for two years with learners from the second half of elementary to intermediate level, the following results were obtained. (1) Knowledge of radicals is useful as a strategy for learning kanji. (2) The efficiency was seen on learning motivation.

Last, the study of Than Thi Kim Tuyen (2020) interviewed 7 intermediate-level Japanese students who have good kanji skills or are interested in learning kanji to find out the most commonly used and rarely used strategies they use when learning Kanji. The results show that, although there are differences between the types of strategies that each student uses, the common point is that all 7 students use and appreciate the strategy of paying attention to the components.

2.2. Research gaps

From the results obtained in the above previous researches, it cannot be denied that the components certainly have various effects on kanji learning. However, in the researches so far, there are very few studies that verify the effects on learners by utilizing them. In particular, no research has been conducted focusing on the effects of this method on Vietnamese learners of Japanese. Therefore, in this paper, the author focus on Vietnamese learners of Japanese and examine their influence on their kanji learning.

2.3. Objectives and research questions

Learning strategies are considered as the most essential tool to help language learners gain active and self-directed involvement in the learning process (Oxford, 1990). Oxford defines language learning strategies as the “specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective and more transferable to new situations.” She divided them into two main groups, direct and indirect strategies. In Oxford’s opinion, direct strategies involve new language directly and these are classified in memory, cognitive and compensation strategies that require mental processing of the language. Among them, memory strategies involve the mental processes for storing new information in the memory and for retrieving them when needed. These strategies entail four sets: creating mental linkages, applying images and sounds, reviewing well and employing action.

This study investigates the changes in information processing skills of Vietnamese learners related to the shape, sound, and meaning of kanji. Regarding the timing of instruction, it is not suitable to teach the knowledge of the components at any learning stage, but it is also necessary to consider when the instruction should be given. As Ikeda (2009) stated that “The stage from the intermediate level is the most appropriate period for teaching the components of kanji”, this paper sets the intermediate level as the target. Therefore, the objectives of this experiment are 17 students (16 females, 1 male, all are 19 years old) of the Japanese language department at Hanoi University who had just finished the second semester of their first year and were about to enter the intermediate level. They had studied Japanese for approximately 480 hours.

The final purpose of this research is to consider whether the ability of kanji of the students will improve by being taught additional knowledge of the components. According to Chieko Kano and Takako Sakai's research (2003), kanji characters have multiple pieces of information which are shape, sound, meaning and to master a kanji, it requires complex processing skills. Thus, to measure the efficiency of teaching, I decided to focus on processing skills related to these three main information. In this way, the research question is set as following.

Question: Did the students improve their information processing skills related to the shape, sound, and meaning of kanji after acquiring the kanji instruction focusing on the components? If yes, how did they improve?

3. Method

With the aim of examining the efficiency of kanji instruction focusing on the components in term of learners' information processing skills related to the shape, sound, and meaning, the author conducted an experimental class.

The class was organized for seven sessions with the length of 30 minutes for each. In the first session, the author guided the students through the outline of the experiment then taught them while confirming their basic knowledge of kanji, including the components. From the second to the sixth sessions, the students were taught six kanji characters in each session in 25 minutes. Among them, three characters were given knowledge of the components (name, meaning of its radical and how to read its note which is called onpu - 音符 in Japanese), and the other three were not. At the end of each session, a 5 minute - small test is given to test short-term information processing skills. The final session (seventh) was a 15 minute - final test to test long-term information processing skills of the students. The details of the teaching content of the experimental class are shown below.

❖ *1st session - Basic knowledge of kanji, including their components:*

- The origin of 6 types of kanji characters called Rokusho (六書)
- Percentage of On-reading and Kun-reading for 1,684 kanji at elementary level
- Overview of components, notes and meanings

❖ *2nd ~ 6th sessions – Kanji instruction:*

As a criterion for selecting kanji to teach, the author selected kanji by referring to Townsend (2011)'s list of 92 radicals and the On-reading list of kanji with those radicals. Townsend's study provided a list of 92 notes with identical or nearly identical readings and 413 kanji characters containing these notes, while also providing a list of 29 notes with very different readings and a list of 45 kanji containing these notes. The author had intended to select N3 level kanji suitable for the student's Japanese proficiency, but the number of kanji on this list is limited, so N4, N2, and N1 kanji were also selected as below.

Table 1. List of instructed kanji characters

Session	Instruction of Components	Kanji	Level	Session	Instruction of Components	Kanji	Level
2nd	Yes	忙	N3	4th	No	驗	N4
		記	N3			跳	N1
		性	N3			秘	N1
	No	欲	N3	5th	Yes	零	N2
		痛	N3			房	N1
		過	N3			粉	N2
3rd	Yes	政	N3		No	刊	N2
		官	N3			符	N2
		級	N1			資	N3
	No	被	N2	Yes	恭	N1	
		荷	N2		舗	N1	
		招	N3		艇	N1	
4th	Yes	個	N2	No	罨	Not listed in JLPT	
		担	N2		殊	N1	
		嗣	N1		顛	Not listed in JLPT	

Test

➤ *Small test*

Table 2. Description of small test

Question	Information processing skill	Requirement	Purpose
1	Shape	Choose the kanji corresponding to the Chinese-Vietnamese sound	Distinguish kanji characters that contain the same component
2	Sound	Choose a kanji that has the same sound (on-reading) with the learned kanji	Guess the on-reading of the new character containing the same component
3	Meaning	Choose which the meaning of the new kanji is related to	Guess the meaning of the new character containing the same component

➤ *Final test*

In order to examine the long-term information processing skills of the students, the content of the final exam was generally set to be the same with the content instructed in second, third and fourth session. Question 1 and 3 are the summarization of these three sessions. Question 2 is divided into 2A and 2B. 2B is the same as the three sessions' tests while 2A is to write the on-yomi of the learned kanji.

4. Results

4.1. The short-term information processing skills

The changes in the scores of the three questions through five sessions are analyzed in two ways. The first way is in the scores for all students: total scores of student number 1 to number 17 with or without instruction of components. The second is in the scores for each student: each student's score for each of the three questions over five sessions with or without instruction of components. The perfect score for all students is 51 points, and the perfect score for each student is 15 points.

For the first way, charts are used to represent the change in the scores of all students. For the second way, the author use the paired t-test of Cohen's D (1998) which is the most commonly used measure of effect size. In particular, the author use the statistical software called SPSS to analyze data gained from the experiment.

Question 1 (Shape): Differentiate the shape to select the correct kanji from similar kanji characters

➤ *All students*

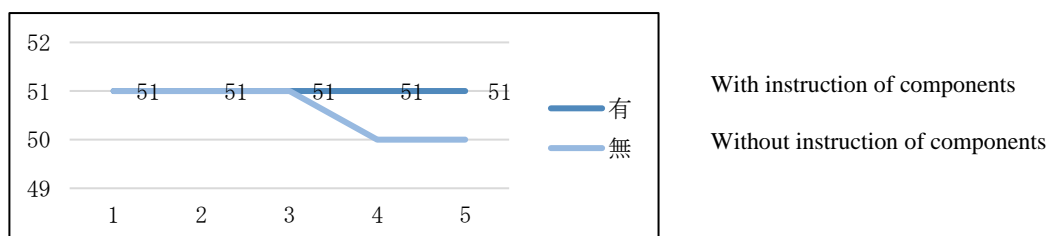


Figure 1. Change in the total scores of all students for question 1 over 5 sessions

According to Figure1, there is not much difference in the scores of all the students regarding of the presence or absence of component instruction in this question. There is a student who made only one mistake in the 4th and 5th test of a kanji without component instruction.

➤ *Individual*

Table 3. Paired samples statistics of total scores by student for question 1 over 5 sessions

		N	Mean	Std. Deviation	Std. Error Mean
Pair 1	Without instruction	14.88	17	.485	.118
	With instruction	15.00	17	.000	.000

Statistics for the paired samples show that the mean increased from 14.88 for "Without instruction" (hereinafter referred to as "Without") to 15 for "With instruction" (hereinafter referred to as "With"), but the change in this figure is very small.

Table 4. Paired samples test of total scores by student for question 1 over 5 sessions

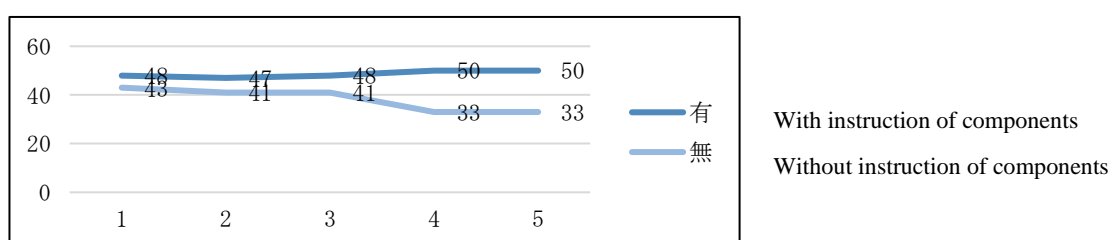
Pair 1	Without - With	Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Sdt. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
		-.118	.485	.118	-.367	.132	-1.000	16	.332

In addition, as a result of examination with a paired t-test, there was no significant difference at $p > 0.05$, and it was found that the score of "With" did not increase much compared to "Without". Therefore, it is considered that teaching the components is not very useful in distinguishing similar kanji characters in a short period of time.

Question 2 (Sound): Guess the on-yomi reading of new kanji that contains the same note as the learned kanji

➤ All students

Figure 2. Changes in the total scores of all students for question 2 over 5 sessions



The scores of kanji with component instruction are always higher than those without instruction. And as the tests progressed, the difference grew.

➤ Individual

Table 5. Paired samples statistics of total scores by student for question 2 over 5 sessions

Pair 1		N	Mean	Std. Deviation	Std. Error Mean
		Without instruction	11.24	17	1.855
	With instruction	14.29	17	.920	.223

It can be seen that the average value rose from 11.24 for "With" to 14.29 for "Without".

Table 6. Paired samples test of total scores by student for question 2 over 5 sessions

Pair 1	Without - With	Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Sdt. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
		-3.059	1.919	.466	-4.046	-2.072	-6.571	16	.000006437

As a result of examination with a paired t-test, there was a significant difference at $p < 0.05$, and it was found that the test score increased significantly in the case of "With"

compared to "Without". In addition, as a result of calculating the effect size of Cohen, it was found that $d=3.33$, indicating a large effect. It can now be asserted that teaching the components has a definite effect on inferring the on-reading of newly introduced kanji.

Question 3 (Meaning): *Guess the meaning of new kanji that contains the same radical with the learned kanji*

➤ *All students*

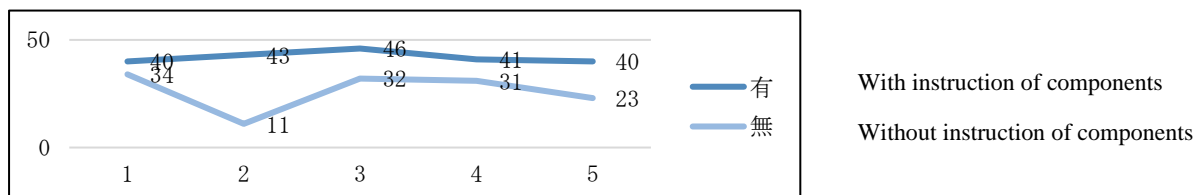


Figure 3. Changes in the total scores of all students for question 3 over 5 sessions

The results revealed that "With" was higher than "Without" for all tests. However, since the difference in scores does not tend to increase continuously after each test, it can not be said that the more you study radicals, the better students' ability to guess the meaning.

➤ *Individual*

Table 7. Paired samples statistics of total scores by student for question 3 over 5 sessions

		N	Mean	Std. Deviation	Std. Error Mean
Pair 1	Without instruction	7.71	17	2.144	.520
	With instruction	12.35	17	2.262	.549

It can be seen that the average value rose from 7.71 for "Without" to 12.35 for "With".

Table 8. Paired samples test of total scores by student for question 3 over 5 sessions

		Paired Differences			95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Without - With	-4.647	2.597	.630	-5.982	-3.312	-7.379	16	.000001557

A paired t-test showed a significant difference at $p<0.05$. As a result of calculating Cohen's effect size, $d=2.05$ indicating a large effect, this result also indicates that the instruction of the components is clearly useful for inferring the meaning of newly introduced kanji.

4.2. The long-term information processing skills

After finishing five sessions, a final exam was organized. To verify long-term skills, only knowledge in the first three classes was set as the content of the test. The content of the test is basically a compilation of five small tests before, but question 2 has two requirements. Problem 2A to write the on-reading of the learned kanji, and problem 2B to select the kanji with the same on-reading from two kanji characters containing a part of the learned kanji. Again, the scores for all students and each student are analyzed.

➤ *All students*

Table 9. Total scores by question for all students

Final test	Q1		Q2A		Q2B		Q3	
Instructions	Without	With	Without	With	Without	With	Without	With
Total	108	136	89	101	106	125	82	108
Improvement	26%		13%		18%		32%	

In all questions, the scores with instruction outperforms the one without it. Among them, Q3 (32%) exceeded the most, followed by Q1 (26%), Q2B (18%) and Q2A (13%). In other words, what improved most by being taught the components is guessing the meaning, followed by differentiating the shape, guessing the pronunciation, and finally memorizing the reading.

➤ *Individual*

Question 1 (Shape): Differentiate the shape to select the correct kanji from similar kanji characters

Table 10. Paired samples statistics of total scores by student for question 1 of final test

		N	Mean	Std. Deviation	Std. Error Mean
Pair 1	Without instruction	6.35	17	1.115	.270
	With instruction	8.00	17	.935	.227

Statistics for the paired samples show that the mean increased from 6.35 for "Without" to 8 for "With."

Table 11. Paired samples test of total scores by student for question 1 of final test

		Mean	Std. Deviation	Paired Differences Std. Error Mean	95% Confidence Interval of the Difference Lower Upper		t	df	Sig. (2-tailed)
Pair 1	Without - With	-1.647	.786	.191	-2.051	-1.243	-8.641	16	.000000201

As a result of examination with a paired t-test, there was a significant difference at $p < 0.05$, and it was found that the test score increased significantly in the case of "With" compared to "Without". Furthermore, as a result of calculating the effect size of Cohen, it was found to be $d = 1.76$, indicating a large effect. This proves that component instruction has a great effect on distinguishing similar kanji characters in long-term skills.

Question 2A (Sound): Memorization of on-reading of learned kanji

Table 12. Paired samples statistics of total scores by student for question 2A of final test

		N	Mean	Std. Deviation	Std. Error Mean
Pair 1	Without instruction	5.24	17	1.954	.474
	With instruction	5.94	17	2.487	.603

It can be seen that the average value only increased from 5.24 for "Without" to 5.94 for "With".

Table 13. Paired samples test of total scores by student for question 2A of final test

		Paired Differences				t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Sdt. Error Mean	95% Confidence Interval of the Difference Lower Upper			
Pair 1	Without - With	-.706	1.929	.468	-1.698 .286	-1.509	16	.151

Since $p > 0.05$, there is no significant difference here, and it was found that the score of "With" did not increase significantly compared to "Without". As a result, it can be said that in the long-term skill, the instruction of the components has no effect on the memorization of the readings of the learned kanji.

Question 2A (Sound): *Guess the on-reading of the new kanji that contain the same notes as the learned kanji*

Table 14. Paired samples statistics of total scores by student for question 2B of final test

		N	Mean	Std. Deviation	Std. Error Mean
Pair 1	Without instruction	6.24	17	2.538	.616
	With instruction	7.35	17	2.370	.575

It can be seen that the average value increased from 6.24 for "Without" to 7.35 for "With".

Table 15. Paired samples test of total scores by student for question 2B of final test

		Paired Differences				t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Sdt. Error Mean	95% Confidence Interval of the Difference Lower Upper			
Pair 1	Without - With	-1.118	1.728	.419	-2.006 -.229	-2.667	16	.017

In the paired t-test, there was a significant difference at $p < 0.05$. In addition, Cohen classified effect sizes as $d = 0.47$, indicating a moderate effect. In other words, teaching the components has a moderate effect on guessing the on-reading of newly introduced kanji.

Question 3 (Meaning): *Guess the meaning of new kanji that contains the same radical with the learned kanji*

Table 16. Paired samples statistics of total scores by student for question 3 of final test

		N	Mean	Std. Deviation	Std. Error Mean
Pair 1	Without instruction	4.82	17	1.667	.404
	With instruction	6.35	17	1.902	.461

Statistics for the paired samples show that the mean increased from 4.82 for "Without" to 6.35 for "With".

Table 17. Paired samples test of total scores by student for question 3 of final test

		Mean	Std. Deviation	Paired Differences Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Without - With	-1.529	1.841	.447	-2.476	-.583	-3.425	16	.003

There is a significant difference at $p > 0.05$. In addition, Cohen classified effect sizes as $d = 0.8$, so it is found that the effect was large. Therefore, it became clear that the ability to guess the meaning of new kanji characters increases by being instructed the components.

5. Discussion and Conclusion

5.1. Discussion

From the above results, there are several recommendations that should be carried out in the future to support teachers and learners in kanji studying process. The first is to use the results of this study to make both teachers and learners aware of the efficiency of teaching kanji focusing on the components. Next, it is required to create appropriate teaching materials to be used for this teaching/learning method. In addition, I think that it is necessary to create an effective teaching method. As a reference, it is also possible to use the teaching method implemented in this study.

In this paper, the author examined the students' improvement of information processing skills after acquiring the kanji instruction focusing on the components. The results are clarified as following.

For short-term skills, instruction of the components is not very effective in distinguishing similar kanji characters. However, by being taught the components, the learner's ability to guess the on-reading of newly introduced kanji will improve, and the more they study, the better. In addition, the components provided clues for guessing the meaning of newly introduced kanji. Specifically, knowing what the meaning of the kanji is related to should increase the possibility of guessing the meaning of the kanji correctly.

For long-term skills, as mentioned above, in the short-term, knowing the components of kanji is not very effective in distinguishing similar kanji, but in the long-term, it has a meaningful effect. There is no visible effect on memorization of new kanji readings, but there is a moderate effect on guessing ability. Besides, it has become clear that there is a great effect in guessing the meaning of newly introduced kanji.

Overall, it can be concluded that the learning of the components has the significant efficiency in improving the information processing skills related to the form, sound, and meaning of kanji for the learners.

On the other hand, this research is still limited to verifying the efficiency of this kanji teaching method. Correspondingly, there is a need for more specific studies with the aim of improving the quality of kanji teaching and learning that focuses on the components.

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ENGLISH LANGUAGE COMPETENCE OF STUDENTS THROUGH ENGLISH COURSES LECTURED AT THE UNIVERSITY OF ECONOMICS HO CHI MINH CITY, VINH LONG CAMPUS

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Abstract

This article describes the tools and methods of assessing university students' English ability that have been in use throughout four English modules: "English for Business Communication - Module 1", "English for Business Communication - Module 2", "English for Business Communication - Module 3," and "English for Business Studies - Module 4" that have been lectured at the University of Economics Ho Chi Minh City- Vinh Long Campus (UEH_ CV). The aim is to precisely show the English proficiency of the students enrolled in the 46th and 47th courses of the full-time university standard program. Score data are collected and analyzed based on the results of the final examinations. The study' findings show that the majority of students received scores below 5 on a scale of 10. Based on these results and subjective analytical opinions, recommendations are given to improve the ability of non-major English students at UEH_ CV in particular and in Vietnamese higher education in general.

Keywords: *English language proficiency, Business English, four English language modules, UEH_Vinh Long Campus*

1. Introduction

English is an international language that expresses general truths. It can be said that there is no other country in the world that emphasizes the role of foreign language ability, namely English, in training and developing human resources like Vietnam in terms of language policy. In recruitment, foreign language proficiency is one of the most essential criteria for selecting and appointing personnel in the public sector. In training, while in most other countries, the teaching of foreign languages is only carried out in high schools, in Vietnam, foreign languages are also taught at the university as a compulsory subject. English proficiency is also a criterion for admission to graduate training programs such as master's and doctoral training and is also one of the mandatory conditions for participating in graduate training programs funded by the state budget.

In fact, universities still have strict regulations on students' foreign language ability, and achieving the prescribed levels is a mandatory condition for being recognized as a university graduate. To be considered for graduation at the University of Economics Ho Chi

Minh City (UEH) and the University of Economics Ho Chi Minh City Campus in Vinh Long (UEH_CV), students must have one of the following international English language certificates: a minimum TOEIC score of 550 (≥ 550), a minimum TOEFL iBT score of 60 (≥ 60), a minimum IELTS score of 5.0 (≥ 5.0), and a minimum VPET (Versant Professional English) score of 50 points (≥ 50), this decision is granted issued together with Decision No. 1827/QĐ-ĐHKT-ĐT dated July 12, 2021 of the Rector of the University of Economics Ho Chi Minh City.

With the motto "Training global citizens, acting for sustainable development", English is not only one of the compulsory subjects in all training programs of the school, but also the preferred language used to teach all disciplines if students are admitted to a high-quality training program in which all subjects are taught in English. As a result, it can be stated that English has a significant role in the digital era, which necessitates students actively equipping themselves with both the professional knowledge and English abilities to compete in the more integrated working environment.

Currently, what tools and methods has the campus implemented to assess students' English ability? A research report titled "*English language competence of students through English courses lectured at the University of Economics Ho Chi Minh City-Vinh Long Campus (UEH_CV)*" is one of the efforts to answer the question. The English courses given on campus and the assessment process for each module will be specifically stated in the paper. Score data will be collected through the end-of-course exams to see the English ability of students in the 46th and 47th courses who are studying a full-time undergraduate program at the campus.

2. Literature Review

2.1. English ability

Shobikah (2020), "the competences in English learning are cognitive, psychomotorist, and affective competences acquired by students related to the competences in learning English. Specifically, the competence in the mean of language learning is communicative competence between students and teachers in the form of interaction inside and outside the classroom as the realization of language use for communication".

According to the dictionary of the University of Southern Queensland (2016), English competence is defined as "the ability of learners to use English to convey information through oral or written form during their learning".

In this paper, English proficiency of students studying at the campus is considered within a statistical range based on the results of the final exam after each module.

2.2. Business English

When comparing Business English (B.E) and General English (G.E), *Francesco Pierini (2014)*, emphasized, General English is used to designate the English language without special content and is used to communicate in everyday life and situations, from very simple contexts to very complex contexts so language of *General English* used in all

ways and in all contexts. On the contrary, when we use the phrase Business English, we are referring to a very broad field of study and applications used mainly in the field of English for specific purposes (ESP) related to the use of English in the working environment. It can therefore require very versatile and complex linguistic and foreign language skills, because it is used in many situations, in both verbal and written interactions. The most common contexts in which Business English occurs are as follows: attending business meetings and shareholder meetings, preparing internal company documents (memorandums and reports) and paperwork inter-company (letters, offers and brochures), communicating between colleagues, arranging commercial contracts, participating in negotiations and business phone calls.

According to Juan Gu (2020), Business English, in general, refers to the English that people use in business activities. It's really specialized English for the underpinnings of that country's economy. Therefore, it is a branch of English for Specific Purposes. Business English includes both English skills and business knowledge. Also, according to Juan Gu (2020), it is the subject of integration between English language learning and economics. Related theories of English language learning, economics and management are the theoretical basis for the development of the major. In addition to the study of the language itself, it also covers the intersection of culture, economics, commerce, management and law, so Business English has the characteristics of “interdisciplinary” and “composite”. As a result, Business English courses not only improve students' ability to use English in listening, speaking, reading, writing and translation, but also equip students with business expertise and master business practice skills. When it comes to the nature of Business English, we can conclude: First of all, Business English is complex in nature. It not only means business vocabulary and terminology, or business knowledge combined with learning English, but it is also a practical major that is practically oriented and closely related to the profession. Therefore, a Business English Language Course may include topics such as business English in reading, writing letters and resumes, business phrases, or terms of sale, advertising, and marketing aspect.

2.3. Non-English major students

Non-English major students at UEH-CV are those who are not majoring in English but in other majors, such as business administration, accounting, finance, etc., and English is just one of the compulsory subjects in their program.

3. Method

The descriptive approach was adopted in this investigation. It describes how course outlines are being applied as a tool and method to assess the English language ability of formal university students enrolled in school. The researchers used the descriptive statistics, particularly frequency counts and percentages, in analyzing the final exam scores of the 46th-course students and the 47th-course students who had already completed four modules of Business English: "English for Business Communication - Module 1," "English for Business Communication - Module 2," "English for Business Communication - Module 3," and

"English for Business Studies - Module 4". The final exam scores of each module were given a corresponding weight value, with one as the lowest and ten as the highest (according to the scale in the Vietnamese educational system). Descriptive equivalents or verbal descriptions were also provided for the outcomes of a review of the actual English ability of the students.

4. Results

4.1. Brief information about UEH - Vinh Long campus

UEH_CV, commonly called the Campus of UEH in Vinh Long, formerly known as Vinh Long College of Economics and Finance, was signed by Mr. Nguyen Van Phuc, Deputy Minister of Education and Training, on the fourth of December 2019. UEH_CV was founded and operates with the mission of training high-quality human resources, researching, consulting, and criticizing policies to contribute to the development of the Mekong Delta.

The campus enrolls students with permanent residence in 13 provinces of the Mekong Delta, including: An Giang, Bac Lieu, Ben Tre, Ca Mau, Can Tho, Dong Thap, Hau Giang, Kien Giang, Long An, Soc Trang, Tien Giang, Tra Vinh, and Vinh Long, for majors in Business Administration, International Business, Finance - Banking, Corporate Accounting, and Marketing, and six nationwide enrollment programs, including: Logistics and Supply Chain Management, E-commerce, Economic Law, Agri-business, Management of Tourism and Travel Services, and Business English. With the criteria "Studying at Vinh Long: A Quality Degree from the University of Economics in Ho Chi Minh City", all final-year students at Vinh Long Campus will participate in the campus rotation program, which includes studying at the Ho Chi Minh City campus. Moreover, Students of Vinh Long Campus are able to join the Integrated Dual Program, then receive two degrees in just 3.5 years or 4 years if they choose to study majors as Logistic and Supply Chain Management, Agri-business and International Business.

From 2020, the campus will start enrolling and training students in formal university programs, transfer formal university programs, second-degree formal university programs, international association formal university programs, on-the-job university training programs, master's degrees, and short-term courses. Up to now, the campus has enrolled students in three full-time undergraduate training courses, bringing the total number of students in the three courses—Course 46, Course 47, and Course 48—to more than 1,200.

4.2. Student's English ability before being admitted to the Campus

According to "Regulations for Learning English and English Proficiency Standards for Formal University Students at UEH" (issued together with Decision No. 1827/QĐ-ĐHKT-ĐT dated July 12, 2021 of the Rector of the University of Economics Ho Chi Minh City),

Regarding the consideration for admitting students who are currently enrolled in the formal university standard program on the campus in relation to learning English Module 1;

- Students who meet the English entry requirements will be allowed to study English Module 1. If a student does not meet the standards, he or she must take an additional English course known as English Module 0.

- Students must meet one of the two conditions listed below in order to study English Module 1.

+ Have an English high school graduation exam score of 5.0 or higher (≥ 5.0);

+ Have an average English grade 12 score of 5.0 or higher (≥ 5.0).

In addition, the campus also has a number of regulations on the English proficiency standards of students during their studies, as follows:

Time	Minimum standards students need to meet	Note
Conditions for students to register for further courses in Semester 5.	Students must pass English Module 1 and English Module 2.	If students do not meet English standards during their studies, the number of registered credits will be limited. Students are only permitted to register for a maximum of 10 credits per semester.
Conditions for students to register for further courses in Semester 7 (registration for a graduation thesis or Enterprise semester).	Students must pass English Module 3 and English Module 4.	

Non-English major students at the Campus can also convert points from international English certificates such as TOEIC (Test of English for International Communication), TOEFL iBT (Internet-based-test), IELTS (International English Language Testing System), and VPET (Versant Professional English) with scores that meet the score conversion table below and are still valid.

TOEIC	VPET	TOEFL iBT	IELTS	CONVERTED POINTS			
				English Module 1 (4 credits)	English Module 2 (4 credits)	English Module 3 (4 credits)	English Module 4 (4 credits)
≥ 550	50	60	5.0	10	9	8	7
≥ 600	55	70	5.5	10	10	9	8
≥ 650	60	80	6.0	10	10	10	9
≥ 700	65	90	6.5	10	10	10	10

4.3. The English courses being taught at the campus and how they are assessed

The objective is to actively prepare the students for the "Global and Local Generations" of the digital era by giving them professional knowledge in the economic field as well as English proficiency. Because of this, all students in non-English majors must take business English as one of their required courses on campus. There are two semesters in the first academic year. English for Business Communication—Module 1 and English for Business Communication—Module 2 are the two required Business English modules for students. The remaining modules, "English for Business Communication—Module 3" and "English for Business Studies—Module 4", will be lectured in the next two semesters of the second school year, respectively. Each module has 60 periods, of which 70% of the lessons are in class; the remaining 30% of the lessons are on the LMS (Learning Management System), the school's online training system.

4.3.1. Assessment tools and methods for the English Courses; Modules 1, 2, 3, and 4

Based on "Decision No. 1843/QDDHKT-KHTKT dated July 14, 2021." And in "Decision No. 2063/QD-HKT-KHTKT dated July 19, 2022, about "organizing the exam in the form of an online exam of the University of Economics of Ho Chi Minh City" and based on the course outline, the authors briefly summarize the assessment of students' English ability through the English modules being lectured at the campus.

The final grade of every course is divided into two main columns: (1) the midterm assessment score (midterm assessment) in proportion to 50% of the total score, and (2) the final exam score (final exam paper) in proportion to 50%. The campus currently offers the online final test.

4.3.2. Midterm assessment score (proportion to 50%)

This score column includes the attendance score *in proportion from* 10% to 15%, the average score of the five end-of-unit tests (EOU tests) that students can do as their homework on the LMS *in proportion from* 10% to 15%, and finally the score of the speaking test or the group presentation test *in proportion from* 20% to 30%.

In detail, the attendance score is the scale that assesses the extent to which students come to class to fully participate in class sessions with lecturers. Instructors are responsible for grading attendance by randomly taking attendance in any class or in all classes (12 sessions; the maximum score for this score column is 10 points if the student is not absent from class). If students are absent without asking permission from the lecturers during any session, they will be deducted one point for attendance in that class).

The content of five end-of-unit tests is compiled based on the content of each unit that students have learned in class, like a homework assignment for them to review previous lessons. Teachers are allowed the range to choose the most flexible way to

encourage students to experience and familiarize themselves with doing the five end-of-unit tests on the LMS but have to ensure that the score is in proportion from 10% to 15%. According to observations, English teachers at the campus use two methods to calculate EOU test scores:

Method 1: After setting the time for completing each EOU test, the teacher will take the average score of 05 EOU tests to calculate the final score. For example, if student A has the score of each EOU test in turn as (8.6; 9.6; 8.9; 9.4; 9.5), the average score of the LMS score column for the five EOU tests of this student will be $46/5 = 9.20$ points.

Method 2: If the student completes the EOU test on time and gets a score of 5.0 or more in each test (≥ 5.0), then the student will be counted through that EOU test and get a full 3% of each test. If there is any EOU test worth less than 5 points, students will lose 3% of their LMS score. Example: Student A's scores on the five EOU tests are as follows: 6.0; 5.5; 7.5; 5.0; 7.0. The final LMS score of Student A is 15%. Student B has a score on the five EOU tests as follows: 3.5; 5.0; 6.0; 5.5; 6.0. The final LMS score of Student B is 12% (because Student B only has 4 of the 5 EOU tests over 5.0 points).

The framework of the five EOU tests is intended to be 90% similar to the structure of the final exam in order to familiarize students with it. This includes vocabulary and grammar: Guided cloze test: 10 sentences to complete with answers A, B, C, and D; 30 multiple-choice questions on vocabulary and grammar; Reading Comprehension (10 sentences, including 3 multiple-choice questions and 7 essay questions related to vocabulary and grammar). The Listening Comprehension section includes two listening parts, the first of which is selected from Part 2 of the TOEIC English textbook, and the second of which is to fill in 10 words or numbers in the blanks of the summary passage.

Designing EOU tests on the LMS system has certain advantages. Students do not have to work in class with the lecturer but can do it anywhere if they can access the school's LMS system, but it requires them to meet deadlines that the system has allowed. Students are not under pressure to do the EOU tests because there is no teacher supervision. Furthermore, because this exercise is designed online, students can see their grades as soon as they are completed and submitted to the system, teachers do not have to spend time grading, and students are allowed to redo the test at least one more time to improve the score if desired, depending on the class teacher's setting for the number of times, but most students can do at least twice on each EOU test.

For the speaking test or group presentation test, the teacher is allowed to choose a topic but must stick to the content of the five units of lessons in class and decide on the test format, for example, speaking tests in pairs or presenting in groups of 3-5 students. The criteria are as follows:

Vocabulary

Whether the students have chosen the right vocabulary for the topic.

Grammar

First, the teacher will see if the student's speech is grammatically correct, and then he/she will find out if the speech has a variety of simple, complex, and compound sentence structures.

Pronunciation

In the scoring criteria for the pronunciation part, the teacher will check whether the student's speech has errors in single sound, last sound, word stress, sentence stress, intonation...

Fluency and development of ideas

Whether or not the student's speech is clear and fluent, and whether or not students will be able to develop and expand their ideas related to the topic.

Discourse Management

Whether the students' ideas are consistent with the content of the topic or not, and if the students use words or phrases to connect ideas within and between sentences. In addition, if the students have to conduct a dialogue, body language, student interaction, and interactive communication will be judged.

Eye- Contact

During the presentation, whether students have a connection with each other. If there is something hidden, inferior and avoidance will show a lack of confidence, the examiner may think that the student has not prepared well for the talk. Therefore, a lack of confidence can leave a negative impression.

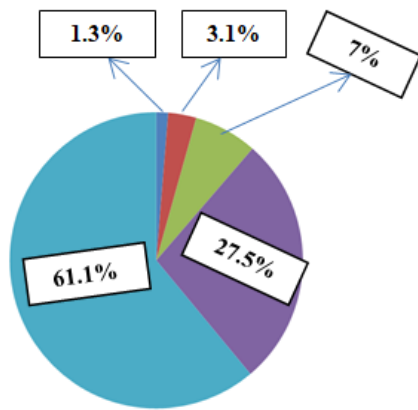
Attitude

Through the test, it has also been shown to the examiner whether the students have prepared the presentation in the best way, whether they are active, positive, or not, and whether they are ready to answer other related questions that the examiner wants to ask. All of this is reflected in the attitude of students in the exam.

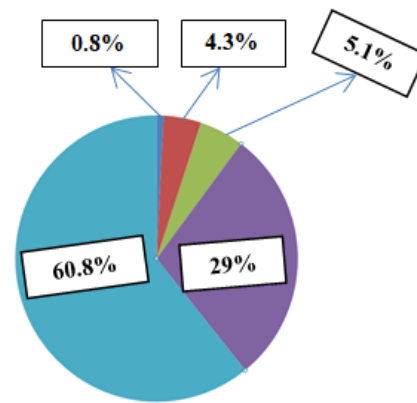
4.3.3. Online final exam paper (proportion to 50%)

As mentioned above, the end-of-course exam is designed to have a 90% similar structure to the form of the previous EOU tests; only the first 10 questions are changed to be in the form of a "Cloze test". Furthermore, writing an email is a required component of the final exam, which accounts for 20% of the total test score. The exam is conducted online, the tests are scored by the system, and the results are given except for the writing part. The lecturer must log in to the system to give marks for the emails-writing part by the student. The criteria for grading the emails in the final exam are agreed upon by the teachers in charge of grading and are as follows: task fulfillment (the level of completion of the task), organization, the layout of the written emails, vocabulary, and grammar.

4.4. Statistic and analysis the results of the final exams

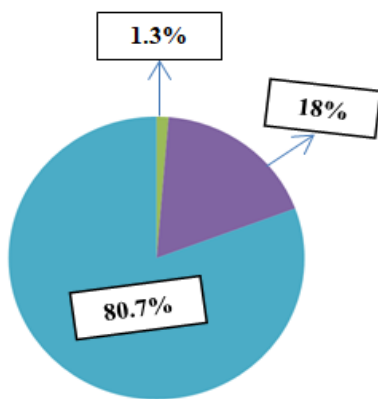


MODULE 1

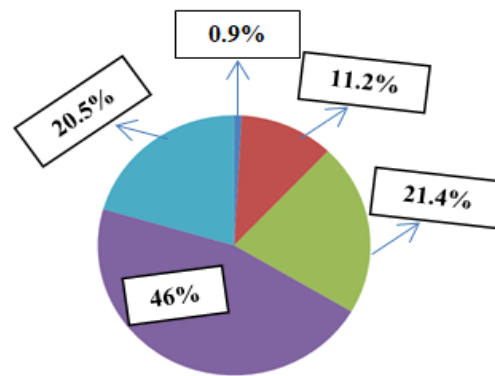


MODULE 2

- from 9,0 to 10
- from 8,0 to 8,9
- from 7,0 to 7,9
- from 5,0 to 6,9
- from 1,0 to 4,9



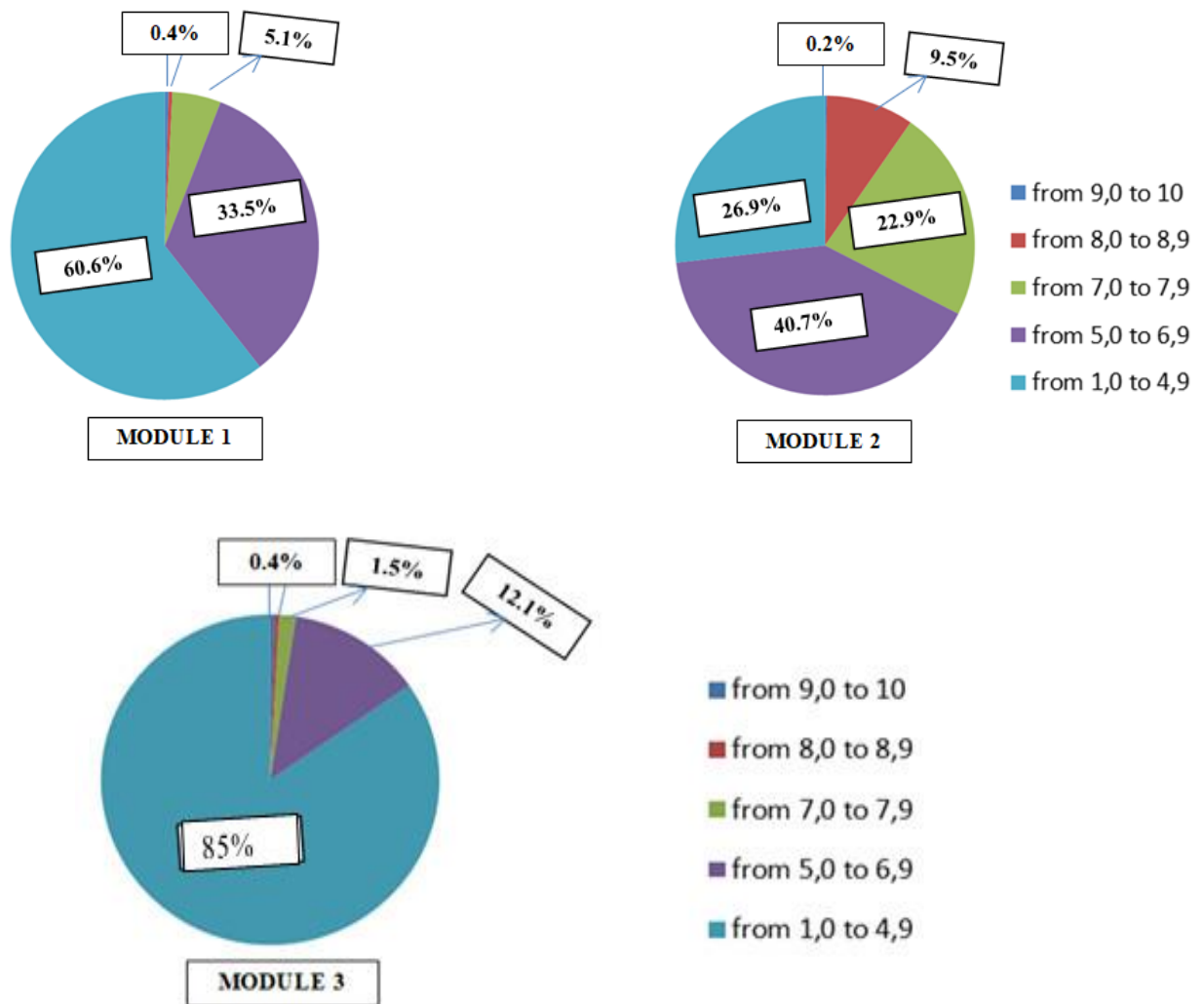
MODULE 3



MODULE 4

- from 9,0 to 10
- from 8,0 to 8,9
- from 7,0 to 7,9
- from 5,0 to 6,9
- from 1,0 to 4,9

Statistics on the percentage of final exam scores of the 46th- course students in four modules in Business English



Statistics on the percentage of final exam scores of the 47th- course students in three modules in Business English.

- English for Business Communication - Module 1 (English –Module 1)

For this module, the students in the formal university program course 46 take the paper-based test (offline). Statistical results show that up to 140 out of 229 paper tests scored from 1.0 to 4.9 points, accounting for 61% of the tests with scores below five. For the students of the formal university program course 47, at this time, the school has applied the form of online exams for all subjects, and the results have been recorded for up to 286/472 paper tests, with scores ranging from 1.0 to 4.9 points, which also account for 61%.

- English for Business Communication - Module 2 (English –Module 2)

In this module, 61% of students have test scores below five, equating to 155 out of 255 exam tests with scores ranging from 1.0 to 4.9 points. The ratio of this score compared to the students of course 47 is 27%, or 127 out of 473 exam tests.

- *English for Business Communication - Module 3 (English – Module 3)*

The number of tests with scores ranging from 1.0 to 4.9 points is extremely high in this module for students enrolled in Course 46. With a total of 184 out of 228 exams, up to 81% of the exams have below-average test scores. However, this rate is even lower than that of 47th-course students, accounting for 85%, or 376 out of 444 exams with below-average scores.

- *English for Business Studies- Module 4. (English – Module 4)*

The percentage of exams with scores ranging from 1.0 to 4.9 points accounted for 21% of the total in this module, corresponding to 46 out of 224 exams.

5. Discussion and Conclusion

5.1. Discussion

As previously stated, the student's final grade is based on two main score columns: the midterm assessment score column and the final exam score column, each of which accounts for 50% of the final grade.

In this article, the authors will explain why the team does not assess the students' English ability through the results of the entire course, including the midterm assessment score and the final exam paper score, but instead, only analyzes the results of the final exam of each module to show the English ability of the students. As has been analyzed above in how teachers judge midterm grades for students, objectively, it can be found that: firstly, scores of the five EOU tests are done by students on the school's online learning system (LMS: 05 end-of-unit tests), and students are free to do these exercises anywhere and with anyone. As a result, it is difficult to judge their ability accurately through the assignments. Secondly, for the assessment of the attendance score, students only need to attend all the sessions as prescribed (12/12 sessions) to get the maximum score. It is said that this is not an impossible task for a hard-working student. Finally, there is the speaking test score or group presentation score, which is directly assessed by the classroom teacher, who acts as a judge when the groups in the class perform what they have previously prepared. In fact, it is unavoidable to include the subjective opinion of the examiner when marking oral exams, even though the examination criteria have been fully and clearly announced to the learners. These are also some of the subjective reasons the authors want to raise for the explanation.

In terms of the score of the final exam, it is easy to see that, of the four English modules that the students of course 46 have completed, most final tests get scores below 5, which accounted for more than half of the tests in the whole class; English Module 3 accounted for the highest percentage at 81%. When carrying out the research, the students of course 47 had only completed three of the four English modules mentioned above. However, the rate of low-scoring tests is quite high, even in English Module 3, where 85% of the tests have scores below five.

Students in both courses 46 and 47 have currently completed a total of seven final exams in English in accordance with the prescribed curriculum. Six of the seven exams were online. (With the exception of Course 46's English Module 1, which took the offline exam.)

According to the statistical results, the majority of final exams have less than five, which has made both of us, as the authors of the article and the lecturers who directly teach these students puzzled. In our opinion, firstly, it is difficult to conclude that students are still confused with the format of the test while they have been familiarized with this test format by practising the five EOU tests on the LMS, each of which is tested on the LMS at least twice. Secondly, it cannot be said that they have difficulty because they have to take the online test; in fact, they have been used to the online exam form since the end of 2019 when the COVID-19 epidemic first appeared in Vietnam.

For the reasons stated above, we have some concerns about whether the students' English competence is inadequate in comparison to the exam standards or because the exam questions are too complex for the students to answer. It is also claimed that in terms of the form of organizing the online exam, it is easier than taking the offline exam; the students can decide where to take the test, and there is no direct supervision by the examiner. As a result, they frequently have dependent attitudes and do not prepare effectively for the exam until the final exam began.

Within the scope of this research paper, the above are temporarily the subjective doubts of the author's team formed through the teaching process of observation and perception. Further research and more precise surveys are required to properly investigate and determine the causes of the low final test scores.

5.2. Recommendations and Conclusion

According to the statistics, the English abilities of non-English major students studying on campus, although having previously met the standard English requirements, qualify them to study at the school. However, the actual exam results show that the majority of students received scores below 5 on a scale of 10. The causes can be subjective or objective, such as the teacher, the program, the technique of compiling the final exam questions, the evaluation, and the students themselves. For these reasons, program developers, educators, and others must pay attention to the actual competency of students in order to create more relevant approaches for them.

One of the solutions proposed by the group is to first review the entire assessment process and the content of the final exam papers. The second option is to impose further restrictions, such as not allowing students to take the second final exam if their overall course grade is less than 5.0 and requiring students to re-register for the discipline in which they previously failed. (the same as the main campus of UEH is doing). In the hopes that students will no longer experience thoughts of neglect and dependence. We believe that it requires the great determination and desire of the whole school community to implement this policy with the aim of creating a more positive learning environment for students if they want to improve students' English abilities and high-quality human resources, which are critical for the development of the nation in order to meet the increasing demands for human resources for Vietnam's economic integration process.

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APPENDIX

Statistics on the final exam scores of the 46th-course students in four modules in Business English at UEH- Vinh Long Campus

Course 46 th		“English for Business Communication - Module 1’ or “TA- HP1”	“English for Business Communication - Module 2” or “TA- HP2”	“English for Business Communication - Module 3’ or “TA- HP3”	“English for Business Communication - Module 4” or “TA- HP4”
Exam format		Offline (papers)	Online	Online	Online
Scores of final exam (proportion to 50%)	from 9,0 to 10	3	2	0	2
	from 8,0 to 8,9	7	11	0	25
	from 7,0 to 7,9	16	13	3	48
	from 5,0 to 6,9	63	74	41	103
	from 1,0 to 4,9	140	155	184	46
Total of exam papers		229	255	228	224

Source: Department of Training- UEH- Vinh Long Campus

Statistics on the final exam scores of the 47th- course students in three modules in Business English at UEH- Vinh Long Campus

Course 47 th		“English for Business Communication - Module 1’ or “TA- HP1”	“English for Business Communication - Module 2” or “TA- HP2”	“English for Business Communication - Module 3’ or “TA- HP3”	“English for Business Communication - Module 4” or “TA- HP4”
Exam format		Online	Online	Online	Online
Scores of final exam (proportion to 50%)	from 9,0 to 10	2	1	2	This module will be lectured in April, 2023.
	from 8,0 to 8,9	2	45	2	
	from 7,0 to 7,9	24	108	7	
	from 5,0 to 6,9	158	192	57	
	from 1,0 to 4,9	286	127	376	
Total of exam papers		472	473	444	

Source: Department of Training- UEH- Vinh Long Campus

SOLUTIONS TO IMPROVE ENGLISH SPEAKING SKILLS OF GEOGRAPHY STUDIES STUDENTS AT THE DEPARTMENT OF GEOGRAPHY, HO CHI MINH CITY UNIVERSITY OF EDUCATION

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Abstract

In the process of globalization, English proficiency is becoming more and more important to students in many aspects. Social science students, who are not majoring in English, need English proficiency the most, especially speaking skills. Therefore, this article aims to clarify the reality of English-speaking skills of students in Ho Chi Minh City University of Education (HCMUE), including three following majors: Geography Studies, Vietnamese Studies and International Studies. By making a survey, we collected valuable primary data. After making a comparison about English speaking skills among the three groups of students, we suggest appropriate and effective study solutions for students in Geography Studies in order to improve their English-speaking skills.

Keywords: *English speaking skills, social science students, Department of Geography.*

1. Introduction

Nowadays, in the era of globalization, English proficiency is becoming increasingly important for many aspects of students' lives. English not only provides students with opportunities for broad learning and research, allowing them to read and understand foreign documents, especially research documents that are not yet available or not deeply explored in their native countries, but also provides students with greater job opportunities after graduation, as English is now considered the international language of business.

According to Babbel - an online language-learning platform, currently there are nearly 7.5 billion people in the world, including over 1.5 billion English speakers (including both native and non-native speakers). The number of countries that speak English reaches up to 101, including major countries such as Australia, Canada, England, Ireland, New Zealand, Northern Ireland, the United States, and Wales.

In addition, countries such as Botswana, Cameroon, Fiji, Guam, Hong Kong, India, Kenya, Malaysia, Nigeria, the Philippines, Puerto Rico, Singapore, South Africa, and Zimbabwe recognize English as one of their official languages, most of which were once part of English-speaking countries. European countries with more than half of the population speaking English including Austria, Belgium, Cyprus, Denmark, Finland, Germany, Greece, Luxembourg, Malta, Slovenia, and Sweden.

The widespread distribution of English worldwide has made it one of the main languages used in the United Nations, in the process of trade between countries, businesses,

and companies to exchange work experience, production technology, manufacturing, cultural exchange, translation, and tourism, all of which require the use of English. Therefore, it can be affirmed that in the era of globalization, the ability to speak English is a great advantage for students and workers in this period of integration. Especially for non-language majors who are studying social sciences, job positions after graduation are fields that require the use of English such as tourism, media, public relations, event organization, and foreign affairs.

According to a study from the recruitment company Euro London, knowing and using a foreign language (especially English) fluently can increase an individual's income level by up to 15%. The more foreign languages one knows, the higher their income level and the more likely they are to be promoted to hold important positions in companies.

Nowadays, the Social Sciences sector in Vietnamese universities trains a workforce for fields that require strong English-speaking skills to develop personal careers and contribute to the growth of the businesses where individuals work. For example, Vietnamese Studies educates a workforce for research institutions, organizations that apply Vietnamese knowledge, tourism-related production and business, culture, and more. International Studies prepares a workforce for research institutions, organizations that apply international knowledge, production and business organizations, non-governmental organizations, foreign companies, multinational corporations, and international entities. Geography Studies educates a workforce to understand and research issues related to natural and socio-economic areas, and to work in training, research, and tourism management positions.

At Ho Chi Minh City University of Education, the three fields of Geography Studies, Vietnamese Studies, and International Studies share one job position in the tourism industry. Workers in this field need language skills, and good speaking skills are an opportunity to develop their careers. The jobs include tour guides, tour operators, and tourism advisors.

The ability to speak English can be considered a key to help workers improve their skills and develop their careers. For example, through contact and service provision to international visitors, a tour guide/tour operator will understand how to behave, welcome, and deal with more diverse situations than when dealing with domestic tourists who are Vietnamese. Additionally, English is also a key to increasing personal income and contributing to the development of businesses where individuals work.

If every tourism student can effectively use their English language skills in their work after graduation, it will not only benefit their personal development but also enhance the reputation of the businesses they work for. Having skilled and professional tour guides and advisors who are fluent in English will improve the credibility of these businesses, which in turn will boost the tourism industry in Vietnam. As a result, both the tourism industry and the overall economy of Vietnam will continue to grow, which is the goal of the authors.

For these reasons, the authors believe that it is necessary to conduct a survey of the English language proficiency of three majors (Geography Studies, Vietnamese Studies, and International Studies) at the Ho Chi Minh City University of Education. Through the survey results, the authors can evaluate the English language proficiency of Geography Studies students in comparison to Vietnamese Studies and International Studies. At the same time, the authors can identify the strengths, weaknesses, and difficulties of Geography Studies students in improving their English language skills. This will provide a foundation for the authors to propose appropriate learning methods and development strategies for English language proficiency for Geography Studies students in the Geography department.

2. Method

- Document analysis method:

The method of collecting and processing secondary data is important and necessary for scientific research in general. Using this method, the author's team has collected and synthesized materials from various sources such as textbooks, scientific journals, scientific research papers, master's theses, statistical data from domestic and foreign agencies... From these reputable and relevant reference sources to the research topic, the authors have a more comprehensive and intuitive view of the subject.

- Survey method:

The survey method was carried out by obtaining survey results based on a sample survey. The survey was conducted to assess the English-speaking skills of non-language major students in social sciences and humanities through an online survey and evaluating the survey results. From there, the author group could research, collect, and process data in a logical and scientific way, ensuring the objectivity of the survey results. The sample survey method chosen by the author group in the research project is "Probability Sampling Method - Stratified Random Sampling."

The survey sampling method was implemented as follows:

- Divide the population into groups according to one or more criteria related to the research purpose.
- In each group, use simple random sampling or systematic sampling to select units of the sample.
- The sample rate taken in each group is equal to the proportion of that group in the population.

The "Probability Sampling Method - Stratified Random Sampling" was chosen by the author group for the research project to ensure the representativeness of the survey and because of its convenience, low cost, and simplicity.

Table 1. The number of students joining the surveys

Course	Geography Studies			Vietnamese Studies			International Studies		
	Size	Ratio	Sample size	Size	Ratio	Sample size	Size	Ratio	Sample size
42	-	-	-	84	0.20	17	110	0.19	21
43	29	0.27	8	137	0.33	46	150	0.26	39
44	49	0.45	22	100	0.24	24	160	0.27	44
45	33	0.30	10	88	0.21	19	160	0.27	44
Total	111	-	40	409	-	106	580	-	148

3. Results

- Students' opinion about the importance of English proficiency and English-speaking skills

Over 97% of students from all three majors agree and strongly agree that English proficiency and English-speaking skills are important for their future careers. The majority of students from all three majors believe that speaking skills are the most important skills and that study habits have the most influence on English speaking skills.

Nearly three-fourths of students from all three majors believe that establishing clubs or groups for the purpose of practicing and improving English speaking skills is necessary and very necessary. Over 50% of students from all three majors believe that group studying is the most important form of learning to develop English speaking skills.

Over 60% of students from all three majors believe that the purpose of learning English is to serve their future careers after graduation. More than half of Geography Studies students believe that listening skills are the most difficult, while nearly three-fourths of Vietnamese major students and over half of International Relations students believe that speaking skills are the most difficult.

The majority of Geography Studies students spend less than 30 minutes per week studying English, while Vietnamese major and International Relations students who participated in the survey spend about 1 hour. However, the proportion of Geography Studies students who spend more than 2 hours per week studying English is higher than that of Vietnamese major students (20.2% > 14.2%) and nearly double the proportion of International Relations students who participated in the survey (9.5%).

- English certificates

Table 2. Students' English certificates

Certificate	IELTS		TOEFL		TOEIC 4 skills		TOEIC 2 skills		CEFR	
	Number	Average score	Number	Average score	Number	Average score	Number	Average score	Number	Level
Geography Studies	2	5.5	0	-	0	-	0	-	1	B1
Vietnamese Studies	1	6.5	0	-	0	-	6	522	0	-
International Studies	7	5.86	0	-	0	-	6	676	1	B1
									3	B2

Table 2 shows that the proportion of students with English language certificates is not high: the highest percentage is found among International Studies students, but it only accounts for 10.8%, while the percentages for Geography Studies and Vietnamese Studies are 7.5% and 6.6%, respectively.

The highest average IELTS score belongs to Vietnamese Studies students, followed by International Studies students and Geography Studies students ($6.2 > 5.9 > 5.5$). However, the number of students with IELTS certificates in Vietnamese Studies is the lowest, followed by Geography Studies and highest in International Studies ($1 < 2 < 7$). The highest average TOEIC score in Listening and Reading belongs to International Studies students, followed by Geography Studies students and Vietnamese Studies students ($676 > 522$). There are no Geography Studies students with TOEIC certificates in both Listening and Reading.

No Vietnamese Studies students participating in the survey have CEFR certificates, while in Geography Studies, there is one student with a B1 level CEFR certificate, and in International Studies, there are four students with one B1 level CEFR certificate and three B2 level CEFR certificates.

Among the three majors, International Studies students have the most impressive number of certificates and average scores. None of the three majors have students with TOEIC 4 skills (Listening, Reading, Speaking, Writing) and TOEFL certificates. Since the TOEIC 2 skills (Listening and Reading) are not directly related to speaking skills, they can only reflect students' vocabulary and grammar proficiency, which can serve as a basis for proposing learning methods to develop students' speaking skills.

The certificate data partly reflects students' speaking skills, but it cannot fully represent the overall situation because there may be cases of students who have good speaking skills but have not taken the language proficiency test (although this proportion is usually not significant). However, the proportion of students with language certificates in all three majors is still low, and the number of students with certificates achieving good scores is also very low. Overall, it can be concluded that the current situation regarding students' English-speaking skills in all three majors is not promising enough to meet the professional requirements after graduation, regardless of whether they have language certificates or not.

- English speaking skills assessment

* *English speaking skills*

Table 3. Students' assessment of their own English-speaking skills

Assessment level of English-speaking skills	Very weak	Weak	Neutral	Good	Very good
Major					
Geography Studies	2 (5%)	9 (22.5%)	23 (57.5%)	6 (15%)	0 (0%)
Vietnamese Studies	8 (7.5%)	30 (28.3%)	53 (50%)	15 (14.2%)	0 (0%)
International Studies	6 (4%)	15 (10.1%)	88 (59.5%)	38 (25.7%)	1 (0.7%)

More than 50% of the surveyed students from 3 majors rated their speaking skills as average. Only one International Studies student self-assessed their English-speaking skills as good. The proportion of students who assessed their English-speaking skills as fair in the International Studies major (25.7%) was higher than that of Geography Studies (15%) and Vietnamese Studies (14.2%) majors. However, the proportion of students who assessed their English-speaking skills as poor in the Geography Studies (22.5%) and Vietnamese Studies (28.3%) majors were similar to each other and higher than that of International Studies (10.1%).

* *Psychological factors*

Table 4. Students' confidence in the elements affecting English speaking skills

Elements	Students have the MOST confidence			Students have the LEAST confidence		
	Vocabulary	Grammar	Pronunciation	Vocabulary	Grammar	Pronunciation
Geography Studies	14 (35%)	12 (30%)	14 (35%)	10 (25%)	12 (30%)	18 (45%)
Vietnamese Studies	36 (34%)	38 (35.8%)	32 (30.2%)	43 (40.6%)	33 (31.1%)	30 (28.3%)
International Studies	56 (37.8%)	60 (40.6%)	32 (21.6%)	61 (41.2%)	35 (23.7%)	52 (35.1%)

The Geography Studies students were the most confident in the vocabulary and pronunciation factors, while in Vietnamese Studies and International Studies, the grammar factor was the least confident. As for the factor that students were least confident in, the highest proportion of Geography Studies students lacked confidence in pronunciation, while in Vietnamese Studies and International Studies, it was vocabulary. However, the factor that had the highest proportion in all three majors was not significantly higher than the other two factors.

- Solutions to improve English speaking skills of Geography Studies students

* *For Geography Studies students*

- *Study awareness*: Study awareness is considered the foremost important factor that determines whether students achieve their goals of developing good English-speaking skills or not. At the Geography Department, students should participate in sharing sessions between lecturers and students on the importance of English proficiency and speaking skills in the era of integration. Moreover, students should refer to official information sources of the department to reinforce their English learning awareness. Additionally, they should participate, maintain and promote the spirit of the English for Geography Contest, a representative English contest of the department, to learn and develop their speaking skills under the guidance of the contest's judges, who are also lecturers.

- *Study time*: Arranging time for studying, practicing, and completing set goals is extremely necessary. Spending too little time on studying will not bring effective results as

much as dedicating more time. Students should balance between different activities and studying, practicing English speaking skills. They should spend at least 30 minutes a day studying English and set study slogans such as "5 vocabulary words per day" or "1 grammar point per day" to make their learning journey more specific.

- *Personal plan*: Setting the ultimate goal of learning and practicing English speaking skills leads to smaller goals in the learning journey that depend on each student's personal plan. Students need to answer their own question "What do I need English speaking skills for?" to set goals in their learning and practicing English speaking skills. This will create a higher motivation for studying than studying without any plans or goals.

- *Learning methods*: Learning methods are the decisive factors in each student's learning journey. Regarding learning and practicing English speaking skills, there are numerous methods that students can apply. Therefore, finding a suitable learning method for oneself is key to making English learning and speaking skill practice effective. Specifically:

+ *Study in groups*: Each individual participating in a study group will have different English proficiency levels and each individual also has a different purpose for learning English. Therefore, when studying in groups, the task is to set a common goal for the whole group to aim for. When studying in groups, especially practicing speaking skills in groups, it will help us develop a reflex in the form of English that is here together with familiar friends, creating a comfortable feeling and avoiding initial shyness. From there, students learn useful things from others and can share what they know with everyone and help each other improve their English-speaking ability.

+ *Classroom learning*: Vocabulary, grammar, and pronunciation training when learning English achieve high effectiveness when applying this learning method because the learning process is directly supported and scientifically accurate by instructors. Students should apply this learning method more and actively ask questions to the instructor to clarify their doubts, reinforce their knowledge throughout the learning process without worrying, being confused about the accuracy of the answer as in a study group (no professional instructor). At the same time, students can also interact with other students in the same class to learn together, develop and create a communication environment, and practice English speaking skills under the guidance of the instructor.

+ *Online learning*: When learning English in general, applying online learning will save time for students because they don't have to spend time traveling to study points, while still ensuring all the characteristics of studying in groups and in classes when applying this learning method. The disadvantage of this learning method is that when the connection is unstable, it will cause missed knowledge or interrupt the exchange and Q&A during the learning process, affecting learning efficiency. This is something that students need to pay attention to.

+ *Offline learning*: Students should often apply this traditional learning method because although it consumes the learner's travel time to study points, it does not cause any risks related to network connection that affect learning efficiency as online learning does because this learning method is not associated with the concept of distance and online learning.

Currently, students have many methods and forms of learning and practicing various English language skills. The development of the subjective creativity and ability to support and create good forms of English language learning objectively in schools and society will be a good premise to enhance the ability to practice speaking English for students.

At Ho Chi Minh City University of Education, students in general and Geography Studies students have access to 3 English language courses at B1 level (Level 3/6 according to the Vietnamese Language Proficiency Framework) where the teaching process integrates all 4 skills: listening, speaking, reading, and writing. Among these skills, speaking is emphasized by the lecturers who create communicative learning forms in English. Here, students have the opportunity to practice and improve their speaking skills by organizing group learning forms, participating in the school's English communication clubs.

- *Real learning environment*: In order to develop English speaking skills, especially for future career purposes (tourism industry), Geography Studies students need to actively seek a real learning environment to become familiar with the job. Students should participate in internships and job-related English language practice in tourism companies, restaurants, hotels that require English language skills. In addition, students should actively seek a practical learning environment outside of the faculty and school by participating in activities organized by the Department of Tourism, as well as participating in competitions and activities of non-governmental organizations related to tourism.

- *Learning space*: Creating a good learning space will help students maximize their time and effectiveness in learning and practicing speaking English, whether in group learning, class learning, online or offline. Students should create a comfortable space for themselves to feel excited about developing their speaking skills, which will then maximize their learning effectiveness. For example, in group learning, students should use any comfortable space such as their home, lobby, stone benches, parks, anywhere they feel inspired to learn. At Ho Chi Minh City University of Education, there are always learning spaces for students such as self-study areas, exchange and sharing spaces at English club meetings.

- *Learning mindset*: Learning is an endless process of creativity and thinking. Ask what you don't know and explore what you're not sure of. If there are things that you don't know or aren't clear about during your learning process, search for answers by asking questions. Ask your teachers, friends, search the internet or look for information in books. By all means, develop a habit of thinking and asking questions about the things you don't know or understand. This is how students can progress and improve their English-speaking skills through learning and practicing.

- *Perseverance in learning*: English is a language, it is not a problem to be solved or a movie to be watched in a few hours or days. Mastering a language is a long journey that requires persistence and overcoming oneself. As mentioned in the goal setting section above, be persistent in achieving every learning goal you set for yourself, from short-term to long-

term. Don't rush in practicing your English-speaking skills, as students may easily burn out. Persistence is the guiding principle, try your best to complete each short-term goal, until one day you will see a significant improvement in your English-speaking skills.

- *Taking notes and listening*: Speaking English means using English to communicate in daily life and work. Therefore, take notes of frequently encountered English words, important grammar rules, words that are easy to forget or confuse. Take notes everywhere and place them in a visible place for you to remember. This is a useful daily learning technique that you can apply to develop your English-speaking skills. To develop good English-speaking skills, students need to develop good listening skills to serve the interactive speaking format. Listen carefully to English lectures, how actors pronounce English in movies, how singers sing English songs, and how native speakers speak English... to train your listening skills. This is also a good opportunity to practice your pronunciation and intonation, as you can adjust your pronunciation and intonation to be as close as possible to that of native speakers.

- *Learning everywhere*: Learning is a lifelong process, and the ultimate goal of improving English speaking skills is to serve many other purposes in the future. Therefore, try to practice speaking English everywhere. In addition to reliable sources such as books, with the Internet, you can easily look up information, but make use of all resources, not just the Internet. It could be textbooks, newspapers, magazines... Or simply everyday entertainment methods like watching movies, listening to music, or watching news...

- *Learning and sharing*: When we have an apple and we give it to each other, each person only has one apple. But when each of us has a stream of knowledge and we share it with each other, it will create many different streams of knowledge because knowledge is endless. Learning and improving English speaking skills are also similar, learning from others or sharing your own knowledge with others also helps us improve, master, and expand our English-speaking skills.

- *Practice goes hand in hand with learning*: Speaking English is a skill that requires practice. Because if students only learn through one-way methods without multidirectional communication and practice speaking English, they will not be able to develop this skill. Actively create an English-speaking environment, use English with friends around you, or interact, make friends to communicate with international friends through social networks, etc.

* *For the Department of Geography and Ho Chi Minh city University of Education*

Within the Faculty of Geography and the Ho Chi Minh City University of Education, the establishment of academic English clubs for students is a very meaningful and practical way to develop students' English language skills in general and speaking skills in particular. Recognizing this, the Faculty of English at the University of Education in Ho Chi Minh City established the HCMUE English Zone Club (formerly HCMUP English Club) at the

beginning of the 2013-2014 academic year. This English academic club regularly organizes a variety of activities, events, and contests on different topics in daily life in English. The club aims to create an English-speaking environment for students both inside and outside the university. If the club's communication activities and events continue to be effective and attract more students from different majors, both linguistics and non-linguistics, it promises to be a more beneficial playground than ever before.

In addition to the above general English academic club, it is recommended to establish another English academic club specifically for non-linguistics students in the Faculty of Social Sciences. This club should regularly organize activities, events, and contests related to students' career opportunities in English, focusing on topics related to tourism, culture, history, and international issues. Through this, non-linguistics students both inside and outside the university will have the opportunity to develop their English language skills for future work.

At the department level, the Geography Department holds an annual English for Geography Contest at the end of the second semester, starting in the 2017-2018 academic year. This academic contest is organized to improve the English language skills of Geography Studies students, with content revolving around natural geography, economics, society, and tourism, attracting a large number of student participants.

The authors hope that the leadership of the Department of Geography at Ho Chi Minh City University of Education will maintain and promote the spirit of this competition, as well as increase communication measures so that students both inside and outside the department who are passionate about geography and tourism have the opportunity to participate in order to improve their English proficiency. In addition, there should be more English competitions related to tourism business, such as dealing with situations in tourism, presenting about tourist attractions and cities, in order to train students' vocational skills in an English-speaking environment. This will be very useful for students because it not only helps to improve their English proficiency but also familiarizes them with the job that their major is aimed towards. In addition, during the students' learning process, the teachers are the most significant factor that can influence their English proficiency and speaking skills. Therefore, during the teaching process, the teachers can provide opportunities for students to learn English through looking up terminology, referencing materials, presenting in English based on students' abilities, and encouraging them with bonus points to motivate them to study harder, getting closer to common English and the field of geography and tourism in particular.

** For the Youth Union and Student Association at the Department of Geography*

In the current process of globalization, English is the prerequisite for individuals to integrate and become global citizens. Therefore, "The mission of the university" is to help students integrate well, and English is not only important for Geography Studies students but also for all students at Ho Chi Minh City University of Education.

In order to promote the spirit of "Good learning" and "Good integration" - 2/5 criteria for the title "Excellent student", the Youth Union and Student Association of the Department of Geography at Ho Chi Minh City University of Education has implemented enthusiastically and effectively communication measures to encourage students' English learning spirit in the department. Encourage students to participate in academic activities related to English, recently typified by the activities "Creating English flashcards", "Translating scientific articles on research topics"... It can be said that thanks to the efforts of the Union and Association, Geography Studies students increasingly realize the importance of English for their study and work career.

The authors hope that the leadership levels of the Youth Union and Student Association of the Department of Geography at Ho Chi Minh City University of Education will continue to encourage students to learn English, organize more English learning activities such as pronunciation practice, grammar chart construction... in addition to vocabulary learning and English translation activities for students. Join hands towards the goal of developing English language proficiency and speaking skills for Geography Studies students in particular and non-language majors in Social Sciences in general.

4. Discussion and Conclusion

Geography Studies students recognize the importance of English language proficiency in general and speaking skills in particular. They consider speaking skills to be the most important and listening skills to be the most difficult. Most students believe that establishing clubs (associations, groups) to practice English is necessary, and they feel that group learning is the most important form of learning to develop their English-speaking skills. The majority of students study English to serve their future careers, and they consider learning consciousness to be the most important factor when studying. An interesting point is that the percentage of Geography Studies students with English language certificates is low (about 5.5%), which is the lowest among the three social science fields surveyed in the study (Vietnam studies 6.6% and International Studies 10.8%).

Most Geography Studies students rate their English-speaking skills as average, just like Vietnam studies and International Studies students. The majority of students spend less than 30 minutes a week studying English. Geography Studies students are most confident about their vocabulary skills, which is completely different from the two other fields where grammar is the most confident skill. It is hoped that the proposed learning methods and English-speaking skill development suggestions in the research will help Geography Studies students in the Geography Department to determine their own learning methods. If students identify what they need to learn and how to learn and practice seriously, their English-speaking skills will undoubtedly make significant progress in the near future.

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THE SAYINGS OF KACHIN ELDERS' IMPACT ON KACHIN SOCIETY

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Abstract

This paper is an attempt to point out the ethical values from Kachin elders' sayings. Sayings give advice about life and general truth. Kachin has custom, manner, principles, belief, morality, daily habits, sayings and attitudes. Human being learnt from the experience of their forefather and followed the traditional ways. Elders can guide and give advice to the young generation with the sayings, that the way to benefit and loss, right and wrong, just and unjust, fair and unfair, good and bad, is and ought and dos and don'ts. So the young generation will adapt himself to correct his faults and wrong ways and do what is right from past experience. Some of the Kachin elders' sayings can provide guidelines for their ways of life. Sayings are guidelines of action and adjustment for the life of the group. The aim of this paper is to organize the various ethical and moral views found in Kachin elders' sayings to gain some understanding of the general social outlook.

Keywords: *Admonish, Advice, Good livelihood, Social duty.*

1. Introduction

Kachin who mostly live in Northern Myanmar is one of the nationalities in the Myanmar family. Kachin has distinct cultural systems which were handed down from their ancient ancestors. They love and greatly respect their culture which has been conserve and sustain since ancient times.

Society is an organized group who has agreed to live together according to certain rules for the survival and existence of the individual and family. But to improve economic life knowledge and experience is necessary for from this human being learn how to improve provision of not only basic needs but also to live a better life.

There is a saying in Myanmar literature, "If the culture is lost the race will be lost." So, we must care, and preserve and protect our culture which is valuable heritage obtained from our elders and ancestors.

According to Robert Alan, culture can be defined as follows:

"Culture differences should not separate us from each other, but rather cultural diversity brings a collective strength that can benefit all of humanity."

Culture therefore includes all ways of life. Culture is a value concept and it stands for utilities and activities which are beneficial to the enrichment of human life. So, we should

keep and preserve every part of culture. Every race, every ethnic people and every nationality has its own culture. As there are so many nationalities in the world, there are different kinds of culture can be found in the world. Generally, cultures can be divided into two, Eastern and Western culture. The two cultures are not the same due to the different customs, different beliefs, different perceptions, different religions and different values. If we failed to love and preserve our cultural life, we will lose our nationality, identity, our country and finally our sovereignty.

They are the invaluable heritage and pride of the respective race. Through culture, they have built unity, love, peace, contentment, compassion, happiness among their nationalities. While they respect their institutions and culture, they also live together with other races and ethnic groups in peace and friendship. This is an admirable character of the Kachin peoples. The Kachin culture is an ancient one and there have been anthropological studies of their traditions and culture, but there has not yet been any study of their ethics and moral traditions.

Ethics is the study of morality. Besides, it studies and investigates the nature, meaning and definition of ethical terms such as good, bad, justice, injustice, moral, immoral, right, and wrong. It studies the moral behavior and lays down guiding principles to distinguish between good conduct and bad conduct. Ethics is a part of philosophy as well as an important part of culture. They are intimately related. In this way, ethics can make men and society better and more harmonious. So, it relates to culture and ethics. It shows the enrichment of Kachin culture which is descended from their elders. Kachin has a distinct and advanced culture of their own and it can be seen Kachin elders' sayings concerning morality, sayings concerning social duty, sayings concerning livelihood, some other general sayings.

The existence of an ethnic group and its society is related to the development of its culture including the spiritual forces of its society. Kachin, a nationality of Myanmar, has its own historical and traditional systems of institutions, customs, thoughts, creed, art and language etc. ... These cultures, as enriched heritage, have been handed down from their elders and ancestors. They are the pride and glory of the Kachin.

Kachin are important in the development of Kachin culture. The genesis of Kachin is not shown clearly. It is based on legend. But even legend is said to be the sources of culture. Sayings arise from experiences. Sayings are reflection from daily happenings and events. Some sayings refer to well- based events of the experience right and wrong that to guide what humans ought to do, obligation, duty, benefits to society, fairness and specific virtues.

Some sayings are adequate principles of moralities because they are supported by consistent and well-founded reasons. Some sayings also refer to development of personal ethical standards as well as community ethics, in terms of behavior, feelings, laws, social habits and norms which can deviate from more universal ethical standards.

Sayings are continuous effort of studying of our own moral beliefs and conduct. We are striving to ensure our community and the institutions we try to shape, lift up to our standards. Some sayings are reasonable and solidly based for the progress of the moral of humans being and society. Sayings are reflection from humans' attitudes. Some sayings are accessories for speech and preach.

2. Method

This paper has been used Descriptive Method, and the Evaluative Method.

3. Results

Ethics is the study of the basic principles that underlie moral rules and also tries to identify moral values and the true values of life. The aim and objective of this paper is to show how Kachin elders' sayings contribute to uplift moral and morality of Kachin peoples. It will be supported to preserve the traditional culture and to build love and unity in society.

Some traditional Kachin elders' sayings

Kachin elders still admonish the younger with sayings. The following sayings are concerning morality. Some are dealing with social duty and manners some are related to business and how to earn a good livelihood and some others are more or less general.

Sayings Concerning Morality

There are some sayings concerning morality in traditional Kachin elders' sayings.

(1) *N gup gaw bawlaw, lata gaw lagyaw (Kachin)*

He who speaks boastfully but does nothing.

Meaning: It implies that one should speak less and do more.

Talk less action more.

(2) *Apu magaw ai hpe mu tim, amyit magaw ai gaw n mu ai (Kachin)*

We cannot see the ill will of a person even if we can see her coiled intestine.

Meaning: A persons' may hide his or her ill will. It is hard to judge a person's mind or character through a person's behaviour. It would in fact be easier to see his or her intestines. A persons' may be all smile but may be hiding evil thoughts. It A persons' may be all smile but may be hiding evil thoughts. may be just pretense. It warns us to beware of such person and also not to behave like such a person. One should be frank and honest when dealing with others. If members of a society are all full of such presence they are being dishonest and a society of such dishonest people will not prosper.

This is the moral lesson of the saying.

(3) *Tinang mara gaw magap, masha wa a mara gaw shadap (Kachin)*

Cover own mistakes and reveal mistakes made by others.

Meaning: The person who finds faults in others of covers his own fails and weaknesses. Human beings are weak-they are full of greed, hatred and jealousy. Everyone more or less has done something bad. So, one should not pretend to be virtuous and talk ill of the sins of others. It is a moral lesson in sympathy and compassion which are moral values.

(4) *Du Ke ai she ra ai, myit magaw nra ai (Kachin)*

People may have the same kind of shoulders but their mental make up is different.

Meaning: A human being may have the same physical form but they differ in attitude, deeds, ideas and thoughts. That is why there are people who are clever or stupid, moral or immoral, bad-tempered or good-tempered and so on. It teaches one to make allowances for human nature. It teaches us to have good will and sympathy.

(5) *Ma hpe kayat ai gaw shingna, myit su ni hpe kayat ai gaw tara (Kachin)*

Children are punished with a stick and elders with the law.

Meaning: It is a warning for us not to evil deeds. This saying shows that people do wrong in spite of the moral rules of conduct laid down by their society. People have freedom of choice and when they are motivated by extreme greed, hatred or envy, they will forget about what is good or right and commit crimes; they will rob, kill, steal or injure others. So to prevent this society needs laws to supplement morality and protect innocent people in society. Just as a child who is naughty with a stick, so an adult will be punished by the law.

(6) *Jum jat yang hka ai, ga lai yang bra ai (Kachin)*

Too much salt will make eat salty. Too many words will break friendship.

Meaning: Here again is a warning not to go to extremes. There is also a further word of caution not to talk too much. There is also a Myanmar saying: "If your foot goes through the floor boards it can be extracted. But when your mouth lets slip too many words they cannot be withdrawn. Words spoken carelessly, without thought can hurt other's feelings which means friendship is broken and a friend becomes an enemy. The power of words is great. It can lead to happiness or misery. Words can break down moral behaviour and social stability.

These sayings in essence are rules for moral conduct. They point out the difference between good and bad, right and wrong, justice, and injustice are found in traditional Kachin elders' sayings.

Sayings Concerning Social Duty

In addition to the sayings on morality, there are other sayings which guide the people to maintain harmonious relations and for the smooth functioning of society.

(1) *Tsi Kaja gaw hka, jinghku ga gaw hta (Kachin)*

Good medicine is bitter, and the words of relatives are admonitions.

Meaning - It means if a medicine is bitter, it is a good medicine that will cure disease. So also, pay attention to the words of relatives. They are admonitions for your welfare. This is a lesson for young people.

(2) *Bawng hkut sai bungli gaw, mara ningtsi ai (Kachin)*

A work carried out after much discussion cannot be faulted even if it goes wrong.

Meaning - It urges that before doing an important job, it is wiser to discuss it with others. For many heads are better than one. It is also the first step in democracy.

(3) *Aga nau tai yang shabyi bum, ashi nau htawn yang kaya hkrum (Kachin)*

Too much react leads to swollen cheeks and gossiping is shameful.

Meaning - This is a very wise saying. When people gossip, it leads to disunity in society. Gossip and rumors can lead to a break-down of society.

(4) *Sa jang danam du hkra sa ra ai (Kachin)*

Escort a guest to the jetty. (Do not say good-bye at the door).

Meaning - If you wish to help others do it with good will till you have fulfilled all that is required. This will maintain friendly relations.

(5) *Du Kajawng yang mare bya (Kachin)*

If a leader is frightened, the village will be ruined.

Meaning - To be chief one has to have all the qualities of leadership and the most important is not to be cowardly. Leader and chief must be brave.

(6) *Sara law yang adap mat (Kachin)*

Too many instructors will make the kitchen vanish.

Meaning - This is similar to the English proverb "Too many cooks spoil the broth" and the Myanmar equivalent. "Too many physicians will lead to the death of the patient".

The tendency of human is always to seek the benefit of self. But as he is part of human society, one must be good to others so that others will be kind to you in turn. That there must be certain codes of conduct for man-in-society is undeniable. These sayings show clearly the sense of social responsibility of the peoples.

Sayings Concerning Livelihood

In traditional Kachin elders' sayings that gives advice on the best way to earn a livelihood.

(1) *Myitsu hpe hkum tat, hkanu hpe hkum pat (Kachin)*

Do not lose a wise man, do not block the river.

Meaning - If we block a river we have no water to use. Similarly, if we do not approach a wise man we get no advice to improve, our welfare. In earning livelihood whether as a farmer or trader one should always have wise men around you and listen to their counsel and remind.

(2) *Manang hte chyu chyai, tinang na amu hprai (Kachin)*

If you spend time only having, fun with friends, you will never successfully finish a job.

Meaning - This saying wants to remind us like this "work while you work, play while you play, that's the way to be happy and gay."

(3) *Madu Lagawn yang aga si ai (Kachin)*

If the master himself is lazy, his workmen will not work.

Meaning - It shows masters or leaders must set a good example to his employees and work diligently.

(4) *Hpu nau myit hkrum hpyen n shang, ula myit hkrum sharaw n dang (Kachin)*

If brothers are united no enemy can divide them. Unity even among bulls can overcome a tiger.

Meaning - It shows that unity is strength. This is true of a family, a community a race and a nation. We should try to have a union spirit and cooperation in every works.

(5) *Jum shanam gaw shum, tsup ni lahpa gaw Lum (Kachin)*

Salt and ginger make the curry tasty. So also, old clothes can give warmth. Meaning - It shows the value of the small things or old things. The small things or old things should not be discarded for they can be useful.

These sayings are shown concerning livelihood from traditional Kachin elder's sayings.

General Sayings

There are some other general sayings that give knowledge and wisdom.

(1) *Bu midu, zai mi mu (Kachin)*

Traveling gives us knowledge.

Meaning - If we travel places we can know many things from many places. A well-traveled person has wider experience and greater knowledge.

(2) *Hpawt ni ngu ai gaw galoi n htum lu ai (Kachin)*

Never ending tomorrow.

Meaning - We should not delay our work. Today's work should be finished today. The future is endless, so do not procrastinate.

(3) *Hka Ka-ang e she, sham bat daw ai (Kachin)*

The oar broke in the middle of the river or lake.

Meaning - This reminds us that man is not master of everything. There are situations where it is best not to resist, but go with the tide.

(4) *Hka rum gaw wu ai, du salang gaw daru ai (Kachin)*

Like hearing the sound of a water fall, one will always hear the voice of elders giving advice.

Meaning - One should always listen to the advice of elders who are wiser and more experienced.

(5) *Lamu mung n na marang htu, maran htu nna Lam manen, Lam manen nna ka taw ai (Kachin)*

It rains because it is cloudy. It is slippery because of the rain and one falls down because the road is slippery.

Meaning - It shows the habit of always giving excuses or reasons. Another interpretation is that there is a chain of causes that leads one to fall down. If one has knowledge of causal relations, mishaps can be avoided.

(6) *Sa mit hkrat hku Kadai npat (Kachin)*

One does not patch a hole made by a needle.

Meaning - It means small matters should not be exaggerated.

Discussion

- These valuable sayings are becoming lost gradually and need to be maintained by used in speech, seminars, and use as teaching course in schools.

- Other Western and Eastern sayings can be found ethical instructions for relation to each other's, so it also need to be taught in schools.

- Sayings are short and can easy to get understand and recall.

- From sayings we can get autonomy moral philosophy.

- It can be found the values like, wise advice, help each other, respect, cooperation, obedience, get some good ideas and unity from Kachin elders' sayings.

- By learning sayings, we can get a wide- ranging knowledge and make ourselves to get a better life.

4. Conclusion

Nothing is more important than living a good life. Our thoughts are the seeds of our lives. Our actions and words are our methods of planting those seed. Our actions and words establish our standards of living. Our lives will always go to the level of our conversations. With our words and actions, we constantly paint a public picture of our own inner selves. We will discover how to actually action ourselves to the top.

Primitive man followed the traditional ways. The same ways of methods are called sayings. These sayings passed down from one generation to precede generations by applying to become guide-line and by practicing the ways to have a good life. The individual ways of action, feeling and thinking are controlled by the group. All the morality depends upon the group and the social development.

The past can point out the win and the loss, right and wrong, just and unjust, fair and unfair, good and bad, is and ought and do's and don't. If man has made progresses in the past, then he will also make progresses in the future. The future depends on the past time. Sayings passed down from parents to children, old aged ones to young ones by instructions, imitations, duties, responsibilities, tradition, obligations and morality, and they become a powerful society force moral.

These sayings are old and venerable because we believe that they serve the needs of living generations and have inherent worthy. Sayings are the outcome of past experiences and reflections, and there is no immediate need to question their wisdom. Some sayings remind us how to practice good ways and how to avoid bad ways in our works.

We should discuss each other before any problem occurs. We ought to give complete help others. Small matter should not be made into problems. We should not find faults without any reason. Good deeds are loved by all. Some sayings show about human social situations and it can be followed and practiced.

It is a necessity to approach a wise man to improve. We should have to listen to our relatives' words as those are precious preaching. We should rather observe us owns mistake than point out other's faults. We are also not to neglect the small things or the old things far they are useful in some ways. Some people dare to give excuses or reasons. It is not the good habit.

So, mentioned above all the sayings can apply in our daily life. All these Kachin elders' sayings can guide us as a moral philosophy to have a good life for the Kachin society.

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HOME INDUSTRY OF WEAVING AND CULTURAL VALUES IN MYITKYINA, KACHIN STATE, MYANMAR

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Abstract

Human work is influenced by natural environment, thinking and behavior patterns. Weaving as a result of human culture is considered as an important. This study aims to describe the development of weaving as home industry form of management. There are several areas textile cottages can be studied in Myitkyina. Traditional textile cottages such as weaving, garments both man and woman (by both hands and machines) can be studied. Many ethnic people prefer wearing Kachin traditional weaving materials due to fit local climate. Historically, the Kachin people practiced in the form of textile production for family and sociological needs which later in the century developed into a form of market scale production. Materials needed for weaving were obtained from the natural forest leading to the appearance of hand-woven fabrics weaving. Then, the economic interests of textiles in the Myitkyina lead to a variety of materials with new designs. Research problems have been formulated as: How is the development of Kachin traditional weaving products? How the field of design and trade? The purpose of this study is to discuss the status of Kachin cultural weaving and production scale to be able to more qualified and scientific manner.

Keywords: *traditional textile, culture pattern, economic interests, production scale.*

1. Introduction

Myitkyina, Capital of Kachin State, owns natural environment and human resources for traditional weaving in home weaving industries. Native people are historically creative and talented and skills in the weaving traditional handicrafts and creates home industries. The creativity comes from relationship with their daily livelihoods and natural environment. Their experiences are causing skills and individual has the potential for job creation through the generations. Creative industries such as blacksmithing, gold and silver smiting, pottery, wood carving, are including as typical examples in human history and local environments. The weaving fabric is traditionally carried out by age old women of descendant ethic communities and has become part of their daily activities. To make cultural fabric, dyes are needed which will give a pattern as colour. Variety of plants and animals were used as symbols that have meaningful, beautiful and brilliant colors then relationship with natural environment they live. The used of dyes derived from plants and animals had been used for interpretation of human history. These were widely used from the leaves of plants obtained from the forest.

This study aims to describe the traditional weaving of home industry in Myitkyina Kachin State; design forms of the history of Kachin culture; and suitable management to

applied international trade. This study also aims to focus on the community development of traditional textiles, which is a potential source for local economies, contributing to increase the value of the material, and cultural identity. Local silk handloom textile production in Shatapru ward, Myitkyina and the wear of silk fabrics to be studied as ethnical sources of Kachin culture. The objective of this study is the point of cultural and traditional awareness, which try to maintain cultural symbols, traditional patterns and designs and promote quality and quantity for local, regional and international markets scales in home industries. This study is expected to emit reference needs for public creativity in general and also expected to be able to further improvement in the construction of the community development.

2. Method

This study used a qualitative research method where the data obtained from observations, interviews, literature reviews, and documentation is presented in descriptive form. The materials used in this study are digital cameras and writing in computer accessories. Interviews with weavers and owners of the home industry, the local silk producers, and weavers have been carrying through in the 2020s in weaving as primary resources. Analysis of the data used in the form of presentation of data, discussion, and conclusion to evaluate the impact of local textiles on culture designs.

3. Results

3.1. Weaving history

The history of weaving culture is evidence regarding ornaments that the people have characteristics in several ways, both in daily life and customs. According to F. Adiatmono (2017), describes clothing model consists of daily clothes, clothing for cultural ceremonies, clothing for worship, and war clothing. In essence, the meaning in the form of clothing is the result of reflection of the world in his life.

The history of Kachin culture has anthropogenic characteristics in both daily life and customs. In the art of anthropological field of weaving by designing and its relationship with the creator of the cultural patterns are based on descendant history of Kachin people that now indicate a history and weaving can be a function of social, economic, and aesthetic history. The colour and patterns describe that the Kachin clothing model consists of daily life or livelihood, clothing for cultural ceremonies (Manau Festible), clothing for worship (spiritual), and war clothing etc. In essence the meaning of clothing and patterns are the result of reflection of the cultural life and related to the presence of weaving and anthropological art of artistic activities. The craft weaving is made by hand that made from yarn and is very beautiful traditional origin. This type of applied art focuses on hand skills to process raw materials around the environment into functional and aesthetic value. Age old women have a lot of expertise in traditional weaving and cultural patterns to produce a product for necessities and marketing needs.

The history of weaving in Kachin, it can be identified through several factors as follows:

1. Cultural meaning patterns:

Weaving has been passing down from generation to generation. Culture is based on many complex elements, including the system of livelihoods, religion, customs, language, clothing, buildings, politics, and works of art. Culture is a comprehensive lifestyle and social activities.

2. Economic functions:

The weaving is considered capable of producing material as a livelihood and improving the people's economy.

3. Esthetical factors: It is a form of expression of beauty of people that try to decorate themselves as weaving.

4. Lifestyle

It is a form of behavior, which applies something to be used as a social life pattern in everyday life such as custom rituals and certain forms of association.

Economically weaving should be focused on the creative industry a shift towards craft product, prioritizing skills and techniques and IT capabilities and innovations.

3.2. Anthropological Approach

According to Fendi-Sdiatmono (2019), textiles are no longer produced only for the body protection, but for decoration as well. Maiwada (2009) states that modern-day scholars believe that the dress gives a sign of identity and through which non-verbal messages are communicated. It also believes that in traditional societies, the function of clothing is almost as a language that can indicate a person's age, gender, and marital status, place of origin, religion, and social status for Kachin ethnic tribes. Clothing and accessories are the most important forms of aesthetic expression. Clothes and accessories not only cover the body, it shows the sex, character, situations, wealth, and status of a person. Weaving is one of several types of textile products that received a positive response in the Kachin communities. Kachin traditional weaving fabrics have experienced a long history with the development of the Kachin community. Historically, the fabric of woven fabric in the Kachin communities were as traditional clothing such as wedding ceremonies, custom equipment, funeral and so on.

The cultural factors are one of the contributing factors choosing to make woven cloths as a system of livelihood for their lives as cultural factors, which are known according to the information given that work is passed down from their parents or ancestors. Knowledge in weaving cloth is based on informal education but of knowledge that is passed down from ancestors to generations. Deep cultural meaning can be found in the designs of woven fabric based on the pattern of the symbols.

Culture value: Kachin traditional woven fabric is a high-value cultural heritage for the Kachin communities living in Myanmar, China and India.

Economic Value: Weaving is economically source of income and their livelihoods. Weaving which was originally a traditional garment worn by people, now is developed in various forms of clothing materials. This development benefits that their livelihood and their

knowledge of weaving is increasing with their innovations. Currently, Kachin traditional weaving materials are popular to wear suitable with climate condition. Weaving that exists today needs to be preserved cultural meaningful symbols and developed as a cultural heritage.

Social value: Traditional weaving is a cultural characteristic of Kachin people. Weaving indicates the culture life that the result of a combination of one culture with their natural environment. This is characterized by cultural in terms of language, equipment, art, clothing, utensils and so on.

Kachin indigenous knowledge consists of a local idea that is wise, full of wisdom and experience, good value, embedded and followed by the community. indigenous knowledge contains goodness for human life and principle of descent and strongly attached to the life of Kachin communities.

There are differences and complexity in the character and their cultural social relationships in creating a life of mutual dignity and prosperity.

Indigenous technology is a matter of their identity and it distinguishes a local community from other communities. The differences can be seen easily from the types of local culture and tradition that can be traced as relation to food related to the local environment that the food source of society can be maintained, relation to the production system as part of the effort to meet the needs, adapted to the climate and raw materials available in the region, in relation to clothing in human relationships that a system of local knowledge as a result of the continuous interaction built upon their needs.

Educative: The character values contained in the weaving activity that takes days in working on one product woven fabric, creative thinking and do something to produce new fabric products, attitudes and behaviors.

Weaving home industry is ensuring that organizations and practices can be adapted to the demands of optimism in the present creative economy. According to F. Adiatmono, 2015, the weaving logic is inherent in it capable of capturing the substance of the structure and anatomy of the basic forms of nature that surround them, then poured into simple and core substantive visual language (F Adiatmono, 2015). Human relations with surrounding habitats are based on the assumption that their existence lives in nature which is seen as an orderly and hierarchically arranged order in a culture that is always maintained.

The functions of woven fabric in aspects of life are:

a) **Social Aspects:** In the social aspect woven fabrics are widely used for traditional ceremonies such as birth, marriage, or death. Even the symbol and color have been adjusted. For example, materials wearing in wedding design and materials wearing in Manau Ceremony are not the same symbols, colour, designs and patterns.

b) **Economic Aspects:** Woven fabrics in economic aspects are used as a means of exchange. Exchange in the sense of goods exchanged with other items. In current days, demand and supply cannot be balanced due to population growth. Kachin traditional handloom weaving materials are growing prefer by the people and market is wider day by day. It is opportunity of local economic development by production of handloom fabrics and

one side of consideration for home industry is challenging for handloom weaving practices due to digital machinery creation products are becoming growing to replace handloom fabrics in some areas.

The cotton farm cannot be seen in agricultural land to produce commercial scale for weaving. The cultivation of cotton and mulberry plantation is rehabilitation status that is challenging for commercial scale production for handloom weaving in Myitkyina.

The people lived on the self-sufficient production and the people produced their necessities and handlooms were put on in the homes of rural community and produced home-spun clothing.

Cotton and mulberry plantation need for one of the principal cash crops as an important item. Weaving necessary of varieties of yarn are imported from China and India expansively.

c) Aspects of cultural identity: traditional wearing is beautiful, uniqueness, express clear cultural meaningful lifestyle. These are mutually supportive, referring to the work that is compared with other multidisciplinary sciences.

The craft weaving is made by hand from yarn and is very beautiful. This type of applied art focuses on hand skills to process raw materials around the environment into objects that have functional and aesthetic value.

The approaches of anthropology in the field of weaving by designing are its relationship with the creator and the influencing factors. According to Aesthetic Theory, art theory that history and visual weaving can be a function of social, economic, and aesthetic history that explains the basic principles involved in creating a woven-cloths.

The most complex woven handloom textiles are patterned of silk textiles.

Traditional handloom textiles have played a crucial role in creating awareness as cultural heritage and cultural identity and sustainability in design. Traditional handloom textile weaving is threatened by market scale in home industry production; it is rapidly growth in Myitkyina.

Sustainable and ecological awareness play a very minor role in traditional textiles. design and business potential, contribute to local identity value, contributing to the local economy, traditional materials in making use of indigenous knowledge, value and experience, creating design process that connected to a local system and provides locals income and cultural identity.

In the Kachin textile culture, the value of the traditional silk textiles, considered to be a resource for the development and support for local economies. The definition of patterns and symbols express their cultural identity and their design process as contributing to the production of collective memory.

Silk handloom weaving played an important role in the Kachin cultural and traditional life of Kachin ethnic societies. Silk-worm culture is family practical activity for family members. In mordent days, it is based on development of textile, silkworm production and hand-woven textiles in Myitkyina, being an important employment for local workers, created a local economy for the region.

Skill weaver on handloom weaving and indigenous techniques, which requires experience and patience, each piece of the silk fabric is a unique creation.

The result of this study is that can be utilized by stakeholders, through weaving home industry and produce scientific research publications, and teaching reference.

4. Discussion and conclusion

4.1. Discussion

The weaving with natural coloring material is one form of traditional knowledge of ethnic society that needs to be supported by scientific research, so that it can be better preserved to develop.

Updates on fabric-making techniques to gain high quality and mass quantity, raw materials production, scale of trade should be considered.

Cultural diversity of the study area is a social potential that can form the character and image of its own culture in each region, as well as an important part for the formation of image and cultural identity of Kachin people due to modern fashion designs are growing every day in globalization.

Cultural diversity is an intellectual and cultural property as part of a cultural heritage that needs to be preserved.

With the improvement of technology and cultural transformation towards modern life the influence of globalization, cultural heritage and traditional values of Kachin indigenous people could face the challenge to their existence. This needs to be studied deeply because the cultural heritage and traditional values contain much local indigenous technologies that are highly relevant to relationship between livelihood activities such as cultural symbols, traditional patterns, designs and natural environment in the modern periods need to be preserved.

The uniqueness of Kachin cultural symbols and patterns that relationship between human and natural environment, richness of biodiversity, their experience and working colander have been indicating.

4.2. Conclusion

Weaving craft is one of Kachin's traditional cloth culture arts produced mostly in Myitkyina. Weaving has varieties of meaning, historical and cultural value due to weaving patterns represents human being as symbols and technique color and type of material and yarn (silk and cotton) used and each region has its own characteristics. Weaving is one of the high cultural heritage values of the Kachin people, and reflects the cultural identity.

The development of woven fabrics began to occur marketing system in modern periods. The use of natural dyes in the handloom weaving of woven fabric was valuable for Kachin ethnic communities than synthetic dyes because it can provide its own privileges. The use of natural dyes can provide several benefits, because it is not toxic to the skin, cheaper and durable that could be obtained from natural environment. Some examples of plants that are often used by weavers as coloring material are the red color, purple color of tree leaves and some kinds of bark and roots.



Figure 1. Designs and symbols are create by colour yarns, men basu, garments



Figure 2. Weaving process of home industries in Myitkyina



Figure 3. Female lungji: Weaving home industries in Myitkyina



Figure 4. Weaving process of home industries in Myitkyina



Figure 5. Silk-worm culture (L) and silk producing processes (R)



Figure 6. Handloom weaving in Ri Da Jawng (traditional Weaving Training School) in Stapru, Myitkyina (L), handloom fabrics for women (R)

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CREATING JOURNALISTIC CONTENT IN THE CONTEXT OF INDUSTRIAL REVOLUTION 4.0: OPPORTUNITIES AND CHALLENGES

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Abstract

Content creation - characteristic labor of journalism is not only influenced by content strategy in each editorial office/ broadcasting station/ television station, the professional capacity of journalists, and the information needs of the public but is now also strongly affected by the 4th Industrial Revolution. Using collecting, synthesizing, and analyzing documents, the argument has pointed out the opportunities and challenges that technology 4.0 brings to creative content activities in journalism. Technology 4.0, especially artificial intelligence (AI), has partially liberated journalists' intellectual labor, helping them have more conditions to focus on creativity, and telling more complete and attractive stories. Technology 4.0 also provides press agencies with tools for producing content faster and more efficiently like automated content production software, and online analysis tools to track trends and preferences of the audience... However, the increasingly fierce information competition, the demand for personalized content to increase audience reach, the rapid development of technology, and the increasing prevalence of fake news are challenges that require appropriate solutions from press agencies and journalists to prevent being dominated by technology, ensure the quality and reliability of produced content.

Keywords: *Artificial intelligence, Creation of journalistic content, Digital communication, Industrial Revolution 4.0*

1. Introduction

Today, with the rapid development of the Internet and the achievements of the scientific and technological revolution, the face of Vietnamese and global Journalism is constantly changing, especially in terms of information transmission. A news/article is no longer just a few hundred to a few thousand words accompanied by illustrated images or supplemented with a sound or video clip but also combines everything that can be presented most attractively and understandably appropriate to the modern public's information reception habits.

According to the Digital Transformation Strategy for Journalism until 2025, with an orientation towards 2030 issued by the Prime Minister on April 6, 2023, the goals of digital transformation for 2030 are as follows:

"100% of press agencies publish content on digital platforms; 90% of press agencies use centralized data analysis and processing platforms, apply AI to optimize operations; 100%

of press agencies operate in converged editorial models and models suitable for the development of advanced science and technology worldwide, producing content according to digital journalism trends”.

In the digital media environment, content becomes a competitive factor and the survival of each journalistic product (such as newspapers, magazines, radio, television, and online newspapers). Creating content - characteristic labor of the journalism profession is not only influenced by the content strategy in each editorial office/ radio station/ television station, the professional capacity of journalists, and public demand but is now also strongly affected by 4.0 technology. Studying the creation of journalistic content in the context of the Industrial Revolution 4.0 to clarify the opportunities and challenges of journalists and press agencies in Vietnam is extremely important and necessary.

To carry out this paper, the author uses the method of document research, synthesis, and analysis based on secondary data obtained. After systematizing the basic theoretical framework related to the topic, the author analyzes and evaluates the opportunities and challenges of journalists and press agencies in creating content in the 4.0 era. From there, the author proposes some solutions to support journalists and press agencies in Vietnam to innovate content as an indispensable task in the process of digital transformation.

2. Conceptual framework

a. Creation of journalistic content

Content creation is considered an activity that generates "new" and "valuable" elements. According to Pham Thanh Nghi (2012, p.28), creativity can be seen as "the process of moving towards something new, the ability to create something new, evaluated based on new, unique and valuable products". Le Huy Hoang (2002, p.39) defines creativity as follows: "Creativity is a human activity, based on understanding the laws of the objective world, creating new material and spiritual values, meeting the diverse needs of society".

When it comes to creative work in journalism, the group of authors including Duong Xuan Son, Dinh Van Huong, and Tran Quang (2007, p.193) explained that "to talk about journalism is to talk about creative work. Creativity means creating something new that is useful for people's lives" and "creative labor in journalism brings many joys and interests but also many difficulties, even dangers".

According to the Vietnamese dictionary (2006, p.738), "content is the inside part of an object, contained or expressed by its form". Content is seen as the indispensable soul of an object. In philosophy, content is understood as a general concept that synthesizes all aspects, elements, and processes that make up an object and occur within the object. Content plays a decisive role in the movement and development of an object.

Thus, content creation in journalism can be understood as the daily work of journalists to produce new and valuable works for society. From these journalistic works, editorial offices/broadcasting stations/television channels can produce media products with attractive content to fully meet the needs of the public for information, entertainment, education, etc.

Especially in the context of the Fourth Industrial Revolution, content is referred to as the king while technology is the queen, so content creation in journalism cannot be without the support of 4.0 technologies such as the Internet of Things (IoT); Artificial intelligence (AI); Virtual reality (VR); Big data; Cloud computing; Social networks, Mobile networks,... Therefore, each journalist and press agency needs to master the internal changes of content in the current period to gradually adapt and develop together in the new situation.

b. The Fourth Industrial Revolution

Klaus Schwab (2016), founder and executive chairman of the World Economic Forum, provides a simple view of the Fourth Industrial Revolution as follows:

“The first Industrial Revolution uses hydropower and steam energy to mechanize manufacturing activities. The second one took place as electricity is utilized for mass production. The third revolution used electronics and information technology to automate production. Now, the fourth Industrial Revolution is blooming based on the third one. It integrates technologies and blurs the border among physics, digital, and biology”.

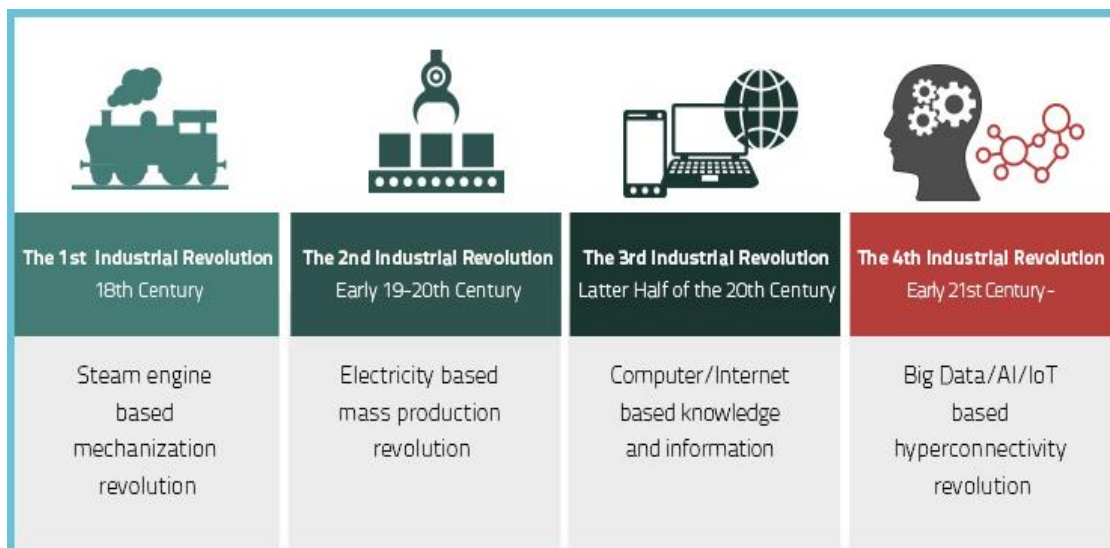


Figure 1. History of the four industrial revolutions of Mankind

Source: SamsungSDI.com

The essence of the Fourth Industrial Revolution is the integration of technology, creating connections between physical, digital, and biological spaces. Billions of people can connect through mobile devices with immense computing power, large data storage capabilities, and unlimited access to human knowledge. The core technologies of this digital revolution include IoT, AI, Big data, cloud computing, VR, social networks, mobile networks, and more.

The application of these 4.0 technologies allows press agencies to create smarter products than ever before, with the development of data journalism, mobile journalism, embedded journalism, multimedia journalism, multichannel journalism, and multiplatform journalism. One of the fundamental factors in creating a "digital" editorial office is owning a rich and modern database based on Big data and cloud computing technology.

In particular, AI technology helps media producers search for and process information, automatically/generate news articles, turn text into spoken voices for video news, podcasts, and audio, or study the information consumption habits of modern audiences. The application of VR technology can provide diverse digital content alongside traditional news stories. Modern audiences can receive information through both their senses and emotions as if they were participating in events in 3D or 4D simulated spaces thanks to virtual reality technology. The publishing process of press agencies also becomes simpler with supportive techniques and technologies.

3. Results

Opportunities and Challenges from the Fourth Industrial Revolution to Content Creation in Journalism

a. For journalists

Journalists are the direct creators of independent and complete journalistic works through a process that involves selecting and determining topics, making the outline, collecting and processing data, and presenting content and form. After completing the work, content, and form continue to be carefully reviewed and edited before being published or broadcast.

With the support of technology, the process of creating journalistic content has been shortened. For example, in data collection and processing, before the Fourth Industrial Revolution, journalists typically used three basic methods: reading and studying documents, conducting interviews, and observing. Nowadays, with the development of IoT, Big data, and AI technologies, journalists can take just a few minutes or even seconds to search for and verify data (numbers, images, information, audio, and video files) instead of spending hours searching through piles of documents or personal data on their computers, or even days or weeks gathering necessary information based on fieldwork.

AI can also support journalists in monitoring sources on social networks (analyzing real-time data, identifying characters who have influence and interact with readers) or automatically fact-checking information. Through data systematization, AI can help journalists identify connections between investigative stories or detect trends and highlights among millions of data points, providing foundations for in-depth journalistic content.

In recent years, some press agencies have used AI to support news production. For example, at The New York Times, creators use a tool called "Editor" to determine the most important information to provide to the public. "Editor" analyzes data from sources such as social networks and Google Trends to determine which topics readers are most interested in and searching for. Then, "Editor" suggests the stories most likely to generate interaction based on that data.

In October 2022, the release of Chat GPT (Chat Generative Pre-training Transformer), a chatbot interface developed by OpenAI, is a typical example of AI's support in data processing for journalists. ChatGPT helps journalists analyze data from various sources and quickly return completely automatic analysis results.

In addition, in the process of completing journalistic work in terms of content and form, AI can help journalists create simple content or part of the desired content. By using predictable data patterns and programming them to "learn" variations over time, an algorithm helps journalists sort, classify, and create content at speeds far beyond traditional methods.

Currently, at some press agencies, simple repetitive content such as sports information, weather forecasts, financial bulletins, etc., are automated through the application of AI technology. AI software can input data from multiple sources, recognize trends and patterns, then apply natural language processing to place those trends in specific contexts, writing complex sentences with many adjectives or using metaphors and comparisons. The Associated Press (AP) was one of the first units to use robots to write news articles. Wordsmith Robot was used to write financial reports for listed companies in 2014. By 2016, Wordsmith had written and published 1.5 billion news articles (Miroshnichenko, 2018).

According to CNBC, in the news technology industry, AI has shown a superior advantage in terms of the speed of news production. If an AP economics reporter produces an average of nearly 400 articles on the stock market in three months, when applying AI, the number of articles is almost multiplied by 10 to around 3,700 articles. In addition, an AI application called Tobi from Swiss media conglomerate Tamedia produced nearly 40,000 news articles about election results in the country within just five minutes. Moreover, "an AI software named Wibbitz from USA Today can create short video clips. Wibbitz selects a story presented in text format, shortens it, collects images or videos, and adds commentary" (Le Quoc Minh, 2019).

The author group Browyn and colleagues (2022) presented the classification of AI tools that can produce news content in journalism based on case studies from the BBC. This research organizes data into a list of technologies with relevant systems, categorizing them and modeling the AI tools.

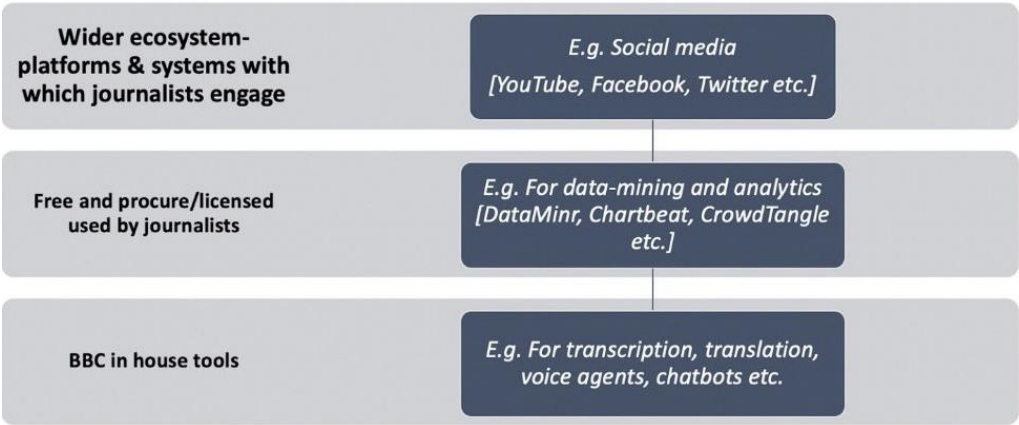


Figure 2. Categorization of journalists’ use of AI tools at the BBC

Source: Browyn and colleagues, 2022

In Vietnam, Lao Dong is one of the pioneering press agencies in applying science and technology to carry out digital transformation in publishing journalism operations. With an automated news production model and process based on AI technology, the editorial team can

produce a series of regular TV news bulletins and breaking news reports at any time to provide information to readers (Dung Anh, 2021). Similarly, VietnamPlus uses AI to support the production of graphic products and long-form articles (in-depth reports using graphics, large images, and impressive motion effects) to meet stricter audience requirements in the context of the Fourth Industrial Revolution.

Thus, the Fourth Industrial Revolution empowered journalists with strength and energy in creative activities. Technology allows journalists to go anywhere in cyberspace to seek ideas, collect and verify diverse data sources, and connect them in just a few seconds or minutes to perfect brainchild in both content and form. Thanks to technology, journalists can easily detect major issues to create modern and in-depth journalistic works that are attractive to readers, such as E-magazine (multimedia articles), Long-Form (articles with 1,000 to 20,000 words), Infographic (graphic information), Mega Story (super journalistic work)...

Technology also allows journalists to free intellectual labor from boring tasks such as writing template articles or editing videos and audio recordings, allowing them to save time and focus on more creative work that requires higher skills (Chou et al., 2021). Journalists have the opportunity to read hundreds of thousands of documents or millions of images within a few hours - a task that may take weeks or months to complete; thereby giving journalists enough time to develop more interesting tasks such as investigating, interviewing people, or focusing on detailed, and meticulous journalism... (Noain-Sánchez, 2022).

Although the Fourth Industrial Revolution has brought many opportunities and benefits for journalistic content creators, new technologies, especially AI applications, have replaced some simple and repetitive tasks of journalists. However, this challenge is an opportunity for journalistic content creators to express their imprint on modern media works clearly and powerfully. Certainly, machine-generated news writing or video production is being used in many newsrooms but cannot completely replace the role of journalists in this uniquely creative profession.

The real challenge that journalists face is controlling the sources of information in cyberspace, data sources, and content recommendations searched and suggested by AI. Algorithms can also cheat. "Machines are programmed by humans, and humans always have prejudices and errors in logical thinking that can lead to incorrect conclusions" (Le Quoc Minh, 2018).

AI algorithms only handle well requests within the range of data they are trained with. News or articles generated by AI are often evaluated to have lower quality than those written by humans because AI lacks the emotions and creativity of humans. In addition, stories generated by AI are often biased compared to those written by humans, which can lead to incorrect and subjective news (Shin, 2021). Furthermore, applying AI can reduce the diversity of news, as AI algorithms can only recognize certain aspects of a story and therefore provide a biased perspective. This can lead to decreased public trust due to a lack of transparency about how AI algorithms produce content (Ansari, 2022).

Furthermore, if technology, particularly AI, is frequently "abused" in the creation of journalistic content, journalists may become dependent on it and even lose their creative

abilities, sensitivity in thinking, and human emotions that machines cannot have. Journalists may even violate professional ethics and intellectual property rights by using AI-generated content as their own work.

b. For press agencies

The Fourth Industrial Revolution has been strongly influencing the development of the journalism industry, especially the change in the journalism process in the digital age (Nguyen Thanh Loi, 2021). Press agencies that know how to use tools and platforms in the production of new journalistic products can keep up with the speed of adapting to new technologies by the public. Moreover, when content is compared to the king while technology is compared to the queen, Industry 4.0 brings good opportunities for press agencies in terms of speed of coverage, personalizing user content to retain readers, and creating more journalistic works that affirm the brand identity of the newsroom...

In the competition for information, applying Industry 4.0 technology to process data helps press agencies quickly make correct predictions about public interests, and news flows in society. Thanks to the three typical core technologies - AI, Big Data, and IoT, press agencies can easily observe the access behavior of each reader for better interaction and timely improve the quality of news products. In particular, AI allows press agencies to reach and engage larger and more diverse audiences, leading to greater success for press agencies in the digital age (Yang, 2020).

Some Radio - Television stations and converged newsrooms can apply the automatic production of repetitive structured content for some news such as weather, sports, technology, etc. by building natural language generation software (NLG). Most recently, the research team of Ho Chi Minh City Television Station has successfully tested the application of Chat GPT to produce television reports on technology.

In the process of creating journalistic content, analyzing big data with different volumes and formats helps press agencies to find hidden patterns, unknown correlations, and new perceptions of the world. When "joining" massive data sets, instead of reflecting information about phenomena (Who, What, Where?) and explaining the roots of "How?" and "Why?", big data helps media agencies explore correlations and causes of issues, find coincidences to make predictions about "What will happen?" (Kenneth & Viktor, 2013).

However, in addition to the opportunities mentioned above, press agencies face new challenges in managing creative content. For example, when applying AI to filter and select stories that are most likely to attract interactive readers, one of the potential risks is that the content generated by AI could spread misinformation. The reason is that news may be biased during the AI filtering and data selection process. The public only gets exposed to one aspect of the story, and therefore, their perception can be shaped by the bias generated by AI. Furthermore, AI can be used to spread misinformation and fake news to the public by presenting fake stories alongside real ones (Sen & Ganguly, 2020).

Besides, AI can also be the object of being deceived by fake news. AI algorithms are designed to process data quickly and accurately, which means it is difficult to distinguish

between real and fake news. Moreover, AI lacks the ability to understand the emotional and ethical meaning of the news and data that AI delivers. As AI becomes more advanced, the risk of being attacked by fake news will increase, making it even more difficult to distinguish between what is true and what is false (Gradoń, 2020)."

3. Discussion & Conclusion

According to Reuters Institute (2023), in just a few years, the criteria for evaluating digital transformation in press agencies will not be the speed of digital adoption but rather the transformation of digital content to meet readers' expectations - something that is constantly changing.

Press agencies and journalists must quickly adapt to technological changes; continuously improve their wide-ranging and in-depth skills while learning and updating the latest advancements and mastering technology to serve daily creative work.

Some free AI software such as Google Alerts, Meltwater, Google Trends, Tubular Labs or paid software such as Chartbeat, Sharablee, Parsley, Newswhip, and Social News... can help journalists receive the latest information from installed keywords with topics ranging from social life to science, sports, securities... via email or text messages.

In addition, journalists need to increase their responsibility when using 4.0 technology in content creation. Instead of relying on technology, journalists need to have the ability to control technology to ensure the authenticity and transparency of information generated from applications. To verify information, journalists can use reputable sources such as Official websites of state agencies, international organizations, or reputable organizations in related fields; Website credibility checking tools such as URL Void, Sucuri, UnMask Parasites, PhishTank, Dr.Web Anti-Virus Link Checker, UnShorten.it, VirusTotal or Scamadviser.com; Websites with clear origins and verified by national or international databases for business registration or domain names...

Each press agency needs to aim to become a "digital technology enterprise" by building cooperation with technology enterprises to have standardized data, improve forecasting capabilities and provide technology training for journalists. Press agencies apply digital technology to create conditions for journalists to learn, experiment, and apply content creation content to have distinctive journalistic works/products. At the same time, press agency administrators also need to monitor, check and immediately identify signs of journalists abusing or using technology for the wrong purposes.

Therefore, technology cannot completely replace the role of humans in the press agencies. Instead of seeing technology as a "competitor", press agencies and journalists should see technology as an "ally" to help them work more efficiently and creatively. By "collaborating" with each other, 4.0 technology and creators can tell stories perfectly and attractively, while ensuring professional ethics principles and fully meeting the information needs of the public in today's digital media environment.

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PERSPECTIVES AND ROLES OF BUDDHISM IN ECOLOGICAL ETHICAL EDUCATION

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Abstract

This article approaches the concept of ecological morality from a Buddhist perspective, clarifying the Buddhist view on this issue through various doctrines such as the theory of emptiness, dependent origination, and karma. The author analyzes the Buddhist perspectives on the ecosystem, the position, role, and relationship of humans with the ecosystem based on Buddhist doctrines. From there, the article clarifies the role of Buddhism in the current issue of ecological moral education. It clarifies the position of humans in the material world, changes human perception of their role in nature, and encourages positive actions to transform the ecosystem.

Keywords: *Buddhism, Buddhist perspectives on ecological morality, ecological morality, ecological moral education, role of Buddhism in ecological moral education.*

1. Introduction

Buddhism is a religion that has influenced many countries around the world, including Vietnam. According to the Government's Committee for Religious Affairs, the number of Buddhist followers in Vietnam was over 4.6 million in 2020, spread across different regions. With a long history of formation and development, Buddhism has always actively participated in sharing social responsibilities. The teachings of Buddhism form a vast system of beliefs with a well-structured framework that addresses various aspects of human relationships with the world around them. The positive values in Buddhist teachings need to be absorbed and implemented to contribute to building a society that aims to achieve the general goals of the national revolutionary cause: "rich people, strong country, equitable society, democracy, and civilization."

In the context of industrialization, modernization, and the trend of international economic integration, the ecological environment is increasingly changing with many risks and challenges for human beings. The issue of ecology is no longer a problem of any particular country but has become a global issue, and only the joint efforts of all nations can solve it. Among them, religions also play a role in promoting action not only among believers but also in society. The influence of Buddhism in Vietnam and the world today plays an important role in helping people reassess ethical and ecological issues. From there, it encourages people to take positive actions against climate change by forming the right awareness that leads to the right actions. This article will clarify the perspectives and roles of Buddhism in this regard. Having the right awareness leads to the right actions. Therefore,

this topic always receives the attention of researchers. Some specific studies, such as the work "The Path of the Buddha's Teachings for Peace and Ecology" by Zen Master Thich Nhat Hanh, discuss the issues of peace and ecological morality in the world from the perspective of the Buddha's teachings. The Zen master uses the perspective of Buddhism to explain the existence of nature and points out the role of humans in it. At the same time, the Zen master also clarifies how humans should behave towards other humans and nature in order to continue to develop [12]. Author Pham Cong Nhat has also discussed the fundamental principles and ethical standards of ecological morality in Buddhism in his research work "Ecological Morality from the Perspective of Buddhism" [16]. Analyzing the basic teachings of Buddhism such as Impermanence, Non-self, and Dependent Origination, authors Nguyen Thi Le Thu and Nguyen Thi Hoai demonstrate the values of ecological morality in Buddhism [17]. Author Phuong Lap Thien, a Taiwanese researcher, analyzes Buddhist theories of ecological morality to understand the significance of ecological morality in Buddhist doctrine in the study "Buddhist Ecological Philosophy and Modern Ecological Consciousness" [18]...

Most of the above studies focus on analyzing and clarifying the perspective of Buddhism on ecological morality and how humans should behave towards ecological morality. However, there has been no study that clarifies the role of Buddhism in ecological moral education today. Therefore, to clarify this issue, in addition to analyzing the perspectives of ecological morality from the perspective of Buddhism, the article also clarifies the role of Buddhism in ecological moral education today.

2. Method

Based on the principles of dialectical materialist methodology with comprehensive perspectives, developmental perspectives, and historical-specific perspectives, the author approaches and clarifies the concept of ecological morality - a relatively new concept. Accordingly, ecological morality is placed in relation to social and economic factors, in the environment, in the relationship between humans and nature, and as a part of human participation in the wider nature.

In addition to dialectical materialist methodology, other research methods such as synthesis analysis, logic combined with history, statistics, and system are also used by the author to clarify the research problem. Each method plays a different role in the research process. Specifically:

Synthesis analysis is carried out with the aim of building Buddhist views on ecological morality. Based on analysis, accessing Buddhist documents such as the Buddhist scriptures, studies on Buddhism by authors, research articles in Buddhist journals, etc., the article synthesizes and systematizes Buddhist views on ecological morality, an indispensable part of Buddhist doctrine.

Logic combined with history is used to examine views on the relationship between humans and the environment, and between humans and nature in the flow of Buddhist teachings, and to combine dialectical relationships with the times to see the Buddhist

perspective on ecological morality in the present. The views are analyzed based on their relationship with the social and economic factors that Buddhist teachings recognize and teach their disciples.

Statistics and system are used by the author to systematize Buddhist theories, thereby approaching the Buddhist perspective on ecological morality. Systematizing these views helps the author to establish connections and see the coherence and dynamics of Buddhist theories in the current period, based on which the author clarifies the role of Buddhism in ecological morality education today.

3. Results

3.1. The concept of ecological ethics

Ethics, according to the philosophical tradition, is a Sino-Vietnamese word that consists of two elements: "đạo," which means path or way, and "đức," which means goodness. Thus, when referring to ethics, it is about cultivating the virtues of human beings. Broadly speaking, ethics refers to the rules, standards, and norms that society establishes, and each person relies on them to adjust their behavior accordingly. Ethics is often discussed in three aspects: duty, conscience, and good and evil. Among these, duty refers to an individual's responsibility for the community's benefit; conscience is an individual's awareness of responsibility and self-evaluation of their conduct; good and evil are opposing terms used to measure an individual's ethics. On the other hand, "ecology" is a term used to refer to the living environment of human beings, or it can be understood as the natural environment, in which human beings and nature have a dialectical relationship. The ecological environment is formed on the basis of the material unity between nature, human beings, and society. It is the result of the evolution of the living environment and the development of human society.

Based on the analysis above, "ecological ethics" refers to the ethical standards, norms that society sets for human beings to behave towards the natural environment and the living environment around them. Ecological ethics includes the behavior of human beings that is regulated by specific rules, standards, norms that are formed from the requirements of nature for the existence and development of human beings. These are reflected in the way human beings interact with nature in their activities to exploit natural resources to meet increasingly higher human needs. These expressions reflect harmony, suitability in the interests of maintaining the natural environment's sustainable development and human and social development.

3.2. The Buddhist Perspective on Ecological Ethics and Ecological Moral Education

When discussing the nature of existence, Buddhism proposes the theory of Anicca (impermanence) and Anatta (non-self). According to this theory, "Human beings, plants, and animals are born, grow up, mature, and die. Human beings interact with other phenomena and with themselves..." [7]. Therefore, human life is impermanent and is subject to the constant changes of nature. Humans are not the center of the universe but only a component of it. Humans are not outside the cycle of all things, from "birth, aging, sickness, and death," "having birth, having death"... "According to Buddhist philosophy, what is called living

beings, individuals, or the self is only a synthesis of matter and the power or capacity of the spirit called the Five Aggregates" [6]. The material part of the Five Aggregates includes: form, consisting of bones, flesh, skin, and limited in space and time. The mental part includes: perception, thought, action, and consciousness, which are expressed through the six senses: sight, hearing, touch, taste, smell, and mind. The elements of the Five Aggregates are always changing, sometimes coming together, sometimes dispersing. The Lotus Sutra teaches, "Form is emptiness, emptiness is form. Perception, thought, action, and consciousness are also like this" [9]. Therefore, the nature of human beings is non-self; human beings are only a temporary aggregation.

Based on the theory of Emptiness and Non-self, Buddhism advocates the perspective of "respecting life" and the equality of all things. Whether it is a "sentient" being (with emotions and consciousness) or an "insentient" being (without consciousness such as grass, trees, flowers, leaves...), there is no differentiation, they all deserve to live and exist equally. Species exist on the basis of mutual dependence and interaction, only through which the ecosystem can be stable and sustainable. Therefore, the Dhammapada teaches: "All beings are seen but not seen; All beings live far away, not far away; All beings currently alive; All beings will be born; May all beings be free from harm; Live happily and peacefully" [8]. Therefore, in the five precepts, the first precept is to refrain from killing, which is the most important ethical standard for practitioners. Refraining from killing means that one should not kill oneself (including human and sentient beings) and even having the intention to kill is also a violation of the precept. According to the Buddha, refraining from killing also prevents others from killing, thus forming the tradition of "liberation" in Buddhism. This is also how compassion is cultivated. In the Dhammapada, the Buddha expresses: "May all who have life/ sentient beings/weak or strong/ not exclude anyone/ tall or short/ large or small/ seen or unseen/ living far away or near/ may all beings be happy and peaceful" [2]. According to this, the Buddha's compassion is limitless. "Tù" means loving-kindness for all beings, bringing peace and happiness. "Bi" means empathy for suffering, reducing the suffering of sentient beings. "Tù bi" is a very genuine and limitless love, without discrimination" [3]. All things in the universe have their own internal mechanisms, self-regulating, self-transforming, and self-elevating. Human beings or any species are all part of the ecosystem. Therefore, humans need to respect nature in order to achieve stability in the structure and function of the ecosystem. In order to exist and develop in this universe, human beings need to cultivate compassion for all sentient beings.

In addition to the theory of Impermanence and Non-self, Buddhism also has the theory of Dependent Origination. According to this theory, the Buddha believed that the whole world is a tightly unified entity, bound together by interdependent relationships that cannot be cut. In the *Ānguttara Nikāya*, the Buddha said, "Oh, Ānanda! It is by dependent origination that there is consciousness, by consciousness that there is mind and body, by mind and body that there are the six senses, by the six senses that there is contact, by contact that there is feeling, by feeling that there is craving, by craving that there is clinging, by clinging that there is becoming, by becoming that there is birth, by birth that there is aging and death, sorrow, lamentation, pain, grief, and despair. Such is the origin of this whole mass

of suffering" [10]. This means that everything in the world has a logical relationship with each other; this exists because of that, that develops based on this, this is destroyed by that, and so on. It can be said that everything is due to Dependent Origination, everything exists, develops or perishes because of it. Because of Dependent Origination, everything in the world is diverse and vibrant. This is the result of "multiple fortuitous connections" and "the key to unlocking the door of liberation is the principle of non-self, the principle of dependent origination" [11]. In that cyclic process, if something is lost, everything else changes accordingly. Also, the relationship between humans and nature is a symbiotic relationship, a dependent relationship, which is called "Dependent Origination.

Everything is born because of "Dependent Origination", and it has the essence of "Impermanence" and "Non-self," and it is subject to the ultimate law of karmic cause and effect. This is an absolute law of motion and operation in the universe. In the Pāli Canon, it says, "There is no place on the face of the earth, in the sea, or in any mountain crevice where one who has committed an immoral act can escape from the law of karmic cause and effect" [2]. Because of the power of karma, everything is constantly changing: arising, persisting, decaying, and ceasing; being born, existing, decaying, and dying. Dependent Origination is not accidental, but it is all caused by karma. Today is the result of yesterday's karma. Karmic effects can be direct or indirect, early or late, and they can occur not only in this life but also in future lives. Karmic cause and effect cover human life in a very subtle and transparent way. Accordingly, Buddhism affirms that the impact of human beings on nature will also follow the law of karmic cause and effect. If people behave appropriately towards nature, they will receive the benefits...

Thus, the theories of Buddhism all affirm the relationship between human beings, nature, and society. Ecological ethics from the Buddhist perspective is built upon these theories. In other words, humans must have principles of behavior and a peaceful way of life with all beings, which is an interdependent and mutually supportive relationship, relying on each other's existence because everything is caused by "dependent origination," all are "impermanent, selfless" and all have "karmic consequences". Good actions of humans towards nature are also the means of maintaining the living environment and existence of humans themselves. From the perspective of the equality of all sentient beings, Buddhism places humans as the subject in maintaining the balance of the ecosystem. At the same time, ecological ethics helps humans cultivate their body and mind to attain "renunciation," "compassion," "joy," and "equanimity."

3.3. The role of Buddhism in ecological ethics education today

3.3.1. Buddhism points out the relationship between humans and the ecological environment, in which humans are a part of the ecosystem and have the responsibility to balance it

Not only does Buddhism encourage people to pursue "goodness, kindness, and beauty," but it also advises them to abandon "greed, anger, and delusion" in order to reduce their greed and prevent the exploitation of nature in an excessive manner, forcing nature to obey humans. Once nature is destroyed and deteriorates, humans cannot exist either. The Consciousness-Only theory in Buddhism explains the relationship between human

consciousness and the physical world, such as rivers, land, mountains, and forests, where the physical world affects all forms of life on Earth, including humans. The theory of "dependent origination" also explains the relationship between humans and the environment. The Impermanence theory proves the independent existence of all species in the ecosystem, and the theory of "karma" clarifies the consequences that humans have to pay if they act against morality and the norm.

With its theories, Buddhism affirms the position of humans in nature as both independent and bound by the ecological environment. Humans are a part of nature and have a position and role as a part of the ecosystem. Humanity has an organized way of survival and maintaining existence different from other species. In that ecosystem, humans are not alone but always bound to and evaluated on nature. Humans live by nature, and nature humans humans. That's why the image of Buddha from birth, through renunciation, enlightenment, preaching, and entering Nirvana, is always associated with a tree. Likewise, for his disciples, they practice under the tree during the day and use the tree as a place to sleep at night. It is a clear, vivid message that Buddha wants to convey to everyone: Live in harmony with nature.

Therefore, humans are a part of nature and have a responsibility to balance the ecosystem. Destroying nature means that humans are destroying their own lives. According to the theory of "karma," the ecological crises currently present are what humans have to suffer when they disturb the ecological balance.

3.3.2. The viewpoints of Buddhism help change human perception, attitude, and behavior towards nature

By highlighting the position and role of human beings in the ecosystem, Buddhist teachings encourage people to adopt a lifestyle of "moderation and wisdom", meaning to desire less and understand what is enough. Therefore, people should not indulge in the excessive enjoyment of resources and energy for their present lives but rather conserve, use just enough, and avoid wastefulness. In addition, people should actively protect the ecosystem and not harm living things and the environment. However, this does not mean that the quality of human life will decrease. Buddhism believes that quality of life is "inner peace and happiness" rather than greed and anxiety, protecting nature rather than killing and destroying it, cooperation for the benefit of all humanity rather than seeking personal gain, and harmonizing with nature rather than separating from it.

Parallel to this, Buddhism condemns the three poisons: greed, anger, and ignorance of human beings and believes that these are the sources of all suffering. These desires of human beings are the source of damage to all living things in nature and to human beings themselves as entities of nature. Therefore, Buddhism always emphasizes the need to control personal desires, with the highest level being the eradication of sexual desire and greed.

From perception to attitude and action, these are the changes that Buddhism brings to its followers and society as a whole in educating ecological ethics. When people recognize their role, position, and responsibility towards nature, and the consequences of destructive

actions, their attitude towards living things around them will change, resulting in actions to protect the environment such as not littering, planting trees, conserving electricity, etc. From the perspective of Buddhism, a good society cannot exist if people constantly harbor too much greed, anger, and ignorance - the root of unwholesome behavior. The living philosophy of Buddhism has helped people gain deeper insight and understanding of their responsibility towards the environment.

3.3.3. Buddhism education of believers and practicing a simple lifestyle in harmony with nature and actively contributing to protecting the ecological environment

Buddhism goes beyond doctrine, turning the process of understanding the position and responsibility of humans towards the environment into action. In temples, there are usually three months of "rain retreat" coinciding with the rainy season of ancient India. During this time, the monks and Buddhists in the temple limit their movement to avoid accidentally killing insects, worms, and plants. The Buddha once instructed his disciples: "Buddhists should not kill themselves, order others to kill, use killing tools, praise killing, see killing and indulge in it, and even use spells to kill. All sentient beings with life should not be intentionally killed" [13]. Or: "People often generate thoughts of killing, which increases their karma of suffering and keeps them in the cycle of life and death, with no way out" [13].

The most practical aspect is that Buddhist meditation centers are often built on the "meditation forest" model, with lush greenery, clean lakes, and cool air. Even many meditation centers and temples are built next to forests with the purpose of protecting the forest and preserving wildlife. In Buddhist festivals, monks, Buddhists are also mobilized to participate in the "blessed tree planting" and "virtuous tree planting" movements. The practice of "vegetarianism" by believers and monks is also an action to protect the environment, avoiding the risk of extinction for many species. Thanks to the Buddhist teachings on ecological morality, humans can be aware, change their attitudes, and behave well to maintain and develop life, balancing the existence of the ecosystem-environment for human beings.

Buddhism always educates its followers and practitioners to lead a simple and frugal lifestyle, to reduce pressure on the environment, to harmonize material prosperity with the protection of natural resources and all living beings. The Buddha taught his disciples about clothing: "only to prevent cold, prevent heat, prevent the bites of mosquitoes, wind, the heat of the sun and various reptiles ... to use simple food only to ensure the body can live long, to maintain it, to prevent harm to the body, and to support spiritual practice ... to use medicine only to prevent the arising of painful feelings and to achieve complete liberation from suffering..." [4]. Accordingly, the Buddha did not deny economic life, but economic development must go hand in hand with spiritual development, expanding awareness, including awareness of the environment and environmental protection as a moral standard. In general, "Buddhism encourages us to accept a middle path between two extremes: a) extreme poverty that lacks the means to live, where poverty is a painful condition for families in this world, and poverty and debt are sad matters in this world; b) seeking material wealth for oneself" [5].

4. Conclusion

With a spirit of defiance and non-conformity, Buddhism regards ecological ethics as a problem that needs to be addressed through the actions of each practitioner or any Buddhist, believer, or human being. Maintaining ecological balance, protecting the environment, and respecting the lives of all species is not only a responsibility but also a factor in maintaining the very environment that sustains human life. From the concept of Dependent Origination to the doctrines of "Emptiness" or "Non-Self," Consciousness, karmic retribution, and the Four Immeasurables... All the teachings of Buddhism educate people on ecological ethics with the spirit of respect, equality, and compassion towards all species. Accordingly, "the highest and most universal ideal of Buddhism is to continuously strive to permanently end suffering for all sentient beings, not just humans" [1]. It can be said that this is an important function of Buddhism. Through practical ethical education methods that are realistically applicable, Buddhism has "listened to the cries of the Earth and awakened the collective consciousness" [11], thereby calling on humans to take positive action in addressing ecological balance issues. Buddhism calls on Buddhists and people to act from their inherent good nature. Therefore, it can further enhance the efforts of humans in the collective fight against climate change and the protection of the ecological environment.

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INTERNATIONAL DESIGNS OF MULTI - TIER PENSION SYSTEM AND THE ORIENTATION OF DEVELOPING VIETNAM MULTI - TIER PENSION SYSTEM

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Abstract

The article identifies the challenges faced by Vietnam's social insurance system; especially, when Vietnam pension fund is at risk of deficit which threaten workers' rights and national social security system. Hence, it proposes solutions to develop a sustainable pension fund. The article analyzes the designs of ILO and OECD multi - tier pension system to suggest recommendations for Vietnam design.

Keywords: *Multi - tier pension system, challenges, designs, sustainability*

1. Introduction

Although Vietnam is a developing economy, it confronts the problem of rapidly aging population. In 2020, Vietnam life expectancy reaches 75.38 years and this number is expected to increase to 78 years in 2030 (The World bank, 2020). According to General Statistics Office of Vietnamese, in 2020, Vietnam has 11.41 million elderly people (comprising 12% of the population) while there are approximately 2 million people aged 80 years or older. By the end of 2020, Vietnam has more than 16 million employees (accounting for 32.5% of total workforce) participating in social insurance system (Vietnam Social Insurance); relatively 40% of pensioners received pensions and social allowances (Ministry of Labor, Invalids and Social Affairs).

Currently, there are about 3.8 million elderly people who have not yet received pension social benefits as prescribed by law (Vietnam Social Insurance). Thus, reforming pension insurance and social allowance policies is extremely essential for Vietnam.

Vietnam government always attaches great significance to the formulation and implementation of social security policies to ensure social justice and sustainable socio - economic development. Resolution No. 28-NQ/TW the Party Central Committee stated that Vietnam's social insurance policies still have many limitations and shortcomings. Therefore, as the main pillar of national social security system, Vietnam social insurance policies need to be flexible, innovative diversified, multi - tier and international integration. This improvement and innovation aim to maximize social resources to ensure risk sharing and payment of pension benefits for all workers sustainably. Resolution No. 28-NQ/TW also

emphasized that the above issues are related to create a multi-tier social insurance system, social pension allowances, basic social insurance, supplemental pension insurance, etc. Simultaneously, the key issue is expanding social insurance coverage (The Central Committee of the Communist Party of Vietnam, 2018).

Accordingly, it is necessary to study practical experiences in the international context in order to find appropriate design for Vietnam multi - tier pension insurance system.

2. Method

The article used the method of synthesis and statistical analysis. Data sources on revenue and expenditure of pension social insurance system are taken from the Vietnam Social Security, Department of Social Insurance and ILO reports for summarizing and analysis. The article studies typical international experiences to suggest recommendations for Vietnam case

3. Results

3.1. Challenges to Vietnam pension scheme

Vietnam pension scheme consists of two tiers: the first tier is those who have paid social insurance contributions for 20 years or more are entitled to pension benefit when they reach retirement age; the second tier is a small percentage of the elderly (80 years old or older) receive monthly social allowances. The design of pension system has a distinction between age groups. People aged 60 to 79 is classified into 3 types: some better-off are entitled to social insurance pension (higher income); a few people from poor households receiving social allowances; and the majority is not covered (no social insurance pension, nor social allowance), as figure 2 indicates. However, if people aged 80 years or older do not receive pension, they will be entitled to elderly allowances. Hence, theoretically all adults aged 80 years over are covered.

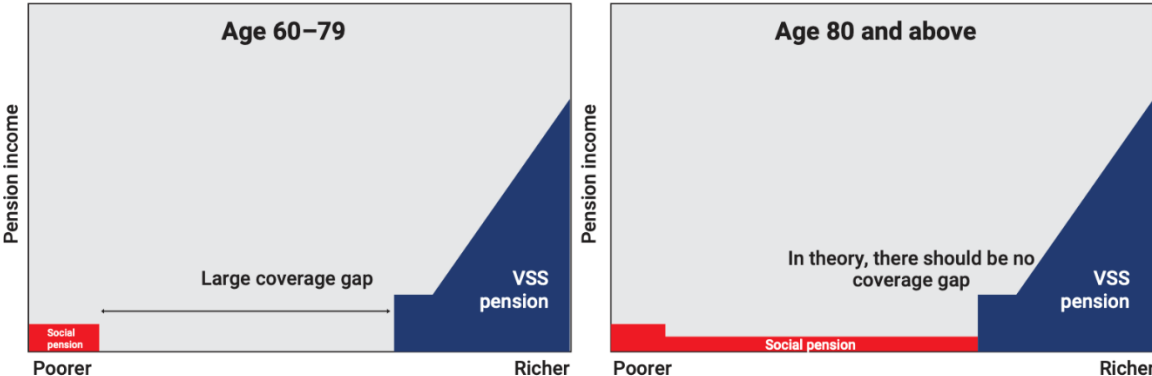


Figure 1. The current design of Vietnam’s old age pension system

Source: ILO

Given the aging population and inadequacies in the implementation of social insurance policies over the past time, the sustainability of Vietnam pension system recognizes a number of major challenges as follows:

Swift aging population

Vietnam experiences demographic trend, transitioning from young population stage to aging population . It will take Vietnam just 20 years which is much faster than other countries to reach “aged stage” (GSO, 2016). While France needs 115 years, the US needs 69 years, Japan and China need 26 years. The ratio of working age population (aged 15-59) to the elderly (aged 60 and over) is 6.6 in 2015, and this rate is estimated to decreased to 2.1 in 2025. This issue urgently requires significant adjustments of pension system.

The design of social insurance system is incomprehensive

Basically, Vietnam social insurance system is state system, operating under Pay-As-You-go defined benefit (PAYG DB) mechanism, retirees’ main income are retirement allowances of social insurance system. However, coverage is relative low. Currently, social insurance coverage only accounts for about 80% of compulsory participants and 20% of workforce. This situation is caused by a large number of informal workers , and small enterprises’ evasion of social insurance payment. In recent years, since Vietnam economy faces many difficulties, the trend of labor transition from formal sector informal sector has become popular, leading to delayed expansion of social insurance coverage .

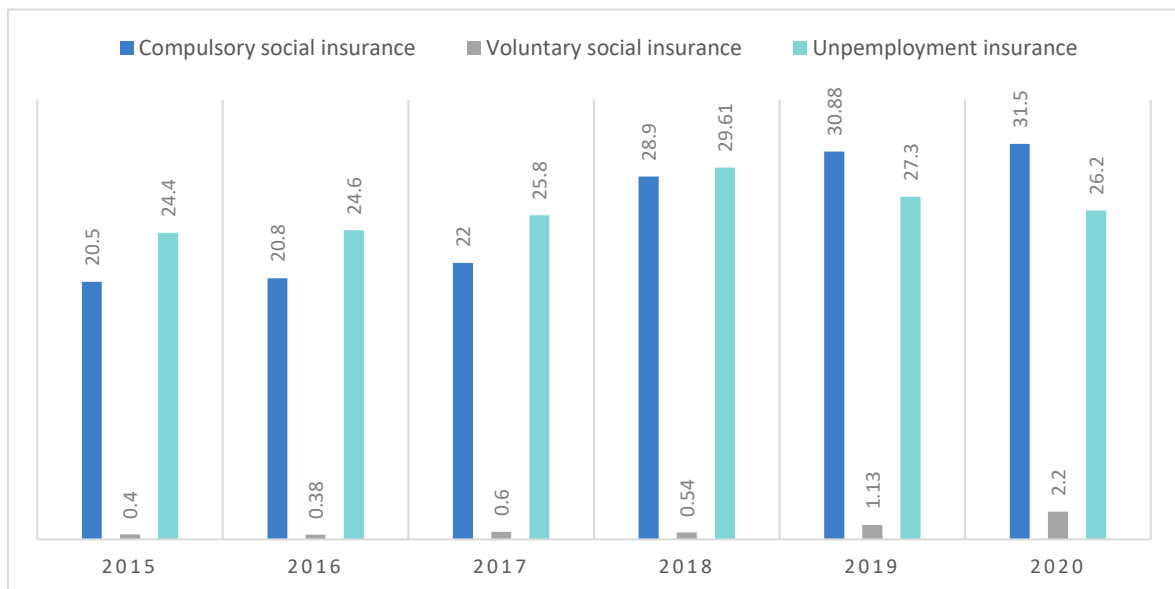


Figure 2. Vietnam social insurance coverage (%)

Source: VSS

Nonetheless, other concern is also low coverage of the elderly. Presently, only 34% of people aged 65 and over enjoy pension or old-age allowances. Coverage for people aged 80 years and over is 60%, though the cover is theoretically universal for this age group. Furthermore, pension system is biased in terms of beneficiary gender: 39% of men aged 65 and over are entitled to pension/allowances while this rate for women is 30%.

Moreover, voluntary pension scheme perform ineffectively. Voluntary system aims to attract workers who are not required to participate, but it has only reached about 533,000 people in 2019 (0,96% of labor force) (VSS,2019).

Another matter in of system design is that the statutory retirement age is relatively low, leading to short duration of social insurance contribution. On average, men contribute 28 years, women contribute 23 years while enjoyment period might last 22.6 years for men and 27 years for women (Social Insurance Department).

Long life expectancy and high net replacement rate

Viet nam retirement age for Women is 55 years 8 months and 60 years and 6 months, for mem while life expectancy is 73.5 years in 2021 (GSO ,2021) and reach 80.9 years in 2060 (UNDP). Longer life expectancy leads to longer period of retirement enjoyment (or higher working age in case of good health conditions). Additionally, declining rate of contributors and rising number of beneficiaries pose financial challenge for the system. The current net replacement rates are too high to ensure system’s financial sustainability. The maximum net replacement rate is 75% of reference salary after 35 years of contribution. Vietnamese normally contribute for people 20 to 35 years. This means the net replacement rate in Vietnam is currently too high.

The number of lump – sum withdrawal increases

The increase in number of people withdrawing lump - sum social insurance leads to a negative impact on the expansion of social insurance coverage. Those who postpone contributing for at least one year and have not reached 20 years of contribution are allowed to receive lump sum withdrawal. However, this withdrawal will affect income security in old age. The number of participants choose one -time benefit reaches roughly 500,000 per year which is high compared to the number of pensioners. Moreover, the cases of one-time payment focusing on young workers who might fail to ensure old-age income security.

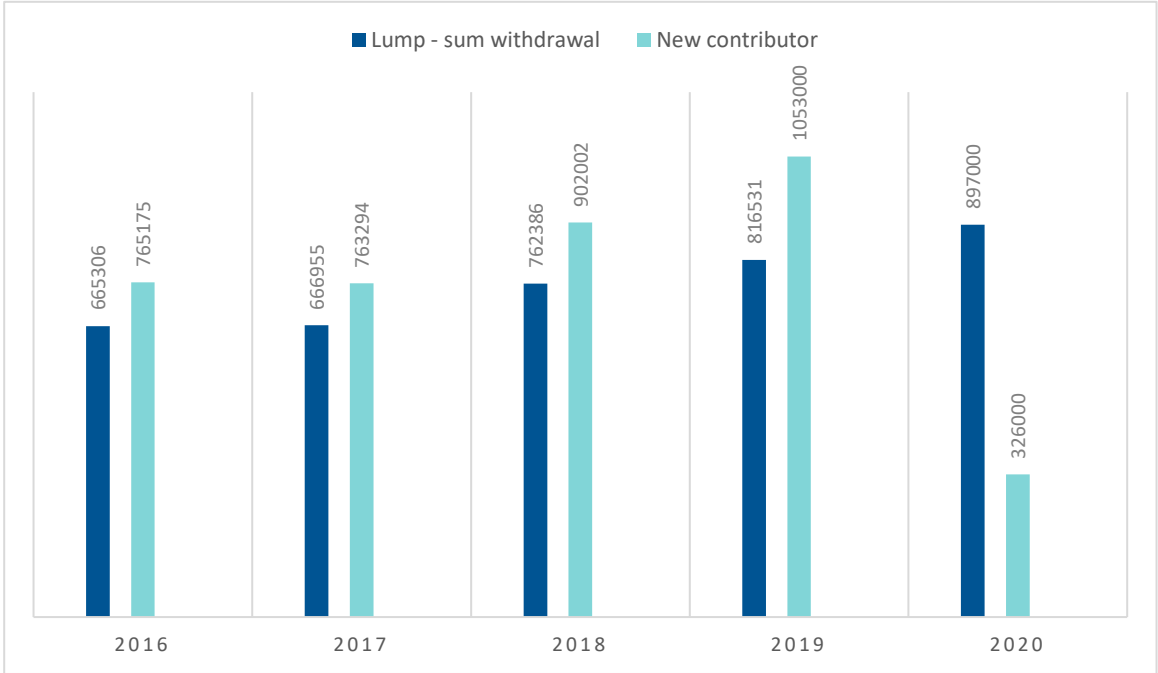


Figure 3. The number of lump – sum withdrawals and new contributors (case)

Source: VSS

3.2 International designs of multi - tier pension system

Many countries have approached strategies of expanding coverage based on multi-tier pension system. Besides, this system design also are studied by many individuals and organizations

ILO design of multi - tier pension system

The first tier usually is sponsored by tax – based sources to ensure basic old-age security for all citizens. The 2nd tier is defined benefit mechanism (DB) that financed by participants' contributions. Finally, Tier 3 is an additional and fixed contribution (DC) which allow people to enjoy higher retirement rates.

Tier 1: Non-contributing pension is derived from tax sources

Tier 1 aims to ensure everyone has a minimum income in retirement through pension derived from tax sources. This is fully consistent with the ILO Social Protection Floor Recommendations. There are two models to be considered: universal pension scheme based on a common rate for all people who reach the qualifying age; or social pension scheme based on pension verification for all persons who reach the age of eligibility but are not entitled to social pension or other public pension system.

Tier 2: Compulsory public social insurance

This tier functions as insuring and distributing income tool in old-age income security programs. Although basic income is guaranteed, tax subsidies are difficult to finance sufficiently compared to previous earnings. Tax-funded programs are geared toward poverty reduction and redistribution of pension system, but lack the function of income regulation. Compulsory public pension schemes sourcing from contributions are the key to ensuring adequate benefits for a large segment of workers, including middle - income class. According to ILO standards, this tier must be designed in the form of defined benefit (DB) managed by the state. The Social Security (Minimum Standards) Convention, 1952 (No. 102) stipulates a minimum replacement rate of 40% of pre - retirement income (after 30 years of contribution). C128 - Invalidity, Old-Age and Survivors' Benefits Convention, 1967 (No. 128) set higher standards, requiring a replacement rate of at least 45% of pre - retirement income.

Tier 3: Additional Private Pension Insurance

Occupational pension or other voluntary private pensions has a limited role in Asian countries as only a small number of participants. These individual retirement plans provide additional benefits to mandatory public pension for those who demand a higher replacement.

OECD design of multi - tier pension system

Tier 1: Compulsory mechanism, government fund ensures appropriate income for all retirees. Each country can choose policy design based on the following three models: (1) Basic pension, (2) Social pension based on income verification or (3) Minimum pension.

Tier 2: Compulsory mechanism, participants' contributions to save for old age. This might be provided by the government or private insurers. If provided by the government,

there are 3 models which are (1) Defined benefit, (2) Accumulate points or (3) Personal account. If it is provided by private sector, there are two models that are (1) defined benefit or (2) defined contribution rate.

Tier 3: Voluntary mechanism, participants' contributions to save for old age, it is provided by private sectors, there are 2 models that are (1) defined benefit or (2) defined contribution rate.

4. Discussion and conclusion

The trend of swift population aging combined with changes in socio-economic aspects and workforce are posing challenges in terms of adequacy and especially sustainability for pension system in most nations. Retirement is not a recent social issue but has not received sufficient attention from the Government and public until recently since recent financial crises affected negatively retirement assets. If timely reforms are not implemented, pension system's challenges will not only be a matter of financial security but also can lead to the risk of socio-economic instability.

Recognizing these problems, many countries have implemented pension system reforms with the aim of building a more stable and sustainable pension system in long term. Although reform policies have been carried out diversifiedly, depending on specific socio-economic situation of each country, policy implementation still has many similarities. According to statistics, there are currently 80 countries around the world that introduce supplementary pension plans, including ASEAN and APEC countries such as: Thailand, Philippines, Indonesia..., but except from Vietnam (IOPS - International Organisation of Pension Supervisors, 2022).

There is a growing recognition that multi-tier pension systems address different risks associated with aging population (diversifying pension sources for employees; reducing pressure on basic pensions plan, etc.) is better than single-tier pension system. International experiences proved that: basic pension has never been considered as the only source of retirement income. Global trend is that basic pension income will decrease gradually whilst additional retirement income will continuously rise as the economy develops.

Most nations introduce supplemental pension insurance when the population structure is golden. This scheme initially voluntary and then becomes compulsory. when the nation reach golden population, labor force is abundant and stable for several decades, simultaneous high economic growth. The implementation of additional pension plan at this time will ensure stable income at relatively high level which attract employees participating in the system. When the supplementary pension scheme becomes popular and the population switch to aging stag, this scheme will turn to mandatory. Vietnam just entered golden population phase, this is the driving force and leverage to introduce supplementary pension insurance. However, Vietnam golden population does not last long, so the government needs to urgently issue implement supplementary retirement plan.

According to international practice, supplementary pension policy is a form of social insurance, so it is involved in a tripartite relationship including employees, employers and

the government. Nonetheless, the government plays a protective role in the basic pension programs; while in the supplementary pension insurance policy, initially, the government must have incentive policies via developing a legal framework; tax incentives; strictly manage investment portfolios to protect the interests of participants.

There are preferential tax policies such as corporate and personal contributions are tax deductible, taxed only for lump – sum withdrawal. Vietnam Law on Social Insurance indicates that basic compulsory retirement income is exempt from tax. However the supplementary pension also directed towards social security goals, ensuring life stability, reducing the burden of retiree on their family and society. Therefore, in order to encourage employees and employers to save for the future, it is necessary to have tax incentives for contributions to supplementary pension fund as well as income from this fund.

The government needs to regulate maximum contribution level to avoid tax evasion from businesses and employees since they pay high contributions. Additionally, this regulation aims to limit future payment for retirees, ensure fund safety, and reduce income gap of retirees.

Furthermore, it is also necessary to stipulate a minimum level of contribution to ensure efficiency. The pension benefits should be equitable to ensure retirees' living and social security purposes.

Vietnam must clearly and specifically regulate the participating conditions of supplementary pension plans such as: age, duration of contribution, monthly benefit, lump – sum benefit. Strict regulation of beneficiary conditions will help manage the fund sustainably, avoiding fraud. However, if employees can prove a legitimate need to withdraw, they should also be approved.

In order to be financially transparent and attract employees, the Government needs effective fund management and investment tools. The fund management agency regularly reports publicly on revenue and expenditure, fund balance or investment portfolio as well as investment interest rate. Before the fiscal year, the Fund Management Authority should develop an investment strategies and publicly announce.

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DEVELOPING HUMAN RESOURCES TO MEET THE CURRENT REQUIREMENTS OF BUILDING A DIGITAL ECONOMY IN VIETNAM

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Abstract

Along with the development of the Fourth Industrial Revolution, in recent years, the trend of digital transformation is taking place strongly in most countries worldwide, including Vietnam. The digital economy brings great development opportunities and requires workers to change their qualifications appropriately to meet the requirements. The paper clarifies the comprehension of the digital economy, analyzes the current situation of digital human resources in the digital economy in Vietnam, and proposes some solutions to develop digital human resources to meet the requirements of building a digital economy in Vietnam.

Keywords: *Human resources, digital human resources, digital economy, Vietnam.*

1. Introduction

The digital economy is a new economic model that most countries are moving towards. In Vietnam, developing the digital economy is one of the major orientations for the socio-economic development strategy for the 2021 - 2030 period. To form the digital economy, besides the environment, institutions, and policies, developing human resources is considered a prerequisite factor. The digital economy requires correspondingly developed human resources to deploy, implement, and operate the economy effectively. However, how the workforce responds and adapts to digital transformation is challenging. There has been much concern that digital transformation could create fluctuations in the labor market, especially in countries with low labor productivity and mainly based on outsourcing and assembly, like Vietnam. Therefore, it is essential to understand the current situation of human resources to prepare the best ones for the development of the digital economy in Vietnam.

2. Method

The study used basic methods such as secondary data research, primary and secondary data collection, and analytical methods.

3. Results

3.1. Digital economy and requirements for human resources in our country

Nowadays, one of the prominent features is that the Fourth Industrial Revolution and globalization are taking place firmly worldwide. The Fourth Industrial Revolution is the continuation and development of the Third Industrial Revolution based on integrating new achievements in many scientific fields, such as: physics, chemistry, and biology... This is

the outstanding development of many technologies, creating many new technologies, such as: nanotechnology, new material technology, new energy technology, biotechnology, 3D printing technology, and especially digital technology. Digital technology is a higher level of information technology with the development of artificial intelligence, the Internet of Things, cloud computing, big data, and blockchain. All information and data are converted into electronic data, digitized, stored, transmitted in a larger capacity, and processed faster. However, each of these technologies mainly affects a specific area, e.g., new material technology in the material sector, energy technology in the energy sector, 3D printing technology in the manufacturing sector, and biotechnology in the field of biology. Meanwhile, digital technology greatly influences almost industries and creates the foundation for other technologies to be implemented. Digital technology acts like the human brain and nervous system. It develops strongly, creates breakthroughs in many fields, especially in the economic field. The digital economy is growing very fast and becoming a new development trend on a global scale. In line with the development trend of countries around the world, Vietnam is promoting the development of the digital economy, considering this "breakthrough" step in the context of the Fourth Industrial Revolution.

The digital economy can be approached from many angles with different aspects. However, in the most general sense, the digital economy is understood as an economy that operates mainly by applying digital technology. Building a digital economy is a revolution that transforms a resource-based economy (traditional economy) into a knowledge-based economy with the pillars of science, technology, the internet, and digital. Economic activities are performed in the internet space, using telecommunications services and information technology, helping save time as well as human resources, increasing labor productivity, and creating tremendous value for the economy.

After 35 years of renovation, the economy has been improved in many aspects, and the people's material and spiritual life has been markedly raised: "Our country has never had the opportunity, potential, position, and international prestige as it is now." However, the economic growth rate is still not commensurate with the potential and advantages, lacks sustainability, and has been unable to close the gap and catch up with developed countries. The economy's productivity, quality, and competitiveness are not high and are not really based on science, technology, and innovation. The macroeconomic foundation and the economic resilience have not been firm yet. In the coming years, Vietnam will integrate more deeply into the international economy and will have to fully and effectively fulfill its commitments when participating in new-generation free trade agreements. However, the economy that has not developed sustainably has many weaknesses and faces many challenges. To overcome that difficulty, one of the urgent tasks is to "renew growth thinking, change the way of working and living, boost institutional reform, application of scientific and technological advances, and innovation, drastically implement a digital transformation, and build a digital economy and a digital society."¹ This shows that building and developing

¹ The Communist Party of Vietnam (2021), *Documents of the 13th National Congress*, Volume I, Truth National Political Publishing House, Hanoi, p.213.

the digital economy in Vietnam is both an objective trend and an urgent requirement. The Party and State identify developing the digital economy as one of the key tasks that must be successfully performed for Vietnam to “catch up and develop together” with other countries in the region and the world. This is one of the most significant growth drivers to turn Vietnam into a developed country by 2045: “Strongly promoting national digital transformation and developing digital economy and digital society to create breakthroughs in productivity, quality, efficiency, and competitiveness of the economy.”² Along with that, the Government has also actively researched and developed many guidelines and policies, especially promptly issued a series of legal documents such as decrees and circulars to create a legal corridor, managing and regulating various segments of the digital economy in Vietnam. Dated June 3, 2020, the Prime Minister issued Decision No. 749/QĐ-TTg approving the “National Digital Transformation Program to 2025, orientations by 2030” with the goal of striving that Vietnam is in the group of 50 leading countries in e-government, related to the development of the digital economy, improving the competitiveness of the economy; the target that by 2025, the digital economy will account for 20% of GDP; the proportion of the digital economy in each industry or field shall reach at least 10%; by 2030, the digital economy will account for 30% of GDP; The proportion of the digital economy in each industry or field shall be at least 20%.³ Besides, the Government of Vietnam has been taking necessary steps to facilitate the development of the digital economy, such as: Implementing institutional reforms to attract investment in digital technologies; Building e-government, digital government, reforming the administrative In addition system towards digitization and improving the quality of human resources; Building legal frameworks on network safety and security; Promoting innovation and digital ecosystem... Thanks to the decisive battle of the whole political system, Vietnam is becoming one of the strong attraction places for digital economic investment in Southeast Asia.

Vietnam is one of the countries with the fastest-growing digital economy in Southeast Asia, with the growth rate of 28% in 2022. Forecast to 2025, Vietnam's digital economy can reach 52 billion USD, making Vietnam the second largest digital economy in Southeast Asia. Thanks to the digital economy, businesses in Vietnam have become more active, from ecommerce, online advertising on social networking sites (Facebook, instagram), entertainment (Netflix, Pinterest), transportation (Uber, Grab, GoViet) to distribution, wholesale and retail (Lazada, Shopee),... The digital economy promises to be a factor that brings many opportunities for implementation of the process. develop industrialization and modernization towards modernity in the coming time.

Each economy requires a correspondingly capable production force, especially human resources. Therefore, digital human resources are required to deploy, organize, and operate to correspond to the digital economy. Digital human resources are the workforce in the digital economy, a pivotal force to deploy and realize the digital economy. They decide

² The Communist Party of Vietnam (2021), *Documents of the 13th National Congress*, Volume I, Truth National Political Publishing House, Hanoi, p.46.

³ Decision No. 749/QĐ-TTg of the Prime Minister: Approving the “National Digital Transformation Program to 2025, orientations by 2030”.

the existence of the digital economy, can master digital technology devices, and operate them in production, business, and other activities. Therefore, parallel with the economic transformation is the process of labor restructuring. Accordingly, digital human resources are increasingly developing and leading the social labor force. Therefore, the development of digital human resources is indispensable in the process of labor restructuring in Vietnam.

The essence of the digital economy is based on applying digital technologies and knowledge, and knowledge is considered a resource for developing the economy. Thus, digital human resources must be well-trained, professional, ethical, capable of mastering technology, creative, and able to quickly adapt to technological changes. The characteristics of digital human resources can be seen in the following aspects: Being capable of mastering digital technology devices in the interactive process of economic activities; Having the ability to quickly adapt to the working environment and new scientific and technological advances; Being disciplined and ethical at work; Having breakthrough thinking at work, also known as creativity. This is considered a sufficient condition and a criterion of digital human resources. To satisfy the above aspects, digital human resources must be properly trained and constantly be supplemented, but this task is not easy and fast. In the context of Vietnam, forming digital human resources to meet the requirements of developing the digital economy still has many problems that need to be clarified and dealt with by appropriate solutions.

3.2. The current situation of digital human resources in the digital economy in Vietnam

In the context of global economic competition, all countries consider human resources the most important tool to improve national competitiveness. Currently, Vietnam's human resources are increasing in quantity and advancing in quality. According to the General Statistics Office of Vietnam, as of July 31, 2022, Vietnam's population was about 99 million, of which the working-age labor force was 51.9 million. The number of workers who were trained and had degrees and certificates was estimated at 13.4 million, accounting for 26.2%.⁴ Vietnam's Human Development Index (HDI) in the fairly developed group ranked 115 out of 191 countries (according to the report dated September 9, 2022, of the United Nations Development Program). This is one of the favorable conditions for Vietnam's labor force to be able to transform and apply digital technology to build a digital economy in the 4.0 Industry.

Although the quality of human resources has improved, Vietnam's human resources faces many challenges. Digital human resources are lacking and weak in quality. Vietnam is lacking in technology engineers with high qualifications and management capacity to meet the development needs of technology enterprises now and in the future. According to the online job service company VietnamWorks, Vietnam lacks about 78,000 IT employees annually and about 500,000 by 2020, which means that the current staff only meets 22% of market demand.⁵

⁴ <https://www.gso.gov.vn/du-lieu-va-so-lieu-thong-ke/2022/07/thong-cao-bao-chi-tinh-hinh-lao-dong-viec-lam-quy-ii-va-6-thang-dau-nam-2022/>

⁵ <https://www.vietnamworks.com/hrinsider/nganh-cong-nghe-thong-tin-viet-nam-thieu-hut-so-luong-nhan-su-khong-lo.html>

To adapt to the digital economy, workers must have the knowledge and technical expertise to use and exploit modern tools to lift labor productivity. Currently, the level of knowledge, ability to master science and technology, and skills in the production process of Vietnamese workers have not met the demands. According to the Ministry of Industry and Trade, the rate of FDI projects using high technology in Vietnam is still low, with only 5% of high-tech from the US and Europe being operated. 80% is medium technology, and 15% is outdated technology.⁶ The reason for the slow technology transfer is that workers have not met the demands of mastering science and technology in production. According to the report of the Central Institute for Economic Management, Vietnam’s labor market has a surplus, but the quality of labor is still low. There is a lack of connection between training and practice, and labor skills are poor. According to the assessment of international organizations, most of Vietnam’s human resource indicators are low. The report of the World Economic Forum in 2018 assessed that Vietnam’s human resources were not ready for the 4IR and ranked 70 out of 100 countries. Due to low skills and the nature of labor, they are vulnerable to technological breakthroughs, lose their jobs, and are replaced by automation, robots, and artificial intelligence. We also ranked 90 out of 100 countries regarding technology and innovation. Highly qualified staff is also in the last group, ranking 81 out of 100 countries (view table). In particular, labor productivity was very low, equal to 7% of Singapore’s labor productivity.⁷ Vocational training quality ranks 80 out of 100 countries, just above Cambodia (ranking 92 out of 100 countries).⁸ Compared with ASEAN countries, most of Vietnam’s indexes only exceed Cambodia’s. Thus, the level of the Vietnamese workforce is only close to that of Indonesia but lower than most other countries, leading to a series of other weaknesses such as poor application of science and technology, low labor productivity, and high product costs, making the competitiveness of our country’s economy low, and causing great difficulties for the development of digital economy in the future.

Table 1. Ranking of factors “Dynamics of production” of Vietnam and Asean countries

	Singapore	Malaysia	Thailand	Philippines	Vietnam	Indonesia	Cambodia
Technology and bright	6	23	41	59	90	61	83
Human resources	2	21	53	66	70	55	86
Highly skilled labor	1	45	78	50	81	83	87

Source: WEF Readiness for Future of Production Report 2018

The majority of Vietnamese workers are unskilled and untrained, which leads to a risk of labor redundancy and poses a problem in retraining this workforce. Research published recently by the ILO indicates that in the next two decades, about 56% of workers

⁶ <https://baochinhphu.vn/them-bo-tieu-chi-loc-nhung-du-an-fdi-kem-chat-luong-102221116175843599.htm>.

⁷ <https://vietnamnet.vn/loi-giai-bai-toan-nguon-nhan-luc-nhan-taitrong-thoi-dai-40-713560.html>.

⁸ <https://vietnamnet.vn/loi-giai-bai-toan-nguon-nhan-luc-nhan-taitrong-thoi-dai-40-713560.html>.

in 5 Southeast Asian countries, including Vietnam, are at risk of losing their jobs because of robots, especially in the clothing industry. Or according to the Asian Development Bank's report, the growth of the digital economy will lead to the loss of a large number of jobs. For example, a third of the workforce in agricultural processing and 26% of the workforce in the logistics industry in Vietnam will be replaced. Workers will lose their jobs if they lack the necessary skills to do new jobs and do not have an adequate and timely investment in skills development. At that time, Vietnam may be under big pressure on job creation and face an increase in unemployment or underemployment in the future.

In addition, the issue of labor consciousness, labor discipline, technology discipline, professional ethics, soft skills, and ability to work in a multicultural environment are considered weaknesses of Vietnamese workers. Labor discipline has not yet met the high requirements of modern industrial production. Employees are not equipped with the knowledge and skills to work in groups. Their ability to synthesize and share work experience and creativity is limited.

The above limitations are caused by the following main reasons.

- Perceptions and conceptions of many ministries, relevant agencies, society, and people about developing digital human resources to meet the direct requirements of the digital economy are not comprehensive and accurate. In recent years, all ministries and relevant agencies have paid much attention to the role, importance, opportunities, and challenges of the digital economy. However, advancing digital human resources to meet the needs in developing the digital economy is still slow compared to reality and requirements, from people's awareness to the participation of education and training institutions and state management agencies. Providing information and career guidance for people in choosing and deciding to participate in vocational training to meet the needs and demands of the labor market in the context of the digital economy is not good.

- Human resource training is renewed and updated slowly. Most training institutions for digital human resources have not caught up with the trend of the digital economy and have not trained enough digital human resources that meet quality standards for the labor market.

- Promulgating and implementing some mechanisms and policies related to developing digital resources are not consistent and synchronous. There is a lack of an information system that updates human resource supply and demand for the digital economy.

3.3. Some solutions to develop digital human resources to meet the requirements of building a digital economy in Vietnam

Recognizing the importance of digital human resources, the Party and State have had many policies and correct orientations on developing digital human resources. In which, we must mention Decision No. 146/QĐ-TTg of the Prime Minister, dated January 28, 2022, approving the Project "Raising awareness, popularizing skills, and developing human resources for national digital transformation by 2025, with orientation to 2030," and Decision No. 411/QĐ-TTg of the Prime Minister, dated March 31, 2022, approving the National Strategy on Development of the Digital Economy and Digital Society to 2025, with orientation to 2030. To develop digital human resources, the following solutions need to be implemented:

Firstly, promoting propaganda to raise awareness about digital transformation and the development of the digital economy. The attention of governments at all levels in raising people's awareness of digital transformation plays a role. The State must have programs and plans to foster and spread knowledge about the digital economy so that managers and implementers understand it. Digital transformation is relevant and affects every individual in society in many aspects, from tasks and work arrangements to the way of working, and way of life, and protects the interests, security, safety, and secrets of each person. Ignorance, lack of preparation, and unpreparedness of members and social organizations will hinder digital transformation and economic development. Therefore, raising awareness and understanding about digital technology and digital transformation for each person to prepare the psychology, conditions, and skills to participate in and adapt to digital transformation actively is the first and vital requirement to complete the digital transformation and develop the national digital economy. If people gain knowledge, they will change their minds and develop a digital economy well.

- Secondly, our Party and State need to perfect institutions and legal documents to create favorable conditions for building the digital economy. The rapid development of science and technology, the digital economy, and new and unprecedented business methods and innovative ideas have confused state agencies in managing digital economic activities. Vietnam has issued a national strategy for developing the digital economy and digital society, so it is necessary to accelerate the implementation of the national digital transformation program, especially solutions for skills training, digital human resource development, digital transformation of enterprises, and development of the domestic digital market. The content of the digital economy needs to be legislated to ensure a solid and unified corridor and legal basis for fulfilling the digital economy agenda. In which, a core digital workforce, sufficient in quantity and satisfying in quality, must be built to serve the requirement of digitizing all areas, from agriculture to industry and services.

- Thirdly, boosting the construction of digital businesses, thereby promoting the transformation of digital human resources. Digital transformation in the industry to build smart manufacturing is considered an essential driving force of digital economic development. According to a survey by the Ministry of Industry and Trade on the readiness to apply Industry 4.0 in industrial enterprises' production and business activities, up to 82% of enterprises are new entrants. In which 61% are still on the sidelines, and 21% of enterprises have started to have initial preparation. This requires businesses to boldly transform their operations to match the general development orientation of the economy. The digital transformation of businesses will put new requirements on employees and force them to change their working methods, actively study, improve their qualifications, advance their skills, and apply science and technology instead of relying on the training of enterprises as before. It is crucial to develop incentive mechanisms (financial and non-financial) to develop digital technology enterprises and Vietnamese enterprises in the field of digital business, especially small and medium-sized enterprises, because most Vietnamese enterprises are SMEs. The digital enterprises with the digital technology solution "Make in Vietnam" will be a principal driving force for successfully building the digital economy. Encouraging the

improvement of soft skills for employees and creating initiatives to build essential core skills for people to meet the demands of technological advances is an urgent task.

- *Fourthly, building education and training strategies to serve the development of the digital economy.* Education and training play a decisive role in the quality of human resources. It is necessary to associate the education and training development strategy with the human resource development strategy and the socio-economic development strategy on both macro and micro aspects. Thus, a new integration between supply and demand for digital human resources can be created in terms of education level, professional and technical level, human structure, capacity, and quality. With the characteristics of digital human resources, training human resources needs to innovate the model, structure, and thinking from just learning once to work for life to learning for life to be able to work for life. The structure of vocational training is adjusted and changed according to the requirements of the digital economy, with a focus on training the IT labor force. The IT HR training program should accelerate IT education's socialization. It is needful to update curricula in association with new technology trends such as the Internet of Things, AI, robotics technology, etc., helping learners approach this field early and promoting training and practice linkages between schools and the business sector applying IT. Educational programs need to be reviewed to update and educate children about the Internet from high school. In addition, it is necessary to study and change training contents and methods to build human resources capable of receiving new production technology trends, focus on promoting training in science, technology, engineering, and mathematics (STEM), foreign languages, and informatics, develop training programs, re-train professional knowledge, and provide the ability to self-study flexibly, suitable for each organization and individual. It is important to create close links between businesses, schools, and learners to enhance exchange and coordination to increase efficiency in training digital human resources to serve digital businesses. Enterprises support funding and order personnel. The schools provide in-depth knowledge training for learners in the fields that companies need to recruit workers. Learners should be aware of the requirements of the enterprises and based on their own capacity to choose a career and train their capacity appropriately. Furthermore, it is paramount to advance the internal resources of domestic universities in combination with large research institutes, universities, and research centers in the world on technology and digital to build a smart university system and gradually form leading research centers on science, technology and digital in the region and in the world. The Ministry of Education and Training needs to coordinate with ministries, relevant agencies, enterprises, universities, and research institutes to forecast labor demand and demand for products of science and technology of each industry and field to set training targets and invest in big research projects. Developing programs, training and retraining digital skills for the tech workforce, as well as training basic digital skills for people to adapt to the trend of digital transformation and development of the digital economy is an urgent task.

- *Lastly, building a working culture for digital human resources.* Industry 4.0 helps each person receive information quickly, but not all information is accurate and useful. Much

harmful information, ideas aimed against the Party and State, and false information cause disorientation in the actions of each individual. Therefore, building and consolidating political stances and ideas and creating the ideal of life for employees is significant. For creating a cultural working environment and bringing conditions and opportunities for human resources to help them develop, leaders must be exemplary in words and deeds. Human resource development strategy must be implemented in a fair, disciplined, and ethical environment. Following the law is considered the standard for creating a cultural environment, leading to the development of human resources.

4. Discussion and Conclusion

In summary, Vietnam has favorable conditions for developing digital human resources, but that development is not commensurate with its potential. Therefore, all forces participating in developing digital human resources must actively promote their roles, which can bring high efficiency. The Party and State play the role of orienting, directing, and building a favorable mechanism for the digital transformation process. Organizations and businesses need to be proactive and flexible in transforming operating models and methods based on digital technology. Finally, each person must actively learn, improve professional qualifications, master science and technology, and apply them to production to promote the growth of Vietnam's economy in the current period.

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HUMAN RESOURCE DEVELOPMENT STRATEGIES FOR LECTURERS AT HUE UNIVERSITY ADAPTATION TO UNSTABLE WORLD

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Abstract

The world today is going through multiple accelerating and complicated changes. Under the impact of globalization, international integration and the fourth industrial revolution, when digital technology is becoming more and more powerful and widespread, accordingly, higher education institutions need to build up development strategies to adapt to those changes. Human beings are both a product of circumstances and a subject of circumstances – history. Therefore, human beings play a leading role in fast and sustainable development in a changing world. In such an unstable world, building smart university is an indispensable requirement for Hue University. Development of lecturer resource is considered a decisive factor for building smart university

In its development strategy for the period of 2021-2030, with a vision to 2045, Hue University always emphasizes the strategy of human resource development, especially the strategic development of lecturer resource that can actively adapt to the world full of changes. Lecturers are the most important human resource for Hue University to flexibly adapt to the changing world. In order to develop a resource of qualified lecturers meeting the requirements of building smart university which is compatible with the digital economy and digital society, Hue University needs to implement a number of synchronous solutions.

Keywords: *a changing world, international economic integration, lecturer resource, fourth industrial revolution.*

1. Introduction

The world is constantly changing because movement is its inherent property. Specifically, globalization, international integration, economic competition and the fourth industrial revolution, especially digital technology, are taking place powerfully and widely; creating huge and abrupt changes, causing unprecedented complexity globally. To cope with this unpredictable world, higher education institutions need to establish adaptive strategies to overcome challenges and take advantage of opportunities for rapid and sustainable development. For higher education institutions, the foremost adaptation strategy is flexibly and effectively combining development resources with the increasingly unstable circumstances.

Human beings are the center, the subject, the main resource and the goal of development. Consequently, investment in human resources is considered as an investment in one of the most special resources. This kind of investment is considered as a basic one

because it enhances the reproduction of labor force for the future. Therefore, in the development strategy for the period 2021-2030, with a vision to 2045, Hue University always emphasizes the strategic importance of lecturer resource development. Higher education plays an important role in the national education system, in which lecturer resource not only plays a decisive role in improving the quality of education and training, but also determines the adaptability of the whole university, its ability of response and its resilience to challenges in an unstable world.

The article focuses on analyzing and clarifying the human resource development strategy of Hue University's lecturers in adaptation with the changing world. To accomplish this purpose, the article analyzes and clarifies the following: Adaptation strategies in new contexts and human resource problems; Problems of developing Hue University's lecturer resource to adapt to the changing world; Solutions to develop lecturer resource at Hue University to adapt to the changing world.

2. Method

The article applies specific methods such as analysis, aggregation and systematization of documents, Research works related to the situation in Vietnam and globally as well as faculty resources in educational institutions. Moreover, Survey methods are also used to collect and process data for in-depth analysis of Hue University's faculty resource development strategies to adapt to the changing world. From here, the article points out: developing high quality human resources is a core issue of adaptation strategies in a changing world; the requirements necessary for the development of Hue University faculty resources to adapt to the changing world; Hue University resource solution lecturers to adapt to the changing world.

3. Results

3.1 Adaptation strategies in new contexts and human resource problems

The world nowadays is a world full of change. "The world is going through great changes which is happening very quickly, complicatedly and unpredictably. Economic competition, trade wars, competition for markets, resources, technologies and high-qualified human resources. Attracting foreign investment among countries is drastically increasing which strongly affects the global production and distribution chain. The fourth industrial revolution has given way for the fast growing of digital technology, creating breakthroughs in many fields, at the same time, creating opportunities and challenges for all nations and peoples." (Communist Party of Vietnam, 2021, pp.105-106). The adaptation and development of each institution, enterprise and higher education institution under the impact of the COVID-19 pandemic in the digital era, globalization and international integration is a matter of urgent and long-lasting survival. Therefore, it is necessary to have a holistic thinking and approach that is suitable for the new developing context and requirements; concurrently, it is necessary to have a mindset and approach in which human beings are both the center and the subject. Human beings are the goal and driving force of social development in general and organizations, businesses, and higher education institutions in particular.

Strategies must go along with the situation. The current world situation is becoming more uncertain. People need to have more adaptive and flexible vision and action. The more uncertain the world is, the harder it is to predict. The more complicated the world is, the harder it is to analyze. Therefore, in order to actively adapt to the changing world, people need to boost the development of human resources, science, technology, innovation and digital transformation to improve adaptability, quality, efficiency and competitiveness of agencies, organizations, enterprises in general and higher education institutions in particular. The world today is a world of great change. Accordingly, an adaptation strategy is a necessity.

Adaptation strategy is a development strategy that is suitable for changing circumstances, in order to create a reasonable combination of opportunities and risks of the environment and the capabilities and resources of the subject (organization, enterprises, higher education institution). The resources for social and economic development in the volatile world are all assets, resources, power is ready to put into use or reserve to serve that development). Kneel according to the division basis, one can divide resources into natural and non-natural resources; resources are divided into material resources and immaterial resources; resources are divided into domestic resources (internal resources) and foreign resources (external resources).

In the context of the fourth industrial revolution and international economic integration; Human resources are considered part of non-natural resources and play a leading role in development resources. Because: the use of natural resources is economical, effective, sustainably and adapting to a world of turmoil or irregularity belonging to human resources; a country rich in natural resources, modern machinery but without high quality human resources, it is difficult to adapt quickly to the unpredictable transformation of circumstances; opposite, a country with a poor natural resources but a high quality of human resources is able to adapt quickly to challenges in a volatile world; management institutions, science and technology, literary values, development aspirations are all of unnatural resources and, to the end, are all created by human resources. "The treasure within itself is bigger than any treasure in the ground"

In the dialectical relationship between resources are divided into material resources and immaterial resources; in this way, human resources are part of a material resource, so it plays a leading role. In the dialectical relationship between internal and external forces, internal force plays a decisive role. The main pillar of internal force is the human – human resources.

As such, the resources for the world's socio-economic development are very volatile despite being divided into natural and non-natural resources, between resources are divided into material resources and immaterial resource, or internal and external forces; but human resources play a fundamental and decisive role. Therefore, the adaptation strategy in a volatile world should prioritize the development of human resources, especially high-quality human resources.

Human beings exist and develop in a certain situation. That is called the natural condition and the social condition which have an indispensable relationship to human life.

Therefore, people have to accept and adapt to the situation. Human beings are the product of natural history and social history. Human beings are a product of the natural environment - Human beings are a biological entity and a part of nature; in other words, the natural world is the inorganic body of man. Therefore, human beings must rely on the natural world, stick with it, adapt to nature, harmonize with the natural world, and depend on nature to survive and develop. Human beings are also a product of the social environment - the human beings are a social entity with social activities, the most important of which is labor and production; The social environment includes economic, political, cultural, educational, historical issues which encircle human beings and they take that as a source of their life and their goal. Therefore, people must adapt to the situation in order to survive and develop.

As a product of history, human beings are not passively changed by historical activities, but they are also the subject of history. Human beings not only have to accept and adapt to the situation, but at the same time, they change the situation to adapt and transform themselves. Through the above analysis, the requirements for an adaptation strategy in today's changing circumstances include properly addressing the relationship between opportunities and risks of the environment and the capabilities and resources of the subjects, especially human resource. In higher education institutions, lecturer resource is the most important resource for rapid and sustainable development in the world full of changes and challenges. The fourth industrial revolution, international economic integration is taking place strongly on a global scale, Strong impact on all areas of social life, including higher education. In this context, the development of lecturer resource has become the focus of strategic competition among higher education institutions.

3.2. Problems of developing Hue University's lecturer resource to adapt to the changing world

To adapt to the changing world in the digital era, Hue University has determined that one of the important strategic tasks is the effective application of information technology, digital transformation in all activities to build Hue University into a model of smart university with entrepreneurship and innovation. The outstanding development of science and technology, especially digital technology, has created many unprecedented changes and strong impact on the whole system of education and training. The traditional university model has proved to be inadequate in response to the requirements of socio-economic development in the digital era. The traditional university model must be changed by a smart university model, in other words, a digital university. Consequently, it is requirable to build a smart university suitable for the digital economy, digital society and digital citizen and to make higher education institutions in general and Hue University in particular flexibly adapt to the fourth industrial revolution, globalization and international integration that are taking place more and more strongly.

Developing higher education institutions in the direction of smart universities is a trend and a vital issue of Vietnamese higher education, especially national and regional universities. Hue University is an example of regional university. According to article number 4 of the Law on Higher Education, it is clearly stated: "Educational institutions have

legal status, including universities, colleges and higher education institutions with other names in accordance with the provisions of law. National and regional universities are universities that perform national strategic tasks and regional development tasks of the country” (National Assembly of the Socialist Republic of Vietnam, 2019, p.14). As a regional university, Hue University has made active contributions to the training of human resources, especially high-quality human resources to serve the cause of industrialization and modernization of the country.

In today world of changes, the tendency of transforming colleges into universities and making connection among universities is strongly increasing. This tendency is being encouraged by the nation which turns small universities into universities of larger scale, broadly understood as centers for undergraduate and postgraduate training and scientific research, a place for highly-qualified multi-disciplinary and multi-field technology transfer which makes Vietnam a famous country in education and training in the area, catching up with the advanced level of the world.

For its nearly 66 years of establishment and development, Hue University (1957 – 2023), is a higher education institution that plays a leading role in providing high-quality human resources training in Thua Thien Hue province, in the Central and Central Highlands of Vietnam as well as in the whole country. Hue University ranks the top 350 universities in Asia and among the top ranking of higher education institutions in Vietnam. “Currently, Hue University has 09 member units including University of Education, University of Sciences, University of Medicine and Pharmacy, University of Agriculture and Forestry, University of Arts, University of Economics, University of Foreign Languages, University of Laws, Institute of Biotechnology; 01 affiliated school which is the University of Tourism and Hospitality; 03 affiliated faculties including the Faculty of Physical Education, International School, and School of Engineering and Technology; Quang Tri Campus; functional departments, Centers, Research and Training Institutes and a Publishing House. Hue University is always proud of its tradition, position and role of a national educational institution, bringing with it the unique and elite features of education and training. The multi-disciplinary nature of Hue University is clearly demonstrated with a full range of disciplines and groups of training disciplines” (Hue University, 2021, p.6). In order to affirm its position, brand and reputation while trying to meet the new requirements of socio-economic development, science and technology and to adapt to the fourth industrial revolution, globalization and international integration, Hue University has to transform itself following a smart university model.

For Hue University to become a smart university - a digital university, it is necessary to have resources. Resources have a close relationship with each other, in which human resource, especially lecturer resource, plays a decisive role in building a smart university. The role of lecturer resource originates from the role of human beings. Human beings are the subjects of history because labor and creation are the supreme social nature of humans. The productive forces are the material and technical foundations of socio-economic formations. Human beings are the decisive factors in the productive force, because human

beings are the subjects of creation when using means of work and tools of work. Under the strong impact of the fourth industrial revolution and international economic integration, then both the natural ecosystem and the human society are immeasurable. Accordingly, lecturer resource is the foundation of all transformations in higher education institutions. As a result, the focus of the adaptation strategy to a changing world is the development of lecturer resource. A development higher education institution must always put lecturer resources at the center of its development programs and plans

Building Hue University following the smart university model is the vision and strategic goal of Hue University in the new context. One of the strengths of Hue University when building a smart university is that: “Hue University's staff and employees are highly qualified, capable of undertaking many high-quality training programs and new programs of interdisciplinary and transdisciplinary nature” (Hue University, 2021, p.33). Hue University's staff and employees are highly-qualified and capable of implementing many high-quality training programs as well as numerous new interdisciplinary and transdisciplinary programs” (Hue University, 2021, p.33). According to statistics, until August 1st, 2021, Hue University has 3.679 officers, officers on a temporary assignment and employees (2.431 officers, 11 officers on a temporary assignment, 1,237 contracted employees). Among the total number of staff, there are 1.939 lecturers and 19 professors, 196 associate professors, 717 lecturers with doctor degree, 10 senior specialists, 1.125 lecturers with master degree, 03 junior specialists and 84 lecturers with bachelor degree. Regarding professional titles, there are 215 senior lecturers, 411 main lecturers and 1.313 lecturers. In comparison with the beginning period when the 2016-2020 Hue University's Strategic Plan for Development was implemented, the ratio of lecturers with doctor degrees among the total number of lecturers has reached 37.64 per cent” (Hue University, 2021, p.9).

The Industrial Revolution 4.0 has led to a smart economy or a digital economy, a digital society and accordingly, a smart university - a digital university. This is a major upward change in the history of human development. The smart university model was inevitably born to replace the old university model - the traditional university model. The core of building a smart university in the current context of the fourth industrial revolution and deep international integration is digital transformation. Digital transformation in higher education is based on the advancement of new technologies to innovate models and modes of operation to flexibly adapt to the changing world in the digital era.

The new context creates conditions and at the same time, sets requirements for the development of Hue University's lecturer resource. Over the years, the lecturer resource of Hue has undergone many positive changes in all aspects of quantity, quality and structure. However, compared with the requirements of building a smart university, whose core is digital transformation to adapt to a changing world, there are certain shortcomings:

Firstly, the quantitative development of university lecturers depends on the training scale and the adaptation strategy to an unstable world. According to statistics, the training scale of Hue University as of June 2021 will reach nearly 40,000 undergraduate students and 4,500 postgraduate students. According to higher education regulations, in order to have a

basis for analyzing and evaluating the development of lecturer resource in terms of quantity, the number of all learners needs to be converted to one level of bachelor and the number of all teachers (or lecturers) needs to be converted to one level of master. To become a research university, the student/lecturer ratio should not exceed 20. However, currently in Hue University, this ratio is around 24. Therefore, the student/lecturer ratio needs to be adjusted reasonably to promote digital transformation towards building Hue University following the smart university model.

Secondly, the internal structure of the lecturer resource is a complete and unified body with synchronous requirements - which contributes to the synergy of human resources. The synchronicity of the lecturer resource structure is the basis to ensure that Hue University's activities can adapt actively and flexibly to the changing world. The structure of lecturer resource is evaluated according to the following criteria: age structure, gender structure, qualification, title and specialization. According to statistics, “by June 2021, Hue University has 147 undergraduate majors, 104 master majors and 55 doctoral training majors; 63 training specialties for senior and junior specialists; 12 branches of training resident doctors” (Hue University, 2021, p.10).

The demands of digital transformation and building smart universities are requiring Hue University to restructure its lecturer resource towards meeting the requirements of economic reconstruction and increasing training majors with potential and competitive advantages as well as high technology content and high added value to adapt to the changing world. The fact shows that there are a number of training majors of undergraduate and graduate levels at Hue University have not yet satisfied the requirements of socio-economic including artificial intelligence, data science, big data, cloud computing, Internet of things, virtual/augmented reality, blockchain, 3D printing, digital technology, digital transformation, digital economy and digital society.

Thirdly, the quality of human resource is an overall factor of intellectual, physical and mental strength. To adapt actively and flexibly to an unstable world, intelligence is the most important. Human beings are the subjects of history but they cannot create history according to their subjective will. Human beings must obey the law, which means they have to be aware of the rules and their actions have to follow the rules.

Under the impact of the fourth industrial revolution, globalization and international economic integration will promote the formation and development of the digital economy. Digital economy operates on the basis of combining many new technologies, the core of which is digital technology, to create new business models and bring surplus value for the economy. The digital economy is considered as a breakthrough to form and develop a digital society, towards the formation and development of a smart economy, a smart society and a smart university. In the digital economy, the most important development resources are the knowledge and digital resources. Those resources participate in the global value chain production network, giving businesses and higher education institutions many new development opportunities which never happens before.

The intelligence of lecturer resource is demonstrated through the following criteria: professional qualifications, information technology application capacity, foreign language proficiency, pedagogical skills and scientific research capacity. Owing to the requirements of new period and according to Hue University's assessment, "the number of employees with doctoral degrees is still low, many officers and lecturers have not been timely under training plans of political theory and expertise; It is also difficult to attract highly-qualified employees in teaching and research at Hue University's training institutions, while the number of highly qualified people leaving Hue University tends to increase due to low income compared to the same level in larger provinces and larger training institutions. Some lecturers who went to overseas for training and retraining did not return to serve the institution or decided to quit jobs at Hue University" (Hue University, 2021, p.20). In conclusion, the demands for Hue University is actively developing lecturer resource; especially improving intellectually to adapt to the changing world. Lecturers are the most advanced part of human resources because they are the "role model" of high-quality human resource.

3.3. Solutions to develop lecturer resource at Hue University to adapt to the changing world

The first, solution is changing thinking and action. In order to flexibly adapt to the changing world, first of all, Hue University must start from the flexibility of thinking. The institution must renew thinking and actions to promote digital transformation towards building a smart university, overcome the separation between education and training development as well as science and technology development and application; overcome the separation of higher education institutions with the new and transformed context. Higher education institutions in general and Hue University in particular can only implement adaptation strategies to a changing world when it really innovates its thinking and actions. Building a smart university is an opportunity for Hue University to develop breakthroughs in quality, efficiency, competitiveness and adaptability to the new context.

Developing lecturer resource is the focus of Hue University's strategy to adapt to the changing world. Developing lecturer resource is the basis for creating a reasonable combination between opportunities and risks of the environment, circumstances and capabilities and resources of Hue University. Developing human resources for lecturers is the key to open the door for Hue University to firmly step into the digital era. The more uncertain the world is, the harder it is to predict. The more complicated the world is, the harder it is to analyze. Therefore, improving the quality of lecturer resource is both an urgent and long-term requirement for Hue University to develop quickly and sustainably. Developing human resources faculty is a very urgent strategic math problem; thereby, improving flexible adaptability, create the best conditions for Hue University to grow fast and sustainably

The second, solution is improving the quality of training, fostering lecturer resource to meet the requirements of digital transformation and a smart university. Improving the quality of training and fostering lecturer resource needs to comply with the criteria of adapting to the new context. The powerful development of digital technologies has created

tremendous and rapid changes to the economy and society. The digital era is demanding that lecturers improve their technology capabilities, first of all, new skills related to digital transformation and building smart universities. Determining the necessary skills and appropriate qualifications for each subject of the training is a basis. Prioritize training and fostering digital knowledge and skills for lecturers through digital platforms and online training. Digital transformation and building great intelligence are always associated with innovation. Therefore, it is necessary to improve the capacity of Hue University's innovation system, form a digital ecosystem and promote digital transformation in all activities of Hue University. Innovation is the creation of knowledge in a creative way which is associated with the acceptance of the market. Therefore, "the nation encourages individuals, organizations and enterprises to invest in research, development, transfer and application of scientific and technological advances to the fields under their responsibility" (Communist Party of Vietnam 2021, p.141). Implement a close relationship among schools, scientists and businesses in education and training of human resources.

The third, solution is increasing the degree of integration of Hue University into the world higher education system to advance with the period. Smart university has the mission of creating knowledge, providing high-quality human resources, becoming an innovation factor and a focal point for international integration. Therefore, in order to adapt to the rapid changes of the current socio-economic situation, Hue University implements: "Diversify international cooperation in order to quickly develop high-quality human resources, especially lecturers. Develop and implement a project to improve foreign language proficiency for lecturers and researchers of Hue University; a project to establish a team of experts and scientists according to task groups, field groups, competency frameworks and title standards, in line with the criteria of research universities in terms of size, structure and academic levels, in which a number of research groups reaching international levels" (Hue University, 2021, p.38).

The fourth, solution is developing teaching, doing research environment and conditions for lecturers. The fourth industrial revolution created a real world combination with the virtual world. Therefore, higher education will take place both in real and digital environments; through that, encourage and facilitate the construction of smart universities. Good teaching and researching environment and conditions will motivate lecturers and enhance self-study, research and practice activities in order to reach the values of truth - goodness - beauty, and consequently, they can adapt quickly to changes in the world. Cultural, human is the endogenous power for Hue University to adapt and develop in the context of the fourth industrial revolution and international economic integration strong. "Promote the development of digital platforms; create, update, store and share, use digital data; ensure network information safety; educate, fostering, developing digital human resources, digital skills, population citizens, digital culture" (Prime Minister 2022, p.26). Thereby, Hue University can create favorable conditions for lecturers to promote their initiative, positivity and self-discipline; improve their research, teaching, technological and creative capacity.

The fifth, solution is developing mechanisms and policies for the development of lecturer resource to adapt to the new context. “Develop a policy of attracting, bringing together Vietnamese intellectuals at home and abroad to actively participate in livelihoods, training cooperation, scientific research, transfer of new technology” (Tran Thi Van Hoa (2023), p.59) As an institution for managing and employing of lecturer resource, Hue University needs to develop and implement mechanisms and policies to flexibly adapt to the changing world. The synchronous implementation of mechanisms and policies on attracting, recruiting, using, evaluating, training, fostering, treating and honoring lecturers should follow the orientation of the nation, of Thua Thien Hue province and of Hue University in order to adapt to the actual situation of the new period, promoting the strength of the lecturer resource in successfully implementing the Hue University development strategy for the period of 2021 - 2030, with a vision to 2045.

4. Discussion and Conclusion

In higher education institutions, the adaptation strategy is the flexible and effective coordination of development resources with specific circumstances. The main pillar of internal resources is lecturer resource. Lecturers are the most important resource for Hue University to flexibly adapt to the changing world. The Industrial Revolution 4.0 will lead to a smart economy - a digital economy, a digital society and accordingly a smart university - a digital university. The core of building a smart university in the context of the fourth industrial revolution and current deep international integration is digital transformation. Therefore, in an adaptation strategy in a changing world, it is necessary to prioritize the development of human resources for lecturers. In other words, Hue University's adaptation strategy to the new context is also the strategy for developing human resources for lecturers in changing world.

There have been many positive changes in the lecturers of Hue University. However, compared with the requirements of building a smart university, whose core is digital transformation to adapt to a changing world, there are certain shortcomings. Compared to higher education institutions in advanced countries in the region and around the world, Hue University's staffing of human resources is still low, not meeting the digital and digital economic development requirements. So, to develop lecturer resource adapted to the new context and requirements of the fourth industrial revolution and international economic integration, Hue University needs to implement the above solutions synchronously.

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BUDDHISM AND ECO-ENVIRONMENT ISSUES

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Abstract

Today, ecological and environmental issues attract the attention of all nations and peoples. Aspiration for a healthy green living environment is the dream of all sentient beings. Before the problem of environmental pollution, experts, scientists and politicians have found many ways to solve it. However, the results can be quite limited. From that practice, the article tries to give an explanation of today's ecological pollution problem from a religious perspective. That is Buddhism. Thereby also concretize environmental protection solutions according to Buddhist theory. From this research will help orient people to live a better life. People are more aware of their responsibility to protect the environment. Building good behaviors that contribute to sustainable socio-economic development.

Keywords: *Environment, pollution, Buddhism and the environment*

1. Introduction

Humanity is currently entering the post-industrial stage, also known as intellectual civilization and knowledge economy. Besides the very developed economic life with a huge amount of material wealth brought about by scientific and technological progress. people in modern society are facing new tribulations such as gap between rich and poor, competition and conflict, environmental pollution, moral corruption, lifestyle... That's the reality. In particular, environmental pollution is a hot issue of all mankind. The risk of depletion of natural resources and environmental pollution destroys human life. Humans are getting more and more diseases. Buddhism with its human value in human liberation seems to have met the spiritual needs, gaps and frustrations in people's hearts. By its ability to regulate inner balance, Buddhism can help people live harmoniously in this world.

In today's modern society, people fall into a lifestyle of enjoyment, for economic profit, but constantly increase their impact on the living environment to exploit minerals and natural resources. Therefore, people also have to face consequences such as climate change, environmental pollution, floods, droughts, epidemics. Experts, scientists and politicians are trying to clarify the causes and find solutions to the current ecological imbalance problem. However, there is still no perfect solution to this problem. Meanwhile, the issue of living in harmony with nature, environmental protection and sustainable development has been mentioned by Buddhism since the 6th century BC. This is one of the sustainable solutions to current ecological and environmental problems that scientists and politicians are still paying little attention to and have hardly been mentioned. Therefore, it is very important to study and clarify the Buddhist view of the environment. From there, contribute to find out

the values in the teachings of the Buddha, change the perception and behavior of each person in order to contribute to environmental protection and sustainable development in Vietnam as well as in the world today.

The theoretical basis of the article is the principles of Marxism - Leninism, Ho Chi Minh's thought and the line of the Communist Party of Vietnam on religion. Historical documents of Indian Buddhism and Vietnamese Buddhism. Analytical documents on the current status of ecological pollution in Vietnam and the world.

The study clarifies the views of Buddhist doctrine on the causes of current ecological and environmental problems. From there, clarifying the solutions of Buddhism in solving ecological environmental problems. This study has theoretical and practical implications for religious policy making. On the other hand, research also contributes to solving ethical and environmental issues, especially in Buddhist communities.

2. Method

In this study, the author used qualitative research method. The author has researched, analyzed and synthesized theoretical views of Buddhism related to ecological environment issues. Besides, the author uses the historical - logical method to deploy and clarify the research problem.

3. Results

3.1. Current status of ecological and environmental problems and their causes from a Buddhist perspective.

Current status of ecological problems today

A hot and pressing issue in today's society is ecological pollution. Caused by production activities and human activities. This problem is increasingly serious and directly threatens sustainable socio-economic development. It threatens the existence and development of present and future generations. Solving the problem of environmental pollution in the current period is not only an urgent requirement for all levels of management and businesses, but also the responsibility of the whole political system and of the whole society.

Today's environmental problem is a global problem. In fact, the earth and the atmosphere are warming. Melting ice at the poles threatens natural life. Rising seas engulf lowlands. Air, soil and water are all polluted. Desertification is common. Plastic waste fills the oceans... The polluted natural environment is no longer a problem of any country or ethnic group. All humanity is involved and must share responsibility for the consequences. The problem of ecological pollution today is threatening the survival of mankind. Man cannot exist independently if separated from the natural world.

We are no stranger to the image of giant whales dying from ingesting too much plastic waste. Sea turtles were also unjustly killed by swallowing a plastic bag they mistook for a jellyfish. Scientists and environmental protection organizations have surveyed and estimated the volume of plastic, rubber, and inorganic waste in the oceans equal to the area of France and rapidly increasing. Scientists and environmentalists urgently call on the United Nations

to soon come up with laws and measures to save the ocean. Environmental organizations also work hard to protect and save the green planet.

It is not until this time that environmental issues are raised as an urgent requirement of all mankind. The consequences of environmental destruction are bringing human life closer to the danger of extinction. It is no coincidence that floods, earthquakes, tsunamis, and tornadoes continuously occur in every corner of the earth, leaving unpredictable consequences, claiming the lives of thousands of people.

From the above situations, people have to change their awareness and views on environmental issues. Countries, organizations and the whole society are making efforts to clarify the causes and find appropriate solutions to solve current environmental problems. The cause of environmental problems is none other than humans. The industrial boom, population pressure, rapid urbanization, exhausting resource exploitation, and waste discharge into the environment... lead to problems of climate change and ecological imbalance. Humans have directly or indirectly caused the agents to change their own lives. Therefore, solving environmental problems must also start with people.

In today's civilized and modern society, people have reached a high level of science and technology, which allows to explain many natural phenomena that were previously inexplicable. It also makes people think that they have mastered nature, forcing nature to obey. Humans also do many things that are contrary to nature. They exploit nature excessively, affecting the natural environment and affecting their own lives. Indeed, the threat to the ecosystem has been put on a red alert by the world, because of the increasing harm of toxic substances on human health and life, on all living things, for the land, the air, the sea, the trees, even the life of the earth is being seriously threatened. It was humans who caused this terrible situation

The actions of destroying mountains, forests, rivers, and destructive exploitation of resources by humans today have destroyed the lives of other species, eventually leading to the bad consequences of destroying the environment and destroying the environment own life.

Causes of environmental pollution from a Buddhist perspective

Buddhism is a major religion in the world. Today, we cannot help but be surprised to see that mankind, especially Western countries, is turning towards Asia, towards Buddhism. This can be partly explained from the humanistic values of Buddhist ethics. Moreover, Buddhism has really entered the world in all areas of life, even economic activities, business, environmental pollution... Buddhism does not teach people to give up their lives to become gods. Buddhism aims to improve society, improve the world with morality, and make humanity more progressive and humane.

In recent decades, facing the problem of polluted environment and the danger of depletion of natural resources, mankind has alarmed about human responsibility and the relationship between man and nature. However, with clear wisdom, 26 centuries ago, the Buddha attached great importance to the relationship between man and nature. It is a reciprocal, reciprocal relationship. In it, humans are only a part of the living world. Human

life and existence will be inseparable from the natural world. The Buddha explained the existence of all things and phenomena in the natural environment by the theory of Dependent Origination. Many scriptures explain that causality is the cause of all existence and non-existence as the core philosophy of this doctrine. All existence and non-existence cannot occur independently but are caused by causes and conditions because they always support each other. It means “Since this exists, that exists. Because this is born, the other is born. Since one is not present, the other is absent. Because one ceases, the other ceases” (Translated by Thich Minh Chau (1991), *Kinh Tuong Ung*, p. 55-56). The theory of Dependent Origination has clarified the starting point of the relationship between humans and ecological and environmental issues today.

Based on the theory of Dependent Origination, the relationship between humans and the polluted natural environment today is caused by human behavior and consciousness. Human life is developing more and more, resources from the natural environment are increasingly lost because people have taken advantage of high technology to exploit. The abuse of excessive exploitation of resources is the cause; Climate change is its result. Another, the use of fossil fuels and industrial and agricultural activities have created the greenhouse effect. In the process of producing goods, businesses also create waste and emissions. Then, waste continues to be generated when consumers use the products sold by the business.

Another phenomenon caused by human impact on the natural environment is desertification. Part of the reason is that people use scientific and technical means to affect agriculture. Thus, the phenomenon of desertification and climate change are the consequences of human direct intervention in the natural environment, making the natural ecosystem disturbed. This means that, for the sake of life, for personal gain, man has lost his own nature and changed the nature of nature.

It can be affirmed that everything that harms the ecological environment and destroys the earth comes from the greedy mind, the profiteering mind, the selfish mind, and the delusional mind of people. Ready to kill, cause war, spread poverty and disease, destroy human life, species and environment are also increasingly destroyed. Or to make huge profits, along with indiscriminate exploitation of resources, they also release toxic substances into the ground, into rivers, into the air, polluting the environment, harming health and causing pain. sick many people. Thus, the problem of ecological imbalance and environmental pollution are the causes of diseases in humans. Environmental pollution is caused by humans. This proves that man cannot exist without the existence of nature and man must deal with nature in a harmonious way.

The Buddha pointed out that all those actions are rooted in the three poisons: greed, hatred, and delusion of every human being. In fact, individuals or groups because of boundless greed have turned them blind and cruel. They are ready to kill, cause war, spread poverty, disease, destroy human life, animals and the environment, thereby harming them even more. Or to get immediate benefits, along with indiscriminate exploitation of resources, they also release toxic substances into the ground, into rivers, into the air, polluting the environment, harming health and causing harm to health and sick many people.

According to the Theory of Dependent Origination, environmental pollution will gradually make people physically degraded, mentally emaciated, lagged behind in life, and economic crisis according to the principle “This gives birth to another”. “If this does not exist, the other does not exist, because when this ceases, the other ceases” (Translated by Thich Minh Chau (1991), *Kinh Tuong Ung*, p. 55-56). Human will not be able to exist because the human entity consisting of body and sentient beings (natural world) is within oneself. According to the theory of Dependent Origination, the unbalanced natural environment is inherently caused by ignorance and craving. Humans themselves must understand and take responsibility for all their actions that directly or negatively affect the natural environment. Therefore, the Buddhist view is to explain environmental pollution as a consequence of lack of awareness and over-exploitation of natural resources. According to cause and effect, this operation is consistent with the traditional model: greed - hatred - delusion exist and “suffering” will also exist according to co-existence in the natural environment.

In short, according to the theory of Dependent Origination, the natural environment is a resource that humans must rely on to survive. If the environment is disturbed and destroyed, people will gradually lose their support and confidence in the future of present and future generations. The Theory of Dependent Origination proves that we cannot exist without relying on nature and that this relationship is an equal one. People need to put aside Greed - Hatred - delusion and live in harmony with nature to protect the natural environment and lead a peaceful and happy life.

3.2. Some solutions to environmental problems according to the Buddhist approach.

Some solutions from Buddhist theory

For Buddhism, the path to enlightenment and becoming a Buddha has to go through many challenges. One of the prerequisites of a Buddhist is compassion for all sentient beings. With the concept that all species are born with life, Buddhism believes that all species are equal and should be respected and protected. The Buddha taught his disciples about the five precepts, in which the issue of prohibiting killing is given the top priority.

The content of the teachings of Buddhism carries humanistic thought, respecting the life of all species. The precept against killing in Buddhism contributes to solving environmental problems because Killing to serve human needs will lead to ecological imbalance. That action has a direct impact on human life. Those who live by exploiting forest and marine resources, those who cultivate and produce agriculture, if they only exploit nature by completely exploiting them without letting those resources have time to regenerate, they will deplete them. In addition, the exploitation of hard-to-renew resources such as coal, oil, etc make environmental problems more and more serious.

With the wisdom of the enlightened, the Buddha pointed out the truth of life. That is all living things on this earth have an organic and close relationship with each other. The existence of one species is a condition for the existence of the other. Conversely, when the

life of one species ends, the extinction of other species is followed. When there is this, there is another, when this arises, that arises, when this ceases, that is destroyed. Thus, with the wise view of Buddhism based on the theorem of Dependent Origination, it helps people to see that humans and nature have an indistinguishable relationship. This reciprocal relationship creates sustainable development to survive. The destruction of nature affects human life. Therefore, we must not harm any animal, even the smallest species in this world. The Buddha also advised people not to waste, but to appreciate resources. The Buddha taught those who have the heart to walk with him on the path of liberation and enlightenment to practice compassion, whereby not only not killing but also respecting the lives of people, animals and even plants.

That truth of the Buddha is completely consistent with the natural law of existence. In that natural chain, one species is the lifeblood of the other, and so, if a link in that chain is broken, it will upset, change and lead to extinction. Proposing the precept forbidding killing, the Buddha is teaching his disciples to practice the teachings of compassion but also to return to the laws of nature, limiting interference with nature to satisfy their own ends. It is also an effective way to protect the environment and protect human life.

According to the Buddha's teaching, Buddhists are not greedy and do not do things that harm all sentient beings. Minimalist, contented lifestyle. It is a way of living with understanding and nobility. From there, limit selfishness. Each individual does not for his own benefit but harms others, to other living things. Humans should not destroy the environment, do not exploit natural resources in a destructive way so that generations of descendants will suffer terrible disasters. Instead, Humans live in harmony with nature.

Buddhism teaches that the cause of suffering is greed, hatred, delusion and ignorance. Therefore, if people want to be free from suffering, they need to eliminate it. Applying to today's environmental problems, we see the Buddha teaching his disciples to apply the teachings of Buddhism to the present life. People should live in harmony with nature, do not destroy the environment, do not indiscriminately exploit natural resources, only exploit what is essential and in moderation so that nature has time to regenerate. So that our next generations can continue to exploit and benefit from nature.

Affirming the Buddha's teaching of living in harmony with nature, today Buddhist monasteries are often built on hills, or in forests. The monasteries with shady trees, fresh air and a quiet and peaceful lifestyle are becoming an attraction for monks, nuns, devotees as well as tourists from all over the world. It becomes a great place to practice to find serenity for the mind and health for the body.

Buddhist vegetarianism is also a useful solution to the environmental problem. Besides the proven effects on human health, the practice of vegetarianism also brings practical effects on the environment, helping to improve and balance the living environment. Limiting and not using animal products will help some species avoid extinction, permanently no longer exist in the world. The vegetarianism policy is a testament to the charitable spirit

that Buddhism has, and at the same time it is a positive action to show the love of nature and the responsible attitude to the environment of each Buddhist.

In short, the Buddhist view of ecology is the harmonious coexistence between man and nature. Man must always love nature and his living environment. Because the existence of nature is the existence of man. The extremely close relationship, interdependence and coexistence not only between humans and humans but also with other species and with the ecological environment is very important. With such awareness, protecting the ecological environment on earth will become easy and effective.

Vietnamese Buddhism and the issue of environmental protection

Vietnam is a developing country. With the policy of opening up, integrating and attracting investment, Vietnam's economy has achieved many achievements in recent years. However, besides the development of material civilization, Vietnam also faces the problem of environmental pollution and resource depletion. With the rapid explosion of industrial parks, export processing zones, craft villages and production facilities, environmental problems in Vietnam have become increasingly serious. Air, water and soil pollution are directly affecting the lives of Vietnamese people in both rural and urban areas. The epidemic in Vietnam is getting younger and younger. The number of cancer patients in Vietnam ranks first in the world. Therefore, in Vietnam today, it is very necessary for all organizations and individuals to speak up and take practical measures to protect the environment.

Buddhism was introduced to Vietnam very early and has a history of development of nearly 2000 years. Buddhism blended with the indigenous culture of the Vietnamese people to become the national religion. Vietnamese Buddhism has accompanied the ups and downs of Vietnamese history for thousands of years. Today, Buddhism is still actively participating in all areas of Vietnam's social activities. In which the environment and environmental protection are also issues of concern and focus. With its methods and approaches, Vietnamese Buddhism is daily mobilizing and propagating monks, nuns and Buddhists to be aware of environmental issues and actively protect the environment like protecting their own lives.

The solution of Vietnamese Buddhism is to encourage followers to live close to the environment, in harmony with nature, and to minimize direct impacts on the environment. Recently, many meditation practices have attracted a lot of attention not only from Buddhists but also from all walks of life, from all walks of life, not only the elderly but also the elderly. The youth classes, teenagers and children are also very excited about the practice.

Completely in harmony with nature, staying away from modern civilized life not only makes practitioners feel peaceful and light, but also contributes to minimizing the impact on the environment due to noisy and rushed life. It also reduces the use of devices of modern life such as cars, phones, etc. That will contribute to a cleaner environment. People who come to this meditation are also encouraged to live slowly, meditate in all daily activities,

be closer to nature by spending time taking care of and protecting trees and birds, and limiting killing animals. Limit Use of digital technologies. Practicing vegetarianism as an effective measure to protect health and the environment.

Buddhist ashrams also regularly organize retreats for Buddhists. The content of humanistic education in these retreats is rich and varied. In particular, the issue of environmental protection was also taught by dignitaries and propagated to believers and Buddhists as an important content. Coming to these retreats, believers and Buddhists will gain knowledge about environmental protection from the Buddhist point of view. From there, they can practice right in their daily lives and encourage everyone to join hands to act for the environment.

In modern life, the fast pace of life also leads to the result that young people in society receive and integrate too quickly with the Western lifestyle, which is not suitable with the fine customs and traditions of the Vietnamese people. It has given rise to many negative phenomena in Vietnamese society. More than ever, young people need a healthy living environment both physically and mentally. Meeting the practical needs of society, every year, pagodas in Vietnam organize summer retreats to help a part of Vietnamese youth stay away from temptations, personal and selfish pleasures. Thereby, they aim to live a life of altruism, love and sharing.

In summary, it can be affirmed that the ethical values of Buddhism are making an important contribution to the awareness of environmental protection in Vietnam. The actions of Buddhists are leading, orienting and creating a truly beneficial living environment for the people and country of Vietnam today. Buddhism has been joining hands with society in activities to protect nature and ecological environment. Vietnamese Buddhism has been making every effort to build a peaceful society, a community enjoying peace, prosperity and happiness, building a real realm of bliss in the world.

4. Discussion and Conclusion

The responsibility to protect the ecological environment does not belong to any individual or organization but needs the cooperation of all mankind. Buddhism with the motto “Buddha Dharma in the world, not separated from the world” has always accompanied mankind in all matters of life. Buddhism with the policy of living in harmony with nature has a profound meaning in explaining ecological issues and protecting the living environment of people and things.

The truth of life is nothing but cause and effect. Everything in life has a cause and effect. What we need to do now is to sow more good deeds, avoid sowing evil. Start with your own actions. Start with the little things in your life. People should not do anything bad that harms the environment and society no matter how small. Humans need to wake up to the incalculable harms of acts that destroy the living and ecological environment. Then spread and encourage family members, groups, organizations, factories, schools, etc. also act well. Thus, our living environment will be better and better and the world will be more peaceful. Our lives become more peaceful and happier.

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TRAINING AND FOSTERING TALENTS IN VIETNAM ACCORDING TO HO CHI MINH THOUGHT

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Abstract

To build and develop a prosperous and happy country, it is necessary to gather and maximize all resources, including high-quality human resources - talents. To have a talented team, it is necessary to have the right training and fostering policies. In this article, the author has clarified the views of President Ho Chi Minh about the necessity of training and fostering talents and methods of training and fostering talents. On that basis, the author initially clarified the perception of the Communist Party of Vietnam on training and fostering talents in the doi moi period from 1986 up to now.

Keywords: *training, fostering, talents, Ho Chi Minh, Communist Party of Vietnam*

1. Introduction

A country that wants to survive and develop sustainably needs to make good use of human resources. People are endogenous and never-ending resources. Mastering that issue, Ho Chi Minh always considered people the center of every revolutionary period. Inheriting traditional national values, derived from revolutionary practice, Ho Chi Minh soon realized the need to train and foster talents for the country. Since then, Ho Chi Minh has proposed training and fostering talents. It is Ho Chi Minh who is an example of training and fostering talents. In the process of leading the Vietnamese revolution, Ho Chi Minh has both directly participated in training and fostering talents and sent talents to train abroad. Therefore, Ho Chi Minh has built a team of outstanding associates, contributing to the victories of the Vietnamese revolution in the twentieth century. Currently, our country is entering a period of accelerating industrialization and modernization with intertwined opportunities and challenges. The issue of high-quality resources is increasingly concerned and becomes an urgent issue. Acquiring and creatively applying Ho Chi Minh's point of view, over the years, the Communist Party of Vietnam has had the right views and policies on the issue of training and fostering talents and considers this a solution. Strategy towards building a prosperous and happy Vietnam. Studying Ho Chi Minh's views on training and fostering talents and the views and policies of the Communist Party of Vietnam on training and fostering talents in Vietnam today have profound theoretical and practical significance sharp.

2. Method

In this study, the author used qualitative research method. The author has researched, analyzed and synthesized the views of President Ho Chi Minh in 15 volumes of Ho Chi Minh Complete Collection. Research, synthesize and analyze the views of the Communist Party of Vietnam in documents of the Party Congress.

3. Results

3.1. Ho Chi Minh's perspective on training and fostering talents

From a very early age, Ho Chi Minh was interested in training and fostering talents for the country. Ho Chi Minh's point of view on training and fostering talents includes many contents. Within the framework of this article, the author focuses on clarifying on two aspects: the necessity of training and fostering talents and methods of training and fostering talents.

3.1.1. Ho Chi Minh's point of view on the necessity of training and fostering talents

President Ho Chi Minh once said that in order to build socialism, there must be socialist people. For Ho Chi Minh, the human factor is always the most important factor in every revolutionary period, so Ho Chi Minh attaches great importance to talent. In Ho Chi Minh's thought, talent plays a great role and is a driving force for the development of the country.

President Ho Chi Minh conceived of a talented person as a person who is both talented and virtuous, because talented people "can do things that benefit the country and the people" (Ho Chi Minh, 2011, Vol 4, p.504). According to Ho Chi Minh, talented people are "those who are the most enthusiastic, the smartest, the most patriotic, the most determined, the bravest" (Ho Chi Minh, 2011, Vol 5, p.302). In the relationship between virtue and talent, Ho Chi Minh emphasized the role of morality, considering morality as the root, the foundation. Thus, talented people in Ho Chi Minh's concept are talented and virtuous people who wholeheartedly serve the country and the people. In two articles "Talent and National Construction" published on National Salvation Newspaper, on November 14, 1945 and "Finding talented people" on November 20, 1946, Ho Chi Minh affirmed the important role of talents. in the cause of national construction and defense. Ho Chi Minh clearly defined: "Construction requires talent" (Ho Chi Minh, 2011, Vol 4, p.114). This point of view clearly affirms that talent is an important factor to build and develop the country. Stemming from the role, position and importance of talents, Ho Chi Minh soon saw the need to train and foster talents for the country.

President Ho Chi Minh determined that fostering, training and using talents is the top issue, the foundation, determining the success or failure of the revolution. Since preparing for the establishment of the Party, in 1927, in the work "Revolutionary Road", President Ho Chi Minh affirmed: "It is necessary to cultivate talents to bring into the Communist Party" (Ho Chi Minh, 2011, Vol 2, p.322). Thus, very early on, Ho Chi Minh clearly saw the relationship between talent and the Party, in other words, towards the goal of bringing talented people into the Party to serve the Fatherland and the people. Chi Minh made clear his point of view on the need to cultivate talents so that talented people can solve important problems on behalf of the people on behalf of the country.

It is important to understand that not all talents are cadres and not all cadres are talented. The fact of our nation's history for thousands of years has proven that: there are many talented people who have become generals and mandarins with great influence on the country and nation such as: Ly Thuong Kiet, Tran Hung Dao, Nguyen Trai... The feudal dynasties of Vietnam adopted the form of an examination to select talented people to serve

as mandarins to help the king and help the country. Ho Chi Minh clearly understood the nation's history and the role of talents for the country. Ho Chi Minh wishes that talented people will contribute their efforts to the process of national construction resistance. Thus, talent becomes an cadre is inevitable. At that time, talented people bring all their talents to contribute to the country. Ho Chi Minh determined that for the country to develop quickly and sustainably, it is necessary to have many cadres and party members who are both talented and virtuous and to realize the aspiration for a prosperous and happy Vietnam. Because according to Ho Chi Minh: "The cadre is the root of all work" (Ho Chi Minh, 2011, Vol 5, p.509), "The success or failure of the work is due to good or bad cadres" (Ho Chi Minh, 2011, Vol 5, p.313). In fact, all policies and guidelines of the Party and Government are researched and proposed by officials, as well as by officials to organize and guide the people. The Party's line is right or wrong, the organization's success or failure all depends on the cadres. In every stage of the revolution, the masses are the driving force and the cadres are the leadership nucleus. Therefore, Ho Chi Minh emphasized the Party's responsibility for the training, fostering and training of talents and cadres: taking care of and raising cadres is an important job that must be very meticulous and thoughtful. Careful, meticulous, just like a gardener who takes care of and cultivates precious trees, diligent and dedicated will have fragrant flowers and sweet fruits. Therefore, the Party needs to know how to respect and preserve old cadres, and actively train and foster new cadres, respect talents, and respect cadres.

After the victory of the August Revolution in 1945, the country entered the period of both resistance war and national construction, human resources in Vietnam, especially professional talents, were seriously lacking: "We are both resistant to war and at the same time, there is a serious shortage of human resources in Vietnam. Therefore, the most specialized talents, especially those in the medical field, will only be lacking but not in abundance" (Ho Chi Minh, 2011, Vol 5, p.487). Therefore, we need to know how to detect, train and foster them. Natural talent is a rare thing, so the role of the organization and the leader is to gather them together for training and fostering. Through the process of training and fostering, professional talents will be formed. Talented people will apply to each industry, each specific field. Thereby contributing to the construction and development of the homeland. Ho Chi Minh pointed out that they had to make every effort to gather them together: "Who are the young men and women who went to war, where are the professional talents and technical staff participating in economic and financial activities, culture. Employing all kinds of people as above means concentrating human resources" (Ho Chi Minh, 2011, Vol 4, p.531). After gathering, it is necessary to organize training and foster them. With that, talents will bloom like spring flowers.

3.1.2. Ho Chi Minh's point of view on the method of training and fostering talents

When he saw the role of talent and the need to train and foster talents, Ho Chi Minh came up with a system of methods for training and fostering talents. Methods of training and fostering talents focus on such contents as: the role of education and training; on the construction of education and training institutions; on method innovation; responsibilities of

the organization and its leader; on mechanisms and policies in the implementation, training and fostering of talents.

Firstly, Ho Chi Minh's view on the role of education and training in training and fostering talents. From a very early age, Ho Chi Minh attached great importance to education and training in general and training and fostering talents in particular. Ho Chi Minh once said: "For the sake of ten years, one must plant trees, for the benefit of a hundred years, one must plant people" (Ho Chi Minh, 2011, Vol 11, p.528). Cultivating people is concerned with training people who are both virtuous and talented to serve the country and the people. Ho Chi Minh once affirmed the role of education and training in order to: "train good citizens and good cadres for the country" (Ho Chi Minh, 2011, Vol 11, p.528).

Second, about building training facilities. In the process of leaving to find a way to save the country and directly lead the revolution, President Ho Chi Minh found that talents who matured from self-training are available but very rare. Therefore, in order to build a large force for the country, it is necessary to promote the process of training and fostering talents. To practice training and fostering talents according to Ho Chi Minh, it is necessary to open schools and open classes. In the "Viet Minh Program" in 1941, President Ho Chi Minh made a request: "Set up specialized schools for political, military and technical training to train talented classes" (Ho Chi Minh, 2011, Vol 3, p.630). Later, in his appeal to compatriots nationwide on the occasion of the second anniversary of the National Day of the Democratic Republic of Vietnam, Ho Chi Minh requested: "Build a new high school and university, train talents " (Ho Chi Minh, 2011, Vol 5, p.233). Thus, President Ho Chi Minh attaches great importance to building a system of schools and classes for education and training to improve people's knowledge in general and training and fostering talents in particular.

Third, on innovation of training methods and fostering talents. Besides opening schools and opening classes, President Ho Chi Minh advised the need to innovate methods associated with revolutionary practice. Ho Chi Minh once wrote: "We must modify the way of teaching to suit the training of talents for the resistance war and national construction" (Ho Chi Minh, 2011, Vol 5, p.575). Ho Chi Minh advised: the process of training and fostering talents must meet the needs of reality. Theory is related to reality. Learning with practice. Overcoming the fatal weakness in our education is heavy on teaching letters, light on teaching people; Heavy on theory, light on practice. Training and fostering talents, officials need: "Practical core is much more thoughtful than greed" (Ho Chi Minh, 2011, Vol 6, p.357).

In order to innovate methods to bring high efficiency, according to Ho Chi Minh, it is necessary to clearly define the goals of education and talent training. According to Ho Chi Minh, the training goal for talented people is: "Learn to work, be a person, be an officer. Learn to serve the Union, to serve the class and people, to serve the Fatherland and humanity. In order to achieve the goal, one must be thrifty, thrifty, incorruptible, righteous, just, and impartial" (Ho Chi Minh, 2011, Vol 6, p.208). Thus, Ho Chi Minh clearly specified the job of studying to be a human being before studying to be an official. Learning to be a person is put first, only being a good person will become a good cadre. Ho Chi Minh specified the objectives, training and training of cadres: first to study to improve their qualifications, then

to correct their ideology and finally to be loyal to the revolutionary cause. According to Ho Chi Minh: "If the right thought is right, the action will not be wrong and only the revolutionary task will be fulfilled" (Ho Chi Minh, 2011, Vol 6, p.360). In which, first of all is learning to cultivate morality: need, thrift, integrity, righteousness, righteousness, and impartiality. Learn to believe in the union, believe in the people, believe in the nation's future.

Fourth, about the responsibility of the organization and the leader in training and fostering talents. In the process of training and fostering talents, leaders and leaders have an important role. The role of the first leader is to spot talent. Early on, Ho Chi Minh assigned "localities must immediately investigate where there are talented people who can do things for the benefit of the country and the people, they must immediately report it to the Government" (Ho Chi Minh, 2011, Vol 4, p.504). For talents outside the Party, leaders need: "We must not abandon them, distance them from them. We must honestly unite with them, support them. Must be close to them, close to them, bring their talents to help in the resistance war to save the country. We must get rid of the diseases of pride, of narrow-mindedness, of excuses" (Ho Chi Minh, 2011, Vol 5, p.316). In order for the training and fostering of talents to be really effective, leaders and Party organizations need to change their leadership style: "To avoid the waste of talents, we need to correct the way we lead. religion" (Ho Chi Minh, 2011, Vol 5, p.281). Leaders need to eliminate rafting and winging because: "It makes the Party less talented" (Ho Chi Minh, 2011, Vol 5, p.297). Besides training and fostering talents, it also needs to be checked because: "Every time a talent is reviewed, on the one hand, new talents are found, on the other hand, corrupt people also emerge" (Ho Chi Minh, 2011, Vol 5, p.314).

Fifth, on mechanisms and policies in training and fostering talents. Ho Chi Minh pointed out: "Agencies need to pay close attention to staff training. The personnel responsible for such training must be selected very carefully. Leaders need to be involved in teaching. Do not be stingy about expenses for training" (Ho Chi Minh, 2011, Vol 5, p.313). Ho Chi Minh also pointed out that the work of training and fostering talents should be given to talented people. In the Training article, President Ho Chi Minh pointed out: "The nature of training is based on the fact that it is necessary to consider and assign responsibility to talented people to train" (Ho Chi Minh, 2011, Vol 3, p.456). Thus, the mechanisms and policies on training and fostering talents focus on two issues: the person performing the training and retraining must be talented people and need to have appropriate financial mechanisms and policies.

With a consistent system of views on training and fostering talents, during the process of leading the Vietnamese revolution, President Ho Chi Minh has built a team of outstanding leaders. Talented people are people who know how to use talented people. The team of outstanding leaders in the Ho Chi Minh era together with President Ho Chi Minh created the resounding victories of the Vietnamese revolution in the twentieth century. Currently, President Ho Chi Minh has gone far, but his thoughts and views are still valid for our Party and State. Applying and creatively developing Ho Chi Minh's views on talent training and fostering is an urgent issue for the Communist Party of Vietnam in the current period.

3.2. The Communist Party of Vietnam applies Ho Chi Minh's point of view on training and fostering talents

When the country enters the renewal period with intertwined opportunities and challenges, it is required that the Communist Party of Vietnam make full use of and maximize resources, including high-quality human resources. Inheriting and creatively developing Ho Chi Minh's thought on talent, over the years, the Communist Party of Vietnam has set forth many viewpoints and policies on training and fostering talents. Therefore, within the framework of this article, the author focuses on researching and clarifying the viewpoints and policies on training and fostering talents of the Communist Party of Vietnam from 1986 to present and on two contents: As follows:

3.2.1. The view of the Communist Party of Vietnam on the necessity of training and fostering talents

The Vietnamese people with a history of thousands of years of building and defending the country, each era has a lot of heroes. Stemming from ethnic characteristics and historical context, in 1986, at the 6th National Congress of Deputies, the Communist Party of Vietnam affirmed the need to train and foster talents for the country: "Many talents are not spontaneous products but must be discovered and nurtured meticulously" (Communist Party of Vietnam, 1986, p.75). Thus, at the VI Congress, the Communist Party of Vietnam was well aware of the need to train and foster talents for the country.

On the basis of the new perceptions of the VI Congress, at the 9th Plenum of the 10th Central Committee, the Communist Party of Vietnam continued to affirm the role of talents and the need to train and foster talents. Therefore, it is necessary to have: "mechanisms and policies to develop mechanisms for detecting, training, fostering and employing virtuous and talented people and a mechanism for cadre nomination; create a fundamental change in the discovery, training, fostering and use of talents and a contingent of excellent scientists and experts; develop a national strategy on talent; consider it a very important solution in the implementation of the cadre strategy" (Communist Party of Vietnam, 2006, p.115). Thus, at the 9th Central Conference, the Communist Party of Vietnam was well aware of the role of talent in the development of the country. The breakthrough point of this Conference is that the issue of talent training and fostering is considered an important solution in the staff strategy. Training and fostering talents is the basis to provide the country with talented and virtuous cadres who can shoulder the job. The 10th Congress, the Communist Party of Vietnam also affirmed: "Fast development of high-quality human resources. Focus on discovering, fostering, and appreciating talents" (Communist Party of Vietnam, 2006, p.96).

In the Economic Development Strategy for the period 2011-2020, the Communist Party of Vietnam affirms the role and importance of talents in the development of the country: "Especially considered in the leadership and management team. excellent staff, a team of experts, good corporate governance, skilled workers and leading scientific and technological staff" (Communist Party of Vietnam, 2011, p.130). When clearly seeing the

importance of talent to the country, the 11th Party Congress continued to affirm the necessity of talent training: "In order to create a strong collective, each child must be built individually. people, paying attention to discovering and fostering talents" (Communist Party of Vietnam, 2011, p.49). Since then, the XI Congress also pointed out: "Focus on discovering, fostering and promoting talents; training human resources for the development of the knowledge economy" (Communist Party of Vietnam, 2011, p.49).

At the 13th National Congress, the Communist Party of Vietnam became more aware of the role of human resources in the development of the country: "Really attaching importance to and effectively promoting the dynamic role of people and culture. , of education and training, science and technology in national development" (Communist Party of Vietnam, 2021, Vol I, p.29). When clearly defining the role of human resources in the country's development, the 13th Congress of the Communist Party of Vietnam affirmed the necessity of training and fostering talents: "Developing human resources, especially high-quality human resources, prioritizing human resources for leadership, management and key areas on the basis of improvement, creating a fundamental, strong and comprehensive shift in education quality, training associated with the mechanism of recruitment, use and treatment of talented people" (Communist Party of Vietnam, 2021, Vol I, p.54).

After 37 years of renovation, the Communist Party of Vietnam has become more and more aware of the role and position of talents in the country. Since then, the Communist Party of Vietnam has set forth policy positions on promoting talent training and fostering activities. Consider this as the most important solution for the development of the nation and nation.

3.2.2. The view of the Communist Party of Vietnam on methods of training and fostering talents

Once well aware of the need to train and foster talents, the Communist Party of Vietnam has set forth views and policies to promote talent training and fostering activities.

Firstly, the role of education and training in training and fostering talents. From the very beginning, the Communist Party of Vietnam was well aware of the importance of education and training in general and education and training for talents in particular. In the political report of the 7th Party Central Committee at the 8th National Congress of Deputies, the Communist Party of Vietnam affirmed: "Along with science and technology, education and training is a national priority. aimed at raising people's knowledge, training human resources and fostering talents" (Communist Party of Vietnam, 1996, p.87). Thus, in this view, the Communist Party of Vietnam has affirmed the important role of education and training in fostering talents. At the 12th Congress, the Communist Party of Vietnam continued to affirm the important role of education: "Education is the leading national policy. To develop education and training in order to raise people's intellectual level, train human resources and foster talents" (Communist Party of Vietnam, 2016, p.114).

Second, on building a system of education and training institutions. The 8th National Party Congress determined each specific step as follows: "Building a system of specialized

schools, key schools, and high-quality centers at all educational levels" (Communist Party of Vietnam, 1996, p.106). At the 10th Congress, the Communist Party of Vietnam continued to affirm the important role of education in talent training. In order to train and foster talents for the country, the document of the X Congress clearly defines: "Promoting the construction of a number of Vietnamese universities to reach world-class standards, training talents for the country" (Communist Party of Vietnam, 2006, p.207). Education and training in Vietnam needs a system of overall solutions, which focuses on building and improving the quality of educational institutions. The policy of bringing educational institutions in Vietnam to international standards. This is a novelty in the education and training policy towards training and fostering talents.

Third, on innovation of training methods and fostering talents. In the political report of the IX Central Committee at the Xth Congress, the Communist Party of Vietnam has determined: "Innovation of the education system undergraduate and graduate degrees, linking training with employment, directly serving the transformation of labor structure, rapidly developing high-quality human resources, especially leading experts. Focus on discovering, fostering, and appreciating talents; quickly build a reasonable human resource structure in terms of professions, training levels, ethnicities and regions" (Communist Party of Vietnam, 2006, p.97). This point of view of the Party has shown the need to renovate the higher and postgraduate education system, promoting the connection between training institutions and the practical needs of the country's human resources.

Fourth, the role of the Party and the leader in training and fostering talents. Talent training and retraining is a matter of concern for the whole political system, in which the Communist Party of Vietnam, the State and the head, the leader play an important role. The Communist Party of Vietnam is the leading organization of the country. The leadership role of the Communist Party of Vietnam in training and fostering talents is to set out the right viewpoints and policies for the development of education and training. Besides the role of the Party, the heads and leaders of agencies and units also have a very important role. Because they are the ones who have direct contact with the talents. At the 12th Congress, the Communist Party of Vietnam pointed out: "Innovating financial policies and mechanisms, mobilizing the participation and contributions of the whole society; improve the efficiency of investment to develop education and training" (Communist Party of Vietnam, 2016, p.117). In Resolution No. 26, dated May 19, 2018, the Communist Party of Vietnam specifies the responsibilities of leaders in training and fostering talents: "Stipulating the responsibilities of leaders and members at all levels in the nomination of virtuous and talented people; the head has the responsibility to train, retrain and nominate his replacement" (Resolution No. 26, 2018).

Fifth, on mechanisms and policies for training and fostering talents. In order for education to truly become a leading national policy, and to do that, the VIII National Congress also pointed out: "Sufficient state budget is spent to send talented and well-qualified people for training and retraining. training in key occupations and fields in

countries with developed science and technology” (Communist Party of Vietnam, 1996, p.106). Thus, the Communist Party of Vietnam advocates combining domestic training and fostering with overseas training and retraining in order to create a talented and virtuous team of talents to meet the requirements of the industrialization cause. modernize the country. The 13th Congress of the Communist Party of Vietnam clearly stated: "Building synchronously, institutions and policies to effectively implement the policy of education and training with science and technology as the top national policy, is the key driving force for the development of the country” (Communist Party of Vietnam, 2021, Vol I, p.136). In order to do well in the training and fostering of talents, Resolution No. 26 also clearly states: “Improving the mechanism, promoting the attraction and creation of cadres from excellent graduates, young scientists with high qualifications. prospects and pay special attention to training, fostering and training the next class of cadres. Actively grasp, select, train, foster and train excellent and excellent graduates at home and abroad” (Resolution No. 26, 2018).

At the 13th National Congress, the Communist Party of Vietnam reaffirmed its policy: “Focus on training high-quality human resources, discovering and fostering talents; have outstanding policies to attract and utilize talents and experts both at home and abroad” (Communist Party of Vietnam, 2021, Vol I, p.220). Thus, once again the Communist Party of Vietnam affirmed the need for appropriate mechanisms and policies in training and fostering talents.

Over the years, the Communist Party of Vietnam's awareness of the need to train and foster talents as well as methods for training and fostering talents has gradually been clarified. These correct views and policies are the basis for practical application. Thereby contributing to building high-quality human resources for the country. Well implementing the views and policies of the Communist Party of Vietnam on training and fostering talents is one of the important orientations, contributing to the development of a powerful and prosperous country as Ho Chi Minh always desired.

4. Conclusion

In the entire content of the article, the author has presented the contents of Ho Chi Minh's thought on training and fostering talents and the application of the Communist Party of Vietnam in the current period. President Ho Chi Minh has gone far, but the lessons on training and fostering talents that Ho Chi Minh left us are still valid today. Currently, our country is entering the stage of accelerating industrialization and modernization, striving "by 2045, turning our country into a developed and high-income country"(Communist Party of Vietnam, 2021, Vol I, p.36) asked the Party and State to make the most of high-quality human resources - talents. Inheriting and creatively developing Ho Chi Minh's thought, over the years, the Communist Party of Vietnam has set forth many correct policies on training and fostering talents, suitable for the development of the country. The achievements in national construction and development are the clearest evidence for the Party's human policy in general and the policy of training and fostering talents in particular.

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THE ROLE OF POLITICAL THEORY SUBJECTS IN DEVELOPING PERSONALITY, MORALITY, AND LIFESTYLE FOR STUDENTS AT UNIVERSITIES AND COLLEGES IN VIETNAM TODAY

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Abstract

Political theory subjects play a significant role in forming and developing personality, morality, and lifestyle for students. Therefore, improving the quality of teaching Political theory subjects at universities and colleges is inevitable. Many researchers approach the issue of promoting the role of Political theory subjects from many different perspectives. In this article, the author explains the role of Political theory subjects in universities and colleges and proposes solutions to improve the quality of teaching Political theory subjects, contributing to student personality building and development, morality, and lifestyle.

Keywords: *Political theory subjects, Personality, Lifestyle, Students*

1. Introduction

Political theory subjects (Marxist-Leninist Philosophy, Marxist-Leninist Political Economy, Scientific Socialism, History of the Communist Party of Vietnam, Ho Chi Minh ideology) are integral to higher education programs, accounting for about 10% of total credits in training programs. Political theory subjects provide progressive, revolutionary theoretical knowledge and play a significant role in building and developing personality, morality, and lifestyle for students.

Through the knowledge provided by Political theory subjects, students will gradually establish a worldview, human perspective, and scientific methodology. This is the basis for comprehensive human development and a step to prepare the next generation of cadres who are good in professionalism and political bravery in the future. However, the study of Political theory has yet to achieve the desired effect because many people are not fully aware of the role of these sciences. There is still a section that thinks that anyone can teach Political Theory; those who do not study Political theory subjects still graduate from school and can work well with their professional expertise. Instead of studying Political theory subjects, they should focus on specialized subjects. Some students have the mentality of "hesitating" to learn" these subjects. They consider these subjects dry, abstract, difficult to understand, and impossible to apply. With this misperception, it will be an opportunity for hostile forces to attack the student force and, step by step, eliminate our weapon of theory. Therefore, improving the quality of teaching and learning in Political theory has become an urgent issue both theoretically and practically, not only contributing to fostering and developing students' personalities but also protecting the ideological foundation of our Party in the current period.

2. Method

The article is based on the theory of Marxism-Leninism, Ho Chi Minh ideology, and the Communist Party of Vietnam on political theory education.

At the same time, the article also uses other methods, such as:

Combined historical and logic: used to study the process of formation, development and find out the essence of the studied problem;

Documentary research method: used to analyze documents such as documents of the Communist Party of Vietnam and published scientific works on improving the quality of teaching Political theory. From there, take note and summarize scientific judgments from sources to serve as a basis for comparison, comparison, and development of theoretical research framework;

Analysis and synthesis method: used to analyze and synthesize knowledge gained from collecting views from sources to give explanations, comments, and suggestions on ideas and solutions to build personality, ethics, and lifestyle for students through Political theory subjects.

3. Results

3.1. The Role of Political theory subjects in Universities and Colleges

3.1.1. Fostering materialistic worldview, communist human perspective, and scientific methodology for students

Political Theory Subjects, primarily Marxist-Leninist philosophy, play an essential role in fostering materialist worldview and dialectical methodology for students. Worldview is the views and conceptions of people about the world around them, about themselves and people's lives, and about the position of people in that world. At the same time, the methodology is the reasoning about methods, the system of views, and principles that guide people to explore, develop, select, and apply methods in perception and practice.

Forming a materialist worldview and scientific methodology will "provide students with a scientific perspective on objective reality and affirm the role and position of human beings in perceiving and improving the world" (Hoang Anh, 2012, p.106). In particular, Political Theory subjects help students to absorb other science subjects well because today's sciences are always closely related and penetrating each other, and every science must have theoretical thinking. Equipping materialist worldviews and dialectical methodologies will help students have a correct view when analyzing and evaluating problems that other sciences pose. In the training program, each science subject provides professional knowledge and forms students' personalities. Political theory subjects are no exception, but it also plays a fundamental role in creating political bravery, a sense of self-reliance, and self-reliance aspirations to develop a prosperous and happy country.

Studying Political theory subjects helps students to be adequately aware of the process of formation and development of natural, social, and thinking circles. For example:

- Marxist-Leninist Philosophy helps students understand the most general laws and gives people the correct scientific worldview and methodology to perceive and reform the world;

- Marxist-Leninist Political Economy studies the relations between people in the production process. With the capitalist mode of production, Marxist-Leninist Political Economy indicates the essence, the main economic laws that shape, develop, and bring capitalism to its demise. With the communist mode of production, Marxist-Leninist Political Economy studies the development laws of new production relations, the way to build a society free from oppression and injustice, for freedom, prosperity, and happiness for everyone. The first stage of the communist mode of production was socialism; Scientific socialism studies the laws of transition from capitalism to socialism and the direction of building a new society. Scientific socialism has proven that the socialization of labor in capitalism created the primary material basis for the inevitable birth of socialism. The social force that carried out that transformation is the working class and the working people. From providing such basic knowledge, students will form scientific awareness and adequately explain the historical development of human society through socioeconomic forms. From there, they give students confidence in the future society, as well as the upward path of the country. At the same time, step by step, students will establish the right and scientific attitude toward reality and be able to identify and analyze existing problems in the spirit of Marxism-Leninism, Ho Chi Minh Thought, and the Communist Party of Vietnam.

The knowledge of Political theory subjects, when imparted scientifically and artistically, plus the active learning of students, will gradually absorb to help students have sharp cognitive tools to orient in professional and professional improvement, improve political bravery and working methods to become "both morality and professional competence."

Political theory courses also form in students the communist view of life, building for them perspectives on how to see life, how to see people, and how to determine the purpose of life. Political theory courses will foster communist ideals and help students have the energy to overcome difficulties and challenges to achieve goals for people and the cause of human liberation, bringing people freedom and happiness. Political theory courses form for students' perspectives on class, ethnicity, and humankind to help them comprehensively view social issues. Since then, students will be more sensitive to reality, rise on their own in their study, productive labor, living, and behavior, and have a firm belief in the path of socialism, contributing to raising political consciousness and perfecting personality.

According to scientists, the human personality is expressed in intellect and morality. Intellectually it is socialization capacity: representing the ability to acquire knowledge, from that accumulated knowledge capital as the basis for the creation of personality bearers in practical activities, expressed in adaptability, mobility, and flexibility in social life; Subjectivization competence: speaking the ability to communicate the "ego" bravery and the unique mark of the individual in social relations; Capacity for action: demonstrating the ability to act on purpose, having the spirit of initiative, positivity, creativity with the highest productivity, quality, and efficiency, is to show the social positivity of the personality bearer; ability to socialize and communicate. Morals are expressed in social qualities: including

worldview, stance, socio-political attitude, and labor attitude. The high development of these qualities makes the individual always have the correct and reasonable perceptions and actions in different practical circumstances and conditions. Only by establishing a worldview can each person assert their personality in life; Personal moral qualities: reflection and affirmation of social existence of the interests and activities of individuals. In their cognitive and practical exercises, individuals implement social ethics as systems of social experience, ideals, and standards formed in the history of the community, turning social experience into personal expertise, and quality of will, discipline, criticality, and manners are essential qualities of a person of character; The development of aesthetic consciousness: With a high sense of aesthetics, the individual will have a high, joyful spiritual life, arouse creative potential and always consciously reach for beauty in each person.

3.1.2. Raising revolutionary feelings and morals for students

Political theory subjects play a significant role in contributing to raising revolutionary sentiment and will. Building revolutionary emotional will become a platform to motivate action, helping students have faith in the scientific theory they are studying. From there, they are determined to learn and follow, and especially they will self-answer about the intense vitality of Marxism-Leninism and the significant progress that no other doctrine has been able to surpass so far.

Along with building revolutionary sentiment, Political theory subject courses also develop and enhance revolutionary ethics for students. One of the paradoxes of today's society is that when science and technology are growing, people's morality and lifestyle are more and more degraded, leading to a selfish, narrow-minded, and insensitive lifestyle. These things happen daily, every hour, impacting the personality, morality, and lifestyle of young people and students. Therefore, arousing the right sentiments and high revolutionary ethics will be the driving force for the development of society. Ho Chi Minh once affirmed: "Like rivers have sources, there is water; without sources, rivers are shallow. The plant must have a root; without one, the plant wilts. The revolutionary must have morality; without morality, no matter how clever, they will not be able to lead the people. Because to liberate the nation, the liberation of humanity is a great task, but the revolutionary without morality do foundation, corrupted and evil by itself, what can be done?" (Ho Chi Minh, 2011c, p.292-293). Ho Chi Minh's view shows that Ho Chi Minh always considered morality as the root of the revolutionary. According to Ho Chi Minh, revolutionaries must have revolutionary ethics to carry heavy work, go far, and lead the people. Because the revolutionary cause is long and arduous, it is necessary to sacrifice, so revolutionaries must have revolutionary ethics.

The study and study of Political theory subjects help learners have conditions to understand and practice revolutionary ethics, anti-individualism, and the enemy "in every man" to establish themselves, establish a career, live beneficial for society, love and do good things, hate and avoid evil, evil; raise pride in the country, the socialist political regime, Ho Chi Minh, and the Communist Party of Vietnam.

The political theory also improves political bravery, maintains stances, and fulfills civic responsibilities. Regularly cultivating and training ideas, ethics, working styles, and methods associated with acquiring revolutionary sentiments will make practical and influential contributions to the country's revolutionary cause, firmly walking on the revolutionary path chosen by Ho Chi Minh and the Vietnamese people.

3.1.3. Develop theoretical thinking capacity and improve the quality of human resources

The Communist Party of Vietnam affirms: Marxism-Leninism and Ho Chi Minh's ideology as the ideological foundation and guideline for the Party's actions. Therefore, seriously studying Marxism-Leninism and Ho Chi Minh's ideology is an objective necessity. Through that learning, students' ability to think reasonably is also enhanced. The power of each person to think the reasoning is essential to help solve the requirements set by life. Students' capacity is formed and developed from many sources, going through many stages of life, but the scene at university is critical; it is associated with the creative youth of people. Moreover, students' knowledge and skills formed and developed through the study of Political theory subjects will contribute to guiding actions for students to become productive citizens of society.

In the process of growing up of each person, in addition to equipping ourselves with professional knowledge, building intense political bravery is very necessary because if we lack political courage, we will be easily exploited by enemies and quickly lose our ideals, the belief and become traitors to the harm of the interests of the nation. Ho Chi Minh once said: "Everyone has the right to study a doctrine. I have studied Marxism." (Ho Chi Minh, 2011b, p.315) because, according to Ho Chi Minh, Marxism-Leninism is the most genuine, surest, most revolutionary. Marxism-Leninism helps us to have dialectical working methods and allows us to live together more loyally.

Learning and understanding political theory is essential for a future cadre to be able to plan courses and guide people in exercising their rights and obligations. Therefore, to become a good officer in the future, students need to work hard to learn theory. The theory is a summation of practice. Political theory subjects are also constantly updated with new, scientific, advanced, and vivid practical knowledge, contributing to the formation of students of unique qualities to meet the requirements. Our Party affirmed: "To build people and generations who are earnestly attached to the ideals of national independence and socialism, have pure morals, and have a strong will to build and defend the socialist Vietnam fatherland." (Communist Party of Vietnam, 1996). In particular, in the Resolution of the 8th plenum of the XI session on fundamental and comprehensive reform of education and training, our Party affirmed: "Create fundamental and strong changes in the quality and effectiveness of education and training; better meet the construction and defense of the Fatherland and the people's learning needs. Educating Vietnamese people to develop comprehensively and bring into full play the potential and creativity of each individual; love family, love the Fatherland, love fellow citizens; Live well and be productive." (Communist Party of Vietnam, 2013).

3.1.4. Protection and promotion of traditional values of the nation

Political Theory courses help learners be fully aware of the nation's traditional values and a systematic awareness of the correct and scientific leadership and rule of the Communist Party of Vietnam towards the class and nation. On that basis, students realize their responsibility to preserve and protect the nation's traditional values and the leadership of the Communist Party of Vietnam against the onslaught of hostile forces.

In the current period, when some young people and students show signs of devotion, hybridity, and turning away from traditional national values, Political Theory subjects will foster the spirit of patriotism, compassion, obligation, honesty, solidarity, diligence, creativity, etc. The will to self-reliance, self-reliance and national self-respect for students helps students understand the nation's traditional values and that traditional values developed to the peak during the period of the Communist Party of Vietnam's leadership. This is an essential basis for building a noble lifestyle for students.

From being adequately aware of the role of Political Theory subjects, students will be more active and active in fighting critically against wrong views to protect the purity of Marxism-Leninism, Ho Chi Minh ideology, guidelines, and policies of the Party and State. At the same time, they are improving the fighting power of young people against negativity, backwardness, and corruption, contributing to preventing and repelling the deterioration of political thought, morality, lifestyle, and manifestations of "self-evolution" and "self-transformation" in the Party and current society.

3.2. Improve the teaching quality of Political Theory subjects, contributing to building and developing personality, morality, and lifestyle for students

3.2.1. Raising awareness of training institutions, lecturers, and students toward subjects and renovating how to organize teaching and learning Political theory subjects.

Our Party advocates fundamental and comprehensive education and training reform, meeting the requirements of industrialization and modernization in the conditions of a socialist-oriented market economy and international integration to create high-quality human resources for the cause of building and defending the socialist Fatherland. The fundamental and comprehensive renewal of education and training is the renewal of major, core, and urgent issues, from viewpoints and guiding ideas to objectives, contents, methods, mechanisms, policies, and conditions to ensure implementation; innovation from the leadership of the Party, the management of the State to the governance of education and training institutions and the involvement of families, communities, society, and learners themselves; innovation at all levels and disciplines.

About theoretical education, in Conclusion, No. 94-KL/TW of the Politburo dated 28/3/2014, emphasized: "Renovating the learning of Political Theory in the national education system to create a new, fruitful and higher quality progress, contributing to Marxism-Leninism, Ho Chi Minh's ideas and the Party's guidelines and views play a leading role in social life; ensure that the young generation of Vietnam is always loyal to the goals and ideals of the Party and our regime." At the same time, the conclusion also affirmed:

"Strengthen the management and direction of the study of political theory in the national education system. Clearly define Political Theory as a compulsory main subject, with serious and rigorous examinations and examinations." Therefore, training departments must seriously observe Politburo's guiding views in Conclusion No. 94-KL/TW. This is the basis for raising awareness of training institutions, lecturers, and students towards teaching and learning Political Theory.

From a management perspective, training institutions must constantly build qualified political theory lecturers. Build their motivation to strive, self-study, research, improve their professional and professional qualifications, innovate, and be creative in teaching methods for service. At the same time, training institutions must strengthen quality management by developing standards for evaluating teaching effectiveness in Political theory.

Training institutions must also firmly say no to unspecialization teaching, pressure learning, shortened learning time, and organizing classes beyond the prescribed number. This is one of the critical issues in improving the quality of teaching Political theory subjects. Because the placement of lecturers outside the training major to teach will lead to the inability to deepen reasoning and make reasoning dry, losing its attractiveness because it is impossible to exploit the characteristics of specialized science. The pressure of learning shortened learning time and organizing classes beyond the prescribed number will make it difficult for lecturers to deploy active teaching methods focusing mainly on one-way presentations. From there, learners are not interested in Political theory subjects, and bad academic psychology spreads from one course to another. This situation should put an end to it. At the same time, training institutions need to create conditions for lecturers to innovate the form of teaching Political Theory subjects such as reducing theoretical learning time, increasing discussion time, self-study and scientific research, and Combining classroom learning with visiting monuments, red addresses, and museums. Through practical teaching, theoretical teaching forms combined with field visits create excitement for students. Or you can develop a plan to organize the Olympiad of Marxist-Leninist science subjects to create a healthy playground for students to participate, contributing to raising awareness and belief for students. At the same time, it is necessary to promote coordination with units outside the school to build and foster student personality, morality, and lifestyle.

Enhance facilities, equipment, and learning materials to serve research and teaching. Teaching facilities and equipment are essential components of the teaching process. The strengthening of modern teaching facilities and equipment will improve the quality of training in general, and the quality of teaching Political Theory subjects in particular. In addition, the building of a rich system of learning materials such as textbooks, lectures, thematic documents, scientific research results, specialized journals, theses, dissertations, dissertations, proceedings of scientific conferences, internship reports, practical is essential for lecturers and students to access for teaching and learning easier. Develop open learning resources, and build shared and inter-library libraries that allow students to exploit and use learning materials in a convenient way to research, discover and create new knowledge.

3.2.2. *On the lecturers*

It is necessary to master professional knowledge and related scientific subjects systematically. Getting specialized knowledge and associated scientific issues will help lecturers have the ability to concretize the nature, content, and value of ideas and views, capable of stringing problems logical "axes of thought" to help learners easily remember, easy to understand, and not infringe on other sciences. This task is difficult for teachers because it is a gradual process of accumulating knowledge. It requires teachers to be persistent, continuous, flexible, sensitive, creative, and especially contemplative to summarize values in the research and teaching process. At the same time, in the teaching process, teachers need to master the module objectives to teach in a focused way. In addition to the general theoretical contents, lecturers need to deeply apply reasoning in practice to each specific training profession to change the perception and actions of students of each discipline. Ho Chi Minh once said: "Education must serve the political line of the Party and the Government, associated with production and people's lives. Learning must go hand in hand with practice, and reasoning must be related to reality" (Ho Chi Minh, 2011d, p.467). To do that, we must carry out Lenin's teachings well: "We must carefully study the question of what we must teach and how young people must learn if they want to appear worthy of the title of communist youth truly and how we must prepare them to build up to the end and thoroughly accomplish the cause we have begun" (V.I.Lenin, 2005, p.357). First, this responsibility belongs to the teaching staff of political theory in universities and colleges.

Combine teaching with scientific research. Teaching and scientific research are two critical factors for assessing faculty competence. Teachers of Political Theory need to be acutely aware of this task. In some schools, scientific research does not bring us monetary value but gives us scientific knowledge and prestige. To do this job well, teachers must explore, learn, research, think independently, apply the accumulated knowledge, and develop it to new heights. Only then can lecturers thoroughly understand the problem to guide students to perform their research and study tasks well.

It must be an excellent example of personality, morality, and lifestyle for students to follow. Ho Chi Minh affirmed: "A good teacher – a teacher who deserves to be a teacher – is the most glorious person. Although their names are not published in newspapers, they are not awarded medals, but good teachers are unsung heroes. This is a very glorious thing. If there are no teachers to teach people's children, how can socialism be built" (Ho Chi Minh, 2011e, p.402-403). This proves that teachers must be ethical and professionally knowledgeable. Building a teacher role model in students' eyes is an important job to implement the personality method to educate personality. At the time, Ho Chi Minh also reminded: "A living example is worth more than a hundred propaganda speeches" (Ho Chi Minh, 2011a, p.284). Therefore, each teacher must strive for self-cultivation to become an excellent example of morality and lifestyle for students.

To become a teach Political theorist loved and valued by students, a lecturer must have enthusiasm, love for the profession, and professional knowledge. At the same time, the teacher also knows how to master himself and lives meaningfully, lovingly, calmly, gently,

cheerfully, sincerely, simply, and politely in learners' eyes. Building a beautiful image of the teacher's personality in students is a great success in teaching. Because of that good example, it has had a significant impact on shaping the character of students.

3.2.3. On the learner

Must raise awareness and interest in learning the subject for students. With the critical role of Political theory subjects in building and developing personality, morality, and lifestyle for students, as mentioned above, in the educational process, it is necessary to raise awareness for students about the importance of studying Political Theory subjects as sciences, is a doctrine of Vietnam's sustainable development, not merely a module that needs enough points to pass and accumulate points according to regulations.

Students must also improve their ability to self-study, self-research, and develop study plans. In learning, students themselves must take self-study as the core. Learning is a need of every person and must be lifelong learning. Therefore, students must be self-disciplined in complying with school rules and regulations; honest in studying, testing, and examinations; and have the spirit of solidarity and mutual support in study and life. Adhering to and training one's sense of organization and discipline at school is the foundation for learners' professional success in the future. Students must develop a plan, set out implementation measures, and be determined to act.

3.2.4. About teaching methods

Combining traditional and modern teaching methods is necessary to promote learners' creativity. Teaching methods are the teacher's tools to transmit knowledge to learners; what content is that method? The method helps learners form scientific awareness, cultivate theoretical thinking capacity, and train political thought, moral qualities, and personality. Education is methodological education. Suitable methods will promote learners' creative ability, help learners acquire knowledge on their own, and use theoretical knowledge to master knowledge. The correct method will be the thrust to develop knowledge and wisdom. The method is the transmission, suggestion, and stimulation of independent thinking to solve the problem best.

Currently, there are different opinions on the use of teaching methods. However, each method has disadvantages since no technique is a multimeter. Therefore, we need to harmoniously combine traditional and modern methods according to each suitable subject to create high efficiency in teaching, especially when the current classes have many students. Therefore, the problem is to be diverse and flexible in using methods to help learners actively acquire and teach knowledge. In teaching Political Theory subjects, in addition to using traditional teaching methods such as presentation methods, raising problems, debating questions, and self-study with textbooks and reference books. Teachers can apply project-based teaching, flipped classes, organize seminars and competitions or apply constructivist theories to education.

In the teaching process, it is necessary to apply information technology in teaching. Information technology is considered an effective support tool for the teaching process. A good lecture usually combines elements: Teacher, learner, and teaching conditions and

means. Most universities and colleges have modern facilities and equipment to meet teaching and learning needs. The application of information technology in teaching has created practical effects to help teachers visually, concisely, succinctly, and systematically express lectures with diagrams, tables, and movies to create excitement in learning. The application of information technology is also an essential requirement in innovating the method of teaching modules. In applying information technology in teaching, we can choose and use software to design lectures, such as Microsoft PowerPoint, MAKER, and iMindMap ... or combine software to make lessons lively and easy to understand, reducing the "dry, abstract" mentality of the lecture.

The application of information technology will increase the persuasiveness of lectures with diagrams, tables, good movies, beautiful photos, and meaningful songs. Teachers who know how to select and use the right resources at the right time will create interest in students' learning, and vice versa will be counterproductive in teaching. Of course, we must also prepare the necessary tools to easily interact with students in education.

Regarding testing, examinations also need innovation, forcing students to enhance their ability to self-study and self-research by strengthening tests and exams in the form of multiple choice, combining short essays and open-ended questions. Make it a habit for students to learn to understand, not memorize. That dramatically affects students in promoting creativity, passion for discovery, free thought, and a more holistic and deeper view of current Political theory subjects.

4. Discussion and conclusion

The above research results clarified the role of Political theory subjects in building and developing students' personalities, morality, and lifestyle. Political Theory subjects contribute to fostering the communist worldview, human perspective, and scientific methodology for students; raising revolutionary sentiments and ethics for students; improving theoretical thinking capacity and developing quality human resources; protecting and promoting the nation's traditional values. Along with that, to promote the role of Political Theory subjects, it is necessary to synchronously and flexibly implement solutions from awareness to organizational form, content, methods, teachers, learners, and material conditions in an excellent way to improve the quality of teaching Political theory subjects, contributing significantly to the improvement of personality, conduct, lifestyle for students.

Specifying the role of Political theory subjects in building and developing personality, ethics, and lifestyle for universities and colleges today will raise awareness of training institutions, staff, lecturers, and students towards Political theory. This is a significant factor because only with proper perception can people act appropriately. Understanding the role of Political theory and proposed solutions will contribute effectively to the realization of "Strengthening the education of revolutionary ideals, morals, lifestyles and arousing aspirations to contribute to youth, adolescents, and children in the period 2021-2030".

This research also provides scientific bases and references for materials for study to improve the quality of teaching political theory subjects at specific universities and colleges today.

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CURRENT SITUATION, CHALLENGES, OPPORTUNITIES, SOLUTIONS AND ACHIEVEMENTS OF VIETNAM HIGHER EDUCATION ON THE WAY OF INTEGRATION

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Abstract

Over the past decades, Vietnam's higher education has made remarkable achievements and developments, making an important contribution to the mission of raising the people's intellectual level, training human resources for the process of national construction, defense and development. Typically: People's learning needs are better met; the strategic goals of improving people's knowledge, training human resources and fostering talents have achieved some important results; the social policies on higher education have been implemented better and more effectively; the quality of higher education has made a good first step in both quality and quantity; strengthen conditions to ensure possible educational development.

Besides the great achievements mentioned above, higher education in our country still contains many weaknesses, shortcomings, and exists many issues that need to be concern. Specifically, the quality of majority education, especially at the university level is still low, educational methods are outdated and slow in innovation; conditions to ensure higher education development are still inadequate; poor families, low-income families and ethnic minorities still face difficulties in accessing higher education, especially for postgraduate studies; some negative cases in higher education are slowly solved, etc.

In order to resolve the above issues, this paper summarizes the achievements, difficulties and provides directions for building an education based on a solid theoretical foundation, focus on researching educational philosophy to suit the requirements of the era and integration.

Keywords: *higher education, current situation of education, educational achievements, challenges and integration.*

1. Introduction

The studies of educators and educational administrators have analyzed and synthesized scientifically on issues in the process of implementing innovation, proposed solutions to the renovation of education and training successfully. Initially, administrators and scientists assessed the overall situation, causes and remedies on education and training on the way of international integration; deep research into issues such as change in awareness and implementation policies; learn the deployment process from the flat world, study the barriers to adjusting explicit implementation methods, create unity, cooperation and high consensus of the whole education system and society. [1] & [16]

In the research process to find the optimal direction for education, initial research results obtained have positive changes at the macro level of the whole system, society to the micro level in people's awareness, teachers, learners about the needs, concrete and practical actions to be taken to innovate education. [2]

Firstly, we need to be deeply aware of the revolutionary and scientific nature of the educational reform process. These are not local, micro modifications and adjustments dogmatically; but this is a "fundamental and comprehensive" innovation process at the macro level of the nature of the education system, take the education system to a new level, a new position, more effectively, more quality. Those are the basic components that need to be objectively and explicitly researched on the theoretical basis, clarifying both scientific and practical basis as a basis for renovating education system. These are very important issues that have not been studied thoroughly and systematically, and there are still many critical, different and opposite opinions. [3] & [16]

However, the renovation process must be implemented consistently from higher levels to grassroots levels, synchronously, with steps and routes consistent with the identified priorities, on the basis of combining scientific research with experimentation, practical theory, with extensive implementation in practice, drawing experience and making supplementary and complete adjustments so as not to allow serious mistakes to occur which affects the whole system.

2. Results

2.1. Current situation of higher education in Vietnam

For any country, the implementation of human resource training must revolve around two basic issues: training and employment. There is no common voice and close relationship between training and labor market in practice. As a result, graduates are many, but their practice capacity is limited so they do not meet the labor market demand. [1], [2]

The reason is that the quality of higher education is still low, institutions are only interested in developing more quantity than quality; compared with the development requirements and needs of the country, there are still many unsatisfactory contents; education is not really a top national policy; the institutions still owe the country a promise for higher education quality as expected. Higher education has only achieved the goal of convey

knowledge, failing to meet the requirements for teaching to be human, career guidance and learning attitudes [16].

The role of education and training is directed to human development to meet the urgent needs of the developing economy; therefore, it is necessary to have a high-quality education. In training, priority should be given to personal development such as independence, sense of responsibility and the ability to work in groups; based on broad and firm basic training, allowing transfer between forms of training; towards the development of social-occupational capacities and close ties with the labor market; enhance adaptability and self-study [8] & [9].

State management of education still has many problems, which are the main causes of all other causes; education management mechanism is still subsidized, not untied; haven't promoted the activeness and responsibility of institutions; overlap and inconsistency in management; incomplete educational policies are still subjective, only willed, far from reality, lack of social consensus; there are still many embarrassments and perceptions at the macro level, especially in terms of market economy and international integration; have not met the expectations of the country [2]&[5].

Training at university level, the contents, programs and methods of education are still stagnant, outdated, slow in innovation, not fast in modernization, not closely associated with the social life and professional labor of the working world; not promote creative thinking and practical capacity of students. Learners has not placed in the right center of the educational trajectory [2].

Embarrassing, not clearly defining the guideline in building the direction of training links with foreign partners. The national education system is not suitable for development, lack of uniformity, not yet connected and lose the balance.

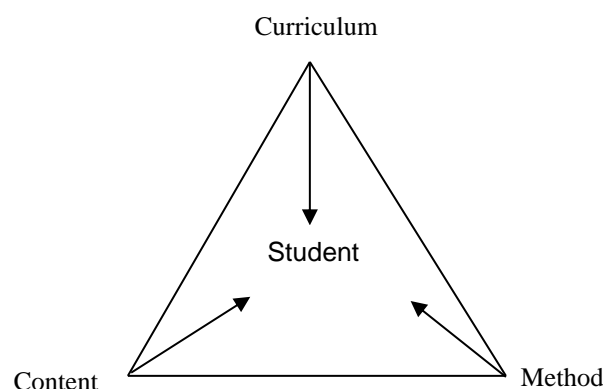


Figure 1. Relationship in teaching - learning

In both qualitative and quantitative terms, the quality of scientific research in higher education is still low in both quality and quantity and there are many shortcomings, although the number of scientific staff, especially the number of doctors, associate professors and professors in our country, is the highest in the region [18].

Educational thinking is psychologically heavy, the point of view has not been fully grasped, slow to innovate, the attitude of not fully and properly aware of education socialization; failing to catch up with the core requirements of education and training innovation with the goal to develop the country in the context of market economy development and international integration; technical pedagogical universities, technical pedagogical institutes or technical pedagogical faculties have not been given adequate attention, not returning in line with the trajectory of technical education but rather the responsibilities of technical pedagogical institutions[1].

The number of educational managers and lecturers is insufficient, weak and inadequate, ethics and capacity of a part is still low. The reality is that lecturers and educational administrators still have limitations that are reflected mainly in consultancy, forecasting, planning, working methods, financial management, foreign language and information technology skills, ability to collect and process information, etc.

The quality of higher education is lax, declining, especially moral education and lifestyle; weak on ideological education, national history, creative thinking, practical skills, life skills, lifestyle, ethics, etc.

The quality of majority education, especially at the university level is still low, educational methods are outdated and slow in innovation; conditions to ensure higher education development are still inadequate; poor families, low-income families and ethnic minorities still face difficulties in accessing higher education, especially for postgraduate studies; some negative cases in higher education are slowly solved.

The impact of the industrial revolution 4.0 on education is enormous, need a change of mindset, goals, content, programs, methods, means, forms of teaching in higher education to meet the era 4.0; must adapt to lifelong learning, which equips new skills for each occupation; education 4.0 requires creative, innovative, and problem solving skills, critical thinking, creativity, human resource management, teamwork, etc.

Objectively assess the current situation of education, put education ahead of the country's demands in a new phase, approach to the next research items.

2.2. Achievements, opportunities and challenges of higher education in Vietnam

From the overall perspective, apart from the reality of being subjective and objective, we can see the positive aspects exist, higher education is not quite a dark color because it has many commendable achievements that are undeniable.

2.2.1. Achievements of higher education in Vietnam

Our country's education and training have achieved important achievements which contributes greatly to the process of national construction and protection.

Typical as: The system of higher education institutions and sizes rapidly develops, the learning needs for the people are better met and increasing, implement a universal education to meet the needs of the people and improve the qualifications and vocational skills of learners.

The strategic goals of raising people's intellectual level, training human resources and fostering talents have achieved important results, contributing to meeting the human resource requirements for socio-economic development of the country. The possible development path towards gradual shift from the goal of higher education is to enhance knowledge to develop learners' qualities and competencies. The quality of higher education, at a certain perspective, is evaluated to be close to the standards of the world.

The social policies on higher education have been implemented better and more effectively. Socializing education and international cooperation have been promoted, achieving many important results. The quality of higher education was improved, there were good initial changes in both quality and quantity; strengthening conditions to ensure successful educational development.

The management of higher education has a positive move. Teachers and administrators of higher education increased rapidly in terms of quantity, training level was raised, gradually meeting the requirements of higher education development of the times.

The facilities of the higher education system are developed and step by step modernized, creating the most favorable teaching environment for teachers and learners when investment in higher education is strengthened. At the same time, there is an approach to teaching methods and assessment based on competence, prioritizing the development of skills and skillful in real life based on the serious attitude of the learners. In training, priority should be given to personal development such as independence, sense of responsibility and the ability to work in groups; relying on broad and firm basic training, allowing transfer between training forms; towards the development of social-occupational capacities and close ties with the labor market; enhance adaptability and self-study ability [2], [3].

Social justice in higher education has made a lot of progress, especially for poor families, low-income families, ethnic minorities, rural laborers, social policy beneficiaries, people with meritorious services and people in difficult circumstances and gender equality are guaranteed; create favorable conditions for everyone to study at the right age and with their own qualifications.

About the worldview and human outlook, parents, educators, educational institutions and the world of work have made positive changes at the macro level of the entire social system in recognition of the progress in management and administration, to micro level in the awareness of everybody, lecturers and learners about the need and specific actions to be taken to innovate education.

A possible, dynamic, effective and quality education is one that meets the country's development needs in the new phase and is in line with the trends of the times and represents the optimal education.

2.2.2. Opportunities and challenges of Vietnamese higher education

The current industrial revolution 4.0, Vietnam is not outside the common trajectory of the world, which is to participate and be directly affected, this creates opportunities,

difficulties and challenges for higher education in particular and for the process of industrialization and modernization of the country in general.

The Industrial Revolution 4.0 can disrupt the traditional labor structure by automating robots to replace manual labor in many industries and sectors of the economy. The impact of this revolution for the social labor structure will change in stages.

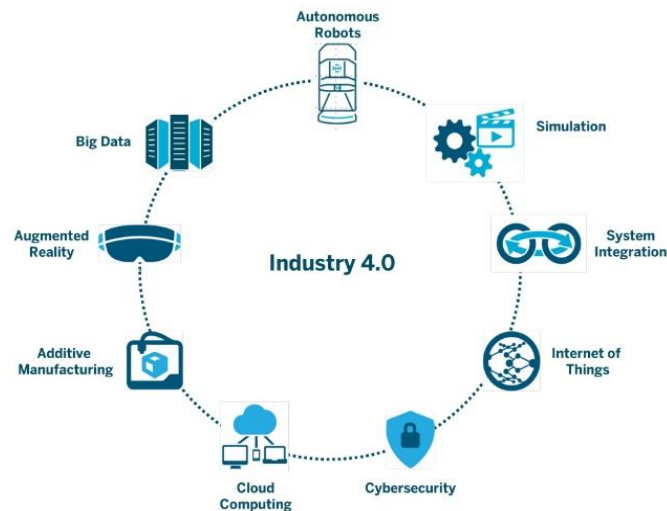


Figure 2. The 4th industrial revolution diagram

Due to the characteristics of Industry Revolution 4.0 is that it does not depend primarily on machines and equipment, but on the creative capacity, ability and intelligence of the people, so Vietnam can take advantage of a latecomer country with a golden population structure.

Another opportunity and challenge for higher education is that the world is entering the Fourth Industrial Revolution, Vietnam is still mainly in the second phase (the 2nd industrial revolution), that is the implementation of the processing and assembly lines.

Most Vietnamese workers are not well-trained, theoretical qualifications and skills are still limited. It is professional knowledge, foreign language ability for social interaction and work. This is a great opportunity and challenge for higher education when entering the industrial revolution 4.0 with human resources that have not been fully prepared, especially the high technology platform is limited, small production, unsynchronized, and missing links.

Changes in the way we communicate on the internet are also opportunities and challenges for people in the digital age, especially the dangers related to human health, financial security, cyber security, the protection of personal information is also imposed at a higher level.

The center of the innovation process in higher education training is high-quality university-level human resources to meet the requirements of the Industrial Revolution 4.0.

In the 4th industrial revolution, along with the rapid change of technology, requires education to give learners basic skills and knowledge, serious attitudes, creative thinking, the ability to adapt to challenges and the need for constant job changes to avoid the risk of

being left behind and eliminated. With many new requirements that are vital for higher education, accepting the law of going forward must be exclusion so traditional education methods will certainly not be able to adapt and be eliminated, because education in the 4.0 era requires critical thinking, innovation mind, cultural understanding and learning skills to start a business; intelligent agents use modern information; mobile technology, Smartphone and cloud computing.

In the context of many changes in the world, countries are looking for ways to develop education and have succeeded then education in our country has stood still and has not escaped from the outdated situation. The fact that the development of higher education in our country in recent years has created an imbalance in the scale between disciplines and study levels, has created a strong and local conflict between effectiveness, quality and training scale.

The public opinion criticized the teaching and learning methods in higher education is outdated, the model of educational and training organization is still stereotyped in the style of academic academy, heavy in theory, overlooking the practical part.

The fact shows that countries in the world not only rely on the advantages of capital, technology and mineral resources of the country but also have to research, study, manage and administer, seek solutions to finding other advantages in creative capacity and exploitation of human intelligence through education. Vietnam's higher education needs to apply to eliminate the constraints that make it difficult for innovation.

On the other hand, compensate for the limitations and shortages, Vietnam has a lot of human resources, which is the golden population generation, quickly and appropriately adapt to information technology, education and training will be the key to opening up all the roles of science and technology. This is an opportunity but also a great challenge of the higher education today.

2.2.3. Solutions for higher education in Vietnam.

To overcome the above problems, higher education needs to urgently implement the following requirements: Researching and applying successfully renovating educational philosophy, educational cognitive thinking to suit the requirements of the times, innovating educational perspectives and goals, because these are issues that are oriented, paving the way for the process of renovating higher education. This innovation will be the premise of changes from the curriculums, textbooks, teachers and teaching methods. According to this new philosophy, the way of teaching and learning will change from learning to "remember" to "understand".

Equity in education is well implemented. Everyone has equal rights and obligations to education and equal opportunities. Education must respect individuals, develop personalities, create many paths and learners are given opportunities to develop their talents and become the country's talents. Personality education is an important element that needs special attention; promote creativity, self-study, self-research, self-responsibility and

participation in group activities, enhance higher-order thinking ability for students; inspire true passion for scientific research and practice self-reading habit, self-seeking information to enhance the understanding to apply academia in the flat world.

Basically and comprehensively changing the assessment to the competency-based assessment of both the input for understanding and acquiring creatively learned content and the output evaluates the ability to apply what learned, practice into the actual experience environments, etc. [2] & [6].

Promote innovation in higher education management, especially the management of training quality; curriculum development must have curriculum outcomes. Curriculum outcomes is written from the perspective of the learners, clearly announcing what the learners will do after completing the unit of study and curriculum outcomes must take the objective reality and requirements of the society as a scientific argument, meeting the diverse needs both in terms of category and quality.

Strongly renovate curriculum contents and teaching methods towards regional and international integration. The program content is built in an open direction and has a life cycle of 3 to 5 years; innovate teaching methods that are learner centered.

The learner-centered teaching method is the teaching method in which teachers no longer play the leading role and learners are no longer passive but become the center and subject of the teaching-learning activities. All are geared towards and for learners. Here, learners are no longer passive in acquiring, do not have to be placed before the existing knowledge of lectures, syllabuses or textbooks, but learners are put in front of practical problems and situations.

The power of teachers is no longer based on the passivity and darkness of learners but based on their ability, teachers must be instructors, mentors to study rather than just transmit dogmatic knowledge. From there, learners mobilize resources and experience to analyze, synthesize, quantify, evaluate, explicitly solve experience problems.

All training methods are centered on the teaching-learning process. However, in the traditional training method, teachers' role is respected. In contrast, in the new training method, the role of learners is especially important. The learner-centered approach is thorough from the program design stage, content compilation, script writing, goal writing to the use of teaching methods, etc.

The learner-centered teaching method is to put learners in the right direction of education, in accordance with the rules of educational process so that education is grounded and focused on learners. With implementation capacity, passion and personal conditions, learners will master their learning and research process [4] & [7].

There are comments that: The learner-centered teaching method has changed the traditional order in schools. At that place, the role of learners has surpassed responsibilities of teachers, creating a bad mentality for learners and teachers. However, the absolute assertion of many leading pedagogical educators on this is that the learner-centered teaching

method or the method of positive teaching of learners is the return to the inherent position of learners, for a long time, learners have accidentally lost.

It is necessary to renovate the orientation and strategy for higher education and training in the context of the Industrial Revolution 4.0 and the formation of a digital economy; development of higher education must be associated with the needs of socio-economic development; changing the educational process from provide academic knowledge primarily to developing comprehensive capacity and quality of learners, learning along with practice, reasoning associated with practice, learning through experience.

2.2.4. Vietnamese higher education on the road of integration and cooperation.

International integration in higher education has been directly and indirectly affecting Vietnam's higher education, this issue needs to be deeply and fully aware at the macro and micro level of higher education. Although our higher education is lagging many countries in the region and the world, but it is recognized as a service (WTO & GAST); based on this foundation, we are gradually opening the education service market and promoting international cooperation [2].

Vietnam's higher education access to changes in the function and mechanism of development of education, and of other fields. Since then, research, comprehension, perception and approach to world education are happening new trends with many important components for the success of higher education, including:

Firstly, the trend of popularization; it is suitable for all people in the world and serves the interests of all people in the world.

Secondly, development of distance learning, online training; diversify methods and types of education; change the model and function of educational institutions.

Thirdly, regionalization, globalization, cooperation and integration together with international competition on education. Standardize educational programs and content towards streamlining, modern, suitable for ages, qualifications, trades, towards the direction is to attach importance to the development of learners' qualities and competencies.

Fourthly, education and training, science and technology together with economic and social development are increasingly dialectical and effective. Strongly transforming higher education mainly from equipping knowledge to comprehensively developing the capacity and quality of learners, learning along with practice, reasoning is tied to reality.

Fifthly, the general development mechanism of education, market and socio-economic is increasingly compatible and correlated; ways to implement social welfare increasingly and effectively; characteristics, features, nature of service and service provision are on the rise.

Sixthly, forming a philosophy of the need for lifelong learning, strongly promoting socialization, combining the state and the people in the development of higher education. Completing the higher education system towards open education and building a learning society.

Seventh, accreditation the quality of higher education becomes a matter of the whole society, one of the necessary and enough conditions to expand international cooperation.

The important elements mentioned above are the prerequisites necessarily for renovating and modernizing the educational system. For education and pedagogy to be successful, Vietnam's higher education development strategy cannot be outside these characteristics.

When Vietnam's higher education is renovated under the conditions, the criteria have been experimentally planned to give some optimal characteristics of higher education, namely:

- High quality and effective education;
- Unique educational method;
- Low cost, appropriate tuition;
- Proper investment in educational facilities;
- Internship opportunities and attractive jobs.

These characteristics are necessary and enough conditions for Vietnam education to integrate and cooperate fully with other advanced educations in the world, including Asian higher education.

3. Conclusion

Bill Gates, CEO of Microsoft Corporation, affirmed: *"One of the most amazing things over the past 20 years has been the advent of the Internet. It was the Internet that made the world so small, the geographical distance was flattened ... Another great thing is that more and more universities around the world are giving lectures on the Internet. You can be anywhere in the world to choose lectures, topics ..., even reputable professors to study without paying. This will be a root change in the education system in the future"*.

Building smart schools and applying information technology based on industrial revolution 4.0 is necessary, it becomes an obvious goal; thanks to IT, the world is brought together, the exchange of science fields is more and more convenient and much more benefit.

Besides the systematic inadequacies such as the quality of education, educational methods, ... Vietnam's higher education has asserted itself in the revival; new arguments, scientific arguments and the application of the 4.0 industrial revolution are placed in the right frame of education to be a lever to develop education; to educate for education, education for humanity.

In short, with the realities, achievements, challenges, opportunities and solutions that have brought higher education to a new height, developing rapidly and achieving remarkable achievements, firmly stepping on the path of comprehensive cooperation and international integration.

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A STUDY ON VIETNAMESE COOKING TERMS

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Abstract

Vietnam has a long and developed wet rice agriculture, forming an extremely rich and diverse culture in cuisine. Vietnamese cooking terms have reflected this typical culture in daily life. This article collected and analyzed 20 Vietnamese cooking terms in order to study the characteristics of its structures and semantics. Furthermore, this study also provides and discusses the meanings of cooking terms in respect of language and culture.

Keywords: *cooking terms, cuisine, Vietnamese*

1. Introduction

1.1. Rationale

Vietnam is a country with a long tradition of wet rice cultivation. There are many kinds' plants like potatoes (potatoes, sweet potato); pumpkin (pumpkin, squash), maize (corn sticky, glutinous corn), watermelon, green beans, black beans, soybeans... and animals (buffalo, cow, pigs, chicken, shrimp, fish...), and others... have contributed to the cooking process.

“In Vietnamese culture, eating and drinking is an art, it is not only to meet the basic requirements of people but also has a close relationship with the lifestyle, national traditions, which is very clearly shown through the tools used in the meal, how to behave with people while eating. Therefore, eating and drinking also proves the history and formation of the culture of Vietnam. The dishes through each period speak about the life and people of that period and the land - where each dish was born” (Nguyen Thi Dieu Thao, 2007).

Besides, “Language as one facet of human behaviors actually relates to other facets, and these all facets are comprised to be human culture” (extracted from Supapas Kumtanode, 2006) and “Words connect indirectly to objects in the world via human’s mind. Hence, they express some attitudes of the speakers towards the world they see and the way they interpret words in their culture” (extracted from Supapas Kumtanode, 2006). Thus, “To reveal a language as a part of culture, it is easier to discuss on the relationship between vocabularies and other facets than between grammars” (extracted from Supapas Kumtanode, 2006).

A study on Vietnamese cooking terms will show the "quintessence" of how to prepare food, which is an important part of Vietnamese culinary art since semantic studies are basically due to human’s thought and worldview expressing via the vocabularies.

1.2. Vietnamese

Vietnamese is in the Austroasiatic language family and is the national language of Vietnam (Vietnam's Constitution 2013).

1.2.1. The Vietnamese consonants are expressed as below:

Manner of articulation		Point of articulation								
			Bilabial	Labio-Dental	Dental	Alveolar	Retroflex	Palatal	Velar	Glottal
Stop	Aspirate				/h/		/ɣ/			
	Unaspirate	Voiceless			//			//	//	//
		Voiced	//			//				
	Nasal		//			//		//	//	
Fricative	Voiceless		//	//		/ʂ/		//	//	
	Voiced		//	//		/ʐ/		//		
	Lateral			//						
Semi-vowel			//					//		

1.2.2. And the Vietnamese vowels are as below

	Front	Central	Back
High			
Mid		,	
Low		,	

Three main diphthongs: /ie/, /uɤ/, and /uo/

1.2.3. There are 6 tones included

- High tone, represented by the number “1”
- Low tone, represented by the number “2”
- High falling – rising tone, represented by the number “3”
- Low falling – rising tone, represented by the number “4”
- High rising tone, represented by the number “5”
- Low rising tone, represented by the number “6”

(Adapted from Đoàn Thiện Thuật, 2004)

1.3. Theory perspectives

1.3.1. Theory of Cooking

According to Arora (1977), the first cook was a primitive man lighting to warm himself and put the piece of meat close to fire. Then he recognized that the meat heated had a good flavor and was tasty. From that ancient time on, the cooking method has been evolved and improved to more sophisticated methods up to the present. Thus, the theory of cooking concerns the transference of heat to food. In any cuisine of the world, it has to pass through the cooking method of using heat (Supapas Kumtanode, 2006).

All methods cooking depend on one or more of the following principles:

* **Radiation:** The process of radiation is that heat passes from its source in direct rays until it falls on an object in its path, e.g. grilling.

* **Conduction:** This is the transferring of heat through a solid object by contact. Some materials, e.g. metal used for pans, transfer heat more quickly than other things such as wood as used for spoons. Conduction normally involves using solid electric hot plates.

* **Convection:** The particles of gases or liquids are heated until they move. Then, it is expanded and become less dense and rise. The colder particles sink to take their place, thus causing convection currents, which distribute heat. This principle is used in heating a gas oven and in the heating of liquids like boiling (Wayne, 2003).

1.3.2. Lyon's Basic Principles

The Lyon's basic principles of the theory of semantic fields in terms of sense relations were cited in "Cooking Vocabularies and the Culinary Triangle of Levi-Strauss" by Adrienne Lehrer in 1972. The principles used for paradigmatic relations are:

- *Incompatibility:* This is about the lexemes which are incompatibility. It means that if any lexeme asserts to be one in a set, e.g. red, blue, yellow, etc., it denies being the others. To state that X is red implies X is not blue, yellow, etc.

- *Complementarity:* This is a kind of incompatibility; but there are only two lexemes involved in the notion of comparison. For example, if X is single, it implies that X is not married.

- *Antonymy:* This principle involves the notion of comparison, such as tall-short, fat-thin, and so on. To say that X is taller than Y implies that Y is shorter than X.

- *Converseness:* It deals with certain systematic sentence transformation, such as a pair of words buy and sell. If X bought a pen from Y, it implies that Y sold a pen to X.

- *Hyponymy:* Lehrer claimed that this is one of the most important semantic relationship. Hyponymy is class inclusion which its more general term is the superordinate term. For example, rose is a hyponym of flower, and flower reveals as the superordinate of rose, tulip, lotus and so forth.

- *Synonymy:* Synonyms mean the lexeme that is the same as another word. If X and Y are synonyms, it means that both of them are implied by each other.

1.3.3. Componential Analysis

Componential analysis is dealt with semantic features which are the significant characteristics of lexemes to facilitate distinguishing one from the others. Nida (1975) proposed the six steps of procedure to analyze diagnostic components as follows:

- Select the related series of lexemes, such as whisper, babble, murmur, sing and hum.

- Examine all the possible referents of these lexeme. For example, for the word "whisper", there is a degree of loudness as the designate of this word.

- Examine the various lexemes as reflected in the nature of the referents and determine which characteristics are true of one or more lexemes. However, there is not any referent being true to all lexemes.

- List the distinctive features of all each lexemes.
- Test the analysis or cross checking all the lexemes in the first step.
- Describe and arrange the features diagnosed in the form of tree, diagram or matrix.

One of the studies about cooking terms using this approach is “Semantic Cuisine” which Lehrer exposed in 1969. Lehrer divided the lexical field of “cook” into 4 main categories, i.e. boil, fry, broil and bake. Each category contains an almost closed set which is incompatible with one another. “Boil” has the most complex subset of terms consisting of simmer, boil (marked), poach, stew, braise, parboil, steam, and reduce, as follows:

Table 1. The categorization of “boil” (Lehrer, 1969)

boil (unmarked)					
simmer			boil (marked)		
poach	stew	parboil	steam	reduce	
	braise				

In the above figure, “stew” and “braise” is a partial hyponym not synonym. Because of having food passed the first process of “braise” in browning in a little fat and taking to be cooked in a little liquid over a low heat in a covered pan, this method reveals the semantic overlap of “stew” and itself.

In the second category, “fry”, there is some partial synonym between “pan-fry” and “sauté” in the necessity of using fat. Besides “deep-fry” and “French-fry” are synonymous in the sense of the amount of fat they gain in large amount.

The third group, “broil”, “grill” seems to be a partial hyponym of fire because of the using of the utensil, griddle that is used as in the “fry” category.

The last group, “bake”, Lehrer commented that “roast” was difficult in classification because of its true sense as cooking by direct heat in front of an open fire and the modern method that cook food in a closed oven. Thus, Lehrer decided to arrange this lexeme as a partial hyponym of “bake”. The four categories can be shown as follow:

Table 2. The figure of cooking terms (Lehrer, 1969)

cook									
boil		fry		broil			bake		
simmer	(full) boil	sauté pan-fry	french-fry deep-fry	grill	barbecue charcoal	plank	roast	shirr	scallop
see	above								
figure									

1.4. Related previous studies

1.4.1. Nguyễn Thị Dung (2009), *Culinary words and how to translate them into English, Ph.D. dissertation, University of Social Sciences and Humanities, Hanoi.*

The dissertation analyzed the origins, structure and semantic characteristics, provide specific look in Vietnamese culinary. The author points out there are two ways of processing of Vietnamese food: processed through fire (boiled, steamed (map), fried (fried), fried, gravy, roasted, baked warehouse, cellar, braised, burst, frequency) and not processed through fire (raw, cooked with fermented foods).

1.4.2. Supapas Kumtanode (2006), *Thai regional cooking terms - An ethno-semantic study, M.A. thesis, Mahidol University.*

In this thesis the authors have shown 102 cooking terms, as follows: Central Thai has 31cooking terms, Northern Thai has 29 cooking terms, Northeastern Thai has 21 cooking terms, and 23 cooking terms in Southern Thai. The analysis is based on cooking terms semantic elements and parameters, specifically pointed out the similarities and differences of food processing among proposed parts in Thailand.

1.4.3. Prasitrathsint (2001), *A componential analysis of kinship terms in Thai, In Essay in Tai language, Kalaya Tingsabadh and Arthur S. Abramson edited.*

She presented a componential analysis of the basic and non-basic kinship terms in Thai, included 17 basic and 32 non-basic kinship terms. This study reveals that each dimensions of contrast play important roles in signifying the reflection of Thai culture through the kinship system, especially for this study of the Standard Thai.

2. Method

2.1. Data preparation

Hanoi is the capital of Vietnam, the place to show the "quintessence" of Vietnamese cuisine. Gone through thousands of years and filtered the most sophisticated and unique features of nature in the North of Vietnam, Hanoi's cuisine has become a special culture that attracts any persons once they first come to Hanoi. Data collected in Hanoi from May 2018 to January 2020.

2.2. Informants

The criteria for the informants are set to be as follows:

- 40 informants aged from 30 to 70 years old, must live in the studied areas and never migrate to other areas more than one year.

- There will be equal numbers of 20 males and 20 females selected as informants.

- 10 chefs in Northern Vietnam to test the data and the way the food is prepared.

2.3. Research Instruments

Questionnaire

The questionnaire used in this research is merely the instrument to gain the personal data of each informant according to the criterion above. This will help the researcher to get some basic data of the informants.

Recorder

Recorder will be used for in-depth interviews to ensure details of significant data acquired from each informant.

2.4. Data Analysis

- The recorded data are transformed into the lists of words and meaning of each informant. Each word will be transcribed according to Đoàn Thiện Thuật (2004).

- The data lists are summarized to get the core meaning of each word.

- The source of heat which is the main factor concerning the cooking method is brought to help the classification of the cooking words.

- Based on the information from 2.4.3, the meaning of words in each group will be considered in detail with their common and distinctive features.

- The researcher will arrange the cooking words in the structure that can reveal and explain their relation in hyponymy, synonymy, and incompatible and so on.

- The result shown in the structure charts will be concluded.

3. Results

3.1. Vietnamese cooking terms and their meanings

From the Vietnamese dictionary (2003) and the field work, there are 20 cooking terms and its meanings as follows:

3.1.1. /luok6/ - luộc: Make foods cooked in boiled water

3.1.2. /lam1/ - lam: Cook (rice) by putting it in some kinds of bamboo tubes (nứa and vầu) (not using a pot, a way of cooking rice in some ethnic minority areas)

3.1.3. /do2/ - đồ: Cook in a pot (chõ) until it's cooked by the heat of steam

3.1.4. /h p5/ - hấp: Make the foods cooked by the heat of steam

3.1.5. /saw5/ - xào: Cook meat with plenty of water and separated vegetables and spices

3.1.6. /h m2/ - hầm: Cook, bake in the oven, in a covered pot, until cooked

3.1.7. /ʔom1/ - om: Cook on low heat for a long time so that the food is thoroughly absorbed with salt and spices

3.1.8. /xɔ1/ - kho: Thoroughly cook salty foods

3.1.9. /t n2/ - tần: Steamed in a water bath until cooked

3.1.10. /cuɲ1/ - chung: Heat to evaporate and thicken (talking about liquid food)

3.1.11. /niɲ1/ - ninh: Cook solid, chewy food by simmering and simmering for a long time

3.1.12. /nuɲɲ5/ - nướng: Cooked by placing directly over burning coals or fire

3.1.13. /quãj1/ - quay: Cook the whole meat until golden brown by turning it over the heat or frying it in a covered fat pan

3.1.14. /saw2/ - xào: Cook food by stirring with oil and salt on the stove

- 3.1.15. /zan5/ - rán: Cooked in boiling grease
- 3.1.16. /zan1/ - rang: Cook by stirring in a hot pan, do not add water
- 3.1.17. /zim1/ - rim: Simmer for food to absorb salt or sugar and solidify
- 3.1.18. /bak5/ - bác: Cook savory food by simmering and stirring until it becomes thick
- 3.1.19. /c n2/ - chân: Dip in boiling water until cooked or clean
- 3.1.20. /n w5 / - nấu: Cook or boil by boiling in a pot

3.2. Classification of the Vietnamese cooking terms

According to the theory of cooking, methods depend much on the types of heat used in cooking. Therefore, in this section, the cooking terms listed in II will primarily be classified according to three heat methods, i.e. the Moist heat, the Dry heat and the Dry heat using fat methods.

3.2.1. *Moist heat method included* /luok6/ - luộc; /lam1/ - lam; /do2/ - đồ; /h p5/ - hấp; /saw5/ - xào; /h m2/ - hầm; /ʔom1/ - om; /xɔ1/ - kho; /t n2/ - tằm; /cuɿ1/ - chung; /nɿp1/ - ninh; /bak5/ - bác; /c n2/ - chân; /n w5 / - nấu

3.2.2. *Dry heat method included* /nuɿŋ5/ - nướng; /quǎj1/ - quay; /zan1/ - rang

3.2.3. *Dry heat method using fat included* /saw2/ - xào; /zan5/ - rán; /zim1/ - rim

3.2.4. *Meaning components of the Vietnamese cooking terms*

- The three heat methods are categorized based on three dimensions of contrast: The use of non-fat liquid, the use of fat, and a direct and indirect exposure of heat to food. The use and non-use of non-fat liquid are used as the criteria to distinguish the Moist Heat method among the three heat methods. The direct and indirect exposure of heat reveals the distinction between the direct heat and non-direct heat to the food in Dry heat method.

- However, these three dimensions of contrast are not enough to express the native's worldview and knowledge concealed. Therefore, more elaborated considerations are needed in finding the semantic components of these terms.

- After using the componential analysis, there are 8 components and 4 relevant parameters resulted concerning the Vietnamese cooking terms as follows:

* Use of non-fat liquid: [+liquid] vs. [-liquid]: The non-fat liquid is some water or water-based liquid such as coconut cream, soup...Cooking terms that use these kinds of substance in their processes have [+liquid] as their semantic component to distinguish it from others that do not use any of this matter (Lehrer, 1969). 14 lexemes in the Moist heat method group have this component as their common component. Thus, the other terms can be explained by [-liquid].

* Use of fat: [+fat] vs. [-fat]: This is the semantic component of 3 cooking terms in the Dry heat method using fat. According to the redundancy rule, [+fat] implies [-liquid] and [-fat] implies [+liquid] (Lehrer, 1969).

* State of heat exposure: [+direct] vs. [-direct]: The component [+direct] concerns the radiated heat to the food directly such as the food cooked by the method /nuuxŋ5/, /quǎj1/. As for [-direct], it is the component involved in terms of the same group of /nuuxŋ5, quǎj1/ but they are different in the exposure of heat to the food: /zɑŋ1/

* Vigorous and gentle action of heat: [+vigorous] vs. [-vigorous]: For the Moist heat method, the water-based substance used for /luok6/, /h m2/, /t n2/ needs the vigorous action of heat to make it reach its boiling point whereas /cuŋ1/, /h p5/ requires the gentle action of heat to make the food tender. In addition, /χɔ1/, /bak5/ also use the gentle action of heat to avoid food burning.

/zɑŋ1/ in the dry heat method need the gentle action of heat to cook the food, but /nuuxŋ5/, /quǎj1/ use the vigorous action of heat to make the food done.

The component is not relevant for those cooking terms that use inconsistent degree of heat in cooking. For example, the component of action of heat is not relevant for /n w5 /, which needs vigorous action of heat at the beginning and gentle action of heat in a later process of cooking to avoid rice from burning.

* Duration of cooking: [+long cooking time] vs. [-long cooking time]: Most cooking spends around 10-20 minutes meanwhile the duration of cooking concerns some methods such as /h m2/, /χɔ1/, /t n2/, /cuŋ1/, /nij1/ have long cooking time to make the food tender. Other methods normally are done in the average time mentioned above, except /c n2/, which spends a short time to cook. Therefore, the vital semantic component of /c n2/ is [-long cooking time].

* Amount of special substance: [+large amount of substance] vs. [-large amount of substance]: Special substance means the substance used in the cooking processes to convey heat to the food. There are two types of special substance, i.e. water-based liquid used in the moist heat method and fat that is used in the dry heat using fat method.

The water-based substance is generally used in an appropriate amount for the food cooked. However, /ʔəm1/ is the processes in which the amount of special substance needs to be controlled. Therefore, /ʔəm1/ have [-large amount of substance] as their important component, showing a small amount of the substance.

A large amount of fat or oil is used in the process of /zan5/ but /saw2/, /zim1/ needs less amount of fat than /zan5/ in different degree. This means /zan5/ has [+large amount of substance] as its distinguished component, and [-large amount of substance] is the distinguished component of the others.

* Food submergence: [+submergence] vs. [-submergence]: The feature [-submergence] is the semantic component for the processes of cooking: /h p5/, /do2/ because the food is cooked by hot steam on a rack.

* Food proportion: [+big proportion] vs. [-big proportion]: Food proportion is another kind of semantic component, /nuɤŋ5/, /quǎj1/ are marked as [+big proportion] and /zɑŋ1/ is marked as [-big proportion] because the process of /nuɤŋ5/, /quǎj1/ is used for bigger size of meat than that of /zɑŋ1/

* Special kinds of utensils: [+rack] vs. [-rack]: Different utensils are used for different purposes. The rack [+rack] is used in many process such as /do2/, /h p5/. For /do2/, /h p5/, a rack helps the food not to be submerged in the substance used for cooking. For /nuɤŋ5/, /quǎj1/, the food is put on a rack to be closely exposed to the heat. A spit is used for /quǎj1/ for the convenience in turning the food on a rack.

A pan is used in the /zɑŋ1/ process, while a bamboo section is used in /lam1/. The processes of /h m2/ and /ʔəm1/ has a lid on to keep the heat in the pot in order to help tenderize the food.

* Special ingredients added: [+special ingredient] vs. [-special ingredient]: Some ingredients are specially added for some cooking processes. /lam1/ needs coconut cream, sesame, ginger as their special ingredients, while /t n2/ require some herbals and garlic, pepper... are important ingredients for /χɔ1/.

* Specific purposes: [+specific purpose] vs. [-specific purpose]: All processes which use the water-based substance such as /do2/, /cuŋ1/ may different in their purposes. The process of /do2/, has the purpose of making food glutinous while /cuŋ1/ has the purpose of making food condensed.

/nuɤŋ5/ and /quǎj1/ are similar in their processes, except their purposes. /quǎj1/ needs an amount of oil/fat covered the surface of the food while /nuɤŋ5/ does not require it.

* Special actions: [+special action] vs. [-special action]: To accomplish the desired purposes of processes, some specific actions are needed. For instance, in /saw2/, /zɑŋ1/, one has to stir the food while it is being cooked. In /saw2/, the ingredients are cooked with fat, or vegetable oil, with fish sauce, salt (moderately), stir on the fire thoroughly while the food cooked by /zɑŋ1/ needs to be stirred continuously.

/nuɤŋ5/ may use a thin film of oil and the food has to be turned on both sides until done.

3.2.5. Structure of Vietnamese cooking terms

To organize these cooking terms of processing food into a structure, it is necessary to describe them in the hierarchical from to show the semantic relations among them. Thus, all these 20 cooking terms mentioned earlier will not come under any super ordinate term but will be grouped as terms in the same lexical field.

- Processing food by moist heat method

Figure 3. Vietnamese cooking terms concerning Moist heat method

/nuɤŋ5/	/hɣp5/	/luok6/					/bak5/	/c n2/	/n w5/
/lam1/	/do2/	/tɣn2/	/saw5/	/χɔ1/	/ʔəm1/	/h m2/, /niŋ1/			

* In the above figure, /lam1/ is considered a partial hyponym of /nuɤŋ5/ since it shares a common feature with /nuɤŋ5/ since the bamboo tube is put next to the fire to get the heat.

* /hɤm1/, /niŋ1/ are complete synonyms, which processed in small heat source and in a long time.

* /do2/, /hɤp5/, /tɤn2/ are methods of processing foods that do not contact with the heat directly and cooked by water steam. However, /do2/ often used for glutinous rice, /hɤp5/ usually used for root vegetables (potatoes, cassava...), and /tɤn2/ used for meat.

* /luok6/, /saw5/, /ɤɔ1/, /ʔom1/ are methods of processing foods use vigorous action of heat to boiling water.

- *Processing food by dry heat method*

Table 4. Vietnamese cooking terms concerning Dry heat method

/nuɤŋ5/	/quǎj1/	/zɑŋ1/
/lam1/		

In the above figure, /lam1/ is a partial hyponym of both /quǎj1/ which is in the Dry heat method group, and /nuɤŋ5/, which belongs to the Moist heat method group.

- *Processing food by dry heat method using fat:*

Table 5. Vietnamese cooking terms concerning Dry heat using fat method

/saw2/	/zɑn5/	/zim1/
/quǎj1/		

In the above figure, /quǎj1/ is a partial hyponym of both /saw2/ which is in the Dry heat using fat method group, and /nuɤŋ5/, which belongs to the Dry heat method group.

4. Discussion and Conclusion

The case of the word /lam1/ is quite interesting because it could be a loanword from the Tai-Kadai (Nguyễn Tài Căn, 1995). From the data that we have confirmed that this cooking term does not belong to the Kinh (the majority group in Vietnam today and hardly having "nomadic lifestyle"/ shifting cultivation (agricultural system in which land is cultivated temporarily then abandoned to revert to their natural vegetation).

Actually, with the current document conditions, what we want to further this study is to build a panorama of regional cooking terms in Vietnam (possible an Ethno-semantic study) in order to discuss the similarities and differences between specific regions and localities.

If the data allows, we would like to study the cooking terms among Southeast Asian countries. The case of /luak3/ in Thai may provide us interesting insights and the similarities, differences in culture between two ethnic groups who do not share the same territory.

Since the Tai (Thái in Vietnamese) people in Vietnam are said to be the owner of wet rice cultivation (Phan Ngoc and Pham Duc Duong, 1983) so we believe that, in the

vocabulary of wet rice agriculture in general and cooking terms in particular, has a certain interference and is a "gold mine" for historical linguistics researching.

Acknowledgement

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IMPLEMENTING THE NEW GENERAL EDUCATION PROGRAMME (2018) IN HO CHI MINH CITY UNDER THE INFLUENCE OF DIGITALISATION

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Abstract

Hồ Chí Minh City is one of Việt Nam's economic, financial, cultural, and educational hubs. Being the leading economy, the city has contributed around 30 percent of the total national income. With over 1,7 million students, Hồ Chí Minh City's ambitious plan on applying The New General Education programme (2018) was and has had significant achievements. The influence of the 4th Industrial Revolution on all sectors, including education and training, has provided Hồ Chí Minh City with broad opportunities to successfully apply The New General Education programme via digitalisation.

Keywords: *Hồ Chí Minh, digitalisation, education*

1. Introduction

With the crucial role of education and training and the current situation, human resources is one of the determining factors in national development. Having researched on the undertakings of basic and multifaceted educational change of Việt Nam Social Republic, the author analyses the current situation in executing The New General Education programme (2018) in Hồ Chí Minh City. The analysis includes the effects of digitalisation on the city's educational programmes, through which provide suggestions on applying achievements of the Fourth Industrial Revolution to digitising the city's education, contributing to the general educational changes.

The broad influence of the Fourth Industrial Revolution has provided great opportunities for countries and territories, the 13th National Congress of the Party noted, "The rapid evolution of science, technology, innovations, and the Fourth Industrial Revolution has placed a multi-dimensional impact on a global scale. Science - technology and innovation are determiners for the competitiveness of each country. Digital technology will promote the development of the digital economy and digital society, change the governmental management method, production and business models, consumption and cultural and social life" (Communist Party of Vietnam, 2021). The Party's view on digital transformation is institutionalised by the Government by Decision No. 749/QĐ - TTg dated June 3, 2020, approving the National Digital Transformation programme to 2025, with orientation to 2030 in which identified the basic goal of the programme: "The dual goal is to develop the digital government, digital economy, and digital society, and to form Vietnamese digital technology enterprises capable of going global.. ." (Prime Minister, 2020).

As one of the country's largest economic hubs, as well as a major cultural and educational centre in the southern region, the city has been implementing the Party's policy and the Government's project on national digital transformation and building a digital economy, digital government, promoting the experiences gained in the period (2016 - 2020) when implementing the programme of information technology application in the management and construction of e-government. Resolution of the 11th Party Congress of Hồ Chí Minh City for the term (2020 - 2025) when determining the overall development goal of the city by 2030 with a vision to 2045 in which the digital economy and digital government are important motivation noted, "... mobilising all resources, taking advantage of the opportunity of the fourth industrial revolution; improve the effectiveness and efficiency of state management..." (Hồ Chí Minh City Party Committee, 2020). To accomplish the set goals, the City Party Committee identified the task of building the Party Committee and the City government, emphasising the need for "fast and sustainable economic development on the basis of strong application of science - technology, innovation... developing the digital economy and circular economy... promoting digitalisation, and constructing digital government..." (Hồ Chí Minh City Party Committee, 2020).

It is clear that digitalisation and building digital government are one of the important goals and key tasks identified by the City Party Committee in order to promote the city's socio-economic development in the direction of sustainable development based on innovation and creativity.

Implementing the national digital transformation programme and the policy of the City Party Committee, on July 3, 2020 issued the decision No. 2393/QĐ-UBND approving the digital transformation programme of Hồ Chí Minh City with a vision to 2030, "Hồ Chí Minh City will become a smart city with fundamental and comprehensive innovation in the operation of the digital government, digital businesses, and the prosperity and civilisation of digital society" (Hồ Chí Minh People's Committee, 2020). With a defined 10-year vision, based on existing resources, experiences and achievements in building e-government in the period (2016 - 2020), the City identifies specific goals for digital transformation and builds digital government by 2025 as a basis to promote the digital transformation process at all ministries, departments, and units of the City. In order to improve the efficiency of digital transformation and speed up the process, the City has issued the Digital Transformation Evaluation Index of Ho Chi Minh City including 6 main indicators, with 32 sub-indices (1. Received). digital literacy, 2. Digital institutions, 3. Digital infrastructure, 4. Digital human resources, 5. Cyber Information security, 6. Digital transformation activities) (Hồ Chí Minh City People's Committee, 2023). This is an important basis for ministries, departments, and units to build their own digital transformation plan.

2. Method

To carry out his research, the author uses historical methods and logical methods mainly to analyse the digital transformation guidelines and policies of the Việt Nam Communist Party and the National Digital Transformation programme of the Government as a theoretical basis for the implementation of digital transformation in Hồ Chí

Minh City. The method is used by the author in analysing digital transformation policies and measures of the Hồ Chí Minh City Party Committee, the city's digital transformation project and digital transformation criteria as the basis for ministries, departments, and units to implement and promote their digital transformation activities. Using the analysis method, the author clarifies the actual status of the implementation of the New General Education programme (2018) in Hồ Chí Minh City to identify the results and arising problems, thereby making recommendations for the implementation of the programme in terms of digital transformation.

3. Results

The implementation of the New General Education programme (2018) under the ongoing digital transformation in Ho Chi Minh City has gained many achievements contributing to its socio-economic development. The Party Congress of Hồ Chí Minh City (term of 2020 - 2025) oriented, "To build and develop high-quality human resources, and perfect the education system towards open education, lifelong learning and building a standardised, modern and internationally integrated society" (Hồ Chí Minh City Party Committee, 2020). With such orientations, it is clear that the determination of the City Party Committee in renovating general education meets practical requirements, especially in the context of digital transformation.

Implementing the programme of the City Party Committee, the City People's Committee directs its education sector to implement "quality improving of comprehensive education; implementing synchronously and effectively according to the 2018 General Education programme plan, new textbooks; enhancing training and retraining to prepare for the coming years" (Hồ Chí Minh City People's Committee, 2020, Directive). The city's education has proactively carried out step-by-step the plan to comprehensively renew its general education in terms of great human resources, facilities, teaching equipment and materials to implement the 2018 General Education programme, and continued to increase the number of teachers and educational administrators with high quality and reasonable management.

The Department of Education and Training has directed to properly implement the education curriculum and teaching plans, conforming to the knowledge and standards and the orientation to develop students' ability, and to adjust education-focused content based on the current general education programme in a reasonable and simple way, aiming to fully meet the requirements of the 2018 general education programme as well as be suitable for the students.

Promoting the application of information technology and utilising the achievements of the Fourth Industrial Revolution, the city's education sector has initiated new methods in teaching and pedagogical organising, eyeing to become modern, active, and to promote students' ability; it also been applying different teaching methods, such as differentiated instructions, individual teaching, project-based teaching, outdoor teaching, extra-curricular activities, practical experiences, application of information technology. Educational institutions continue to actively implement the general education programme in the direction of the 2018 general education programme-oriented approach; regularly and effectively implement active teaching methods, forms and techniques; improve the quality of

examination - evaluation, especially the National High-school exam; actively renovate the contents and methods of vocational education and training in general in association with the city's economy. With the efforts in implementing the plan of comprehensive general education renovation, the city has been achieving important results.

Hồ Chí Minh City's education scale has grown in both quantity and quality, meeting the learning requirements of its students. The city is also able to maintain and develop its educational activities, increasing the numbers of teachers and educational staff, improving education quality to gradually meet the requirements of the reformation of educational programmes and methods. According to statistics in the Final Report of the 2021-2022 school year of the city's Department of Education and Training, the city has 286 secondary schools with 9,993 classrooms and 11,046 classes, 17,293 teachers and 447,940 students; 204 highschools with 6,548 classrooms, 5,915 classes, 12,005 teachers and 232,350 students (Hồ Chí Minh City Department of Education and Training, Secondary Education Department, 2022).

Besides the achieved results, the process of implementing the New General Education programme (2018) in the city has a number of issues raised:

The innovation of teaching methods and techniques, testing and evaluation towards developing the quality and capacity of learners is also facing many challenges. The application of technological achievements to the examination and evaluation of the new general education programme has not been shown in a synchronous and effective manner.

Contrary to the majority of teachers in the city who have well implemented the process of reforming teaching forms and teaching methods and promoting the positivity and initiative of students, there is still a part of teachers who have not kept up with the change. A large number of teachers have not met the requirements of using technology in teaching.

There is a shortage of teachers, especially teachers of integrated subjects at secondary level such as natural science, history - geography, computer training, foreign languages and art subjects.

Despite the improvements of educational infrastructure, it is still unable to meet the actual needs. The lack of schools and facilities in some districts, especially in the periphery areas with rapid increase in population, leads to classes having an overwhelming number of students. Moreover, the lack of day-long classes causes certain difficulties in improving the quality of teaching and learning conforming to the programmer's goal.

4. Discussion and Conclusion

In order to improve the effectiveness of the implementation of the New General Education programme in the context of digital transformation in Hồ Chí Minh City, it is necessary to pay attention to the following issues:

Firstly, raising awareness about digital transformation in the education sector among officials, teachers and students about the impact of digital transformation on education. In addition to propaganda activities, the education sector needs to promote training in digital knowledge and digital skills for education administrators, teachers and students.

Secondly, synchronously build a shared digital data source in the city's educational system. Building and synchronising a shared digital data system in the education sector will

contribute to improving the efficiency and effectiveness of educational management, saving time, effort, and monetary resources. Building a unified education data system throughout the city, including electronic lectures, electronic libraries, etc. will make an important contribution to overcoming the disparity in educational enjoyment conditions between areas of the city.

Thirdly, facilitate investment in educational infrastructure, especially technology, thus promoting creativity and innovation among teachers, promoting innovative teaching and assessment according to the requirements of the New General Education programme (2018). It is also necessary to have a solution to share digital teaching resources between educational institutions in each district to effectively utilise shared resources.

Fourthly, promote the application of technology in education to training and retraining of teachers, with the aim to promote self-study and self-research in teachers under the support and control of technology while requiring minimum resources.

Fifthly, facing the problem of new subjects such as integrated subjects and art subjects, it is recommended to open free online courses on digital resources to create favourable conditions for schools to use and apply those lessons.

Hồ Chí Minh City's education has been seeing new opportunities in the context of digital transformation. With the dynamism and creativity in education, digital transformation is one of the important solutions contributing to overcoming the limitations of the implementation of the New General Education programme (2018) in the city.

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A WEB-BASED SOLUTION TO THE UNSOLVED SOCIAL-ECONOMIC PROBLEM: CARING FOR STROKE PATIENTS AT HOME IN VIETNAM

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Abstract

With the large number of stroke patients in Vietnam and the difficulty to provide special care to them when they return home from hospital, a web-based solution can effectively connect family members of stroke patients with healthcare professionals specializing in caring for stroke patients. This allows family members to find a suitable healthcare professional faster, cheaper, and more reliably. This web-based also includes a database of healthcare professionals.

Key words: *Stroke, Web-base, Caring*

1. Introduction

According to the World Health Organization (WHO), approximately 17 million people suffer from a stroke each year. Of these, 5 million die, and another 5 million are left with permanent disabilities, resulting in an increased economic burden on families and communities.

In the United States alone, nearly 800,000 people suffer from a stroke each year, with 82%-92% being caused by coronary artery disease. Stroke is one of the top five causes of death and disability among adults and costs over \$72 billion annually (Mozaffarian, 2015).

In Vietnam, the stroke rate has increased from 200/100,000 people/year in 1990 to 250/100,000 people/year in 2010. Each year, Vietnam records approximately 200,000 new cases of stroke and 11,000 deaths due to it.¹

While strokes often occur in the elderly due to cerebral ischemia and bleeding in the brain, there has been an increase in young stroke patients. This is largely due to hypertension – the leading cause of stroke – among young people.

Factors such as elevated work pressure, lack of exercise, obesity, high protein diets, and alcohol consumption can all contribute to an increased risk of blood fat and hypertension over time. These factors increase the likelihood of high blood pressure which makes stroke more likely.

After having a stroke, patients often experience sequelae of movement disorders such as paralysis, cognitive disorders, and difficulty in eating and drinking. They may also suffer from psychological and emotional disorders, Kleindorfer (2021).

¹ <https://dotquy.kcb.vn/hieu-dung-ve-dot-quy/tu-vong-do-dot-quy-o-nguoi-tre-tuoi-ngay-cang-gia-tang.html>

Recovery methods for stroke patients must be diverse and multimodal due to the variety of forms of disability that a stroke patient may suffer. These methods may include drugs, surgical interventions, rehabilitation interventions using machines, and hands-on exercises at various stages, Churojana (2019).

The WHO divides the rehabilitation process for stroke patients into four stages:

1. The patients enter the early recovery phase after the first 48 hours of life-saving priority.
2. The second phase, which takes place after 48 hours to three months, is the "golden" phase.
3. The third phase takes place three to six months after the stroke, also a good but slower recovery period.
4. After six months, the patient enters the chronic stage.

Therefore, stroke patients need to begin rehabilitation as soon as possible after treatment to increase their chances of recovery.

It is estimated that more than 30 million people are in need of rehabilitation services in Vietnam. However, according to a survey conducted by The Ministry of Health in 2020, only about 40% of people have access to rehabilitation services.

Meanwhile, due to limitations in Vietnam's medical care system and high hospital costs, many stroke patients are discharged before they are fully recovered and must be cared for at home.

Stroke patients need special care, especially in the early stages. Their family members often struggle to provide adequate care due to a lack of professional skills and time. Not only that, finding qualified caregivers for stroke patients can be difficult as there is no established market or platform for these services in Vietnam. Most connections are made through word-of-mouth referrals which can be narrow and unreliable.

On the other hand, technicians and nurses with expertise in stroke care also have difficulty finding suitable patients for their services; they are willing to provide home care for stroke patients. Interviewing with 24 technicians, nurses with expertise in stroke care shows that they utilize one-third of their free time to care for stroke patients on average.

Without proper and timely care from a qualified healthcare professional, stroke patients can suffer from lifelong complications or even death. Those who experience complications after a stroke may not only lose their ability to work but may also require lifelong care. This can have negative social and economic impacts on both the individual's family and society as a whole.

2. Method

To assess the needs and content of information necessary for the connection between family members of stroke patients and qualified healthcare professionals, interviews were conducted.

Interview with Stroke Patients' family members

- Size: 36 people

- Subgroup: Severe patients requiring intensive care (12 people); mild patients still in need of care (12 people); moderate patients (12 people).

Information about the patient's family was accessed through the Stroke Department of Bach Mai Hospital, Hospital of Hanoi Medical University, 103 Hospital, and Central Acupuncture Hospital.

- Interview content:

○ Assessing the need for information technology application in the connection between family members of stroke patients and healthcare professionals.

○ Identifying information that family members of stroke patients need to decide on home care service for their patient

Interview with Professionals caring for stroke patients

- Size: 24 people

- Subgroup: Referred by the family of severe patients (8 people); Referred by the family of mild patients (8 people); Referred by the family of moderate patients (8 people).

- Interview content:

○ Assess the willingness to provide information to connect with the patient's family.

○ Assess the extent to which information is allowed to be disclosed.

○ Evaluating the necessity of information technology applications in connection.

Interview results

- About the need to apply information technology to connect

Both the patient's family and healthcare professionals specializing in caring for stroke patients highly appreciate the need for connectivity through an information technology application.

A quote from a patient's family member: "Very necessary. If there was an application to connect soon, I would not have struggled to find someone to take care of my wife. The good thing is that I will have more information to choose the right person."

A quote from a healthcare professional specializing in caring for stroke patients: "I regret that there was no early application of information technology to connect us and patients. Such an application is essential. There are cases where I believe, if I had had acupuncture earlier, they would have recovered. Unfortunately, I'm late because we don't know each other."

- About the current connection difficulties

Both the patient's family and healthcare professionals specializing in caring for stroke patients confirmed that their connection was through word-of-mouth. Therefore, their range of options is very limited and it is possible that they may not find the right person.

- About the information needed when connecting

The following information is needed when a patient's family wants to learn about a healthcare professional specializing in caring for stroke patients:

1. Full name
2. Gender
3. Age
4. Hometown
5. Contact phone number
6. Professional qualifications
7. Work experience
8. Working time
9. Price for service
10. Personality
11. Assess the satisfaction and reputation of those who have rented before

The following information is needed by healthcare professionals specializing in caring for stroke patients:

1. Patient's condition
2. Address to take care of
3. Willingness to pay
4. The timetable for caring

- About the readiness to provide information for the connection

All healthcare professionals specializing in caring for stroke patients are willing to provide information upon request to better connect them with the patient's family. Some suggest not publishing their personal information on a connected application while it is still in the beta stage. After the application is completed, the majority of interviewees agreed to make their personal information public, while others suggested keeping it hidden.

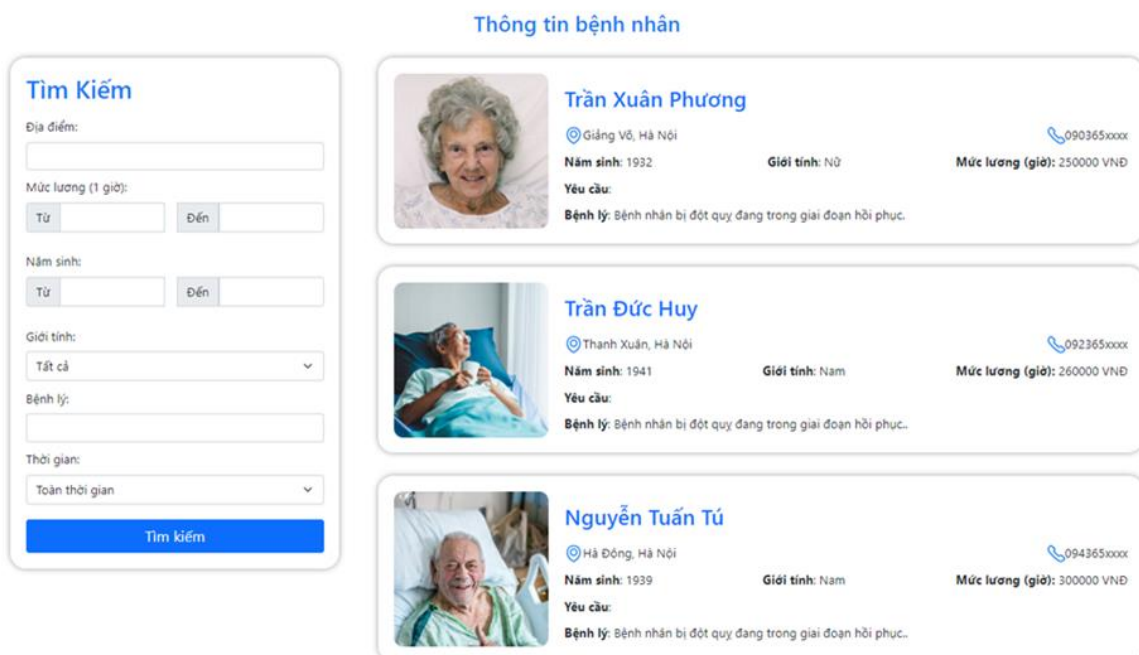
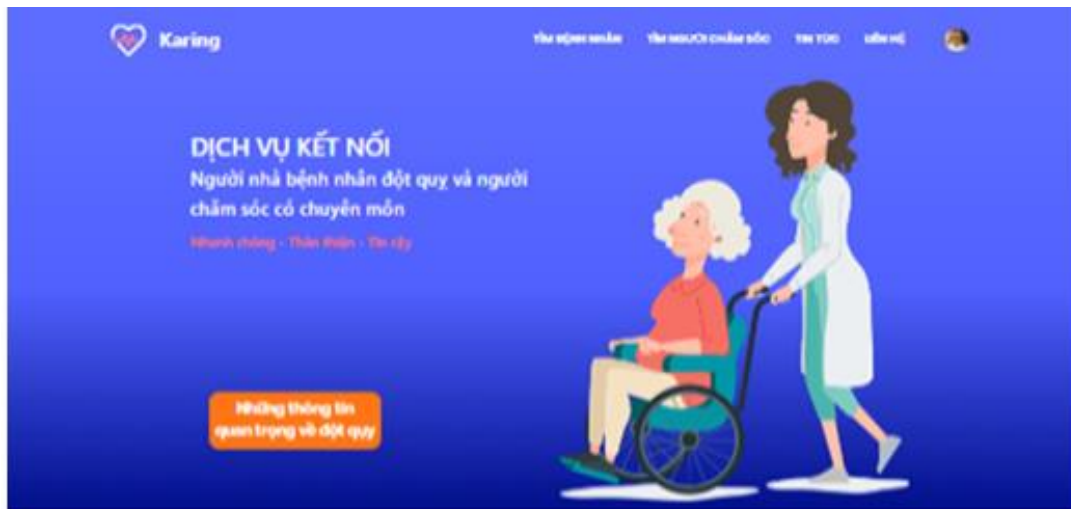
3. Web-Based Design and Setting Requirements

Based on the characteristics, requirements, and features of information technology application models in supply-demand connection (such as websites and web apps), and considering the necessary features for an effective connection between family members of stroke patients and healthcare professionals specializing in caring for stroke patients, a web-based application is suitable and applicable. An app application will be developed in the next stage when the database is large enough.

The main features and requirements of the website include:

- Open database of the patients and persons with expertise in caring for the stroke patient. The information must be verified before publishing on the Website.
- Search engine based on different criteria for finding a suitable person from the database.

Following is the initiate development of website to connect family members of stroke patients with healthcare professionals specializing in caring for stroke patients.



Thông tin người chăm sóc

Tìm Kiếm

Địa điểm:

Mức lương (1 giờ):
 Từ Đến

Năm sinh:
 Từ Đến

Giới tính:

Trình độ:

Thời gian:

Tìm kiếm

Trần Vinh Hiếu (001)
 Hương Long, Hương Khê, Hà Tĩnh 086748xxxx Năm sinh: 1984
 Kinh nghiệm: 15 năm Giới tính: Nam Mức lương (giờ): từ 250000 VND
 Trình độ: Bác sĩ, điều dưỡng
 Đánh giá: Chu đáo, tận tình, cẩn thận trong công việc, có thái độ nghiêm túc, chuyên nghiệp trong mọi việc.

Nguyễn Bá Long
 Tân Yên Mỹ, Yên Mỹ, Hưng Yên 0988100089 Năm sinh: 1987
 Kinh nghiệm: 9 năm Giới tính: Nam Mức lương (giờ): từ 260000 VND
 Trình độ: Bác sĩ YHCT.
 Đánh giá: undefined

Nguyễn Duy Cường
 Song Phương, Hoài Đức, Hà Nội 0954495236 Năm sinh: 1986
 Kinh nghiệm: 15 năm Giới tính: Nam Mức lương (giờ): từ 300000 VND
 Trình độ: Thạc sĩ, Bác sĩ YHCT
 Đánh giá: undefined

4. Conclusion

With the help of information technology, a web-based solution can effectively connect family members of stroke patients with healthcare professionals specializing in caring for stroke patients. This allows family members to find a suitable healthcare professional faster, cheaper, and more reliably.

This web-based solution supports fast and reliable connections between stroke patient families and professional caregivers. It also improves the effectiveness of home stroke treatment, thereby reducing mortality and complications, and helping patients better recover their health by quickly and conveniently connecting suitable caregivers. As a result, they can soon return to normal life and continue to participate in work. This helps to reduce the social and economic burden on the family of the stroke patient.

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**SESSION 8:
SUSTAINABLE DEVELOPMENT**

FACTORS AFFECTING GREEN CONSUMPTION BEHAVIOR OF CITIZENS IN HANOI CITY, VIETNAM

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Abstract

The aim of this study is to determine factors influencing green consumption behaviors of consumers in Hanoi City, Vietnam. Based on thoroughly researched secondary data, this conceptual paper suggests a framework integrating the so far incoherent frameworks as proposed by previous authors. A sample of 260 respondents was collected via both online and offline surveys and data were analyzed by multiple regression model. The research findings indicated that 04 factors affecting green consumer behavior including (1) environmental concern, (2) social trend, (3) product price (4) social influence, (5) product availability and (6) perceived consumer effectiveness. From these, some suggestions are proposed to promotion of green consumption of citizens in Vietnam, to enhance the sustainable development of the nation.

Key words: *Green consumption, green consumer behavior, green purchasing, green consumer decision.*

1. Introduction

Public concern for environmental issues has gradually but steadily increased over the past three decades since the inception of Earth Day (Kim and Choi, 2005) appealing to preserve nature and biodiversity. Marketers have reacted to consumers' growing environmental consciousness by developing 'environmental-friendly' products (Kaufmann, H. R et al., 2012).

Green products are defined as products that are environmentally friendly, have little impact on the natural environment and have a green life cycle (Kumar & Ghodeswar, 2015). In other words, at every stage of the product's life cycle, from design and decision on raw materials to production, storage, transportation, use and post-use, the product must have minimal impact to the environment. According to Tandon and Sethi (2017), green products are classified into two main categories: consumer products, technical products and household appliances.

Green purchasing behavior can be translated to the act of consuming products that are conservable, beneficial for the environment, and responding to environmental concern

(Lee, 2009) Responding to environmental concern, one of the way related to waste management system is by doing the 3R (Reduce, Reuse, and Recycle). ‘Green consumption’ on the other hand, is normally related to environmentally responsible consumption where consumers consider the environmental impact of purchasing, using, and disposing of various products, or using various green services (Moisander, 2007).

Green purchase indicates customers' environmentally responsible buying behaviors for eco-friendly products/services in order to reduce the harm to the environment (Joshi & Rahman, 2015)

It is notable that pro-environmental behaviors differ from general purchase-related consumer behaviors. General purchase behavior is driven by an assessment of its benefits and costs that are of immediate relevance solely to the individual consumer performing the behavior. By contrast, environmentally conscious behavior is unlikely to deliver instant personal gain or gratification, but rather a future-oriented outcome (e.g. cleaner environment) that often benefits society as a whole (Mc Carty and Shrum, 2001; Kim and Choi, 2005)

Environmentally responsible purchasing is vital as unplanned purchasing of goods can severely damage the environment. Grunert (1995) reported that consumer household purchases were responsible for 40% of the environmental damage. Consumers possess the capability to prevent or decrease environmental damage by purchasing green products.

2. Literature Review

Green purchasing refers to the purchase of environmentally friendly products and avoiding products that harm the environment (Chan, 2001). Green purchasing is most often measured as green purchase intention and behavior. Green purchase intention refers to consumers’ willingness to purchase green products. Intentions capture the motivational factors that influence green purchase behavior of consumers (Ramayah, Lee, and Mohamad, 2010). Green purchase behavior represents a complex form of ethical decision-making behaviour and is considered a type of socially responsible behavior. As a socially responsible consumer, the green consumer “takes into account the public consequences of his or her private consumption and attempts to use his or her purchasing power to bring about social change” (Moisander, 2007). A green product is one which satisfies consumers’ needs without damaging the environment and contributes towards a more sustainable world. These products are environmentally superior and have low environmental impact. Green products use material safer to the environment, are recyclable and require less packaging (Chen and Chai, 2010). Some examples of green products are organic products, energy efficient light-bulbs, herbal products, eco-friendly washing machine, etc.

Certain studies adopted TPB as the underpinning theory and other studies included some of the components of TPB as a part of the research constructs (Elhoushy and Jang, 2020; Wang et al., 2020b). However, most of these studies often gave inconclusive or even controversial outcomes (Wang et al., 2019, 2020c). As TPB is a behavioral theory based on a causal process, it ignores other essential factors (Ulker-Demirel and Ciftci, 2020), such as impulse factors, feelings, private standards (Sniehotta et al., 2014); unconscious motives

and spontaneous choices (Yuzhanin and Fisher, 2016); and personal decision criteria (Ulker-Demirel and Ciftci, 2020). This leads to the identification of the attitude- intention/behavior gap by some researchers who argue that factors influencing the magnitude of this gap have not been systematically investigated (Jacobs et al., 2018).

Value-attitude-behavior (VAB) model is a classical model in the literature of social psychology, which investigates the relationship between value and behavior through attitude (Jan et al., 2019). Specifically, the VAB model summarizes specific extant literature on natural food consumption and leads to the development of corresponding hypotheses (Jacobs et al., 2018). Since then, researchers have employed the VAB model in different contexts, such as local food consumption (Zhang et al., 2020), green customer loyalty (Hur et al., 2013), green hotel patronage (Rahman and Reynolds, 2019), and pro-environmental behavior (Tamar et al., 2020).

Various theories exist which assert that attitude alone does not affect behaviour; there are other factors that not only influence behaviour, but also the strength of the attitude-behaviour relationship. Guagnano et al. (1995) introduced Attitude-Behaviour-Context (ABC) model to better understand human behavior. According to this model, consumer green behavior is not only determined by attitude, but also by contextual factors. Favorable contextual factors strengthen whereas unfavorable contextual factors diminish the strength of the attitude-behaviour relationship. Olander and Thøgersen (1995) introduced Motivation- Ability-Opportunity (MAO) model for understanding consumer behaviour. MAO model used two constructs - ability and opportunity, as indispensable pre-requisites to green consumer behavior. The ability construct incorporates both habit and task knowledge, whereas the opportunity construct incorporates facilitating conditions or 'opportunity' to perform the behaviour. According to this model, consumers' positive attitude will lead to desired behaviour only if they have the ability and the opportunity to carry out the expected behaviour. For example, green purchase will not happen without easy availability of green products. Recently, Phipps et al. (2013) introduced reciprocal deterministic theory to understand sustainable consumer behavior. This model emphasized the importance of past behavior and considered it as an indicator of future sustainable behaviour. The model suggests that personal factors such as attitude, along with past sustainable behaviors and sociocultural environments, affect future sustainable behavior. It is thus clear from the above discussion that consumer behavior is not only affected by attitude, but also by various other personal and situational factors. Further, these factors can either strengthen or weaken the strength of attitude-behavior relationship.

Major environmental problems and depletion of natural resources forced human civilization to focus on environmentally responsible consumption. More and more organizations are producing environmentally friendly products today and consumers are also showing increased willingness to purchase such products. The authors conducted an extensive review of 53 empirical articles on consumer green purchase behaviour and identified major factors influencing consumer green purchase decisions. Further, the authors offer probable explanations for the observed inconsistency in green purchase attitude-

behaviour. Additionally, the variables that have received most attention in literature and those that have largely been overlooked were identified.

In addition, Ahmad and Juhdi (2008) notified that perception towards organic food, awareness on government action and support, beliefs about product safety for use, belief about product friendliness to environment, availability of product and product information are the most influential factors that affect consumers' pro-environmental behavior. Partially confirming the view of Ahmad and Juhdi, Panni (2006) as well as Ismail and Panni (2008) notified that availability of information on green products as well as the availability of such products significantly influences consumers' pro-environmental behavior.

To date, social influence has been found as the most important factors that affect green purchasing behavior of adolescents, however there are several more factors which are: Environmental attitude, Environmental concern, Perceived seriousness of environmental problems, Perceived environmental responsibility, Perceived effectiveness of environmental behavior, and concern of self-image in environmental protection. (Lee, 2008).

Hughner (2007) found that while many consumers showed a positive attitude towards purchases of organic food products (67%), only a small number of consumers (4%) actually purchased those products.

Environmental Concern and Social Trend

Dunlap and Jones (2002) defined environment conscious as the extent to which individuals are aware of environmental issues and show support to solve them or signify the readiness to contribute personally to their solution.

Beckford et al. (2010) and Cornelissen et al. (2008) also found in their studies that environmental attitude has a significant impact on consumer environmental/green purchasing behavior. Mostafa (2009) found that environmental knowledge has a significant impact on the consumers' intention to buy green products. So from the above discussion the first hypothesis for a correlated set of consumer behavior variables can be developed:

H1: Environmental concern has a positive influence on the consumers' green purchasing behavior.

H2: Social Trend has a positive influence on the consumers' green purchasing behavior.

Product Price

It has been reported in some studies that higher price outweighed ethical considerations and widened the attitude behaviour gap in case of purchase of green products (Connell, 2010; Gleim et al., 2013; Vermeir and Verbeke, 2006). However, low price sensitivity of consumers was found to positively affect green purchase behaviour (Aertsens et al., 2011; Eze and Ndubisi, 2013; Lea and Worsley, 2008). Conversely, high price sensitivity negatively affected (Ma et al., 2013) green purchase behaviour of consumers.

Besides, customers tend to compare the price of green products with the benefits that green products bring to the environment (Kumar & Ghodeswar, 2015).

H3: Product Price has a positive influence on the consumers' green purchasing behavior.

Social Influence

Many studies found subjective or social norms and reference groups to have a positive correlation with purchase intention and actual purchase of green products (Eze et al., 2013; Liu et al., 2012; Welsch et al., 2009) while studies found that societal norm had a negative relationship with purchase intention and actual purchase behaviour (Connell, 2010; Lee, 2011). Subjective norm was also found to have an indirect influence on consumer green purchase behaviour as it influenced green attitudes that further affected green purchase behaviour (Gadenne et al., 2013; Smith et al., 2010; Welsch et al., 2009; Salazar, Oerlemans, and van StroeBiezen, 2013). Findings further reveal that social and reference groups, especially peers and other individuals with close proximity to consumers have a stronger influence on consumers' green purchase decision-making process (Lee, 2010; Salazar et al., 2013; Tsarenko et al., 2013). To summarize, it can be said that subjective or social norm and reference groups have a positive relationship with consumer green purchase behaviour.

H4: Social influences have a positive influence with green purchasing behavior

Product availability

Some studies reported that limited availability of a product had a negative influence on consumer green purchase intention and behavior (Young et al., 2010); Most studies showed that limited availability and difficulties in accessing green products were major barriers to purchasing environmentally sustainable products (Padel and Foster, 2005; Young et al., 2010). On the other hand, easy availability of the green product positively affected green purchase behaviour (Tarkiainen and Sundqvist, 2005; Vermeir and Verbeke, 2008). Consumers generally don't like to spend a lot of time searching for green products; they prefer products that are easily accessible (Tanner and Kast, 2003; Young et al., 2010). Further, consumers generally look for convenience in purchasing (Fotopoulos et al., 2002; Padel and Foster, 2005). Thus, it can be said that limited availability and inconvenience in procuring products act as barriers and increase the gap between consumer positive attitude and actual behaviour towards purchasing green products.

H5: Product availability have a positive influence with green purchasing behavior

Perceived consumer effectiveness

Some studies found a positive correlation between perceived consumer effectiveness and purchase intention/adoption of green products (Gleim et al., 2013; Gupta and Ogden, 2009). Perceived consumer effectiveness was also found to indirectly influence consumer purchase intention since it significantly affected consumer attitudes, subjective norms and perceived behavioural control which further determined consumer purchase intention (Kang et al., 2013). Hence, it can be said that there exists a positive correlation between perceived consumer effectiveness and green purchase intention and behaviour.

Kim and Choi (2005) argued, that individuals with a strong belief that their environmentally conscious behavior will result in a positive outcome, are more likely to

engage in such behaviors in support of their concerns for the environment. Hence, self-efficacy beliefs may influence the likelihood of performing green purchase behavior. From the above discussion the sixth hypothesis for a correlated set of consumer behavior variables can be developed:

H6: Perceived Consumer Effectiveness (PE) has a positive association with consumers' green purchasing behavior.

3. Method

The target population for this research is the Hanoi dwellers who serve as respondents.

Inheriting previous research results, from the perspective of students' perception of school culture issues, the authors proposes a research model with 6 independent factors affecting Green Consumer Behavior, including: (1) environmental concern, (2) social trend, (3) products' prices (4) social influence, (5) products' availability and (6) perceived consumer effectiveness.

Proposed hypotheses are:

H1: Environmental Concern (EC) has a positive effect on University Culture

H2: Social Trend (ST) has a positive effect on Green Consumer Behavior

H3: Product Price (PP) has a positive effect on Green Consumer Behavior

H4: Product Availability (PA) has a positive effect on Green Consumer Behavior

H5: Social Influence (SI) has a positive effect on Green Consumer Behavior

H6: Perceived consumer effectiveness (PE) has a positive effect on Green Consumer Behavior

Table 1. Scales of the study

No	Variables	Contents	Sources
Environmental Concern			
1	EC1	I am very concerned about the environment.	Pickett-Baker (2008), Ozaki [10], Tseng et al (2013)
2	EC2	I would be willing to reduce my consumption to help protect the environment.	Zhao, Q., Wu, Y., and Zhu, X. (2014)
3	EC3	Major political-social change is necessary to protect the natural environment.	Paul, J., Modi, A., & Patel, J. (2016).
4	EC4	Anti-pollution laws should be enforced more strongly	
5	EC5	Environmental pollution can only be improved when we act to protect it.	Zhao, Q., Wu, Y., and Zhu, X. (2014)
6	EC6	Positive attitude towards green consumption has important implications for personal benefits and environmental protection	

No	Variables	Contents	Sources
7	EC7	I know how to choose products and packaging to reduce waste to the environment	Le Phan Hoa (2022)
Social Trend			
8	ST1	Green lifestyle is getting more and more attention	
9	ST2	The government has many measures to raise people's awareness about green lifestyle	
10	ST3	The government now encourages consumers to buy green products	Aijen, I. (2002)
11	ST4	Information and images of green products for environmental protection are widely communicated to citizens	
12	ST5	I believe in government efforts to enforce standards of environmentally friendly products	Scheneider et al. (2009)
Product Price			
13	PP1	The price of green products is usually higher than regular products	Saleki, Z. S., & Seyedsaleki, S. M. (2012).
14	PP2	The price of green products is suitable with product quality	
15	PP3	I feel pleased when I pay more for green products	Moser (2015), Yadav và Pathak (2016)
16	PP4	The quality of the product is worth the money I spent.	
17	PP5	High price of green products limit consumption	
Product Availability			
18	PA1	Green products are now being sold in many places	Moser (2015)
19	PA2	There are likely to be plenty of opportunities for me to purchase green products	
20	PA3	Manufacturers and distributors pay great attention to make it easy for consumers to recognize green products	
21	PA4	There are shops and supermarkets sold green products more and more	

No	Variables	Contents	Sources
Social Influence			
22	SI1	Most people who are important to me think I should purchase green products when going for purchasing.	Kumar và Ghodeswar
23	SI2	Many people around me use green products	
24	SE3	Most people who are important to me would want me to purchase green products when going for purchasing.	
25	SE4	People whose opinions I value would prefer that I purchase green products.	
26	SE5	Propaganda activities/green lifestyles of people around me affect me	Aijen, I. (2002)
27	SE6	Most people who use green food are guilty of active living	
Perceived consumer effectiveness			
28	PE1	Green lifestyle helps me to be more relaxed and pleased	
29	PE2	My family and I are healthier when using green products.	Shaharudin, M. R., et al (2010)
30	PE3	I feel like a person with a high social responsibility	
31	PE4	Buying green products is a good behavior	Le Phan Hoa (2022)
32	PE5	Green consumption behavior brings benefits to individuals and communities	Fishbein và Ajzen
Green Consumer Behavior			
33	GCB1	Going green brings many benefits to me	
34	GCB2	In future I will use green products more	
35	GCB3	I plan to spend more on environmental-friendly product rather than conventional product.	
36	GCB4	I will recommend green lifestyle to relatives, friends and colleagues.	
37	GCB5	I believe green consumption is becoming more and more popular and has a positive influence	
38	GCB6	Using green products is my right decision	

To answer the research questions, survey data were collected from some districts in Hanoi City, Vietnam. The questionnaire which was sent via both online and offline approaches. The respondents were asked to state how they agree by using a 5-point Likert scale (1 = highly disagree, 5 = highly agree) with agreement with components of culture in their university. From 2022 December to 2023 March, 260 responses in total were received and all were qualified and all valid samples.

In this study, a questionnaire comprising 29 determinants was designed to measure university culture. The Statistical Package for Social Science (SPSS 26.0) is used for data analysis.

4. Results

Of the 260 valid samples, there were 26.5% of the respondents were male compared to 73.5% of the total students who were female; 72.3% in the age from 35 to 55, 18.5% above 55 years old and 9.2% under 35 years old.

In order to test the reliability of each factor, Cronbach's alpha of each factor was computed as below:

Table 2. Cronbach's alpha scores

Factor	Observed variables	Mean	Std. Deviation	Cronbach's Alpha
Environmental Concern (EC)	EC1	3.59	.683	.792
	EC2	4.08	.736	.766
	EC3	3.93	.742	.774
	EC4	3.88	.764	.784
	EC5	3.91	.750	.761
	EC6	3.76	.713	.775
	EC7	3.79	.763	.775
Cronbach's alpha of EC factor: 0.801				
Social Trend (ST)	ST1	3.85	.740	.774
	ST2	3.73	.724	.740
	ST3	3.80	.734	.723
	ST4	3.88	.717	.708
	ST5	3.73	.712	.755
Cronbach's alpha of ST factor: 0.781				
Product Price (PP)	PP1	3.83	.728	.807
	PP2	3.78	.686	.777
	PP3	3.75	.712	.780
	PP4	3.73	.699	.771
	PP5	3.74	.720	.762
Cronbach's alpha of PP factor: 0.816				

Factor	Observed variables	Mean	Std. Deviation	Cronbach's Alpha
Product Availability (PA)	PA1	3.93	.732	.815
	PA2	3.95	.718	.782
	PA3	4.00	.758	.811
	PA4	4.07	.748	.815
	Cronbach's alpha of PA factor: 0.847			
Social influence (SI)	SI1	4.11	.764	.759
	SI2	3.92	.742	.743
	SI3	3.75	.748	.721
	SI4	3.86	.724	.708
	SI5	3.80	.711	.721
	SI6	3.79	.754	.743
Cronbach's alpha of SI factor: 0.767				
Perceived consumer effectiveness (PE)	PE1	3.94	.766	.669
	PE2	3.80	.733	.665
	PE3	3.79	.718	.697
	PE4	3.96	.696	.683
	PE5	3.83	.726	.685
Cronbach's alpha of PE factor: 0.727				
Green consumer behavior (GCB)	GCB1	3.83	.728	.731
	GCB2	3.78	.696	.723
	GCB3	3.75	.712	.713
	GCB4	3.59	.683	.750
	GCB5	4.08	.736	.723
	GCB6	3.93	.742	.725
Cronbach's alpha of GCB factor: 0.763				

The table indicates that Cronbach's alpha scores of 5 factors ranged from 0.727 to 0.816. Since 0.50 is the minimum value for accepting the reliability test (Nunnally, 1967), the results of factor analysis in this study are considered reliable.

Exploratory Factor Analysis (EFA)

The exploratory factor analysis (EFA) was conducted to test the validity of the measurement of six independent variables that met the requirements of Cronbach's Alpha reliability testing. By using SPSS ver 26.0, the exploratory factor analysis produced the results as presented in table 2 below. The results of EFA satisfied four elements: (1) Sig value. Bartlett's test = 0.000 <0.05; (2) 0.5 <KMO coefficient = 0.914 <1; Fraction of deductible = 60,754% > 50%.

Prior to multiple regression analysis, the 32 determinants were factor analyzed using principal component analyses with varimax rotation in order to identify the structure of determinants related to university culture. After 3 times to exclude variables EC1, EC4, EC6, PE4, ST1, SI4; SI3; and PE3, EC7.

The EFA analysis verified the four factors as predetermined in the questionnaire development as the table below:

Table 3. Factor rotation matrix result of independent variables

	Component			
	1	2	3	4
ST5	.763			
PP3	.686			
PE2	.645			
PP4	.639			
SI5	.634			
PP2	.630			
PP5	.609			
PP1	.579			
PE1	.547			
PA3		.808		
PE5		.795		
PA4		.774		
SI1		.761		
PA2		.757		
PA1		.689		
EC3			.733	
EC2			.663	
SI2			.629	
EC5			.563	
ST2				.824
SI6				.819
ST3				.583
ST4				.512

The number of factors was determined by retaining only the factors with an eigenvalue of 1 or higher. After removing 9 determinants, the first factor, Product Price (PP), comprised nine items: PP1, PP2, PP3, PP4, PP5, ST5, PE1, PE2 and SI5. The second factor, Product Availability (PA), consisted of six items: PA1, PA2, PA3, PA4, PE5, and SI1. The

third factor, Environmental Concern (EC) consisted of four items: EC2, EC3, EC5 and SI2. The fourth factor was related to Social Trend (ST), including ST2, ST3, ST4 and SI6.

With dependent variable, KMO = .812, Chi-square = 319.810 và the only one component extracted, accounted for 45.846% of the variation.

In order to investigate whether the independent variables (four factors) had significant impacts on the dependent variables (GPB), Pearson correlation and regression analyses were conducted.

Table 4. Pearson Correlation analysis

		GCB	PP	PA	EC	ST
GCB	Pearson Correlation	1	.849**	.538**	.837**	.586**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	260	260	260	260	260
PP	Pearson Correlation	.849**	1	.521**	.645**	.619**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	260	260	260	260	260
PA	Pearson Correlation	.538**	.521**	1	.538**	.462**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	260	260	260	260	260
EC	Pearson Correlation	.837**	.645**	.538**	1	.478**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	260	260	260	260	260
ST	Pearson Correlation	.586**	.619**	.462**	.478**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	260	260	260	260	260

***.* Correlation is significant at the 0.01 level (2-tailed).

Based on the results of Pearson Correlation analysis in table 3, the Sig. of all factors (PP, PA, EC, ST) > 0.05; therefore, there are correlations between them and the dependent variable (GPB).

Multiple regression analysis

To determine the importance of each factor to online reservation intention, a multiple regression analysis was conducted. Online reservation intention was the dependent variable, while the four determinant factors were the independent variables. All variables were entered at the same time. Table 4 reports the results of the multiple regression analysis.

Table 5. Multiple regression analysis

	Std. β	Sig.	VIF
PP	.512	.000	2.240
PA	-.014	.631	1.568
EC	.497	.000	1.902
ST	.038	.211	1.704
R2 = 0.865			
Adjusted R2 = 0.863			
ANOVA (F = 408.787), Sig = 0.000b < 0.05			

The result showed an adjusted R2 of 0.863, suggesting that about 86.3% of the variation in overall satisfaction was explained by the regression equation, and there is no multi-collinear phenomenon because the VIF of all factors < 10.

Based on the coefficient of each independent variable, it is possible to assess the impact of each variable on the dependent variable. The findings reveal that Product Price (PP) was the most important factor in explaining Green Purchase Behavior (GPB). Environmental Concern (EC) followed in importance. Besides, (PA) and (ST) do not guarantee reliability to have impacts on the dependent variable (GPB).

5. Discussion and Conclusion

This article has significant managerial implications. It informs policy makers and managers about the key predictors of consumers' green purchase behaviour. The findings showed that green consumer behavior is basically influenced by two main factors, which are environmental concern and product price. Besides, other factors also need to be considered for the purpose of improving green purchasing behavior.

The Green Consumption Conference (Oslo, Norway 1994) has said that green consumption is a way to use products effectively, save resources, reduce toxic substances and environmental pollution, and do not affect next generation needs. That is, minimizing the use of natural resources and harmful substances as well as waste and pollutants. It is important to understand that green consumption is not about "consumption less" but knowing how to consume more efficiently, better and using less resources.

Green consumption is currently considered the consumption trend of the century when the environment becomes a major concern of many countries all over the world. During the past decade, efforts have been made to implement policies and programs to successfully transform the industrial structure, making production processes cleaner and more efficient. However, businesses can only reduce the environmental impacts associated with production, but not address the environmental impacts related to the selection, use and disposal of products by consumers. Therefore, consumption plays an increasingly important role in solving environmental problems; Collaboration between producers, consumers and other stakeholders can lead to more sustainable solutions in the production-consumption system. In that context, integrating the efforts of stakeholders is a key issue to promote green consumption in the world in general and in Vietnam in particular.

For manufacturers, they need to make changes to show social responsibility, to enhance the brand image in the eyes of customers, in their sayings and actions, to avoid a communication crisis.

Businesses should focus on investing in aspects such as materials, usages, durability and design of products, because these are the factors that consumers care about first when choosing green products. In addition, businesses should also supplement certificates of safety standards for health and environment friendliness, in order to increase consumers' peace of mind and confidence in their products.

Further, producers and marketers should not only introduce products with eco-labels, but also make efforts to develop consumer trust in the eco-label. To this end, marketers can run campaigns to promote public awareness of eco-labels, inform citizens about the meaning and availability of the eco-labels, and the benefits of using eco-labelled products. Government should also monitor the credibility of the messages carried by eco-labels to ensure that the trust of consumers is not breached.

Developing a green product distribution system: Invest in a distribution system to ensure convenience for consumers in accessing green products. Providing diversified and flexible distribution methods with green products, contributing to limiting obstacles for consumers in deciding to buy green products. Thus, retailers should ensure that their stores contain a variety of green products displayed at convenient and easy to view locations.

The present study has useful implications for public policy as well. Findings reveal that environmental concern is the prime factors that motivate a consumer to investigate green products. Policy makers should further nurture and develop this tendency through environmental education.

Raising people's awareness in environmental protection and green consumption; launch the green consumption movement through the media. Exploiting the effectiveness of the media in bringing green products and green consumption closer to consumers.

Encouraging people to use environmentally friendly products: increase the use of products labeled water saving, energy saving and efficient environmental labels, green food labels and food organic products, reducing the use of products with multiple packaging and single-use products.

Using financial policies: taxing on the use of environmental components; on users of cars and motorbikes that release toxic gases into the environment (usually taxed through fuel); on tobacco using; on the use of fertilizers and pesticides; also waste objects or wastewater into the environment.

Limitations and suggestions for future research

This research basically achieved the research objectives that stated above. However, the research still has certain limitations which are expected to be improved in the future research. First, due to the constraints of time, the sample is chosen by applying non-probability convenience method with a limited number of samples of respondents in some households in Hanoi City with only 260 citizens. Secondly, dwellers which are not separated in fields such as economics, technologies, and social sciences with own characteristics.

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FACTORS AFFECTING GREEN AGRICULTURAL PRODUCT CONSUMPTION BEHAVIOR OF THE RESIDENTS IN HA NOI

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Abstract

This study aims to analyze and evaluate the factors affecting green agricultural products consumption behavior of consumers in Hanoi city. The article uses SEM model for analysis based on data collected from 305 consumers in Hanoi. The results of this study show that the factors "Attitude towards green agricultural products, Environmental awareness, Health awareness, and Green marketing activities" all have a positive impact on the green consumption intention of consumers. The study draws a new conclusion; no relationship between subjective norm and consumption intention. From there, the authors propose some recommendations for state agencies and businesses to promote the green agricultural product consumption behavior of consumers in Hanoi city.

Keywords: *Consumption intention, green agricultural products, green consumption, Hanoi*

1. Introduction

In recent years, green consumption has emerged as a trend with the purchase and use of friendly goods, protecting the environment and the consumers' health, including agricultural products. Among the current manufacturing industries in Vietnam, many industries are applying green standards to the production process and selling them to the

market. However, they have only reached the surface, and have not gone deep into its nature, including the agricultural product industry, one of the industries that account for an enormous proportion and directly affect the interests and lives of consumers. Although green consumption is constantly being popularized and propagated, clean food chain stores also steadily promote the brand and origin of fresh agricultural products to consumers but only gain the trust of loyal customers instead of the expectation and the top priority of all consumers in Hanoi. Therefore, the paper of the factors affecting the green agricultural product consumption behavior in Hanoi city to propose some solutions to encourage the green agricultural product consumption behavior of the consumer in Hanoi in particular and the whole country in general are extremely urgent, meaningful in both theory and practice.

2. Literature review

2.1. Green agricultural products

The concept of green agricultural products in the world has not been clearly defined by many studies, although in Vietnam this concept is still mentioned regularly. According to Yishu Liu and Xia Wang (2022), green agricultural products refer to those agricultural products that are

recognized by special agencies and allowed to use the green agricultural products logo, conform to the theory of sustainable development, and are produced in accordance with the standard environment, health, technology, and other conditions. Green agricultural products are a category covering three concepts: non-polluting agricultural products, organic food, and green food. The above three concepts are interconnected and complement each other's meanings. Other research by Ha et al. (2019) shows that organic food is different from conventional food in some aspects: no pesticides, care, and packaging procedures,... and ensures no harm to the human body and the environment in the entire industrial chain. The above concept is consistent with the definition of Yishu and Xia Wang (2022) when it is determined that organic agricultural products must be produced according to production requirements and standards of organic agriculture in the world. Green food, on the other hand, needs to be produced in a certain way, and its basic characteristics are non-polluting, non-polluting, green, and safe (Yishu Liu and Xia Wang, 2019). Thus, it can be concluded that the concept of green food and organic food is further developed and improved based on non-polluting agricultural products.

2.2. Research on green consumer behavior

Pagiaslis et al. (2004) research on green consumption behavior in biofuels has shown that environmental concerns directly and positively impact behavioral knowledge, beliefs, and intentions. In addition, demographics determine the level of concern and awareness of the environment. Emekci et al. (2019) studied and explained

the factors affecting green consumption behavior and the relationship between these factors. For this purpose, three key elements were added to Ajzen's theory of planned behavior (TPB) to develop a more comprehensive model, namely, concern, environmental knowledge, and consumer cognitive effectiveness (PCE). The results showed that PCE was the variable with the highest influence on attitudes toward green consumption intention and behavior in the proposed model. It can be said that the PCE variable added to the model is an important variable that has improved and strengthened the measurement model. Variables added to the model are also compatible with Ajzen's original model. Pham Thi Huyen et al. (2020) in the study "Factors promoting green consumption intentions and behaviors of Vietnamese Millennials" confirmed that individuals with knowledge of green products are the ones with the most green consumption trends. In addition, having a positive view of green agricultural products is an important factor in promoting green consumer intentions and behavior.

2.3. Research on organic food consumption behavior

Tarkiainen, A., & Sundqvist, S. (2005) focus in depth on the relationship between subjective norms (SN) and attitudes in green food buying behavior of people in Finland. Most previous research has refuted the role of subjective norms in behavioral research, but Tarkiainen points to a close relationship between subjective norms and attitudes. The study confirms that people with positive attitudes toward green consumer behavior influence the attitudes of other buyers. On the other hand, the authors point out that the perceived factor of how much green food affects health has no significant impact on organic food buying behavior. This is in contrast to research by Fotopoulos and Krystallis (2002) that suggests that the health effects of food play an important role in the decision to buy organic food. Using behavioral inference theory (BRT), Tandon et al. (2020) study the role of food safety concerns and green food consumption participation. In addition, Tandon et al. also confirmed that purchase intention is not affected by the refusal to buy green food, which shows that for Indian consumers, the sole reason for refusal may affect the purchase intention. Also on the issue of organic food consumption, Tandon and colleagues (2021) used the SOR model to study organic food buying behavior. The study results confirm that health preoccupation is a stimulus that has a positive effect on the supporting factors (natural content, nutritional content, and ecological well-being) as well as on the factors that inhibit use behavior (use barriers, risks, and values). The analysis also found that all three supporting factors and two hindering factors (value and risk barriers) were associated with consumer behavior. Another study by Nguyen Hoang Viet et al. (2019) indicates that price obstacles have a negative impact on the buying frequency of Vietnamese consumers. This can be explained by the context that Vietnam's per capita income is still at a low average compared to the world as well as the relatively high prices of organic commodities.

2.4. Hypotheses

2.4.1. Attitude towards green agricultural products

According to Ajzen (1991), attitude is an individual's assessment of the results obtained from taking an action. Attitude toward action has a positive influence on the intention to act, a relationship shown in several studies (Chan, 2001; Vermeir, & Verbeke, 2004). Attitude determines a person's purchasing preferences, and it is one of the most important predictors of behavioral intention. Consumers with a positive attitude towards organic food believe that buying organic food is important and a good choice (Magnusson M.K. et al., 2001). Other research also suggests that attitude is one of the important factors affecting behavioral intention and is the best indicator to predict behavior (Rana & Paul, 2017). Accordingly, the following hypothesis is proposed:

H1: Attitude towards purchasing green agricultural products positively affects the intention to consume green agricultural products.

2.4.2 Subjective norms

Ajzen (1991) defines subjective norms or social influence as the perception that influencers will think that they should or should not take action. Research conducted by Vu Anh Dung et al. (2012) found that social factors such as influence from family and society are important sources affecting Vietnamese people's interest in green products. In an investigation of young consumers' intention to buy organic food in India, Yadav and Pathak (2015) confirmed that the subjective norms of the consumers strongly influence the motive to buy organic food. Accordingly, the following hypothesis is proposed:

H2: Subjective norms positively affects the intention to consume green agricultural products.

2.4.3 Environmental awareness

Environmental awareness is defined as "Understanding the impact of human behavior on the environment". Panni (2006) found that the more aware consumers are of social and environmental issues, the more they engage in social and environmental behaviors. As environmental pollution and environmental consciousness increase, they significantly influence consumers' buying behavior of green products because they are less harmful to the environment than traditional products. Caring for the environment is one of the main drivers of buying organic products. Accordingly, the following hypothesis is proposed:

H3: Environmental awareness positively affects the intention to consume green agricultural products

2.4.4. Health Awareness

Health-conscious lifestyles are also considered to be the leading motivating factor for purchasing organic agricultural products (Mohamed et al., 2012). Bourn and Prescott (2002) found that organic foods have a competitive advantage over conventional foods due to their nutritional properties. Siti et al (2014) found that organic food consumption has increased

among Malaysian consumers due to their increasing health awareness. Accordingly, the following hypothesis is proposed:

H4: Health awareness positively affects the intention to consume green agricultural products

2.4.5. Green Marketing Activities

According to the Environmental Protection Agency (EPA), green marketing is the development and promotion of products and services that meet customer needs, including needs for quality, form, reasonable price, convenient to use without harming the environment. There are many opinions that green marketing is only concerned with marketing and advertising products using environmental features or symbols. However, in essence, green marketing is the combination of a series of activities including changing the production process, packaging, and advertising to create environmentally friendly products (Polonsky, 1994). It is widely acknowledged that green marketing practices significantly influence consumers' choice of environmentally friendly products (Maniatis P., 2016). A Malaysian study conducted by Mohd Suki (2018) showed that green marketing activities in some stores enhance consumers' perception of organic food quality and image. Accordingly, the following hypothesis is proposed:

H5: Green marketing activities positively affect the intention to consume green agricultural products

2.4.6. Intention to consume green agricultural products

Purchasing intention refers to the priority of a product category to consumers when they are in the purchase evaluation stage. Behavioral intention is the most important factor to predict consumption behavior Ajzen (1985), Venkatesh et al (2003). Several studies have shown that behavior can be determined from the intention with considerable accuracy (Ajzen 1991). Attitudes towards organically grown food products can positively and significantly influence purchasing behavior (Voon JP, 2011). Accordingly, the following hypothesis is proposed:

H6: Intention to consume green agricultural products positively affect green agricultural product consumption behavior

2.4.7. Price perception

Green agricultural products are more expensive than conventional products, so the price is one of the major barriers to the use of green products (Gadenne et al., 2011). Marketers find that even when consumers claim to be strongly pro-environmental, they are still extremely price-sensitive when it comes to green purchases (Mainieri et al., 1997). This can de-motivate and discourage customers from engaging in green buying behavior. However, Radman (2005) concluded that some consumers have a positive attitude toward organic food and are willing to pay higher prices. Meanwhile, Smith et al. (2009) found that price did not significantly affect the purchase of organic food. Inheriting results from other study, the following hypothesis is proposed:

H7: Price perception positively affects green agricultural product consumption behavior

2.5. Research model

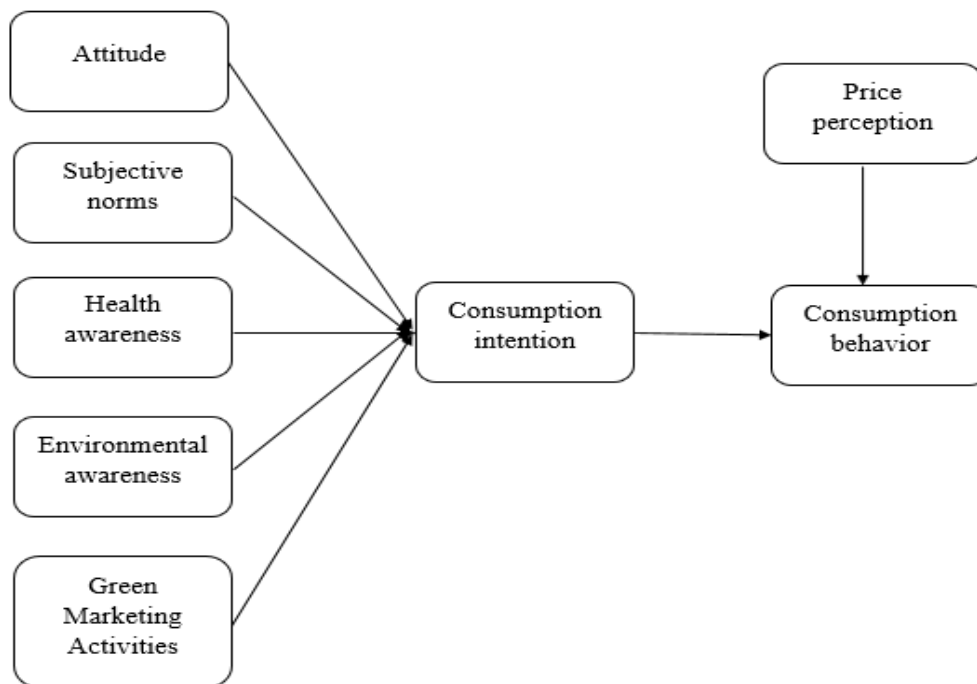


Figure 1. Research Model

3. Method

3.1. Qualitative research methods

With the qualitative research method, the authors use the form of in-depth interviews to exploit consumers' views on green agricultural product consumption behavior. The in-depth interview questions are designed to explore potential factors in consumer behavior and discuss the intelligibility of the preliminary questionnaire. On that basis, the authors propose a research model and a formal questionnaire. Survey subjects include people who are interested in or have purchased green agricultural products, including 3 target groups: students; a group of working people, and a group of middle-aged people. By interviewing 8 consumers in Hanoi, the authors draw qualitative research results as follows:

Firstly, the authors propose to remove the "Eco-label" scales from the observed variables of the factor: "Green Marketing activities". In Vietnam, green marketing activities are mainly based on mass media. Currently, there are quite a few products that are certified with eco-labels, and consumers also have little access to and interest in this issue. Therefore, the authors think that the factor: "Eco-label" is not suitable to be included in the questionnaire.

Secondly, the majority of consumers believe that price plays an important role in their decision to consume green agricultural products. In the context that the income source of Vietnamese people is still relatively low compared to the current price of green agricultural products, consumers are afraid to buy green agricultural products due to the price level despite being aware of the benefits that it brings.

3.2. Quantitative research methods

Research data was collected through questionnaires of consumers in Hanoi city. Out of 330 questionnaires collected, 305 questionnaires were suitable for data analysis. Research data were analyzed using SPSS 20.0 and AMOS 22.0 software. The scales are tested and evaluated by Cronbach's Alpha reliability coefficient and confirmatory factor analysis (CFA). Finally, the authors test the hypotheses using the SEM model.

4. Results

4.1. The frequency of consumption of green agricultural products in Hanoi

The result of descriptive statistics on the frequency of use of green agricultural products in Hanoi shows that the average value of the frequency of consumption of green agricultural products of people in Hanoi reached 4.06, representing the level of “Often”. The analysis results also show that 42.3% of the respondents answered that they always consume green agricultural products. In addition, 34.75% of the respondents confirmed that they regularly consume green agricultural products. Proportion levels “Sometimes”; “Rarely”, and “Never” reached 18.03%, 3.6%, and 1.31%, respectively.

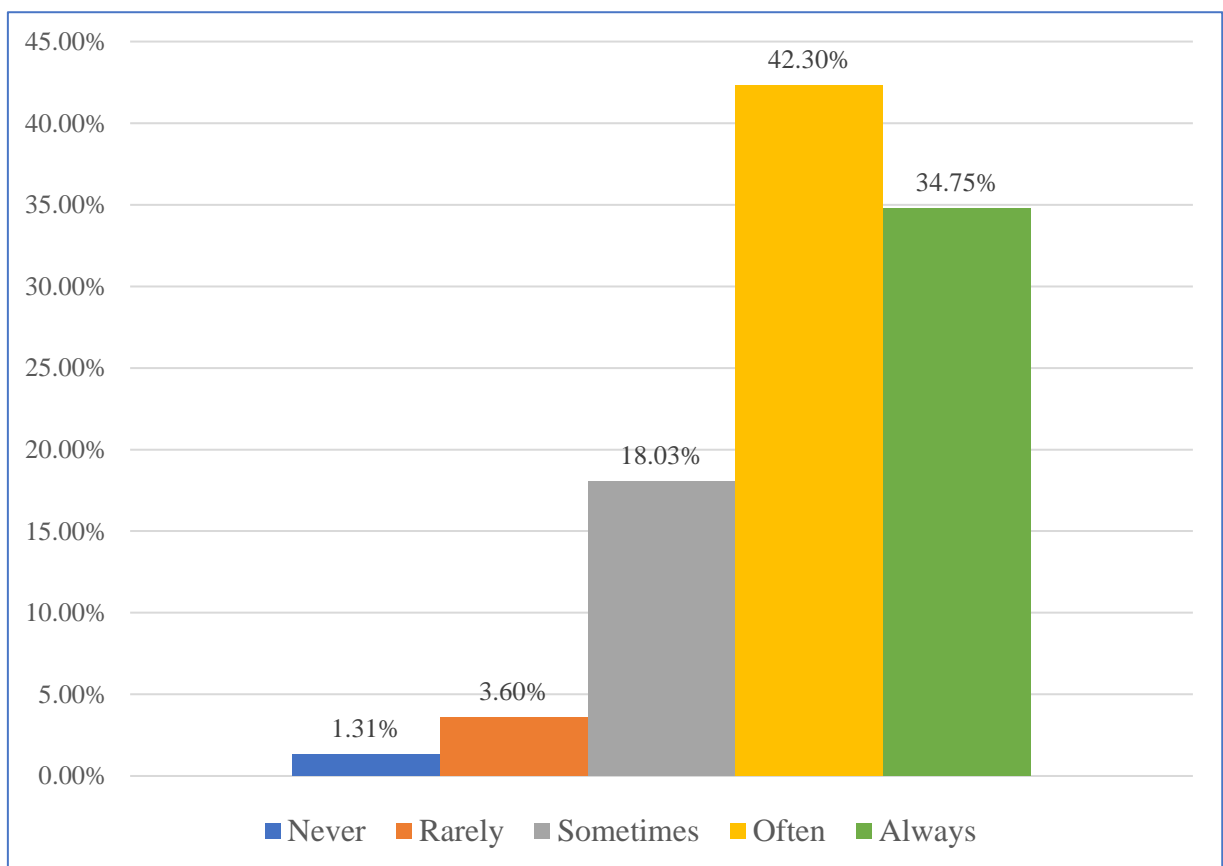


Figure 2. The graph of how often people consume green agricultural products in Hanoi

Source: Authors' synthesis, 2023

4.2. Evaluation of scale reliability

The research data after calculation all meet the conditions of reliability of the scale according to Hair (2009). Calculation results in Table 1 confirm that the scales are reliable (all scales have Cronbach's Alpha coefficient greater than 0.7 and a total variable correlation coefficient greater than 0.3). Based on that result, the authors do not remove any observed variables and proceed to the next step of the analysis.

Table 1. Cronbach's Alpha's results

	Encode	Cronbach's Alpha	Correlation coefficient	The number of variables removed
Attitude towards green agricultural products	TD	0.876	0.672 - 0.781	0/4
Subjective Norms	CCQ	0.763	0.492 - 0.603	0/4
I. Health Awareness	SK	0.886	0.724 - 0.777	0/4
II. Environmental Awareness	MT	0.919	0.714 - 0.794	0/6
Green marketing activities	MAR	0.899	0.778 - 0.818	0/3
Price perception	GC	0.877	0.829 - 0.853	0/4
Intention to consume green agricultural products	YD	0.911	0.885 - 0.9	0/5
Behavior to consume green agricultural products	HV	0.898	0.763 - 0.82	0/4

Source: Authors' synthesis, 2023

4.3. Confirmatory factor analysis CFA

According to the test results described in Figure 1, the indicators showing the goodness of fit of the model include Chi-square/df = 2,106 < 3; GFI = 0.834 > 0.8; CFI=0.937 > 0.9; TLI=0.93 > 0.9; RMSEA=0.06 < 0.08. According to Hair (2009), the GFI index should be > 0.9 but some studies like Doll, Xia & Torkzadeh (1994) confirmed that GFI greater than 0.8 is still considered acceptable. Thus, the calculation results confirm that the model scale is appropriate for the actual data.

On the other hand, the normalized weights are greater than 0.5 and the non-standardized weights are statistically significant, so the concepts in the model achieve the conditions to ensure the convergence of the model. The critical scale has a correlation between the errors of some observed variables, so it does not achieve nomadism (uniqueness is achieved when the correlation coefficients between concepts on the overall scale are different from 1 and have statistical significance (P - Value is smaller than 0.05). The discriminant test results of some factors are not guaranteed because the correlation coefficient between some factors is greater than 0.9. However, to clarify the degree of correlation, the authors keep the factors unchanged and accurately evaluate the effects in the next analysis.

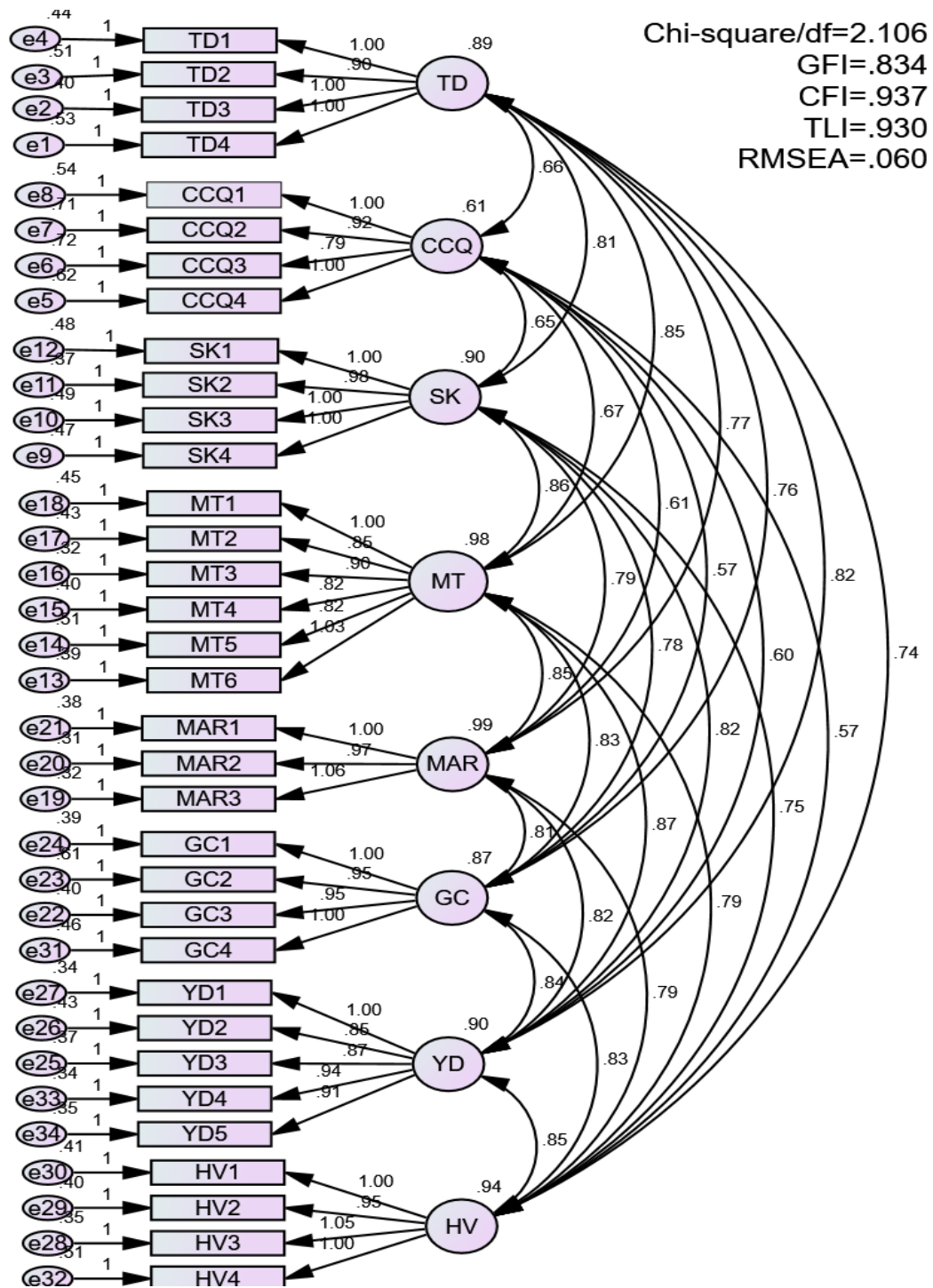


Figure 3. CFA model for scales

Source: Authors' synthesis, 2023

4.4. SEM model analysis

In the next step, the authors performed linear structural analysis SEM to evaluate the fit and accuracy of the model and achieved the following results: Chi-square/df=2.935 < 0.3; GFI = 0.802 > 0.8; TLI=0.877 > 0.8; CFI=0.887 > 0.8, RMSEA=0.08 ≤ 0.08. The relevancy indicators are all at acceptable levels, showing scales that are consistent with market data.

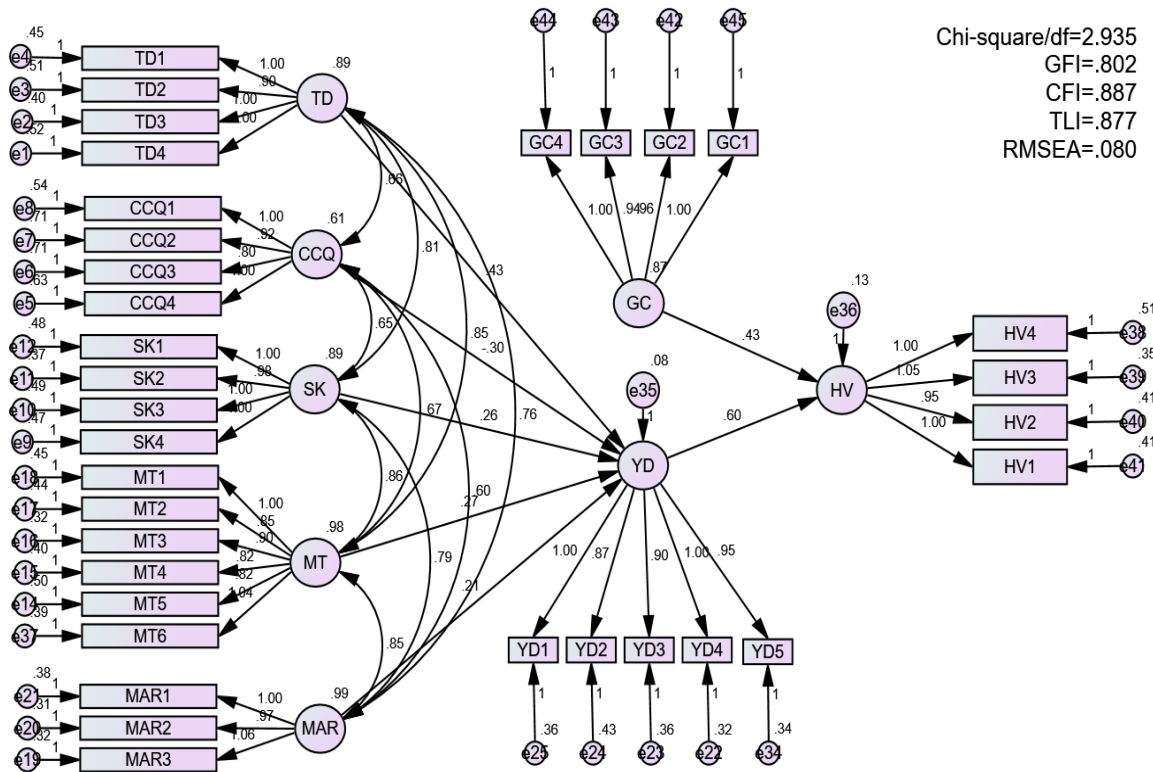


Figure 4. SEM model analysis

Source: Result from AMOS 22, 2023

With 95% confidence, the P-Value of the subjective standard factor (CCQ) for the degree of impact on the variable Consumer intention (YD) is $0.056 > 0.05$. Therefore, the subjective norm factor (CCQ) does not affect consumption intention (YD). The remaining factors all have P - Value < 0.05 , confirming that these effects are statistically significant (Table 2). To evaluate the impact of the factors in the model, the authors use the multiple-squared correlation coefficient and the standardized correlation coefficient.

The average multiple correlation coefficient of the factor “Consumption intention” and “Consumption behavior” are 90.2% and 77.9%, respectively. The results show that the factors in the model have a very large degree of coverage for the factors affecting the dependent variables, and confirm that the model has very few important variables missing.

Among the four factors affecting the intention to consume, the impact level of the variables in descending order is as follows: Attitude (TD); Environmental awareness (MT); Health awareness (SK); Green Marketing (MAR). Which, factor Attitude (TD) has the strongest impact on intention to consume (YD) with a standardized impact coefficient $\beta = 0.44$. Besides, the factors “Environmental awareness” and “Health awareness” also have a significant impact on consumer intention with coefficients of 0.293 and 0.271, respectively. The authors found that the impact level of the two factors above has a negligible difference, and the correlation coefficient between the two factors is relatively large (0.922). The results of the author's data set also show that the two factors have a relatively small degree of difference. This also explains the strong correlation between these two factors.

On the other hand, when considering the impact on consumer behavior, the factor of consumption intention has the largest impact on the actual behavior of consuming green agricultural products with a standardized impact coefficient $\beta = 0.715$. Price perception has a significant impact with a standardized impact coefficient of 0.517. This is consistent with the qualitative research results of the authors.

Table 2. Results of standardized correlation coefficient analysis

			Estimate
YD	←	TD	.440
YD	←	SK	.271
YD	←	MT	.293
YD	←	MAR	.228
HV	←	YD	.715
HV	←	GC	.517

Source: Authors's synthesis, 2023

5. Discussion and conclusion

5.1. Discussion

The results of SEM model analysis show that consumers' attitude towards green agricultural products has the strongest impact on the intention to consume green agricultural products with the level of impact reaching 43%. This result is consistent with the study of Tarkiainen, A. & Sundqvist, S. (2005) who found that attitude has a very significant impact on the intention to consume organic foods. Besides, the results of CFA analysis show that the factor "Attitude towards green agricultural products" containing the variable "TD3" has the highest weight of 0.834. It shows that consumers are aware that green agricultural product consumption is a good trend and should be widely promoted in the community, which will promote the intention to consume green agricultural products.

Research results show that "Health awareness" has a significant impact on the intention to consume green agricultural products with the coefficient $\beta = 0.271$. This conclusion of the authors is similar to the conclusion of Fotopoulos and Krystallis (2002) who found that the health effects of foods play an important role in the decision to buy green foods. Tandon et al. (2020) also show that being health conscious can increase the probability of considering organic food. The above results are very consistent in practice. Specifically, according to the actual observations of the research team, people are now increasingly aware of the importance of health in the context of food safety and hygiene conditions as well as living environment are not guaranteed. More and more agricultural products are using stimulants or pesticides to increase production. On the other hand, today almost people have to be exposed to many factors that are harmful to health. Therefore, awareness of the health benefits of consuming green agricultural products is an important factor in shaping the intention to consume green agricultural products.

The factor “Environmental awareness” has the second strongest positive impact on people's intention to consume green agricultural products with an impact coefficient of $\beta=0.293$, equivalent to “Environmental awareness” with an impact of 29.3%. This is consistent with the results of research by Pagialis et al. (2004) on green consumption behavior that the environment has a positive and direct impact on knowledge, beliefs and behavioral intentions. Research by Emekci et al. (2019) also confirms that environmental concerns and knowledge have an impact on green consumption intentions and behavior. The above results are also consistent with domestic studies by Pham Thi Huyen et al. (2020). Consumers are gradually becoming aware of the decline in environmental quality, which also affects the health of the community and individuals.

The factor “Green marketing activities” has a relatively remarkable impact on people's intention to consume green agricultural products with the impact coefficient $\beta = 0.228$. The above conclusion is also consistent with the study of Nguyen Hoang Viet et al. (2019) which shows the important role of green marketing activities and the role of distribution and retail units in people's organic food purchasing decisions. Thus, promoting the introduction, propaganda, and education campaigns about green agricultural products will have a very positive impact on the community's green agricultural product consumption behavior.

The impact of the factor “Price perception” on green agricultural product consumption behavior is very considerable with an impact coefficient of $\beta=0.517$, equivalent to an impact of 51.7%. Thus, it can be seen that "Price perception" has a great impact on the consumption behavior of green agricultural products of people in Hanoi. Specifically, consumers who think that the price of green agricultural products is suitable for their income will have a higher frequency of buying green agricultural products. Nguyen Hoang Viet et al. (2019) also show that price constraints have a negative impact on the frequency of organic food consumption, as Vietnam's per capita income is still low compared to the price of organic food.

5.2. Conclusion

5.2.1. On the government side

Firstly, the government needs to promote the introduction, propaganda, and education campaigns in the mass media about the benefits and importance of green agricultural products for the health of the consumers.

Secondly, the authority should have policies to strengthen the supervision of agricultural production activities to ensure that enterprises would comply with environmental regulations. In addition, it is necessary to investigate and penalize enterprises that produce and distribute unhealthy agricultural products.

Thirdly, it is crucial for the administration to issue supportive policies for businesses in the production and trading of green agricultural products, creating a strong network in the distribution and sale of green agricultural products to encourage start-ups in this field. Moreover, the government should send people to study science and technology in agricultural production processes in developed countries and apply to Vietnam to reduce

costs for enterprises, and at the same time can research and create new processes suitable to Vietnam's economic and development conditions.

5.2.2. On the enterprises side

Firstly, manufacturing enterprises need to comply well with regulations and seriously take their responsibilities for environmental protection as well as health safety. Enterprises can apply sustainable procedure not only to factors such as packaging, green labels, ... but also in the production process, including prioritizing the use of environment-friendly raw materials, practicing regenerative agriculture and converting advanced technology into production.

Secondly, businesses should promptly solve the cost problem. Specifically, businesses can reduce personnel costs, rental costs, make optimal use of existing resources to save money for green marketing activities, apply advance technology in production to increase sales volume, thereby, can offer more price support programs to stimulate consumer demand for green agricultural products.

Thirdly, businesses also need to promote commercial activities, green marketing activities, and pay more attention to distribution channels so that they are always available to consumers. For retail businesses, it is necessary to build a sustainable agricultural supply chain to link farmer households with the view to not only building large-scale specialized production to provide the market with clean food sources, but also creating a generation of advanced Vietnamese farmers and improving the value of Vietnamese agricultural products. Moreover, it is essential to coordinate with the local government to access information on financial support and technology transfer policies as well as guidelines for green and sustainable agriculture development.

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SUSTAINABLE HUMAN RESOURCES MANAGEMENT, EMPLOYEE'S JOB PERFORMANCE: THE MEDIATING EFFECT OF PERCEIVED ORGANIZATIONAL SUPPORT

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Abstract

Businesses nowadays face intense competition and are forced to shift from traditional human resource management to sustainable human resource management to improve employee job performance. Based on a survey of 208 respondents, the author confirms that SHRM has a positive impact on employee job performance. Specifically, the study adds new insight by finding that POS plays a mediating role in the relationship between SHRM and employee job performance. Some solutions to improve employee job performance associated with SR-HRM and GHRM, POS have been proposed.

Keywords: *Sustainable human resource management, Employee's job performance, Perceived organizational support.*

1. Introduction

Amidst the intense competitive pressures of today, businesses are compelled to redesign their human resource management activities, including renewing and innovating their workforce, shifting from consumption to the development of sustainable human resources by integrating the concept of sustainability. Therefore, sustainable human resource management (SHRM) is viewed as a new approach to human resource management (Davidescu et al., 2020). Integrating sustainability into human resource management activities is still relatively new, therefore, the concept of sustainable human resource management still has many different perspectives. In general, sustainable human resource management can be understood as the application of human resource management strategies and practices that enable the achievement of financial, social, and ecological goals, with both internal and external impacts on the organization, over the long term, while controlling unintended negative impacts.” (Ehnert et al., 2016, p. 90).

Effective job performance of employees (JP) helps businesses achieve their planned goals and gain a competitive advantage (Sonnentag, S, 2003). Employee job performance is considered one of the most important factors influencing the success or failure of a business (Campbell, 1990). Therefore, this has been a topic that many scholars have researched over the years.

The textile and garment industry play an important role in Vietnam's economy. According to (Song Hà, 2022), the textile and garment industry contributed an export value

of \$40.4 billion in 2021, accounting for 5.2% of the global market share. In 2021, Vietnam ranked fourth among the top 10 exporting countries of textiles and garments (after China, the EU, and Bangladesh), providing employment for 2 million workers. Despite its significant contribution to the economy, the textile and garment industry is also a leading cause of environmental pollution.

Meanwhile, Vietnam's textile and garment import markets are becoming increasingly demanding in terms of products. Specifically, importers require companies to have a consciousness of environmental protection and to comply with social responsibility in the production process. To contribute to addressing the difficulties of the textile industry and practicing sustainable development, sustainable human resource management is one of the appropriate approaches. Many studies on the impact of sustainable human resource management on job performance have been conducted, but (1) no studies have examined the impact through the mediating role of Perceived organizational support (POS), and (2) the textile industry has not received corresponding attention.

For the reasons above, the author chose the textile industry to study the impact of sustainable human resource management on employee job performance, taking into account the mediating role of perceived organizational support. The study examines a typical case in a Vietnamese textile manufacturing company.

2. Literature review and Theoretical background

Blau (1964) explained the mechanism of reciprocal interaction between individuals in society through a theory called Social Exchange Theory. This theory suggests that social exchange involves a series of interactions that are interdependent and dependent on the actions of others. It also emphasizes that these interdependent interactions have the potential to create high-quality relationships, although we see this only in certain cases. Reciprocity is the foundation of social exchange, where parties in a relationship reciprocate to maximize their benefits (Phipps et al., 2013), and if employees receive what they perceive as fair treatment from their employer, they will respond by displaying more positive outcomes that benefit the organization (Y. W. Kim & Ko, 2014). In this study, the author argues that sustainable human resource management will bring many positive benefits to employees (fair treatment, recognition of value to the business, reward for environmental actions, etc.), and through perceiving positive organizational support, employees will try to reciprocate back to the organization. This reciprocation is reflected in the effort to improve work effectiveness.

2.1 Sustainable human resource management - SHRM

Sustainable human resource management is a relatively new concept, still in its early stages of research and reflects efforts to link sustainability with human resource management (Manzoor et al., 2019). It is a concept that many scholars support, stating that "sustainable human resource management involves applying human resource management strategies and practices that enable the achievement of financial, social, and ecological goals, with both internal and external impacts on the organization and over the long term, while controlling unwanted negative impacts" (Ehnert et al., 2016, p. 90).

Sustainable human resource management draws inspiration from the three-pillar model of sustainability, combining activities related to social responsibility and green human resource management (Ehnert et al., 2016). Socially responsible human resource management is the combination of a company's social responsibility and sustainable human resource management (Jie & John, 2016). According to Shen & Jiuhua Zhu (2011), socially responsible human resource management consists of three main components, including legal compliance human resource management (implying compliance with local laws and regulations related to human resource management, such as compliance with working hours, minimum wage, equal opportunities, etc.), employee-oriented human resource management (implying human resource management policies that satisfy both the needs of employees and their families), and green human resource management, which primarily involves influencing and encouraging green practices and actions among employees and contributing to the company's environmental certification through “greening” existing HR functions such as green recruitment, green training, and green rewards, ... (Renwick et al., 2013).

Sustainable HRM practices bring about innovation (progression or enhancement) (Salim et al., 2020). Sustainable HRM practices maximize profits for the organization while minimizing harmful negative impacts on employees, their families, and the community (Mariappanadar, 2003). Sustainable HRM practices lead to job involvement and therefore improve employee performance (Jeronimo et al., 2020, Manzoor et al., 2019).

Therefore, hypothesis 1 is:

H1: SHRM has a positive impact on employee job performance.

2.2. Perceived Organizational Support - POS

According to Rhoades & Eisenberger (2002), is an organizational perspective on employees. If the organization values the dedication and loyalty of employees as a form of commitment to the organization, employees in general also pay attention to how the organization commits to them. The authors also suggest three ways that are considered good and can enhance the organizational support that employees feel, including: 1) Fairness; 2) Supervisor support; and 3) Rewards from Organizational Benefits and Working Conditions.

The awareness of human resources leads to the extent to which organizations can appreciate the contributions made and pay attention to the welfare of human resources, known as POS (Rhoades & Eisenberger, 2002).

POS can be generated through various means, including the application of effective HRM practices (H.-H. Chiang et al., 2011) and when these practices are maintained by organizations, it sustains employees' positive perceptions of this support (Kim & Ko, 2014).

Sustainable HRM practices play an important role in establishing positive outcomes and ensuring that positive changes are reflected in employees' attitudes and reactions to their organization (Salim et al., 2020). For employees, sustainable HRM is a signal that the organization can act as a driving force to make their job more meaningful (Albrecht et al., 2015).

Therefore, hypothesis 2 is:

H2: SHRM has a positive impact on POS.

2.4. Job performance - JP

Employee job performance refers to the ability of employees to perform their job responsibilities in the most efficient and effective way possible to produce the best results (Anitha & Kumar, 2016). Currently, there are three common perspectives in research on employee job performance. The first perspective considers employee job performance as the entire individual output (represented by Şehitoğlu & Zehir's study), the second perspective considers it as the behavior (in the formal role) or completion of expected responsibilities in performing job tasks according to job descriptions (represented by Chan, Mak, Darsana), and the third perspective views employee job performance as behavior or effectiveness in both formal (job description) and informal roles, but with significant relevance to organizational job effectiveness (represented by Borman and Motowidlo's studies).

POS is one of the strengths that can influence employee behavior to improve employee performance (Ridwan et al., 2020). Many studies have also demonstrated that POS has a positive impact on employee job performance, such as those conducted by (Ragas et al., 2017; Ridwan et al., 2020).

Therefore, hypothesis 3 is:

H3: POS has a positive impact on JP.

In addition, based on social exchange theory by Blau (1964), when employees perceive support from the organization in the form of fair treatment and job recognition, it will lead to various positive outcomes such as increased commitment, loyalty, and job performance (DeConinck et al., 2018), this is because when employees perceive a certain level of support from the organization, they feel an obligation to reciprocate for the good treatment they have received by exhibiting more positively directed behavior (Kurtessis et al., 2017).

Therefore, hypothesis 4 is:

H4: POS plays a mediating role in the nexus between sustainable HRM and job performance.

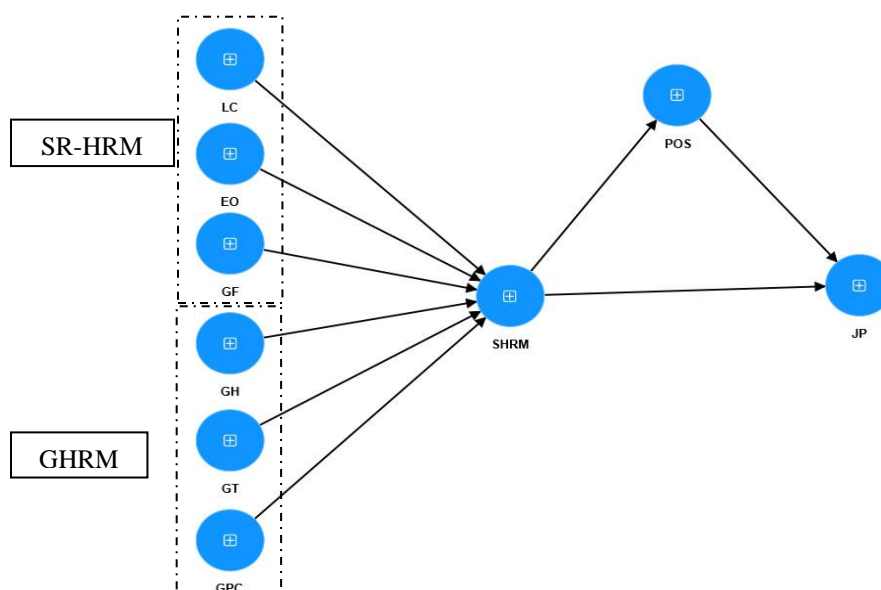


Figure 1. Proposed research model by the authors

3. Method

The study was conducted using a quantitative method. Data was collected through a questionnaire using convenience sampling. The subjects were employees of a Vietnam-based limited liability company producing textile products. Data was collected in April 2023. A five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used to measure all variables except for the demographic characteristics of the respondents. A total of 219 questionnaires were collected, of which 11 were invalid (respondents only chose one answer for all questions). According to Hair (2009), the minimum survey sample size can be obtained by multiplying the number of observed variables by 5. In this study, a total of 35 variables were used, so the minimum required sample size was 175 observations. Thus, a total of 208 valid questionnaires were collected. Among the 208 respondents, the proportion of male respondents was 13.94% and female respondents were 86.06%, while direct production workers accounted for 67.78% and indirect production workers accounted for 32.22%. The encoded data was analyzed using Smart PLS software version 4.0.8.5.

The scale of SHRM was adapted from Shen & Jiu-hua Zhu (2011), Sun et al., (2007) and Renwick et al., (2013). It is a multidimensional, second-order formative construct assessed via socially responsible HRM (SR-HRM) with three sub-constructs: perceived legal compliance HRM practices (five items); perceived employee-oriented HRM (five items); and perceived general CSR facilitation HRM (three items); green human resource management (GHRM) with three sub-constructs: green hiring, green training and involvement, and green performance management and compensation.

Job performance was measured using six items adapted from (C.-F. Chiang & Hsieh, 2012) and (Vu et al., 2022).

4. Results

4.1. Assessment of the measurement mode

The two-stage approach was used to process the second-order SHRM variable into first-order variables before analysis. According to Hair (2009), the overall reliability of the observed variables was evaluated using the composite reliability (CR) and the average variance extracted (AVE) of the variables. The reliability of the observed variables must have an outer loading coefficient greater than or equal to 0.708 to meet the reliability requirements (Hulland, 1999). The results are presented in Tables 1 and 2.

Table 1. Outer loadings SHRM

	EO	GF	GH	GPC	GT	LC
EO1	0.833					
EO2	0.686					
EO3	0.803					
EO4	0.763					

GF1	0.811
GF2	0.714
GF3	0.802
GH1	0.885
GH2	0.852
GPC1	0.802
GPC2	0.656
GPC3	0.738
GPC4	0.754
GPC5	0.794
GT1	0.786
GT2	0.728
GT3	0.72
GT4	0.777
LC1	0.677
LC2	0.846
LC3	0.801
LC4	0.742
LC5	0.779
LC6	0.769

The composite reliability coefficient should be greater than or equal to 0.5 to achieve overall reliability (Hulland, 1999).

Table 2. Composite reliability & Average variance extracted SHRM

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
EO	0.769	0.769	0.896	0.812
GF	0.699	0.7	0.869	0.769
GH	0.677	0.685	0.86	0.755
GPC	0.777	0.779	0.87	0.691
GT	0.64	0.642	0.847	0.735
LC	0.834	0.839	0.901	0.751

To assess the convergent validity of the measurement scale, Fornell và Larcker (1981) suggested that the average variance extracted (AVE) coefficient should be greater than or equal to 0.5. Table 2 demonstrates the appropriateness of the data.

After four rounds of data processing, the data has met the required standards. To assess discriminant validity, this study followed the approach proposed by Fornell and Larcker (1981). Table 3 revealed that the square root of AVE of each reflective construct is greater than its highest correlation with other constructs (Fornell & Larcker, 1981). Additionally, the HTMT values presented in Table 5 varied from 0.599 to 0.816, substantially below 0.85, demonstrating stronger support for discriminant validity (Henseler et al., 2009).

Table 4. Cross loading

	EO	GF	GH	GPC	GT	LC
EO1	0.899	0.489	0.468	0.489	0.433	0.404
EO3	0.904	0.469	0.534	0.468	0.415	0.465
GF1	0.523	0.875	0.482	0.393	0.432	0.434
GF3	0.41	0.879	0.462	0.413	0.527	0.474
GH1	0.518	0.496	0.887	0.523	0.516	0.505
GH2	0.445	0.436	0.85	0.446	0.412	0.43
GPC1	0.489	0.445	0.495	0.84	0.494	0.48
GPC3	0.403	0.334	0.446	0.816	0.406	0.452
GPC5	0.426	0.362	0.453	0.838	0.411	0.449
GT1	0.456	0.48	0.478	0.473	0.867	0.42
GT3	0.348	0.457	0.442	0.431	0.848	0.445
LC2	0.476	0.47	0.482	0.539	0.465	0.908
LC3	0.407	0.473	0.449	0.431	0.404	0.848
LC5	0.366	0.404	0.474	0.468	0.441	0.843

Table 5. Heterotrait - monotrait ratio (HTMT)

	EO	GF	GH	GPC	GT
EO					
GF	0.726				
GH	0.767	0.779			
GPC	0.684	0.62	0.767		
GT	0.668	0.816	0.81	0.744	
LC	0.599	0.678	0.716	0.686	0.69

Table 6. Heterotrait - monotrait ratio (HTMT) confidence intervals

	Original sample (O)	Sample mean (M)	2.50%	97.50%
GF <-> EO	0.726	0.727	0.57	0.876
GH <-> EO	0.767	0.768	0.625	0.897
GH <-> GF	0.779	0.779	0.631	0.924
GPC <-> EO	0.684	0.684	0.553	0.796
GPC <-> GF	0.62	0.621	0.445	0.771
GPC <-> GH	0.767	0.765	0.621	0.88
GT <-> EO	0.668	0.668	0.506	0.816
GT <-> GF	0.816	0.819	0.655	0.978
GT <-> GH	0.81	0.811	0.651	0.967
GT <-> GPC	0.744	0.746	0.595	0.889
LC <-> EO	0.599	0.597	0.457	0.717
LC <-> GF	0.678	0.678	0.539	0.804
LC <-> GH	0.716	0.712	0.555	0.839
LC <-> GPC	0.686	0.683	0.534	0.807
LC <-> GT	0.69	0.689	0.52	0.835
LC <-> JP	0.814	0.812	0.72	0.887

Stage 2 was processed similarly to Stage 1, and the measurement model's fit was assessed using the same criteria. The results are presented in Figure 2.

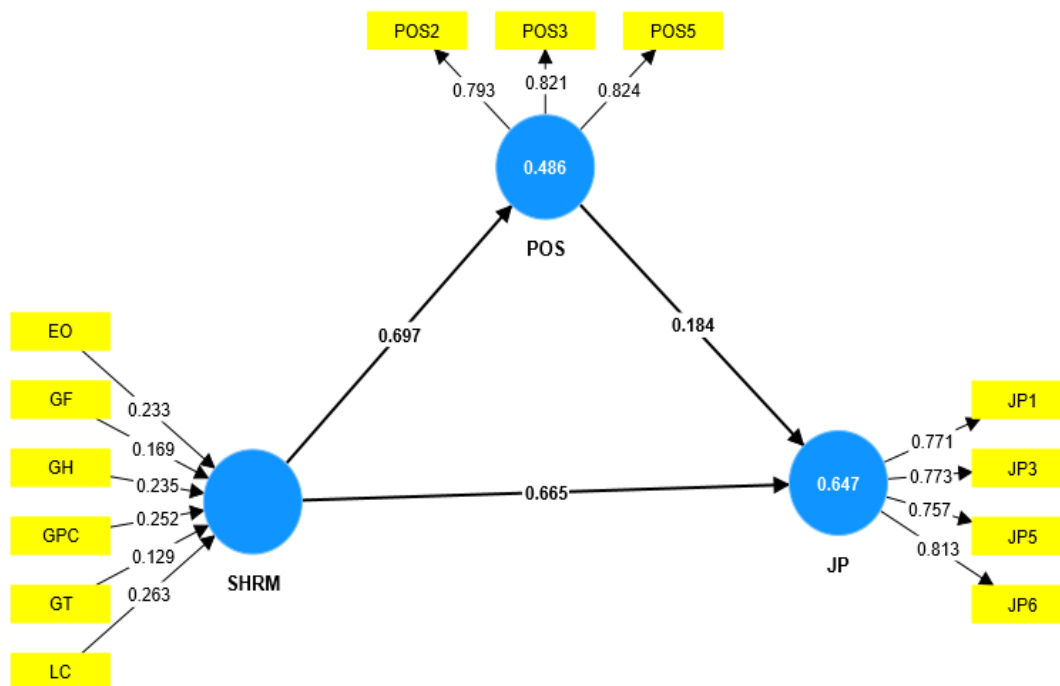


Figure 2. Measurement mode

4.2. Evaluating the measurement structural model and results of hypothesis testing

Testing for multicollinearity: When the VIF values are less than 5, there is no multicollinearity issue (Hair Jr et al., 2017). From Table 7, we can see that the model has no multicollinearity.

Table 7. Collinearity statistics VIF - Inner model

	JP	POS
JP		
POS	1.946	
SHRM	1.946	1

To test the hypotheses of the PLS structural model used in this study, three hypotheses with direct effects and one hypothesis with an indirect effect were proposed. A significance level of 5% was proposed as a basis for accepting or rejecting the hypotheses. Table 8 shows the direct effects, and we see that all hypotheses H1, H2, H3, and H4 are accepted.

Table 8. Path coefficients & Specific indirect effects

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ((O/STDEV))	P values
POS -> JP	0,184	0,175	0,058	3,192	0,001
SHRM -> JP	0,665	0,672	0,053	12,541	0,000
SHRM -> POS	0,697	0,701	0,041	16,838	0,000
SHRM -> POS -> JP	0,128	0,123	0,042	3,049	0,002

In summary, the path model results are presented in the diagram shown in Figure 3.

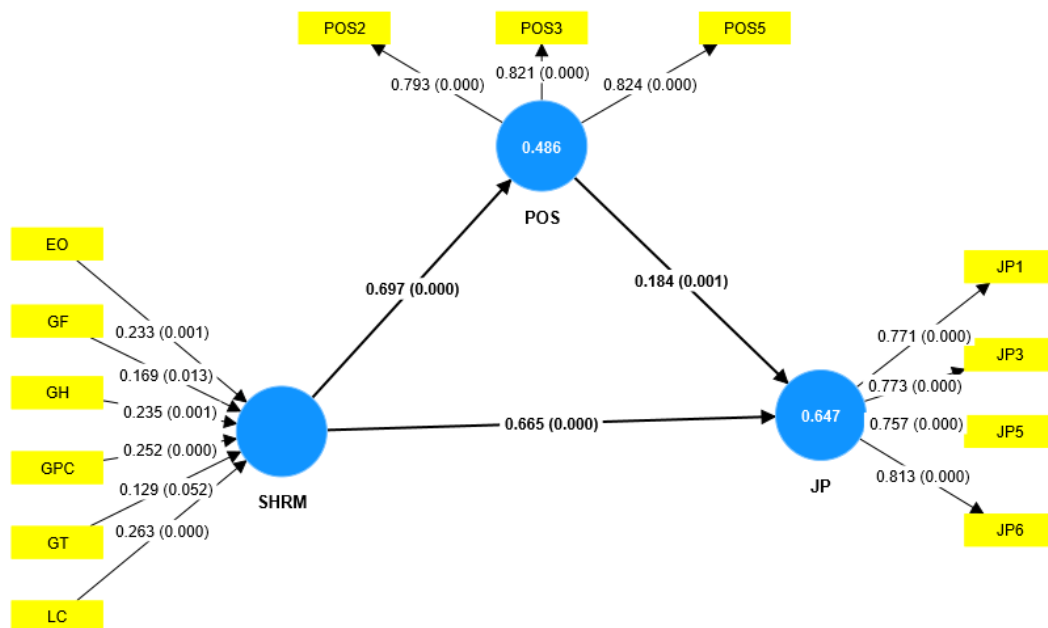


Figure 3. Research model results.

5. Discussion and conclusion

5.1. Discussion

The aim of this study was to analyze the impact of SHRM on employees' job performance, and to test the mediating role of POS, in the case of a Vietnamese garment manufacturing company. As there is no standardized measurement scale for SHRM (Manzoor et al., 2019), SHRM in this study is a second-order variable that combines SR-HRM and GHRM activities. The findings indicate that SHRM has a positive effect on employees' job performance, which is consistent with the results of Ragas et al. (2017), Manzoor et al. (2019), Almarzooqi et al. (2019); POS has a positive effect on job performance, which is consistent with (Muse & Stamper, 2007), (C.-F. Chiang & Hsieh, 2012), (Hafidhah & Martono, 2019). Particularly, this study contributes to the literature by revealing that SHRM has a positive effect on POS, and that POS mediates the relationship between SHRM and job performance.

The significance of the research results is that they support the call of Ehnert et al. (2016) for further research on the impact of sustainable human resource management. Additionally, the study also fills the research gap on sustainable human resource management in Vietnam in general, and the textile industry in particular. The findings of the study provide a scientific basis for textile companies to improve the effectiveness of employee work by integrating sustainability into their human resource management practices and enhancing the employee's POS.

5.2. Conclusion

This study investigated the impact of SHRM on JP, and the results confirmed that SHRM has a positive impact on both POS and JP, and POS is the mediator in the relationship between SHRM and JP. These findings reinforce the positive benefits of SHRM for businesses, provide a basis for improving JP, and offer a systematic approach for future research in this area. In particular, the study discovered the role of POS in the relationship between SHRM and JP.

Based on these findings, the author propose some recommendations that businesses can consider to improve JP, such as:

Firstly, strengthen the practice of SR-HRM through activities such as building and implementing flexible working hours to help employees achieve a balance between work and life. Continue to promote the positive role of trade unions in protecting the rights and legitimate interests of workers (policies should seek the opinions of trade union representatives, build and monitor the implementation of collective labor agreements, etc.).

Secondly, "greening" the functions of HRM. Integrate green criteria into job descriptions, use them as a basis for evaluating employee performance, and reward employees accordingly. To achieve this, organizations need to increase training on green awareness for their employees. The integration of green criteria into the performance evaluation and reward system for managers has a strong and effective impact, which is also

consistent with the practical role of managers who are responsible for the effectiveness of their department. Therefore, businesses need to research and implement "greening" in the evaluation of managerial performance.

Thirdly, actively listen to and care about employees' feedback. Recognize and appreciate employees' achievements, efforts, and loyalty to enhance their positive perception of the organization. To create a positive perception, businesses can focus on caring for employees' health; value and emphasize the goals and values of each employee; respect privacy and personal characteristics. When employees make mistakes, businesses should show empathy, share and forgive their mistakes.

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VIETNAM'S CHALLENGES ON THE ROAD TO THE CIRCULAR ECONOMIC MODEL

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Abstract

Sustainable development always has been the highest goal that all countries aim for. Particularly, in the context of increasing challenges such as natural resource depletion, environmental degradation, and climate change, moving towards sustainable development will also become more and more difficult. The circular economy (CE) model has been and is still being pursued by many countries, and is considered an effective solution to cope with these new challenges. However, the transition to a CE model requires breakthrough changes and fundamental innovation. These are the challenges for developing countries, including Vietnam, which is one of the most vulnerable and severely affected countries by climate change. The study examines the experiences of some countries preparing for the transition to CE model, compares them with the preparation process of Vietnam, thereby identifying the challenges of Vietnam on the way to the new model. The study also gives some suggestions to overcome and minimize barriers for Vietnam to soon transition to this new economic model.

Keywords: *circular economy (CE), circular business (CB), linear economy, sustainable development.*

1. Introduction

Circular economy is no longer a new term that has emerged from the ideas of material circulation in the agricultural industry in the 18th century (Schivelbusch W., 2015). However, it was not until 1990 that this model was fully defined and mentioned in the textbook of environmental and resource economics of Pearce and Turner (Ekins, P. et al., 2019). Pearce, D. and Turner, R.K. (1990) mentioned the contrast between the cyclical natural system and the linear economic system and introduced a new economic model based on the basic principle, that “Everything is an input into everything else”. This model is completely different from the view of the traditional economy. This new economic model, with the goal of connecting the end point (disposal/demolition of linear economy) with the starting point (exploitation of EC) to keep the material flow used as long as possible, to

restore and renewable products and materials at the end of each production or consumption cycle, helps to ensure the sustainable development of the global economy.

Reike, D. et al (2018) said that the model can be divided into three phases, which are: (i) period 1970-1990s: CE 1.0, focusing on waste treatment; (ii) 1990s-2010 period: CE 2.0, paying more attention on connecting inputs and outputs in strategies for ecological efficiency; and (iii) period from 2010: CE 3.0, maximizing value retention in the era of resource depletion.

Currently, CE has developed at many levels (micro, medium and macro) and at many different models. Many countries are continuously innovating, creating and taking actions/plans to develop this model thanks to its benefits. Although actions between countries are quite diverse, most of them focus on: (i) formulation of the Law/Strategy/Program/Plan for the development of CE; (ii) launching a campaign to educate the community's awareness, to change consumption behavior, especially starting from the government consumption behavior; (iii) focusing on effective waste management; and (iv) establishment of Funds to encourage the development of CE.

This study will focus on some key issues: (i) Definition of CE and its benefits; (ii) Preparation of some countries to switch to CE; (iii) Vietnam's challenges of transitioning to CE; (iv) Some recommendations for Vietnam; and (v) Conclusion.

2. Literature review

2.1. Some theories on CE model and challenges of countries when applying the CE model

2.1.1. Definitions of circular economy

CE is not an entirely new theory or a new tool. It has been developed from other already existing theories. Some scientists argued that the theoretical and empirical foundation of CE is mainly based on the theory of industrial ecology (such as Ghisellini et al., 2016; Preston, 2012; Ellen MacArthur Foundation, 2012; Chiu and Yong, 2004); some believed that CE is based on ecological economic theory (eg: Ghisellini et al., 2016; and Loiseau et al., 2016); or some stated that CE based on the theory of Cradle to Cradle (C2C) (eg: Sadhan, 2019); or even some scientists said that CE was in line with the main idea of a green economy (eg: Aurélien et al., 2018). Most scientists believe that CE is a tool for sustainable development. Emphasizing this idea, Bonciu, F. (2014) pointed out that sustainable development aims to solve emerging problems, not to go into the causes as CE is solving. In other words, sustainable development provides goals to be achieved in order to solve problems or consequences, while CE is a tool to solve some causes of problems.

It can be said that CE has recently developed into an independent academic field. The concept of CE is also interpreted quite differently among organizations and scientists. Below are some definitions of CE:

- Ellen MacArthur (2013): A CE is “an industrial system that is restorative or regenerative by intention and design. It replaces the ‘end-of-life’ concept with restoration,

shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims for the elimination of waste through the superior design of materials, products, systems, and, within this, business models”. In 2015, the Ellen MacArthur Foundation continued to give a new definition, which is “one that is restorative and regenerative by design and aims to keep products, components, and materials at their highest utility and value at all times, distinguishing between technical and biological cycles. This new economic model seeks to ultimately decouple global economic development from finite resource consumption. It enables key policy objectives such as generating economic growth, creating jobs, and reducing environmental impacts, including carbon emissions”.

- EC (2015): A CE is “an economy “where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised”. The transition to a more circular economy would make “an essential contribution to the EU's efforts to develop a sustainable, low-carbon, resource-efficient and competitive economy”.

- UNIDO (2017): The CE is “a new way of creating value, and ultimately prosperity. It works by extending product lifespan through improved design and servicing, and relocating waste from the end of the supply chain to the beginning - in effect, using resources more efficiently by using them over and over, not only once”.

- Sadhan, K.G (2019) interpreted CE as “a systems-level approach to economic development and a paradigm shift from the traditional concept of linear economy model of extract-produce-consume-dispose-deplete to an elevated echelon of achieving zero waste by resource conservation through changed concept of design of production processes and materials selection for higher life cycle, conservation of all kinds of resources, material and/or energy recovery all through the processes, and at the end of the life cycle for a specific use of the product will be still fit to be utilised as the input materials to a new production process in the value chain with a close loop materials cycles that improves resource efficiency, resource productivity, benefit businesses and the society, creates employment opportunities and provides environmental sustainability”.

In sum, it is very difficult to determine which concept of CE would be the most perfect because most concepts fit very well in one way to another. However, over time, the concept of CE has gradually grown to be relatively broader and more complex than it was originally. In the early stages of the emergence of CE definition, the CE just stopped at the concept of pursuing the reduction and prevention of waste elimination. In recent years, the concept of CE is no longer only pursuing the reduction and prevention of waste elimination, but also finding new values of waste and discarded products to prolong the life cycle of waste and reuse of the product. Extending the life cycle and reuse of products can be accomplished through product design and/or education. Meanwhile, recycling can result in a huge loss of resources, energy and labor. CE concepts have recently inspired technological, organizational and social innovation across and within value chains (Venkatachalam Anbumozhi, 2016). In addition, the concepts of CE not only pay attention to environmental and economic aspects, but also focus more on social aspects, including creating jobs and protecting people's health.

2.1.2. The circular economy model

Studies on CE show that this is not a uniform model for the whole economy, but it includes different models. CE operates on the principle that “everything is an input to everything else”, meaning operating as a closed cycle. CE approach follows the principle of waste management, turning products/wastes at the end of the life cycle into resources/inputs for a new cycle or for others. With this philosophy, waste management models have been continuously expanded, from 3R, 4R, 5R, 6R, 9R, and in the future may be even more innovative and broad to more Rs. Such as:

The simplest model is the 3R model including: reduce, reuse and recycle. This model dates back to the 1970s when the US Congress passed the Resource Conservation and Recovery Act to strengthen recycling efforts as waste became an increasingly major issue in this country. The 4R model includes: reduce, reuse, recover and recycle. This model was introduced by the European Commission in November 2008 to improve the handling of rubber waste. The applied 5R model is quite diverse, which can include: (i) reduce, reuse, recycle, refuse and rethink; or (ii) refuse, reduce, reuse, repurpose and recycle; or (iii) refuse, reduce, reuse, recycle and repair. The 6R, 7R and 8R models offer a closed lifecycle system with more stages. For example, the 6R model created by the Food and Agriculture Organisation of the UN, including: refuse, redesign, reduce, reuse, recycle and recover. By 2017, the 9Rs model appeared.

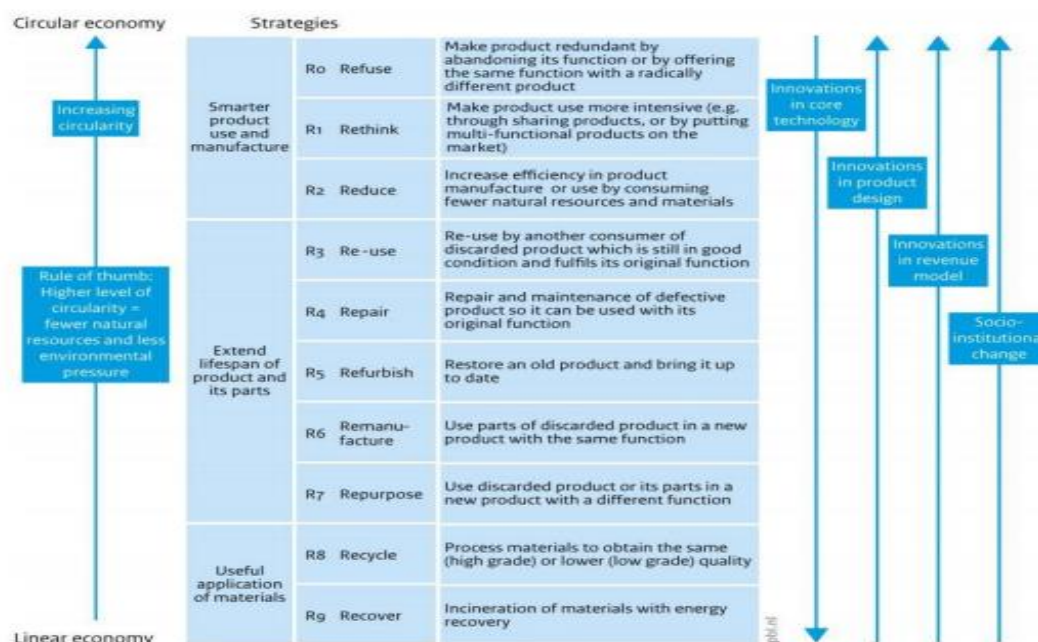


Figure 1. Model of CE in order of priority

Source: Potting et al. (2017), figure 1:5 (quoted from Ekins et al (2019))

Recently, Reike et al (2018) mentioned the 10R model, including: R0 (refuse); R1 (reduce); R2 (resell/reuse); R3 (repair); R4 (refurbish); R5 (remanufacturing); R6 (repurpose); R7 (recycle), R8 (recover); and R9 (Re-mine). According to Reike et al (2018),

R9 (re-mine) is the recovery of materials after the landfill or the extraction of valuable parts from discarded products. In developing countries, people try to make a living by collecting valuable materials and items from landfills. In developed countries, with a long history of controlled landfilling, entrepreneurs have recently begun to 're-exploit' valuable resources stored in old landfills and other waste plants, known as landfill mining or urban mining.

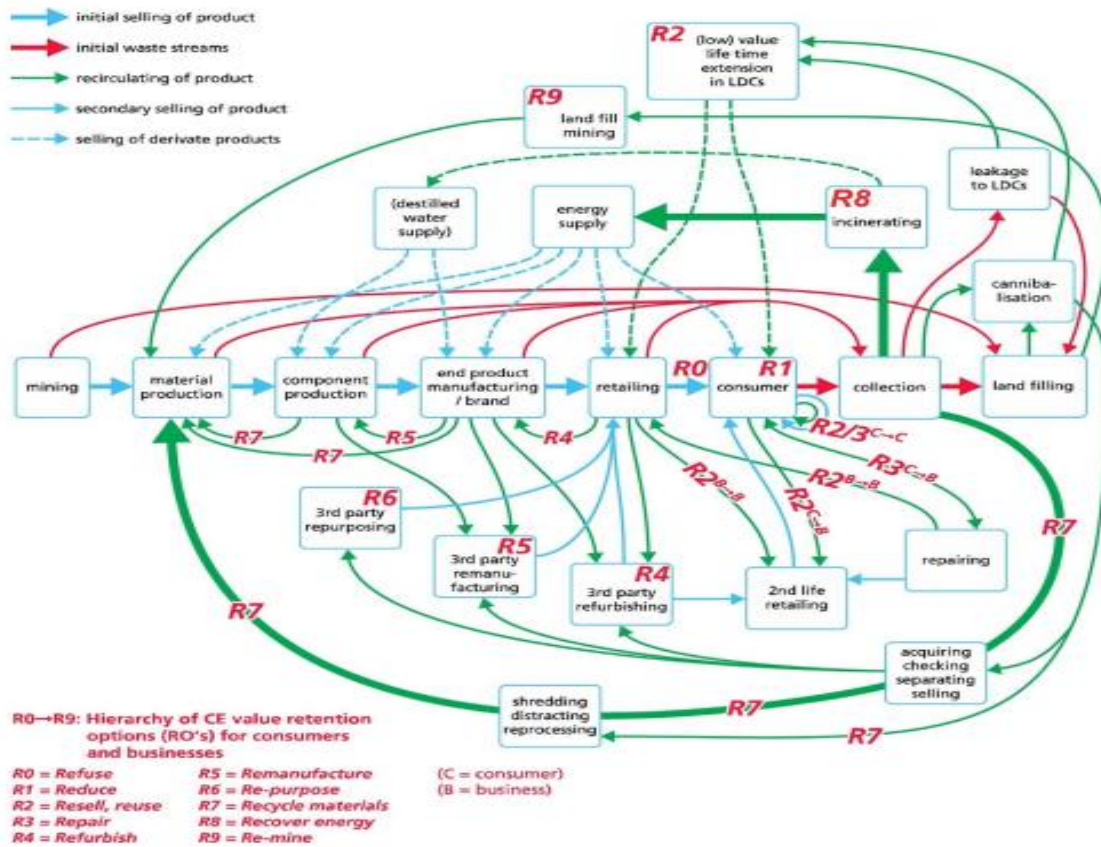


Figure 2. Mapping Circular Economy Retention

Source: Reike et al. (2018:13)

Overall, what connects these models together is the common goal of sustainable development, and in the long run eliminating waste from production and consumption. CE is based on the following basic principles: (i) maintenance and development of natural capital; (ii) optimizing the use of natural resources; and (iii) improving overall system performance. The maintenance and development of natural capital is ensured from the rational and efficient exploitation and use of natural resources, the regeneration of natural systems and the promotion of the use of renewable energy.

CE is still an inevitable trend that countries pursue in the context of increasingly degraded and depleted resources, polluted environment, and fierce climate change. Implementing CE model demonstrates the responsibility of countries in fulfilling their commitments on climate change, while improving the capacity and competitiveness of the economy as well as businesses and consumers.

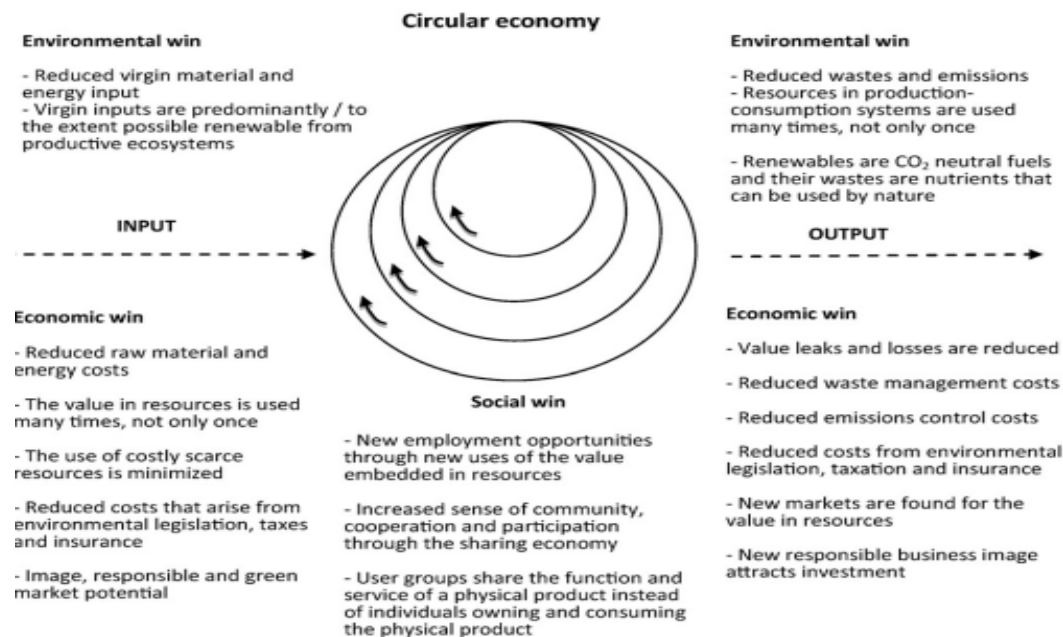


Figure 3. The win-win potential of circular economy

Source: Korhonen et al. (2018:40).

In addition to the benefits of CE models mentioned in Figure 3, the CE would reduce the social costs of managing environmental protection and responding to climate change, help to create new job opportunities and especially improve people's health. For businesses, the implementation of CE models also brings a lot of benefits, including reducing risks of resource scarcity crisis, creating motivation for investment, technological innovation, reducing production costs and increasing supply chain. Especially, today, countries are increasingly participating in joining global Agreements on environment, climate change, sustainable development and joining new generation free trade agreements. These Agreements have set out many regulations on waste and emission standards, on facilitation of circular goods and services and so on. For example, in order to support businesses to apply the CE model, the ASEAN Economic Community discussed and developed a CE framework, in which one of the strategic goals is to create an attractive ecosystem for circular goods and services through trade open and trade facilitation for circular goods and services.

2.1.3. The challenges of countries when applying circular economy model

In many countries, the implementation of CE model in practice has encountered a lot of barriers because CE requires breakthrough changes and fundamental innovations in management, production and consumption. Such as:

- Laura (2018) has identified three main barriers hindering the implementation of CE model in China, which are: (i) lack of educating customers about using recycled products. Some manufacturers have provided used clothing collection services for their recycling purposes, but customer response is very low due to the lack of information about the classification, recycling and reuse service; (ii) higher costs for recycle, especially polyester recycling; while the majority of customers are not ready to pay more for a recycled product with similar features; and (iii) lack of government support.

- Adding to Laura's study, Xue et al. (2010) also mentioned the China's difficulty, that is, although this is the country that provides the legal regulations to implement CE very early, the perception of staffs in the public agencies about CE is still different from their action. The awareness of the people and the community about CE is much more limited than that of officials. The survey in Tianjin (China) shows that, while the government sets ambitious goals in promoting CE, there is still limited public awareness of this model. The public does not have basic information about their role in the implementation of the government's policy on CE promotion.

- Mayer et al. (2019) argue that a CE is an economy that promotes the fundamental linkages between resource use, waste and emissions, and contributes to the integration of environmental policies (output-related) and economic (input-related). However, achieving environmental sustainability and transitioning from a linear economy to a CE is highly dependent on effective waste management and how waste is treated as a potential resources in the future. However, according to Elisabetta et al (2021), at present, the waste management towards CE is facing many barriers, which are: (i) inadequacies in the collection and processing of used materials due to high cost for collection and processing. Besides this, the amount of collected material may not be large enough; the price of material collection may fluctuate; and the raw material market may under-developed; (ii) businesses lack data and information to assess the benefits of circular business (CB) model; and (iii) businesses worry a lot about the fact that regulations between countries are quite different and can hinder work towards CE. Along with a lack of knowledge about CE, the administrative burdens of monitoring waste classification and recycling are also challenges. Finally, socio-cultural barriers, including the fact that organizations/enterprises participating in a closed cycle do not act equally towards CE; or there are cultural differences between organizations/enterprises, thus leading to lack of cooperation also hindering the development of CE. In addition, Cooper, T. (2013) shows that consumption in developed countries is often characterized by shorter use/ownership of product due to the influence of "discard" CE. To achieve the goal of CE, Cooper argues that it is necessary to reverse the consumption habits in these countries.

Recently, OECD research (2020) has identified 13 main barriers for countries to transition to CE model, in which the order of barriers is as follows: lack of financial resources (73% rated as large and very large); inadequate legal regulations (73%), financial risks (69%) and cultural and vision barriers (67%). These are the factors that have a great impact on the implementation of the transition to a CE that governments should pay attention to. In addition, inadequate awareness (63%), lack of human resources (61%), limited investment for CE (59%), incomplete information and inconsistent regulations (55%), lack of private sector participation (43%), lack of political will, and lack of technological solutions (39%) also have a significant impact on the adoption of CE model.

2.1.4. Preparation of some countries to transit to circular economy

Firstly, the development of CE is a process of continuous improvement in terms of mechanisms and policies. To ensure institutional adequacy at different levels (from product, business, consumer to industrial zones or more broadly, cities, regions, countries), many

countries have made great efforts in continuously promulgating and amending legal documents, especially ratifying Law on CE with regulations on technical standards, on encouragement of smart consumption, on promotion of appropriate technology transfer, knowledge transfer, etc. Recently, the British Standards Institute has issued “BS 8001: 2017 framework for implementing the principles of the CE in organizations” which is applied to businesses of all sectors and all scales that want to move to CE model (BSI, 2017).

Secondly, one of the key pillars of the CE is effective waste management. Therefore, many countries have paid great attention to this issue from the very beginning. For example, Germany has enacted a Law on Closed Cycle Management and Waste to provide a framework for implementing closed cycle waste management. England has introduced a Waste Prevention Programme, one of its key provisions is the introduction of an increasing annual landfill tax. The Netherlands has presented the Lansink scale for stratification in waste management methods. Japan has also enacted the Small Waste Electrical and Electronic Equipment Recycling Law; Singapore ratified the Zero Waste Master Plan; and so on. For waste management, in addition to promulgating regulations to encourage recycling (not only for producers but also for consumers), countries also promulgate regulations on strict penalties for violations in waste management. Most countries set a waste treatment fee on the principle of “the more you discharge, the more money you will have to pay”. The higher the fee for waste treatment, the higher the rate of landfilling will be reduced, and will help change the consumption habits and waste treatment of the whole society.

Thirdly, in many countries, in order to develop CE model in a synchronous and systematic way, in addition to amending, supplementing and perfecting the legal framework on environmental protection as well as encouraging more economical and sustainable production and consumption, countries have also developed their own Programs for development of CE. For instance, the Netherlands has adopted “A CE in the Netherlands by 2050”, or Germany has issued the “CE Initiative Deutschland”, or China has incorporated the CE model into the National Strategy and three consecutive periods of China's Five-Year Plan. The contents of these Programs are quite comprehensive, showing the vision, roadmap and focus on developing a number of priority sectors applying circular production in those countries. In addition, the roles and responsibilities of each relevant stakeholders are clearly divided, including: manufacturers, law enforcement agencies, local authorities, consumers and the community. Thus, the CE Programs have demonstrated the clear commitment of the Governments in implementing CE model.

Fourthly, Government itself is not only in the role of policy-making but also directly collaborates with other actors in the process of development of CE. For example, in 2014, the UK Government initiated the Public Procurement Programme, which revised the purchasing standards at the government level and introduced new regulations aimed at reusing furniture, purchasing items refurbished or easily reused, thereby acting as leverage for the development of CB models. The UK government has also established a “swap shop” to facilitate the reuse and exchange of items between government units. Similarly, in June 2016, the Government of Sweden released a National Procurement Strategy, which includes

rules for public procurement that are linked to the environment protection and how it works to ensure social sustainability (Sweden, 2017). Or, the Governments of some countries (such as the UK, Singapore,...) also play the role of a partner to connect stakeholders (leading experts, business representatives, associations, creative Funds,.....) together to discuss and find appropriate production methods and technologies to help business develop sustainably.

Fifthly, one of the major obstacles for businesses to switch to a CB model is financial issue. Understanding this issue, many countries have provided grants from the state budget for projects that have an impact on promoting CB model. For example, Germany has provided grants for collaborative projects during the period 2019-2022, focusing on innovative product design, or the UK launched the Waste Prevention Innovation Fund in 2013 to support waste prevention projects implemented in local communities. Hence, it is indispensable financial support policies from the Government to promote CB model, and these policies are mainly concentrated on creative design projects, recycling industry projects and waste prevention projects.

Finally, the role of business has always been considered as the key actor in promoting CE development. However, the role of consumers is equally important because production efficiency needs to go hand in hand with consumption efficiency. To achieve the goal of CE, it is necessary to reverse the habits of wasteful consumption. In Taiwan, right after the promulgation of the Waste Disposal Act, the Government launched a campaign to educate people about waste, whereby the campaign's message was “*people must cherish what they have in hand*”, helping people appreciate what they are using, thereby helping people to fundamentally change their consumption behavior. Sustainable consumption is also the driving force of sustainable production.

In sum, the steps to prepare for a CE in many countries are quite diverse and at many levels, with different outcomes. However, countries often approach the CE into two directions, which are: (i) widespread application of the CE with an important role of the state, forming the legal basis for CE development, and (ii) applying CE from bottom-up, practical activities, applicable to each product and business (Kalmykova, Y. et al., 2018).

3. Research methods and data sources

3.1. Research methods

To clarify the practical problems and challenges of CE, the study uses several qualitative methods. The study uses the desk-study method to systematize the research related to the topic. This study inherits some theories related to CE model; and uses descriptive statistics to understand the current situation towards the CE model in Vietnam; as well as using statistical and synthesis methods. In addition, the study uses comparative and contrasting analysis methods to highlight Vietnam's challenges on the way towards a CE model.

3.2. Data sources

The data in this study is secondary data collected from reliable researches and surveys. For example, using the CIEM (2020) survey conducted in 2022, with the scale of

interviews using a questionnaire of 508 enterprises operating mainly in the field of processing and manufacturing; and in-depth interviews with 40 businesses, experts, and leaders of relevant state agencies in Dong Nai, Hanoi, Nghe An, Thanh Hoa and Ho Chi Minh City. The purpose of CIEM's survey is to assess the level of understanding of Vietnamese enterprises about CB model; as well as the adequacy of legislation and government support for CB in Vietnam

3.3. Scope of Research

This study examines the current situation of Vietnam on the road towards a CE model at all three levels, namely the micro level (households, enterprises), the medium level (inter-enterprises, industrial parks) and the macro level (with the participation of the whole society, including production and consumption). The study mainly assesses the Vietnamese situation in the recent 05 years, and suggests solutions towards CE model in Vietnam in the next 5 years.

4. Results

4.1. Real situation towards circular economy model in Vietnam

After more than 35 years of Đổi Mới, Vietnam has risen to become a bright spot of growth with remarkable achievements in the region and in the world. However, Vietnam is facing many challenges in terms of resource depletion, pollution, environmental degradation and climate change. In Vietnam, the amount of plastic waste generated is about 1.83 million tons/year; the volume of daily-life solid waste generated is about more than 61,000 tons/day, of which up to 71% of the total waste volume (equivalent to 43 thousand tons/day) is treated by burial method. Many natural resources are currently severely depleted, typically coal. Vietnam has had to import coal since 2015, and it is forecasted that it may have to import up to 100 million tons of coal per year by 2030. In particular, Vietnam is among the most vulnerable countries to climate change. It is forecasted that climate change and natural disasters can cause losses up to 11% of Vietnam's GDP by 2030. Therefore, in order to implement the sustainable development goals and international commitments that Vietnam has signed, the country has implemented a number of approaches to CE, such as:

- At the enterprise and household level (micro level): the CE model is shown through activities of collecting and recycling metal, paper, plastic, etc., then moving to craft villages for recycling; or “garden - pond - barn - biogas” model (in delta provinces), “garden - pond - lake” (in central provinces) or “garden - forest - pond - barn” (mountainous provinces), gas collection from waste livestock production, cleaner production models in small and medium-scale industrial production (for example: food processing industry, steel production,...), or closed farm models. In general, these models have also initially approached to CB principal. However, at present, even corporations and enterprises, most of them just stop at applying the model of "reuse and recycle waste" (the approach towards “making full use of waste” is mainly). CIEM (2022) found that only 21% - 33% of surveyed entrepreneurs said they knew well or very well about one of the popular CB models, of which the "refurbish and reuse” had the highest rate of knowing, with a response rate of 33%. The proportion of enterprises that have never applied any form of CB model is 37.6%. The application from product design

to waste design (with the goal that when the product is discarded, it can be easily transferred to another purpose, or used in other production processes) in enterprises is still limited.

- At the inter-enterprise level, eco-industrial parks (medium level): In recent years, when awareness of environmental protection and climate change response has increased, Vietnam has formed new models towards CE and established wider CE networks, such as: “cleaner production” model; “production of by-products from aquaculture” model; Vietnam Packaging Recycling Alliance; Vietnam's global plastic Partner, or a pilot model of converting traditional industrial parks (IP) into ecological industrial ones in some localities (such as: Khanh Phu IP located in Ninh Binh Province, Khanh Hoa IP in Da Nang city, and Tra Noc 1&2 IP in Can Tho city. These models have been contributing to promoting the development of CE in Vietnam. Currently, only 06 IPs in Vietnam have been piloted for transition. This is a very modest number because at present, there are nearly 400 IPs established, of which nearly 300 parks have been put into operation with the occupancy rate reaching about 70% (Nguyen Hoa, 2021). The conversion to eco-industrial park model is still very limited and there are many obstacles in regulations on criteria of eco-industrial parks.

- At the social level (macro level): the model is still quite primitive and implemented under a number of Programs or Initiatives (such as: “Vietnam recycles” Program and “No Discharge to Nature” Initiative). The “Vietnam Recycles” is a program that collects and recycles obsolete or used electronic products free of charge for the purpose of ensuring a safe and eco-friendly e-waste recycling. This program was started in January 2015 by electronic manufacturers and is operating 10 free collection points, of which in Hanoi (05 points) and Ho Chi Minh City (05 points). In addition, “Vietnam Recycles” also organizes free home collection of e-waste.

Although many businesses have been implementing a part of the circular principal, so far, it seems that Vietnam still does not have a complete CE model. Compared to the CE model in the agricultural sector, the CE model in the industrial sector has only reached at the level of partial circularity in a production process or part of a product.

4.2. Vietnam's challenges of transitioning to circular economy

The road to CE model in many countries around the world has encountered many obstacles at different levels and at different times. Like many countries, the transition from a linear economy to CE in Vietnam also has faced many challenges, including huge barriers that need to be noted:

Firstly, the awareness of leaders, officials, civil servants, individual businesses and people about the characteristics and outstanding benefits of CE model is not always accurate and complete. In particular, in order to implement CE, right from the very beginning, people's awareness of sorting and cleaning waste before discarding or before putting it into reuse and recycling is still limited. People's consumption of some plastic products (plastic bags, plastic bottles, plastic packaging,...) has not been controlled. It is likely that sustainable consumption habits, in which using durable value products instead of one-time products only appear in a very small part of society. Meanwhile, the propaganda to enhance the

understanding of CE has not been focused. In addition, the awareness and consumption habits of Vietnamese people towards environmentally friendly products and services, "green" and "organic" products or products manufactured under CE model remain limited.

Secondly, the institutional framework for the development of CE is not yet complete and there is a lack of policies to encourage businesses to transit to CE model. The evidence is that, according to enterprises' assessment of the adequacy of the CE policy (conducted by CIEM, 2022), about 80% believe that Vietnam already has guidelines, policies and legal regulations on CE under varying degrees of completeness. However, only 9% - 10% think that the guidelines, policies on CE/CB are adequate; 18% - 20% think that there are no guidelines, policies on CE/CB; and 36% - 43% of surveyed enterprises think that guidelines, policies on CE/CB are still lacking. In addition, the proportion of enterprises receiving one of the forms of support from the Government, such as: credit, interest rate, science and technology, training, market information, production premises is quite low, accounting for only 2% to 15% depending on the form of support. Support for "production and business premises for the production line applying the BA model" is the group with the lowest rate of support (only 2%), while the support group on "training" has the highest (accounting for 15%).

Thirdly, the development of CE requires investment resources and continuous technological innovation. Meanwhile, Vietnam is a developing country, and most of the technology is only average level and even backward, and the production scale is small. Due to difficulties in investment resources and technology, the waste recycling industry has not yet fully formed. Currently, there is no suitable technology to turn solid waste into resources and input materials for other products, such as: generating energy, creating organic fertilizers, creating new functional materials, etc. Therefore, although Vietnam has a very large amount of domestic solid waste, generating about 25.5 million tons/year, of which urban is generated about 38 thousand tons/day and rural area is about 32 thousand tons/day. The volume of daily-life solid waste in urban areas across the country increases by an average of 10-16%/year (Ha An, 2019), but the ability to collect and reuse is not sufficient, especially that Vietnam has not yet implemented waste classification from source.

With a small production scale, it will be difficult for an enterprise to fully operate a large closed production process on its own, or to fully operate CB model. The cooperation between many small and medium-sized enterprises (SMEs) would bring competitive advantages to each enterprise and form an effective CE model. However, in Vietnam, the cooperation between SMEs is still very weak, even in many cases, enterprises compete unfairly with each other.

Fourthly, high-quality human resources are still lacking. The CE model requires scientific and technological innovation, creative ideas, and access to advanced technology. This means that it is necessary to have a large number of experts, a good and dynamic research team, who clearly grasp the production characteristics from the beginning to the end of production process. Meanwhile, human resources for science and technology are considered as one of the major challenges in Vietnam. According to statistics in 2021, the

percentage of trained workers remain low, reaches 66%, of which the percentage of trained workers with degrees and certificates is only reached 26.1% (Hong Minh, 2022). The low rate of trained workers with degrees and certificates also affects the application of high science and technology to production activities. In addition, state agencies at central and local levels have been implementing solutions mentioned in national strategies (National Strategy on Responding to Climate Change, Vietnam Sustainable Development Strategy, Green Growth Strategy, etc) and in many cases, the implementation of solutions with both technical and financial support from international organizations, or NGOs. Therefore, the fact that the implementation of solutions towards sustainable development and CE has not yet come from the endogenous capacity of state agencies. CE also requires public managers and officials with technical and information technology knowledge and innovative ideas.

5. Discussion and Conclusion

5.1. Some recommendations for Vietnam

Firstly, it is very necessary to further promote the propaganda about the benefits of CE to people's health and quality of life to leaders, civil servants, managers, workers and people to build a general consensus of the whole society. If policy makers are unknowledgeable about CE, there would be no well-designed policy on CE. If the citizen does not understand the long-term benefits of CE, it would be able to change sustainable consumption behaviour, as well as create pressure and motivation for businesses to change production behaviour. Finally, if businesses do not understand the trend of CE development, they will also be gradually excluded from the game due to increasing consumer demand and increasing technical standards towards CE. Hence, from the very beginning, all stakeholders need to be involved right from the design of CE policy to the implementation in each sector of the economy.

Secondly, the transition from a linear economy to a CE is considered an inevitable path in the context of achieving the goals of sustainable development and climate change response in Vietnam. In order to develop CE, Vietnam needs to soon formulate a Law on CE to avoid the common phenomenon that policies on the same issue are regulated in many separate legal documents. Law on CE is being applied by many countries (such as Germany, Netherlands, Japan, China,...). This Law helps to grasp the regulations on CE systematically and synchronously, including regulations related to many important stages of CE model, that is: design, production, consumption, waste management and turning waste into a resource, etc.

So far, Vietnam has not paid more attention to assessing the development level of CB models that are being encouraged to be implemented in practice, so it has not yet issued specific action plans or solutions to expand successful CB models. Meanwhile, Vietnam has come up with many Strategies with objectives and orientations for each Strategy; and in many cases there has been an overlap and even conflict of objectives between the Strategies. This also causes confusion when implementing those Strategies. Therefore, Vietnam needs to speed up the progress of formulating a comprehensive national action Plan for CE model for the next 10 or 20 years, which includes strong incentive for enterprises to proactively and confidently transit into a CB model.

Thirdly, people are always considered as a center to implement CE. Therefore, each individual skills and knowledge will be the key factors in the process of implementing the CE model. Therefore, it is necessary to develop training programs and courses on new economic models (CE, digital economy, sharing economy, etc). Subjects on ecological economics, green growth, cleaner production, clean technology, sustainable development, environmental industry, protection of ecosystems and biodiversity,... need to be included into all levels of national education system. The provision of basic knowledge about CE should be included in the curriculum even at the primary school. Besides, Vietnam also needs to invest more in science and technology.

Fourthly, to have a more comprehensive and broader policy on CE, it is also necessary to have a more comprehensive concept of CE from the very beginning. Currently, the concept of CE has been officially mentioned in Article 142 of the Law on Environmental Protection 2020. Accordingly, CE is “*an economic model in which the design, production, consumption and service activities aim to reduce the exploitation of raw materials, prolong the product life cycle, limit waste generation and minimize the negative impact on the environment*”. However, this definition has not yet fully expressed the requirements of sustainable development. Because: (i) this definition only refers to 04 activities of the CE model (including: design, production, consumption and service activities) which is incomplete; (ii) this definition only emphasizes on reducing the exploitation of raw materials, prolonging the life cycle of products, but does not cover some very basic features of CE, which are: improve the use of energy in a sustainable way through saving energy, using renewable energy to replace fossil energy; or change consumption behavior towards a more sustainable way through minimizing demand for goods, increasing shared consumption, eliminating the consumption of non-environmentally friendly products, toxic chemicals; or focus on sustainable exploitation and use of all resources. The fact shows that it is very difficult to achieve sustainable production without going hand in hand with sustainable consumption; and (iii) this definition emphasizes the benefits of CE from an environmental perspective, while economic and social benefits have not yet been mentioned. Both theory and practice show that the CE model brings not only the benefits of “reducing waste generation and minimizing adverse impacts on the environment”, but also benefits for businesses and society through creating job, improving productivity and income for workers. Thus, it is possible to consider adjusting the definition of CE, whereby in the next period the CE in Vietnam can be defined as follows: “*is an economic model that promotes innovation, optimization of close production through resource extraction and conservation, design, maintenance, repair, reuse, remanufacturing, restoration and refurbishment, recycling and prolonging the product life cycle. CE creates a society that develops in balance with nature by: maximizing the values of production inputs, minimizing waste, increasing efficiency and efficient use of resources, creating durable products, recycling, reusing products*”.

5.2. Conclusion

In Vietnam, sustainable development has long been considered a national priority. Vietnam is currently ranked as one of the five countries most vulnerable to climate change. There is a lot of evidence that climate change has caused great economic damage to Vietnam.

For example, climate change and natural disasters have caused a loss of 5% of Vietnam's GDP (in 2010), and this number could reach 11% by 2030 if Vietnam does not have effective solutions to solve the problem (DARA, 2012). Similarly, the World Bank has made a forecast that climate change could affect 1.5% of Vietnam's GDP from now to 2050. Therefore, encouraging the development of CE is one of the priority and urgent tasks that Vietnam chooses to develop the country's socio-economic in the next 10 years.

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RESEARCH OF FACTORS AFFECTING EMPLOYER BRAND IN SMALL AND MEDIUM ENTERPRISES IN DONG THAP PROVINCE

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Abstract

The study aims to examine the impact of factors affecting employer brand in small and medium enterprises in Dong Thap province. Research results show that: 5 factors have a positive impact on employer brand; in which the compensation policy has the greatest impact, followed by the co-worker relationship, the interestingness of the job and the opportunity to apply knowledge, and finally, the opportunity for career development.

Keywords: *small and medium enterprises, employer brand, Dong Thap province.*

1. Introduction

Recruiting and retaining talent has become one of the solutions to create competitive advantages of enterprises. To attract employees, employers have used some principles of brand management applied in the field of human resource management. The use of the principle of brand management in human resource management has formed the term employer branding. More and more businesses are using their resources to invest in employer brand development campaigns because of the benefits it brings. Employer branding has become a prominent topic of interest in the field of human resource management.

Dong Thap province has great potential for development in the fields of industry, commerce, services, agriculture and fisheries. Those advantages have created favorable conditions for small and medium enterprises to form and develop. According to the Dong Thap Statistics Department, by the end of 2022, Dong Thap province has nearly 3,000 small and medium enterprises, accounting for about 97% of the total number of businesses operating in the province. The small and medium-sized enterprise sector contributes to the province's GDP on average about 70% per year and handles 51.0% of the labor force in the enterprise sector in general. In recent years, small and medium enterprises in the province are tending to develop well. However, that development is not really commensurate with the role of the province. In general, small and medium-sized enterprises still have difficulties that small and medium-sized enterprises face in human resource management because of their sizes, financial ability and the attractiveness of the brand, etc., especially for businesses doing business in the field of services and retail trade.

Therefore, in this study, the author chooses to study the factors affecting the employer brand of small and medium-sized enterprises in Dong Thap province with the aim of identifying and measuring the level of influence on the employer brand. The influence of these factors serves as the basis for businesses in the field of services and retail trade in Dong Thap province to have appropriate solutions to build employer brands in the future.

2. Literature review and Theoretical basic

2.1. Literature review

Around the world, a lot of research has been done regarding the employer brand of the business. Research by Reis, G & Braga, B.M (2016) said that there are 5 factors affecting employer brand including: interestingness at work; relationships with colleagues; remuneration policy; career development opportunities; opportunity to apply knowledge. According to Hillebrandt and Ivens (2018), there are 12 factors affecting employer brand, including: culture and communication; teamwork spirit; assigned tasks; international environment and career opportunities; remuneration policy; business reputation; work-life balance; training and developing; diversity of work; client; autonomy; corporate social responsibility. Research by Berthon et al (2005) considers employer brand as the benefits from the employer that a candidate gets if they work for the business. With this definition, the authors considered employer branding in favor of benefits. This study also shows that there are 25 observed variables corresponding to 5 factors affecting employer brand including: interestingness at work; relationships with colleagues; remuneration policy; career development opportunities; opportunity to apply knowledge. In addition, the study of Schlager et al (2011) divides employer brand into employer brand perceived by employees in the enterprise and employer brand expectation towards potential candidates. Employer branding includes both internal and external branding, which is an organic integration of internal and external brands. External branding means establishing brand awareness among prospective employees and building a good image of the business to encourage and attract candidates (future employees). In return, internal branding is the image established by the business, which, according to current employees, is closely related to retaining and stimulating potential employees. Enterprises as employers need to develop value systems, company policies, and activities to attract, motivate, and retain current and future employees (Dell et al. Ainspan, 2011).

In Vietnam, the research situation related to the topic of employer brand of enterprises. Research by Nguyen Thi Anh (2016) identifies factors affecting employer brand, determines the level of impact on each factor to the employer brand at information technology enterprises in the Ho Chi Minh City. This study has shown that there are 5 factors affecting employer brand here, including: interestingness at work; relationships with colleagues; remuneration policy; career development opportunities; opportunity to apply knowledge. In addition, in the study of Truong Ngoc Tien (2018), the influence of employer brand experience on employees' intention to quit through the emotional commitment factor - the case of Joint Stock Commercial Banks in Ho Chi Minh City. This study aims to examine the relationship between employees' employer brand experience and emotional commitment, between emotional commitment and employees' intention to quit.

In the study, the author has built a research model from 01 employer experience factor including 3 components, 1 factor of intention to leave and 01 factor of emotional commitment. The research results show that the employer brand experience factor has a direct positive impact on employees' emotional commitment: the higher the employer brand experience and

the employee's emotional commitment, the higher the employee's emotional commitment. the lower the employee's intention to leave. Besides, the emotional commitment of employees to the employer brand has a direct negative impact on the employee's intention to quit. Research by Nguyen Minh Nhut (2016), a study on the influence of employer brand on employees' intention to choose a workplace: a case study at e-commerce enterprises in Ho Chi Minh City. The study aims to examine the impact of the components in the model and the impact of qualitative variables on the intention to choose a workplace of employees.

The results show that 3 factors: reputation, attractive salary and social responsibility are the main factors affecting the intention to choose a workplace of employees; The other two factors, working environment and training and development, have little influence in this study. The study makes recommendations to help businesses increase their attractiveness to employees. Research by Le Tan Dat (2016), research on the topic of improving employer brand image of Ba Sau Nam Group. Based on Lievens & Highhouse (2003)'s conceptual - symbolic framework model, the factors affecting employer brand image are divided into two groups of functional attributes and symbolic attributes. combined with a number of theories and previous research related to building employer brand image. The results of the study show that in order to successfully build an employer brand image, the company needs to improve the factors of salary, bonus, travel, and reputation.

2.2. Theoretical basic

2.2.1. Overview of employer brand

Brand - as defined by the World Intellectual Property Organization (WIPO): is one or a set of signs (tangible and intangible) to identify and distinguish a product, a business or it is an image of a product or business in the minds of customers and the public. Employer Branding is the image of a business from the perspective of a “workplace” in the eyes of current and future employees (Schlager et al. (2011). Employer branding is not what the business advertises itself, but the image perceived by its target audience (both employees and external talent). A “healthy” employer brand is a employer brand that is positively perceived by both internal employees and external target talent. In this study, employer brand is understood from the point of view of Schlager et al. (2011) and the study also focuses on analysis and evaluation. about employer brand from the perception of employees who are working in the business (not studied from the perspective of potential candidates).

2.2.2. Factors affecting employer brand

Relationships with colleagues: reflected in the fun, happy working environment, good co-worker relationships and teamwork atmosphere (Berthon et al., 2005; Hillebrandt and Ivens (Berthon et al., 2005; Hillebrandt and Ivens). 2011)). Potential candidates can perceive the degree of co-worker relationship in an enterprise through the recruitment process (Backhaus and Tikoo, 2004). Colleague relationships refer to the work environment and relationships with other employees (Sivertzen et al., 2013). Relationships with colleagues including relationships between an employee with other colleagues and with superiors; relationships among employees in the enterprise in general (Berthon et al., 2005).

Interest in work: includes diverse, rich and wide-ranging work; transformative work; creativity and enjoyment in products and services (Hillebrandt and Ivens (2011). Nguyen Thi Anh (2016) also pointed out that the interesting things at work include: interesting working environment, opportunities to access new technology, the company promotes the creativity of employees, professional staff. Karma.

Remuneration policy: reflected in salary, bonuses, job security and promotion opportunities (Berthon et al., 2005). Remuneration policy is related to economic benefits (Sivertzen et al., 2013). Remuneration policy is a factor mentioned in most of the studies including both quantitative and qualitative factors affecting employer brand.

Opportunities for knowledge application: Candidates will feel happy when their knowledge and skills have the opportunity to be communicated, shared with others and widely accepted. According to Berthon et al., 2005), the requirements of employees about having opportunities to apply what they have learned in their work and opportunities to impart and share their knowledge with others. others.

Opportunities for career development: is the factor that an individual is attracted to by an employer that provides recognition, recognition of contributions, dedication and creates opportunities for future career development. Research by Berthon et al (2005) said that candidates expect the company to bring attractive future income or have a salary that is highly competitive compared to other companies in the same field.

2.3. Research models

In this study, the proposed research model is inherited by the author based on the research of Berthon et al (2005); Hillebrandt and Ivens (2011) and some other research models on the factors affecting employer brand of small and medium enterprises, the author proposes a research model as presented in (Figure).

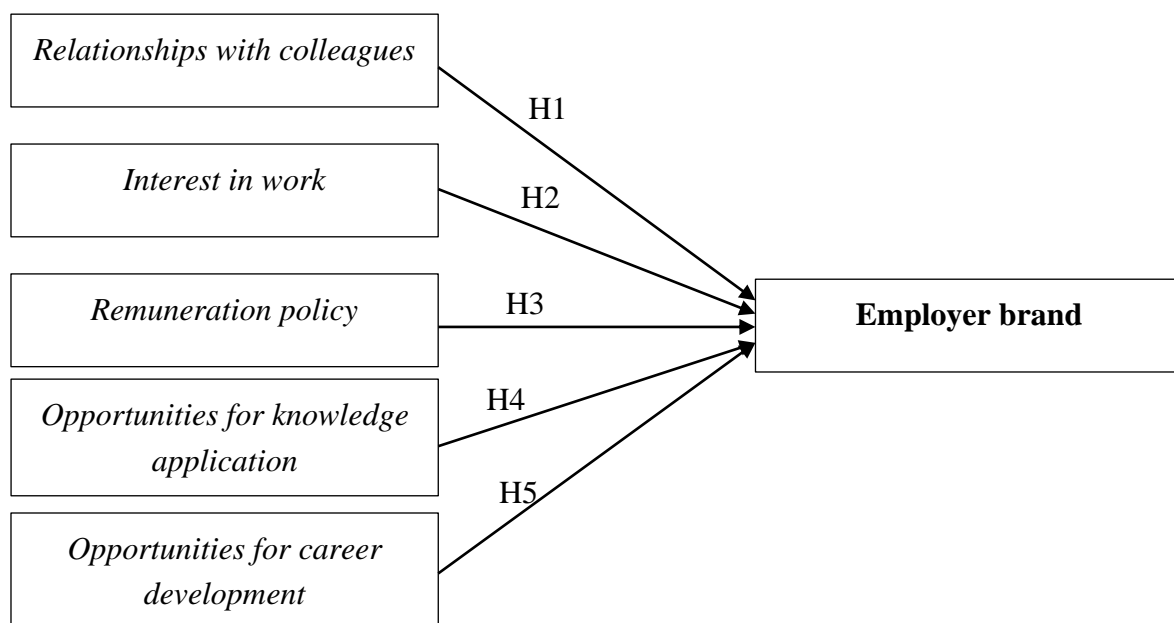


Figure 1. Proposed research model

The general function of the model has form: $Y = f(X_1, X_2, X_3, X_4, X_5, X_6)$

In there:

X1: *Relationships with colleagues* (QH)

X2: *Interest in work* (TV)

X3: *Remuneration policy* (ĐN)

X4: *Opportunities for knowledge application* (KT)

X5: *Opportunities for career development* (NN)

Y: *Employer brand of small and medium enterprises*

Research hypothesis:

- H1: Colleague relationship has a positive impact on employer brand.
- H2: Interest in work has a positive impact on employer brand.
- H3: Remuneration policy has a positive impact on employer brand.
- H4: Opportunity to apply knowledge has a positive impact on employer brand.
- H5: Career development opportunities have a positive impact on employer brand.

3. Method

3.1. Scale development

In this study, the scale for concepts in the research model is based on inheritance and correction from previous studies. Specifically, factor (1) Relationship with colleagues has 5 observed variables; factor (2) Interest in work has 5 observed variables; Factor (3) Remuneration policy has 5 observed variables; factor (4) Opportunity to apply knowledge has 5 observed variables. Factor (5) Opportunity for career development has 5 observed variables; (6) Employer brand has 4 observed variables. All observed variables measuring research concepts are assessed using a 5-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree).

3.2. Research stages

3.2.1. Qualitative research

At the stage of qualitative research to determine the factors affecting the employer brand of small and medium enterprises in Dong Thap province. In which, qualitative research is carried out with the use of interview method to adjust influencing factors and measuring scale for influencing factors to suit the research context in small and medium enterprises in Dong Thap province. The author uses the target group discussion technique. Specifically: the author uses convenient sampling method, selects 07 new employees recruited in the last 5 years and 05 heads of human resources of 05 businesses in the retail sector in the area of Dong Thap Province. This research phase aims to adjust the terms used

in the scale and add observed variables to the scale for the concepts in the research model and verify the theoretical bases in the model before official researching.

3.2.2. Quantitative research

Quantitative research through survey questionnaires via google.doc and emailed to respondents. Samples were selected by convenience sampling method. The main subjects of the survey are newly recruited workers in the last 5 years from small and medium enterprises in the service and retail trade in Dong Thap province. The survey period is from October 2022 to December 2022, the sample size is expected to be 425.

3.3. Data processing method

(1) Descriptive statistics method to analyze the current state of recruitment brand of small and medium enterprises in the survey sample, as well as general information about enterprises.

(2) Testing the scale: Using Cronbach's Alpha coefficient to evaluate the quality of the construction scale. The scale is evaluated as good quality when: (1) Cronbach's Alpha coefficient of the population is greater than 0.6; and (2) The correlation coefficient - the sum of the observed variables is greater than 0.3 (Corrected Item - Total Corelation) (Nunnally & Bernstein, 1994).

(3) Exploratory factor analysis (EFA): Helps to extract factors for further analysis. Factor loading coefficients are the criterion to ensure the practical significance of EFA. This coefficient greater than 0.3 is considered the minimum level, greater than 0.4 is considered important, greater than 0.5 is considered to be of practical significance (Hair et al., 1998). In this study, in order to improve the practicality and reliability of the research results, the author only selects the factors with the transfer coefficient greater than 0.5, the Kaiser-Mayer-Olkin (KMO) has a high value. large value (between 0.5 and 1) and the total variance extracted is greater than 0.5 to ensure the explanatory content of the factors obtained from the results of EFA analysis.

(4) Logistic regression model analysis method to analyze the factors affecting recruitment brand of small and medium enterprises.

4. Results

4.1. Research sample information

After conducting the interviews and evaluating the quality of the questionnaires, the results showed that 375 votes were entered into SPSS 22 software, using SPSS tools such as checking the validity of the data, checking the validity of the data. check empty data to clean the data. After data cleaning, 50 invalid answer sheets were eliminated. Thus, the data of 325 enterprises' answer sheets will be used in the next analysis. Specifically, information about the research sample (n = 325) is presented in Table 1.

Table 2. Research sample information (n = 325)

Characteristic		Frequency	Percentage
Size	Small enterprise	198	51%
	Medium enterprise	192	49%
Field	Retails trade	135	34%
	Service	255	66%
Working time	From 1 year to under 2 year	25	6%
	From 2 year to under 3 year	28	7%
	From 3 year to under 4 year		
	From 4 year to 5 year	337	87%
Sex	male	250	65%
	female	140	35%
Age	Under 25 years old		
	Under 35 years old		
	36 - 45 years old		
	From 46 years old		

Source: The author's data collection and analysis results

4.2. Testing the scale through Cronbach's Alpha coefficient

The results of the reliability analysis show that the Cronbach's Alpha coefficients of all the scales have values above 0.70. The lowest is the Scale of Career Development Opportunities ($\alpha=0.71$), the highest is the Employer Brand Scale ($\alpha=0.85$), the standard scale when the alpha reliability is 0.70 or higher ($\alpha \geq 0.7$). The analysis results of the correlation coefficients - total correlation (itemtotal correlation) less than 0.3 will be rejected, quite closely between the observed variables. After testing Cronbach's Alpha coefficient, the remaining 27 observed variables, the unqualified and excluded variables are KT04 and KT05 (Table 2).

Table 2. Preliminary assessment results of the reliability of the scales

Scale	Encode	Cronbach's's Alpha
<i>1. Relationships with colleagues</i>	QH	0,78
<i>2. Interest in work</i>	TV	0,83
<i>3. Remuneration policy</i>	DN	0,80
<i>4. Opportunities for knowledge application</i>	KT	0,84
<i>5. Opportunities for career development</i>	NN	0,71
<i>6. Employer brand of small and medium enterprises</i>	TH	0,85

Source: The author' data processing result

4.3. EFA analysis

EFA analysis for 5 groups of factors affecting employer brand of small and medium enterprises includes 27 observed variables, after removing the variable KT02 does not meet Cronbach's Alpha reliability. The results of the first factor analysis showed that the variables were extracted into 5 groups, with the total variance extracted was 61.15% > 50%, the scale was accepted. KMO coefficient = 0.783 is in the range of $0.5 \leq KMO \leq 1$, factor analysis is appropriate. Bartlett test with Sig. = .000, representing a high level of significance. All Factor loading values of each group are greater than 0.5; except that the observed variable KT03 = 0.40 is less than 0.5 and appears in two factors (factors 1 and 5), so this variable will be excluded.

For better factor analysis results, the author conducts the second factor analysis after removing the variable KT03. The results of the second factor analysis showed that the variables were extracted into 5 groups, with the total variance extracted = 64.25% > 50%, the scale was accepted. KMO coefficient = 0.86 is in the range of $0.5 \leq KMO \leq 1$, factor analysis is appropriate. Bartlett test with Sig.= 000, showing high significance. All the Factor loading values of the observed variables are greater than 0.5; weight difference $\lambda_iA - \lambda_iB$ are all greater than 0.3, so they are accepted (Nguyen Dinh Tho, 2011). Therefore, the results of this factor analysis are accepted for inclusion in the official survey.

4.4. Logistic regression model analysis results of factors affecting business performance of small and medium enterprises

Regression results (Table 3) show that, R value = 0.754, which means that the relationship between the variables in the model is quite close. The value $R^2 = 0.570$ shows the fit of the model, the adjusted R^2 coefficient is 0.579 (which explains 5 factors that have an impact on 57.9% of the employer brand of small and medium-sized enterprises) and tests F with an F value of 69,615 at the Sig level of significance. very small = .000. The results of the evaluation of the above R^2 value show that the built linear regression model is appropriate. However, to be able to infer this model into a model of the population, we need to conduct an F-test through analysis of variance.

Table 3. Summary of regression coefficients

Model	R	R^2	R^2 adjusted	Standard deviation of the estimate	Change analysis					Durbin-Watson
					R^2 change	F change	df1	df2	Level of significance F change	
1	0,754	0,570	0,579	0,66319991	0,570	46.577	6	367	0,000	2.145

Source: Results from the author's survey data processing

According to the results of analysis of variance (ANOVA) in Table 4, Sig.= 0.000 < 0.01. Thus, the model of factors affecting employer brand of small and medium enterprises is consistent with actual research data. In other words, the independent variables are linearly related to the dependent variables with a 99% confidence level.

Table 4. Analysis of Variance (ANOVA)

	Model	Sum of squares	df	Mean square	F	Sig.
1	Regression	145.480	6	19.925	46.576	.000a
	Residual	108.518	247	.439		
	Sum	367.000	366			

Source: Results from the author's survey data processing

The results of the regression analysis of factors affecting the employer brand of small and medium enterprises are presented in Table 5.

Table 5. Table of regression coefficients

Model	Unnormalized coefficients		Normalized coefficients Beta	t value	Level of significance Sig	Multiple statistics	
	Regression weights	Standard deviations				Acceptance coefficients	Variance Magnification coefficients VIF
Constant	1,50	0,041					
X1	0,381	0,040	0,381	9.235	0,000	0,712	1.400
X2	0,277	0,040	0,277	6.723	0,000	0,478	2.081
X3	0,386	0,040	0,386	9.364	0,000	0,606	1.643
X4	0,232	0,040	0,232	5.641	0,000	0,818	1.217
X5	0,137	0,040	0,137	3.354	0,001	0,612	1.626

Source: Results from the author's survey data processing

The results of testing the assumptions of the regression model drawn from the Enter method also show that the assumptions are not violated and there is no multicollinearity because the VIF is less than 3. The results from Table 5 show that, 5 independent variables of the model are statistically significant because they have Sig value < 0.01 (at 99% confidence level), moreover these regression coefficients are > 0, meaning, They all have a positive impact on the employer brand of small and medium enterprises to different degrees.

The regression has the following form:

$$Y = 0.381X1 + 0.277X2 + 0.386X3 + 0.232X4 + 0.137X5$$

With the results of regression analysis from Table 5, it is possible to arrange the factors according to the degree of impact on the employer brand of small and medium enterprises from high to low as in Table 6.

Table 6. Impact of factors on business performance of small and medium enterprises

Variable	Name	Impact level (hệ số Beta)
X3	<i>Remuneration policy (ĐN)</i>	0,386
X1	<i>Relationships with colleagues (QH)</i>	0,381
X2	<i>Interest in work (TV)</i>	0,277
X4	<i>Opportunities for knowledge application (KT)</i>	0,232
X5	<i>Opportunities for career development (NN)</i>	0,137

Source: Results from the author's survey data processing

The regression model to evaluate the impact of factors on the business performance of small and medium enterprises is rewritten as follows:

$$\text{Employer brand} = 0.386DN + 0.381QH + 0.277TV + 0.232KT + 0.137NN$$

5. Discussion and Conclusion

The research results show that the remuneration policy factor has the greatest impact on employer brand with a β coefficient of 0.386. This result is similar to the study of Alniacik, E. and Alniacik, U. (2012) and Cheng, P., Phoebe, M. C., Lim, A. G., and Sze, D. A. (2015). This is completely appropriate because for many employees “benefits are the glue that binds employees to the business”. However, for small and medium enterprises, especially those operating in the fields of service and retail trade, in order to have a good remuneration policy, it is necessary to consider appropriate calculations. These enterprises can harmoniously combine financial and non-financial compensation policies. Combination of salary, bonus, allowance, welfare with other spiritual treatment policies. In which, financial compensation is the basic and important foundation. It is necessary to link remuneration with the work performed by employees, with the capacity of employees, with their achievements as well as their commitment and loyalty. It is also possible to consider grouping employees (for example, according to the criteria of scarcity, importance to business lines, etc.) to allocate appropriate budgets to ensure that the company's remuneration policies are guaranteed. ensure fairness, suitability to pay while ensuring competitiveness, attracting qualified candidates in the labor market.

The second group of factors that have a relatively large impact on the employer brand is the relationship between colleagues; interestingness of the job and the opportunity to apply knowledge with coefficients β of 0.381, respectively; 0.277 and 0.232. This result is similar to the study of Sivertzen et al., 2013. Regarding co-worker relationships, along with financial compensation policies, small and medium enterprises should have clear policies in improving the working environment, have clear job descriptions, and assign and decentralize expenses. Detailed and complete lay the foundation for maintaining and developing working relationships. Because when the job is diverse, rich, and complicated, if it is not clearly defined in terms of job descriptions and decentralization, it is easy for employees to fall into a difficult situation when performing jobs, overlapping, the relationship between employees is not good, conflicts between employees and employees, between leaders and employees in performing work. This is a very common fact for small and medium sized businesses.

At the same time, clearly specifying job descriptions, assignment and delegation of powers, along with giving employees a certain scope of authority (self-determination) in the process of job performance will help employees have have the opportunity to apply knowledge to work, the opportunity to share what has been learned with others, etc., thereby accumulating knowledge to apply what is learned through the process of working at the enterprise for the company. later work.

For small and medium-sized enterprises, the number of employees is not much, so in human resource management, it is necessary to pay attention to job design to create diverse,

rich and wide jobs. The very diversity of jobs will also help create jobs with good pay, rich jobs. This is the basis for employees to receive good remuneration policies from enterprises. At the same time, small and medium enterprises should also maintain the trend of changing the way of working in a positive direction. Because small businesses, it is easier to change and be flexible in work than large-scale enterprises.

The last factor that also has a positive impact on employer brand is career development opportunities with a β coefficient of 0.137. This result is similar to the study of Schlager, T., Bodderas, M., Maas, P. and Cachelin, J. L. (2011), when arguing that career development opportunities are one of the main reasons for applying candidate for a particular job. In fact, employees always want to have the opportunity to develop their career. They always want to be recognized and properly evaluated for their ability to get promotion at work. In addition, employees not only want to have opportunities for career development in the current enterprise but also in the future when they no longer continue to work at that enterprise. Employees want to stay or work at businesses that offer them wide career opportunities. Therefore, small and medium enterprises need to outline for employees a clear career path with open opportunities./.

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COLD IRONING TECHNOLOGY: THE EFFECTIVE SOLUTION TO DEVELOP ZERO EMISSION PORT

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Abstract

Ports and maritime transportation are significant since they account for 90% of global trade and national economic growth. However, it has a detrimental impact on both the environment and human health. Sustainable development is emphasized in recent port literature. According to some reports, cold ironing can be used to regulate air, water, and noise pollution in ports. There are still many challenges to solve before this technology may be used in real-world applications. The goal of this study is to pinpoint the elements influencing the adoption of cold ironing at Vietnamese ports as a component of the government's Green Port Development Project. The usage of ports for cold ironing is influenced by five main factors, according to research findings. National and international rules are regarded as one of the most important aspects in this. The discussion section of this paper goes into considerable detail about its findings and implications.

Keywords: *Cold Ironing, Green Ports, Drivers, Regulations, Sustainability.*

1. Introduction

Maritime shipping, which is recognized as the most fuel-efficient mode of transportation in terms of ton-miles, is used to move around 90% of the world's trade (UNCTAD, 2018). It has substantial challenges, nevertheless, including a dependency on fossil fuels, an increase in greenhouse gas (GHG) emissions, and certain technological challenges (Zis, 2019; AAPA, 2007). The third GHG study (IMO, 2014) estimates that shipping produces 2.2% of the world's anthropogenic CO₂ emissions, a 0.5% decrease from the estimates from the second GHG study (IMO, 2009). According to studies by Corbett et al. (2007), Eyring et al. (2005), and Zis (2019), ships operating near beaches and ports contribute 15% of the world's NO_x emissions and 5% to 8% of its SO_x emissions, respectively. This industry is also to blame for respiratory illnesses that have been linked to PM pollution deaths.

Among the adverse medical conditions brought on by air pollution are asthma, lung cancer, heart attacks, chest infections, and other serious respiratory diseases (Quaranta et al., 2012; Kumar et al., 2019; Tian et al., 2013). According to Kumar et al. (2019), the shipping

sector significantly contributes to air pollution, which causes long-term disease and mortality from asthma and other chronic illnesses, killing 40,000 people yearly in the UK alone. As a result, steps must be done to stop air pollution and protect a safe environment for people, particularly in harbors. The green ship, green port, and zero-emission port ideas may potentially introduce using renewable, sustainable, and energy-efficient solutions both onboard and onshore (Bailey & Solomon, 2004; Kumar et al., 2019; Pavlic et al., 2014; Sulligoi et al., 2015; Zhao et al., 2020). Many people consider cold ironing to be a way to make maritime transportation cleaner and more environmentally friendly (Cullinane and Cullinane, 2019; Pettit et al., 2018; Spengler & Tovar, 2021). Cold ironing is one way to reduce such emissions from ships at ports. Several earlier studies have demonstrated the significant impact of cold ironing on the economic, environmental, and social aspects of ports (AAPA, 2007; Ballini & Bozzo, 2015; Chatzinikolaou et al., 2015; Colarossi & Principi, 2020; ExternE, 2005; Friedrich and Bickel, 2001; Innes & Monios, 2018; Nunes et al., 2019; Tseng & Pilcher, 2015; Vaishnav et al., 2015).

In order to access the port and the adjacent markets, port officials eventually enacted restrictions requiring all visiting vessels to be outfitted with and then operate contemporary technology. Despite the fact that "cold ironing" legislation have been extremely effective in significant ports like Los Angeles, Seattle, and Rotterdam, Asian nations, like Vietnam, have been slow to implement the technology and regulations (Monacelli, 2017). Developing nations like Vietnam, which have limited resources, struggle to allocate resources to multiple ends including economic growth and environmental protection. Many countries have prioritized economic goals over environmental concerns. Although other studies (Arduino et al., 2011; Diógenes et al., 2020; Innes & Monios, 2018; Radwan, et al., 2019) have identified a number of implementation barriers for cold ironing, little is known about the factors that motivate it. This study aims to pinpoint factors that influence cold ironing adoption, notably in Vietnam. Additionally, this study is the first to examine the influences on the adoption of cold ironing using a quantitative methodology. This will serve as a critical starting point for the government and port authorities as they create regulations to promote the application of sustainability standards for the port.

2. Literature review

2.1. Cold ironing

Vessels can apply for cold iron, also known as an onshore power supply (OPS) or shore-side electricity (SSE), by connecting to shore-side electricity instead of utilizing their auxiliary generators to produce power for hoteling. While the ship is loading or unloading cargo, this procedure enables the continued electrical powering of other equipment, such as emergency equipment, refrigeration, cooling, heating, and lighting (Innes & Monios, 2018).

It has been shown to be effective in reducing emissions that contribute to air pollution and climate change in countries where renewable energy generation accounts for a large portion of energy production. The concept of "Green ports" calls for the use of cold ironing, which has been implemented at a number of ports worldwide. However, according to the WPCI (2017),

only 28 ports have cold ironing installed globally, showing the scant uptake of this technology so far (Innes & Monios, 2018). The use of cold ironing, a relatively recent method that supplies energy for large seagoing boats, may be considered a technical advancement. However, more study is required due to the dearth of information on this concept.

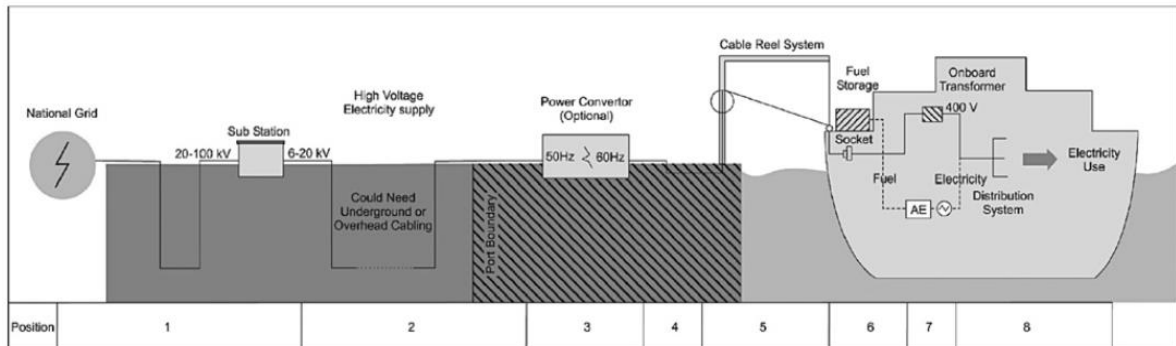


Figure 1. Overview of cold ironing

Source: reproduced from ENTEC (2005a)

2.2. Cold ironing as a sustainable strategy in ports

According to Rajabi et al. (2022) sustainable development fosters social advancement, environmental resource protection, as well as short- and long-term economic growth and stability. The core of sustainable development is the control of the conflict between meeting human needs and preserving the integrity of the ecosystem. A measurement, or set of measures, that gives information on a particular element is referred to as a sustainability indicator (Ugwu and Haupt, 2007). The triple-bottom-line approach, which requires a minimum level of performance in the environmental, economic, and social dimensions, must be taken into consideration in order to achieve operational sustainability (Heravi et al., 2015).

Previous studies, which have been published for the ports of Los Angeles (US), Oslo (Norway), Aberdeen (Scotland), Copenhagen (Denmark), and Kaohsiung (Taiwan), corroborate the advantages of cold ironing from an environmental and economic perspective (AAPA, 2007; Ballini & Bozzo, 2015; Colarossi & Principi, 2020; Innes & Monios, 2018; Tseng & Pilcher, 2015). The primary advantages of cold ironing technology for the environment are the decrease of local and global pollutants as well as noise (Kotrikla et al., 2017; Sciberras et al., 2014; Winkel et al., 2016). Zis et al. (2014) showed that cold ironing has the ability to reduce CO₂, SO₂, NO_x, and BC emissions by 48-70%, 3-60%, 40-60%, and 57-70%, respectively. For the ports of Gothenburg, Long Beach, Osaka, and Sydney, Styhre et al. (2017) determined that the emissions were 150.000, 240.000, 97.000, and 95.000 tonnes of CO₂ emissions, respectively. According to Adamo et al. (2014), cold ironing at the port of Taranto, Italy, might cut emissions of NO_x and CO₂ by 1.097 tons per year and 25.686 tons annually, respectively.

Cold ironing can assist ports in making money through reduced CO₂ emission trade, according to research by Dai et al. (2019). The research also provides a framework for the

economic feasibility of cold ironing investment. Additionally, Zis (2019) examined three different fuel price scenarios for two roundtrips of the Ro-Ro ship between ports A and B in Sweden and Belgium. The results show that investing in cold ironing benefits the ship economically at medium and high fuel costs, but that at extremely low fuel prices, the energy cost savings are not enough to make up for the investment throughout the anticipated lifetime.

According to studies by Kumar et al., 2019; Tian et al., 2013; Quaranta et al. (2012), cold ironing is one useful strategy for reducing environmental pollution in society. This, in turn, reduces the number of individuals who pass away from diseases like asthma, lung cancer, heart attacks, and chest pain that are linked to air pollution. The main benefit of cold ironing is that it reduces the social expenses of treating diseases caused by the air pollution from ships. Several studies have estimated the cost of ship emissions (Ballini & Bozzo, 2015; Chatzinikolaou et al., 2015; ExternE, 2005; Friedrich and Bickel, 2001; Nunes et al., 2019; Vaishnav et al., 2015). Cold ironing provides several benefits when seen as a method to reduce the external expenses to society in general and to port cities in particular. For instance, Chatzinikolaou et al. (2015) estimated the total external health cost to be roughly 25.3 million euros in the Greek port of Piraeus, of which more than half (61%) was attributed to particulate matter. According to ExternE (2005), the external cost of air pollution from ships at the Venice port is 24 million euros. As a result of airborne pollutants from container ships traveling various routes, Friedrich and Bickel (2001) calculated the external cost of inland shipping for the Netherlands and determined that it was 321 million euros, as well as the cost per 100 kilometers: On the routes Felixstowe-Rotterdam (1200 €/vkm), Rotterdam-Felixstowe (1050 €/vkm), Piraeus (9300 €/vkm), Iraklion (900 €/vkm), Aegean Sea (1000 €/vkm), and Felixstowe-Rotterdam (1050 €/vkm). The CAFE project series (2005) calculated a 45 billion euro external cost of air pollution from maritime transport for the European Seas. According to Innes & Monios (2018), air pollution may cost the UK £54 billion annually. Air pollution-related health problems have a significant financial impact on both society and business. Each year, the UK spends more than £20 billion on medical costs (Royal College of Physicians, 2016). Additionally, cold ironing technology keeps the workplace quiet and free of air pollution, which is good for the health and productivity of the workers.

Table 1. Sustainability dimensions of cold ironing

No	Dimension	Authors
1	<i>Economic dimension</i>	Dai et al. (2019); Zis (2019); Wang et al. (2021).
2	<i>Environmental dimension</i>	Kotrikla et al. (2017); Kraemer & Czermanski (2020); Kumar et al. (2019); Monacelli (2017); Sciberras et al. (2014); Spengler & Tovar (2021); Winkel et al. (2016); Zis et al. (2014); Zis (2019). Ballini & Bozzo (2015); Chatzinikolaou et al. (2015); ExternE (2005); Friedrich and Bickel (2001); Innes & Monios (2018);
3	<i>Social dimension</i>	Kumar et al. (2019); Nunes et al. (2019); Quaranta et al. (2012); Tian et al. (2013); Vaishnav et al. (2015).

2.3. The context of Vietnam

In terms of growth, Vietnam is on course to succeed significantly. The so-called Doi Moi rehabilitation program is made up of several important political and economic measures that are meant to improve the economic climate, which had been negatively impacted by the post-war difficulties. Vietnam will become a new Asian Tiger after pursuing economic reforms for thirty years (Barker & Üngör, 2019). According to several international organizations, Vietnam will see the highest economic growth in the Asia-Pacific region in 2022. Vietnam's GDP growth is predicted by the World Bank (WB) to be 7.2% in 2022 and 6.7% in 2023. In the meantime, the IMF increased its 2022 growth prediction for Vietnam to 7% (News 1, 2022). Of the main economies in Asia, only Vietnam has seen a considerable increase in its GDP (Trinh et al., 2021).

However, one of the areas most severely impacted by climate change is the Mekong River Delta region of Vietnam. According to OXFAM's predictions, 90% of the region will be under water by 2100 and 45% of it will be covered in saline-sodic soil by 2030 (Nguyen et al., 2022). Because of this, the Vietnamese government is actively converting to a circular economy and reducing greenhouse gas emissions. Vietnam declared its intention to implement a circular economy in 2022. According to the plan, the advancement of the circular economy is intended to spur innovation, raise worker productivity, support green growth linked to economic restructuring, and update the growth model in line with efficiency improvement. The UNFCCC's 26th summit conference (COP26) in Glasgow (UK) in 2021 will once again call for a 45% reduction in CO₂ emissions by 2030 (compared to 2010) and a reduction of all greenhouse gas emissions (N₂O, CH₄, CFC, etc.) to zero by the middle of the century (Nguyen, et al., 2022). With the ultimate goal of avoiding global warming, Viet Nam is one of the participants in this agreement on reducing GHG emissions as well as in accords on energy, lands, etc. Additionally, the harbor has a program in place to reduce emissions. The Ministry of Transport gave their blessing to the green port expansion project in 2021. Since environmental protection is essential to investment in seaport construction, business, and exploitation, it is necessary to build Vietnam's seaport system in a sustainable manner.

2.4. The main drivers and barriers of cold ironing

2.4.1. Regulation drivers

According to Innes & Monios (2018), all nations are required to adhere to the fundamental legal standards specified by the IMO. The International Convention on the Prevention of Pollution from Ships, often known as the MARPOL Convention, was established by the IMO and has a long history of preventing ship pollution (Cullinane & Cullinane, 2019). However, stricter rules could be implemented. The European Union (EU) has important ecological aims for its maritime policy. By Directive 2005/33/EC, which was published in 2005, the English Channel, North Sea, and Baltic Sea emission control regions were established. The 1.5% sulfur cap imposed in these areas required ships moored or parked in EU ports to use gasoline with a sulfur concentration of 0.1% or less. In 2014, the European Union issued Directive 2014/94/EU, which addressed the development of

infrastructure for alternative fuels. This states that "Member States shall ensure that the need for shore-side electricity supply for inland waterway vessels and seagoing ships in maritime and inland ports is assessed in their national policy frameworks." Unless there is no demand and the costs are disproportionate to the advantages, including environmental benefits, such shore-side electrical supply must be deployed as a priority in ports of the TEN-T Core Network and in additional ports by December 31, 2025 (European Commission, 2014). Additionally, it encourages the use of alternative fuels and authorizes government support for the adoption of technology that reduces emissions.

Vietnam has been a member of the International Maritime Organization since June 12, 1984, making it the organization's 126th member. As of right now, Vietnam has ratified 24 important IMO Conventions and Protocols and is a signatory to 24 of them. To protect the maritime environment, Vietnam has also developed a variety of rules and regulations. For instance, the 2015 Vietnam marine Law stipulates that marine activities must abide by its provisions as well as those of other Vietnamese laws and any international agreements to which Vietnam is a party. It makes it unlawful for people and businesses to take part in actions that harm the marine environment. Additionally, Vietnam will begin construction on a green port there on October 27, 2020. Ports will thus begin legally implementing the Green port requirements by 2030 and on a voluntary basis in 2025. Vietnam's Green Port Plan will be created based on six main areas of criteria, including managing environmental quality, resource use, IT applications, decreasing emissions, and tackling climate change and sea level rise (News 2, 2020). At this time, a lot of ports in Vietnam were actively researching and using the Green Ports criterion as one of their long-term plans. Particularly large ports are frequently at the forefront of implementing governmental policies. As a result, the author argues that:

Hypothesis 1: Regulation drivers have a positive effect on the process of cold ironing adoption.

2.4.2. Incentives drivers

The extensive usage of cold ironing hasn't always been supported by culture and morals (Arduino, et al., 2013). In order to encourage cold ironing and decrease externalities by fostering cost integration, incentives are essential for port authorities. However, these incentives may be developed in various ways and put into practice by parties at various levels, including the government and global legislative bodies like the IMO (Tzannatos, 2010). By reducing taxes, the price of power, and the interest rate on loans, for example, the government may incentivize ports to use cold ironing. For instance, Williamsson et al. (2022) offered evidence that the difference between fuel prices and the cost of using electricity (Seediek, 2016) is the key economic element driving the employment of cold ironing. Some ports, reportedly including the port of Gothenburg, have reportedly switched to more alluring cold ironing by providing free power. A key factor in enticing potential ports to cold ironing is a decrease in fuel costs (Innes & Monios, 2018). Cold ironing is more alluring in countries like Norway that have inexpensive, clean power since local energy costs have a considerable impact on this (Hall, 2010). However, high local power costs, like those in Southern Europe, effectively act as a localized impediment to adoption (Piccoli et al.,

2021). Renewable energy source projects may be created more rapidly and become economically viable when financial incentives are applied efficiently (Diógenes et al., 2020; Ming et al., 2014; Simsek & Simsek, 2013).

The high cost of the investments that will likely be necessary in various forms of hardware is a significant barrier to the adoption of cold ironing (Radwan, et al., 2019). A cold ironing system would cost ports between \$2 and \$6 million, which is more than they have available. Many ports need a loan with a fair interest rate because they lack the initial investment cash. Low-interest rate government policies will influence port authorities to use cold ironing. As a result, the author argues that the government will employ financial incentives, tariffs, and regulatory procedures to encourage ports to use cold ironing technology for environmental preservation.

Hypothesis 2: Incentive drivers have a positive effect on the process of cold ironing adoption.

2.4.3. Environmental drivers

Findings demonstrate that environmental issues, in addition to the port's financial capability, influence the decision to implement technologies like cold ironing (Williamsson et al., 2022). Studies by the International Marine Organization show that emissions of carbon dioxide (CO₂), nitrogen oxides (NO_x), and sulfur oxides (SO_x) are produced by the marine sector in the globe at rates of 2.2%, 15%, and 5-8%, respectively (Wang et al., 2021). It is evident that reducing these emissions would have a significant impact on air pollution mitigation given that more than 90% of global trade happens over water (Monacelli, 2017).

Air pollution affects everyone who works at the port and those who live nearby. The shipping industry makes a substantial contribution to air pollution, which results in diseases like asthma and other chronic conditions that claim 40,000 lives annually in the UK alone (Kumar et al., 2019). Additionally, the noise and vibration of diesel-powered machinery causes headaches and hearing issues in long-term port workers. In order to eliminate health risks to workers' wellbeing and establish a secure workplace, port management works to enhance technology. The greatest solution for these problems is cold ironing. The pollution produced by contemporary ports is reduced by 95-98% with the use of cold ironing technology. This reduces emissions of all sorts, including carbon dioxide, nitrogen oxides, sulfur oxides, and particulates (Monacelli, 2017). As an example, the cold ironing program in Rotterdam was well established in 2014 when the poll was carried out. The port's cold ironing program significantly reduced sulfur oxide emissions because ships are no longer burning sulfurous bunkers while in port. One of the largest ports in the world, Rotterdam, may still be proud of having virtually totally reduced its sulfur oxide emissions (Monacelli, 2017). According to the author, the environmental benefits of cold ironing and the port's negative impacts on human health and the environment will promote the use of this method.

Hypothesis 3: Environmental drivers have a positive effect on the process of cold ironing adoption.

2.4.4. Initial capital barriers

The facility's related costs before, during, and after the implementation process are all considered financial hurdles. It includes investment expenditures, operating and maintenance costs, and power costs. The whole investment cost is made up of berthing, infrastructure, and ship-side refit expenditures (Radwan et al., 2019).

The cost of implementing a cold ironing system has been shown in several research. For instance, it was projected that investment expenses at the ports of Aberdeen and Copenhagen would total £6.6 million and €37 million, respectively (Ballini and Bozzo, 2015; Innes and Monios, 2018). According to the World Ports Climate Initiative (WPCI), annual operations and maintenance expenditures represent 5% of the project's total investment costs. The cost of powering the berthed ships varies greatly depending on the electricity policies of the various nations.

The shortage of electricity in some cities or areas may also be a barrier. Local grids frequently cannot handle high-voltage cold ironing systems. Smaller cities are where this is especially true. In order to support investments in cold ironing systems in such areas, further multi-million dollars expenditures in new electrical networks and transformation substations are required (Kraemer & Czermanski, 2020). For ports, especially those in underdeveloped countries, installing cold ironing systems will be quite challenging since it requires a substantial initial financial expenditure. Therefore, the author argues that:

Hypothesis 4: Initial capital barriers have a negative effect on the process of cold ironing implementation.

2.4.5. Standardization barriers

Another barrier is posed by various technical issues relating to a lack of standardization (Arduino et al., 2011; Kraemer & Czermanski, 2020; Kumar et al., 2019; Radwan et al., 2019). The fundamental challenge in creating port networks is matching ship power to the voltage and frequency of shore energy. This refers to the interoperability of electrical characteristics since different international shipyards have different voltage and frequency requirements. Some ships use 220 volts at 50 hertz (Hz), some at 60 hertz (Hz), while yet others use 110 hertz (Hz). A shoreside power transformer must meet the High Voltage Shore Connection (HVSC) standard voltage in order to be used, but it also has to have a low no-load loss since it is still in use even when a ship is not plugged into shore power (Paul, Peterson, & Chavdarian, 2014). To match the frequencies of the onshore and onboard power systems, a frequency converter is required to transmit energy to ships operating at 60 Hz on board in harbors with 50 Hz power sources and vice versa. A frequency converter must be constructed in a modular way to fulfill the various power requirements since it is one of the most expensive pieces of harbor grid equipment, even if it may not be sized to a standard (Ericsson & Fazlagic, 2008). Besides, the main distribution voltage ranges from 440 volts to 11 kilovolts. For vehicle carriers, the needed load is a few hundred kW, whereas, for passenger ships or reefer ships, it might be a dozen or more MW. Furthermore, there is currently no universal standard for connections and cables (Arduino et

al., 2011). A lack of technological standardization will lead to an increase in the number of converters and the cost of cold ironing. This impedes the practice of cold ironing at ports inadvertently.

Hypothesis 5: Standardization barriers have a negative effect on the process of cold ironing implementation.

3. Discussion and Conclusion

3.1. Discussion

It is generally acknowledged that the rise of port infrastructure and the associated activities significantly contribute to the expansion of marine transportation, the economic development of coastal nations, and the generation of both direct and indirect jobs in the region. However, it faces significant obstacles like a reliance on fossil fuels, an increase in greenhouse gas emissions, and some technological challenges. According to the most recent IMO study, additional types of international shipping pollutants, such as carbon monoxide (CO), nitrogen oxides (NO_x), sulfur oxide (SO_x), volatile organic compounds (VOC), ozone (O₃), and particulate matter (PM), contribute to air pollution in harbor areas. Cold ironing, which is also anticipated to play a significant role in a larger drive for the electrification of maritime transportation, is one of the best options for reducing local emissions among the various technologies that assist the growth of a more sustainable shipping industry (Wan et al., 2018; Williamsson et al., 2022; Zis, 2019). Although earlier research, which was published for the ports of Los Angeles (US), Oslo (Norway), Aberdeen (Scotland), Copenhagen (Denmark), and Kaohsiung (Taiwan), confirms the advantages of cold ironing from an economic and environmental perspective, the use of this technology in developing countries is very limited (AAPA, 2007; Ballini & Bozzo, 2015; Colarossi & Principi, 2020; Monacelli, 2017; Innes & Monios, 2018; Tseng & Pilcher, 2015).

By identifying the variables that affect the cold ironing process, this work significantly advances the field. First, according to our findings and previous studies (Cullinane & Cullinane, 2019; Innes & Monios, 2018), regulation drivers have a favorable effect on the adoption of cold ironing. Through an examination of both the function of international law and the results of national regulation, this study added to the body of knowledge already available on cold ironing. In particular, national regulation complements international law well to encourage ports to use cold ironing. In the past, insufficient national rules on concerns like air pollution have been blamed for the lack of adoption of cold ironing in numerous countries (Tseng & Pilcher, 2015). More detailed regulation is needed to target certain shipping industries, taking into account factors like time spent in ports and pollution impact.

Additionally, the results support earlier qualitative research by showing that incentive drivers have a favorable impact on the adoption of cold ironing (Diógenes et al., 2020; Ming et al., 2014; Tzannatos, 2010; Simsek & Simsek, 2013; Williamsson et al., 2022). Projects, particularly those with significant initial investment costs like cold ironing, can grow more quickly and be economically viable when financial incentives are employed as efficiently as possible. The challenges in putting in place financial incentives for cold ironing are primarily

brought on by the protracted processes required to collect the necessary paperwork in contrast to the short application deadlines, as well as the time required to assess the requests and release the incentives.

Third, the choice to create cold ironing in ports was influenced by environmental reasons. This characteristic demonstrates the level of knowledge about how the port affects the environment and public health. The lack of knowledge in Vietnam that addresses the aforementioned issues might be used to justify this. People in developing countries frequently concentrate on how to grow quickly and reap bigger economic rewards rather than the environment. However, a novel strategy is proposed that implements the idea of sustainability and guarantees both environmental protection and economic growth.

Fourth, study results show that initial financial barriers have a negative influence on the adoption of cold ironing (Kraemer & Czermanski, 2020; Radwan, et al., 2019; Williamsson, et al., 2022). Williamsson et al. (2022) said that because expensive expenditures are probably necessary for many different kinds of gear, they represent a considerable obstacle to the adoption of cold ironing. For instance, it was projected that investment costs would come to £6.6 million and €37 million, respectively, in the ports of Aberdeen and Copenhagen (Ballini and Bozzo, 2015; Innes and Monios, 2018). This study broadens our understanding of the difficulties that cold ironing presents. It helps to be proactive in creating a source of funding if port authorities want to go in a sustainable way. Our findings may be put to use by the government to encourage ports to adopt sustainable standards. It is essential to find strategies to reduce investments or link investments to values in order to make the business model more alluring (Williamsson et al., 2022).

The study's findings also concur with other studies' findings that the expansion of cold ironing at today's ports is being constrained by standardization (Arduino et al., 2011; Kraemer & Czermanski, 2020; Kumar et al., 2019; Radwan et al., 2019). The lack of standards for connecting shore to ship was recognized early on as a barrier to the growth of cold ironing, and it was suggested that a large coalition of parties, including shipbuilders and port officials, would promote the development of workable, affordable solutions (Khersonsky et al., 2007). In accordance with our study, raising the level of electrical uniformity between shore and ship would promote the cold ironing-encouraged decrease of local pollutants at ports. The standardization of wires and connectors should also be taken into consideration. More standardization will lessen the complexity, cost, and difficulty of implementing cold ironing toward sustainability (Williamsson et al., 2022).

3.2. Managerial and practical implications

Humans are significantly impacted by the consequences of climate change, which is a result of human economic activity. Action plans are actively developed by nations to lessen their adverse environmental consequences and build sustainable economies. A Green port model has been developed by nations with sustainable requirements for the maritime sector, including reducing noise, air pollution, and water pollution; using alternative energy sources; and raising environmental awareness. One important strategy for reducing regional

emissions at the port is cold ironing. The study's conclusions have a few managerial and useful applications. First off, regulation shows how effective both domestic and foreign laws are when it comes to running ports that follow sustainable development concepts. Management organizations must support the creation and application of specific regulations in order to encourage ports to change their ports in a greener direction. Lack of a clear regulatory framework hinders the growth of cold ironing. There are three different kinds of policy initiatives that have been used to encourage the expansion of cold ironing. First, command-and-control, usually referred to as direct regulation, might be employed by, for example, laying forth guidelines for equipment or processes. Second, politicians may create economic incentives—soft rules in this paradigm—by establishing markets, taxes, or direct subsidies, for example. Third, a more complex and difficult way to design policy is to use a hybrid approach, which defines some emission-related criteria while allowing players select and pursue the most alluring possibilities as solutions. Second, foreign investment has a significant positive impact on port infrastructure development. To give this change a powerful push, the government should seek out how to sustainably attract foreign investment into the construction of seaports. Additionally, maintaining a stable macroeconomic climate helps the seaport system expand, particularly in terms of sustainability. Additionally, port authorities are aware of the critical elements influencing the deployment of cold ironing, which enables them to be proactive in their plans.

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VALUING INDIRECT USE VALUE OF MANGROVES IN KIM SON DISTRICT, NINH BINH PROVINCE

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Abstract

Mangroves are an important resource that provides many economic values to communities affected by natural factors (climate change, sea level rise) and socio-economic development activities. Part of the reason is that the economic values of mangroves have not been properly assessed, in which indirect use values are difficult to see. This study uses a combination of cost-based and benefit-transfer methods to estimate the indirect use value of mangrove forests in Kim Son district, Ninh Binh province. The results show that the indirect use value of Kim Son mangrove forest is 329.524 million VND/ha/year, of which the protection value is 38.119 million VND/ha/year; The value of carbon absorption is 248.177 million VND/ha/year and the value of creating new alluvial land is 43.228 million VND/ha/year. On the basis of studying the actual use and protection of mangroves and estimating the indirect use value of mangroves in Kim Son district, Ninh Binh province, some suggestions are proposed to effectively manage mangrove forests. salinity includes planning and effective management of mangrove land; Raising awareness and participation of the community in mangrove protection; Building sustainable economic models.

Keywords: *Cost based method; Indirect use value mangrove; Magroves.*

1. Introduction

Mangroves are considered an ecosystem that plays a particularly important role in the lives of coastal communities. Mangrove forests have many effects such as environmental, social, economic value and especially carbon storage value, sea dyke protection, erosion prevention, coastal land fixation, riverside drought, drought, etc. control storm winds, waves, high tides, contributing to climate regulation (Feller et al., 2017).

Despite their enormous economic and environmental roles, mangroves are also recognized as one of the most fragile and threatened ecosystems globally (Taylor et al., 2003; Martinuzzi et al., 2009). The decline in both quantity and quality of mangroves due to causes such as industrialization, urbanization, conversion of uses, logging and charcoal, especially the development of large-scale aquaculture large scale (Balsco, 2001). In the period 1980-2000, the world's mangrove forests lost up to 35% of their total area and continued to decrease by 0.4% per year in the period 2000-2014 (from 173.067 km² to 163.925 km²) (Hamilton & Casey., 2016). . In Vietnam, mangrove forests decreased rapidly in the period 1943-2000 from 450,000 ha to 155,290 ha, mainly due to war, conversion of forest land to agricultural production, aquaculture and urbanization (Sam et al., 2005).

In the current context, when everyday resources are being exploited and used in all forms for development, leading to degradation and depletion, the harmonious coordination

between protection and exploitation and use Using for sustainable development of resources is a challenge for each country and territory. To solve this problem requires understanding the values of resource types. The economic assessment of resources is an effective solution to help "monetize" the value of resources as an important basis for policy makers, government levels, and managers to choose solutions. optimal sustainable use of resources in the relationship between protection, exploitation and use.

Kim Son coastal mangrove forest with an area of about 858.85 hectares is a green wall to protect the environment, break waves to protect sea dykes, fix mud in coastal mudflats, increase nutrition sources for marine animals and habitats. habitat of many migratory birds, a source of seafood for humans. Especially in the Kim Son coastal area with its diverse ecosystem, it is an important part of the buffer zone, the transition zone of the Zone. world biosphere reserve of inter-provincial coastal wetlands in the Red River Delta. During the period 1990-2000, the area of this area decreased by 1,775 ha (79% of the area) due to unplanned aquaculture development (Ninh Binh Provincial People's Committee., 2016). The area of mangroves is reduced, making the sea dyke directly affected by the impact of storms and wind. The evidence is that Binh Minh III dyke has been overrun by storms for many years, causing serious landslides, unable to seal, affecting a large area of aquaculture in the region.

Coastal mangrove forests of Kim Son district are affected by many natural and social impacts, including the area in Kim Hai commune, Kim Son district, Ninh Binh province. This article examines the indirect use values of coastal mangrove forests in Kim Son district in order to contribute to the creation of a scientific basis for the environmental and economic values of mangroves, to raise awareness of local authorities. management and society about the role and value of mangroves.

2. Method

Methods of analyzing and synthesizing data

The main method used in the study is the method of collecting and processing information, researching secondary documents. The documents used in the project include studies on mangrove valuation in the world and in Vietnam, documents on biodiversity, the role and significance of mangroves in the development of mangrove forests. socio-economic, documents on the current status of mangrove exploitation and protection in Kim Son district.

Cost based method

Cost-based methods estimate the amount of money we save due to the presence of ecosystem services. This method is quite common and is used to estimate the value of regulatory and support services, especially the protective functions of ecosystems (e.g., control of erosion, flooding or prevention of floods). Storm). This approach has 3 main techniques including: (i) The replacement cost technique considers the costs of replacing an ecosystem service with man-made technologies or infrastructure; (ii) Mitigation cost engineering considers the costs of dealing with the effects of loss of ecosystem services; (iii) Damage avoidance techniques consider the costs incurred if an ecosystem service is lost.

Ecosystem services are assessed and quantified by calculating the costs and losses (monetary or non-monetary) that are avoided, as a result of conserving these ecosystem services. The strength of this method is that it can be both part of a rapid assessment and a

part of detailed analysis, which usually does not require large numbers of data or complex data, and the results of this method are easy to obtain. easily communicated to policy makers. The limitation of this approach is that it does not measure people's preferences or benefits but focuses on avoidable costs, losses and expenditures.

Method of value transfer

The value transfer method is a shorthand method for estimating economic or monetary value based on the use of results from studies conducted elsewhere. This method can be applied to estimate all ecosystem services, but its use depends on the location of the study site and the objective of the assessment. The strength of this method is that it is generally less expensive than primary data evaluation studies, is conducted relatively quickly, and can be used as a rapid assessment technique before consider conducting larger studies. The limitation of this method is that it is highly dependent on the results of available studies that are suitable or similar to the study site.

3. Results

The coastal mangrove forest of Kim Son district is formed in the deltas of the mouths of the Day and Can rivers. This place and the whole land south of the 20th parallel of Ninh Binh are honored to be recognized by UNESCO as a buffer and transition zone of the Red River Delta Biosphere Reserve with a unique diversity of flora and fauna.

The total area of forest and forestry land in Kim Son district is 1558.9 ha, of which the planted forest area is 633.25 ha; The vacant land area is 955.65 ha. The location from dike Binh Minh 2 to dike Binh Minh 3 is 224.27 ha. The area of mangrove forest outside dike Binh Minh 3 is 408.98 ha.

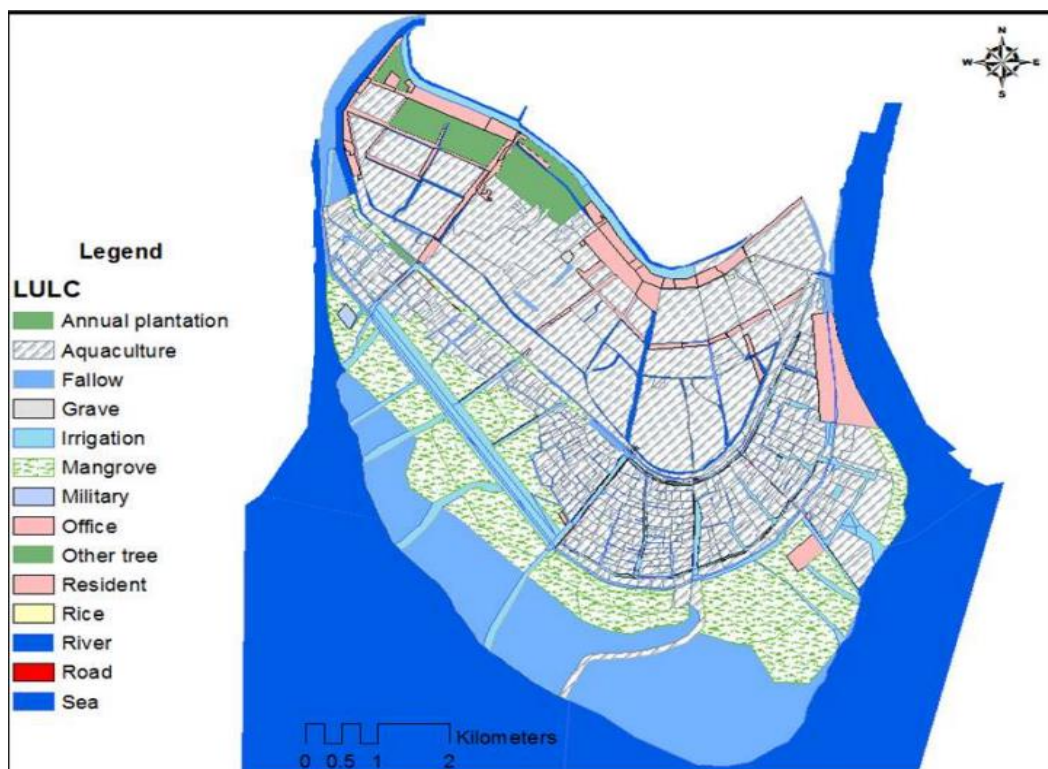


Figure 1. Map of mangroves in Kim Son district, Ninh Binh province

Source: Hong. Q. N et al., 2019

3.1. The value of damage prevention against storms and salinity

It is assumed that Kim Son mangrove forest has the same anti-storm and anti-saline-intrusion effect as a dyke built to break waves and prevent saltwater intrusion and a casuarina forest for windbreak. Using a replacement cost-based approach, the value of storm damage mitigation and saltwater intrusion prevention is calculated by the cost of constructing a dyke with a length equivalent to the length of mangroves along the coastal area and the cost of planting a casuarina forest with an area equivalent to that of a mangrove forest.

** Value of protection against sea waves, against saltwater intrusion*

According to research by Mazda and co-authors (1997) and Tang (2011), each coastal forest belt with a length of 1 km and a width of 1.5 km will have a protective effect equivalent to 1 km of dike/embankment works. The sea is built solidly.

On September 25, 2019, Ninh Binh Department of Agriculture and Rural Development issued Decision 431 on approving the contractor selection results "Bidding package No. 2: Construction and installation and equipment" under the Binh Minh 4 sea dike construction project, Kim Son, Ninh Binh. The Binh Minh 4 dike route is deployed from the mouth of the Day river to the road to the Con Noi border control station with a length of more than 17 km with the winning bid price: 382,227,199,000 VND.

According to Clause 5, Article 14 of Circular No. 09/2019/TT-BXD of the Ministry of Construction: The contingency cost for the arising work volume factor is calculated as a percentage (%) of the total cost of the bidding package. pre-contingency costs. In case for bidding packages the volume of works is determined specifically and precisely, the investor shall decide the reserve ratio for the arising volume factor and must not exceed 5%.

Thus, the cost of constructing a 17 km dyke in Kim Son in 2023 with an assumed slippage rate of 5% is estimated as:

$$382,227,199,000 * 105\% = 401,38,558,950 \text{ VND}$$

So, the cost of building an 18km dyke in Kim Son in 2023 is equivalent to the length of Kim Son coastal mangroves:

$$(401,338,558,950: 17) * 18 = 424,946,709,476 \text{ VND}$$

Depreciation period of sea dyke is calculated as 20 years (the framework prescribed by the State is from 6 to 30 years), so the depreciation value of dyke in 1 year is:

$$424,946,709,476 \text{ VND: } 20 \text{ years} = 21,247,355,473 \text{ VND/year}$$

With a total area of mangroves in Kim Son of 633.25 ha, the value of minimizing damage to breakwater and preventing salinity intrusion of 1 ha of mangroves in 1 year is:

$$21,247,355,473 \text{ VND/year: } 663.25 \text{ ha} = 32,035,183 \text{ VND/ha/year}$$

** Value of protection against sea wind*

According to the plan to plant casuarina forests in Truong Long Hoa commune, Duyen Hai town, Tra Vinh province of the People's Committee of Tra Vinh province on August 5, 2022, with the implementation site in the coastal alluvial area of the hamlet. Nha Mat hamlet, Truong Long Hoa Commune, Duyen Hai Town, Tra Vinh Province; planting scale of 01 ha of

casuarina forest, planting density of 5,000 trees/ha; The implementation period is 04 years (in 2022 to 2025, in which planting is 2022 and 2023 - 2025 is taking care of the forest after planting), with a total cost of 182,533,000 VND by Trung Son Alpha Co., Ltd. sponsor.

With similar conditions in terms of natural and socio-economic conditions, the coastal alluvial plains of Nha Mat hamlet, Truong commune and the coastal alluvial plains of Kim Son district, therefore, it is not necessary to adjust the price of Tra Vinh when applying the price of Tra Vinh. used in Ninh Binh. Therefore, the cost of planting 1 ha of casuarina forest in Kim Son is equivalent to the cost of planting 1 ha of casuarina forest in Truong Long Hoa commune, Duyen Hai town, Tra Vinh province, ie 182,533,000 VND. Thus, the cost of planting 633.25 ha of casuarina forest, equivalent to 633.25 ha of coastal mangrove forest, will need the following funds:

$$633.25 \text{ ha} * 182,533,000 \text{ VND/ha} = 115,589,022,250 \text{ VND}$$

The casuarina forest is old for about 30 years, so the depreciation value of 1 ha of casuarina forest in 1 year is:

$$115,589,022,250 \text{ VND} : 30 \text{ years} = 3,852,967,408 \text{ VND/year}$$

With an area of 663.25 ha of Kim Son mangrove forest, the windbreak protection value of 1 ha of Kim Son mangrove forest in 1 year is:

$$3,852,967,408 \text{ VND/year} : 633.25 \text{ ha} = 6,084,433 \text{ VND/ha/year}$$

The total value of protection against wind, storm and waves of 1 ha of Kim Son mangrove forest in 1 year is:

$$32,035,183 \text{ VND/ha/year} + 6,084,433 \text{ VND/ha/year} = 38,119,616 \text{ VND/ha/year}$$

(equivalent to 38,119 million VND)

3.2. The value of carbon absorption

To calculate the CO₂ uptake of mangroves, it is first necessary to calculate the carbon storage of mangroves. Kim Son mangrove forest has 02 dominant main biomes, OT1 and OT2 predominating cobra biomes. According to the People's Committee of Kim Son district, in 2022, the density of cork is 1,600 trees/ha. Density of mangrove tree in forests Kim Son coastal, Ninh Binh is taken equivalent to density in mangroves Xuan Thuy, Nam Dinh similar in natural conditions (3000 trees/ha).

Based on the value transfer method, the study applies the results of carbon accumulation in mangrove forests in the coastal area of the Red River Delta biosphere reserve to calculate carbon sequestration (Table 1).

Table 1. Carbon storage in Kim Son coastal mangroves

Tree	Density (tree/ha)	Carbon storage in plants (kg/tree)
Mangrove	3,000	2.09
Cork	1,600	134.6

Tateda Y., Imamura T.I, 2005

From there, the carbon storage of each OT1, OT2 community in a year can be calculated, shown in Table 2:

Table 2. Total carbon accumulation of biomes

Communities	Tree	Density (tree/ha)	Carbon storage in plants (kg/tree)	Total carbon accumulation in the community (ton/ha)
OT1	Mangrove	3,000	2.09	6.207
OT2	Cork	1,600	134.6	215.360

Determine the average amount of carbon dioxide (CO₂) absorbed by mangroves in a year according to the formula based on IPCC (2006):

$$\text{Total CO}_2 \text{ absorbed (ton/ha)} = \text{Total carbon accumulation (ton/ha)} \times 3.67$$

In which: 3.67 is the conversion coefficient calculated for all forest types.

The results of CO₂ absorption of Kim Son mangrove forest are shown in Table 3

Table 3. Amount of CO₂ absorbed by Kim Son mangrove forest

Communities	Amount of CO ₂ absorbed (tons/ha/year)
OT1	22.78
OT2	790.37
Average	406.58

From the reference to the carbon tax rates of the countries, this study applies an average fee to cut CO₂ of 26 USD/ton. From there, the average value of CO₂ that the mangrove forest at Kim Son is equivalent to is USD 10,571.08/ha/year. Calculated at the PPP purchasing power parity rate, the value of CO₂ In VND is:

$$23,477 * 10,571.08 = 248,177.245 \text{ (VND/ha/year) (equivalent to 248.177 million VND)}$$

3.3. Value of new alluvial land

The development of mangroves and the expansion of the alluvial land are two processes that always go hand in hand. Mangrove roots, especially densely planted pioneer plants, have the effect of making sediment accretion faster, both blocking the impact of ocean waves, reducing wind speed, and acting as an obstacle for sediments. deposition. Mangroves also have the effect of limiting erosion and coastal erosion processes.

Table 4. The dike crossing and expansion of alluvial area in Kim Son district in the period 1959-2019

Dike	Year	Expanded area
Dike Binh Minh 1	1959	877.92 ha
Dike Binh Minh 2	1980	1,649.48 ha
Dike Binh Minh 3	2008	1,958.69 ha
Dike Binh Minh 4	2019	2,600 ha

Thus, the accretion area in the period 1959-2019 is the total area from Binh Minh 1 dike to Binh Minh 4 dike, that is:

$$1,649.48 \text{ ha} + 1,958.69 \text{ ha} + 2.600 \text{ ha} = 6,208.17 \text{ ha}$$

Thus, the average annual accretion land area in the period 1959-2019 of Kim Son district (60 years) is:

$$6,208.17 \text{ ha} : 60 \text{ years} = 103.4 \text{ ha/year}$$

Assume that the additional area of alluvial land is completely used for aquaculture purposes with the value of products obtained per 1 hectare of aquaculture water surface in Kim Son district (in 2021) is 277.1 million VND/ha.

So, each year, the value brought from land accumulation in Kim Son district is:

$$103.4 \text{ ha} * 277.1 \text{ million VND/ha} = 28,671.39 \text{ million VND (28,671,398,450 VND)}$$

This is also the indirect value brought by 633.25 ha of Kim Son mangrove forest, so the value of new accretion land per hectare of Kim Son mangrove forest per year is:

$$28,671,398,450 : 663.25 = 43,228,644.47 \text{ VND/ha/year (equivalent to 43.228 million VND)}$$

From there, we have a summary table of indirect use values of Kim Son mangrove forest from protection, carbon sequestration and new alluvial values (Table 5)

Table 5. Summary of indirect value per hectare of Kim Son mangrove forest in 1 year

	The value of damage prevention against storms and salinity (I)	The value of CO2 absorption (II)	Value of new alluvial land (III)	Total indirect use value of Kim Son mangrove forest (I+II+III)
Amount of money (million VND)	38.119	248.177	43.228	329.524
Percentage	11.57%	75.31%	13.31%	100%

4. Discussion and Conclusion

4.1. Discussion

The value of protection against waves, reduction of saline intrusion due to sea level rise in the context of climate change, and reduction of damage caused by storms are evaluated by the construction cost of a dyke of the same length as the length. mangroves. Besides, the mangrove forest also acts as a casuarina forest with windbreak effect. The protection value of Kim Son mangrove forest is 38,119 million VND/ha/year, accounting for 11.57% of the total indirect use value of Kim Son mangrove forest.

Compared with the study of the author Tran Thi Thu Ha & nnk (2022), the value of protection against erosion of Can Gio mangrove forest is estimated at 21.3 million VND/ha/year. Kim Son salinity is higher because in this study, the wind protection value is

taken into account (equivalent to the role of casuarina forest). However, this calculation does not fully represent the protective value of mangroves. During storms, mangroves not only protect the dyke, but also protect all assets including the value of aquaculture ponds and the lives of people inside the dyke. Therefore, the protection value of mangroves, if fully calculated, will include the value of aquaculture, properties and works of people inside the dyke.

The value of CO₂ absorption of Kim Son mangrove forest is 248.177 million VND/ha, accounting for 75.31% of the total indirect use value of Kim Son mangrove forest. This value is equivalent to the high carbon sequestration value of Can Gio mangrove forest of 211,042 million VND/ha (Tran Thi Thu Ha, 2022). For more rigorous calculation results, it is necessary to calculate the area of dominant and remaining communities through standard plots to determine the total carbon accumulation in the entire mangrove area.

The value of creating new alluvial soil of Kim Son mangrove forest is 43,228 million VND/ha, smaller than the value of Xuan Thuy mangrove forest which is 54.75 million VND/ha (Thanh Viet Nguyen et al) due to the increased area due to accumulation of Xuan Thuy is larger (355.3 ha/year) compared to 103.4 ha/year of Kim Son.

It can be seen that the calculation of economic values of mangroves has different results, depending on the time of evaluation (market price, replacement price), parameters, Therefore, in each specific case, the application of evaluation methods and criteria is most appropriate in each mangrove area.

4.2. Conclusion

Mangrove forest is a forest that develops on marshy, saline soils in estuaries, coastal areas, along rivers and canals with brackish water due to daily rising and falling tides. Mangrove forest is a transitional forest between the tropical tidal forest ecosystem and the mainland in the tidally affected area.

The indirect use value of Kim Son mangrove forest includes the protection value of VND 38.119 million/ha/year, accounting for 11.57% of the total indirect use value of Kim Son mangrove forest. The CO₂ consumption of Kim Son mangrove forest is 248.177 million VND/ha, accounting for 75.31% and the value of creating new alluvial land of Kim Son mangrove forest is 43.228 million VND/ha, accounting for 13.31% of the total value. .

On the basis of studying the actual use and protection of mangroves and quantifying the use value of mangroves in Kim Son district, Ninh Binh province, some issues discovered for effective management of mangroves are as follows: :

** Effective planning and management of mangrove land*

Effective mangrove protection requires policy changes in land use planning that address the root causes of deforestation and forest degradation. This must be considered as an interdisciplinary plan, it is necessary to strengthen inter-sectoral coordination in the management, use and restoration and development of mangrove forests of coastal provinces.

Immediately review and re-evaluate the planning, clearly define stable forest areas among communes, between forest types, and review the management and use of forest land between planning and reality. Strictly control projects that use land planned for forestry. Minimize the conversion of forests to other purposes other than forestry. Resolutely suspend and recover land for projects that change forest land use purposes that commit violations or pose a risk of great damage to the forest, ecological environment, seriously affecting production activities and life. live people.

** Improve community awareness and participation in mangrove protection*

The fact shows that the forest area is reduced in quantity and quality because a part of people are not aware of the importance of mangroves. Therefore, it is necessary to propagate to social organizations and communities in coastal areas with mangroves about the role and value of mangrove ecosystems as well as the importance of sustainable management and use. mangroves for immediate and long-term benefits.

Through field survey, the exploitation of aquatic products under the mangrove canopy usually follows the direction of the receding water. In the coastal area of Kim Son district, this exploitation is usually done in the evening and at midnight, so it is easy to affect the young tree parts of the mangrove forest. Therefore, in addition to raising people's awareness about mangrove protection, it is necessary to have strict regulations on the areas of forest that are being supplemented or newly planted to avoid exploitation of new forest trees. plant.

** Building sustainable economic models*

It is necessary to build economic models that combine forest management and protection and aquaculture; create long-term stable livelihoods for people living near the forest, apply science and technology in aquaculture. Building a seedling nursery to reduce product costs and reduce risks when planting trees with fruit, forest owners have additional income by selling seedlings to have more funds for forest protection.

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COMPARING THE INFLUENCE OF RICE HUSK BIOCHAR AND MAIZE STALK BIOCHAR ON THE INHIBITION OF CADMIUM UPTAKE BY PAK CHOI

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Abstract

*In this study, we aimed to explore the potential effects of biochar (rice husk biochar-RS and maize stalk biochar-MS) on the inhibition of cadmium (Cd) bioavailability to pak choi. Pot experiments with exposure to different dosages of cadmium sulfate ($3\text{CdSO}_4 \cdot 8\text{H}_2\text{O}$) and biochar (RS and MS) were treated. To compare the influence of RS biochar and MS biochar on the bioavailability of Cd, the levels of total Cd in different pak choi (*Brassica chinensis* L.) tissues (roots and shoots) and the distribution changes of Cd fractions in soil were determined. Results showed that RS biochar application reduced the concentrations of Cd in pak choi tissues more than MS biochar application. Thus, RS biochar application plays a more important role than MS biochar application in limiting the absorption and bioaccumulation of Cd in pak choi. Notably, this role may only be significant when biochar exposure at medium biochar content (2%). This affirmed the importance of the Cd fractions transformation in the assessment of their bioavailability.*

Keywords: *Biochar; Cadmium; Fraction; Pak choi*

1. Introduction

Cadmium (Cd) is one of the most toxic pollutants because of its high toxicity and persistent accumulation in the environment and in the food chain. Cadmium ions enter agricultural soils through anthropogenic activities, such as metalliferous mining, pesticide, fertilizer, and sewage irrigation. Cadmium ions are taken up by plants root and transported to edible plants parts, induce detrimental effects on plants growth and productivity, then pose a potential threat to human health. Therefore, to reduce toxic Cd concentrations, promote agroenvironmental sustainability and food safety, feasible countermeasures for the remediation of Cd-contaminated farmlands are urgently needed.

Over the past several decades, techniques such as soil washing, low-temperature thermal desorption, and phytoremediation have been applied to the treatment of heavy metals (HMs)-polluted soils. Although soil washing method can remove soluble and exchangeable HMs from polluted soils, it can also remove essential soil elements. The soils disturbance associated with soil washing also needs to be considered. The effects of thermal treatment on soil properties require careful balance. Therefore, other approaches that can maintain essential soil elements while reducing Cd accumulation in plants need to be identified.

The previous studies have proved that biochar is a highly stable materials that contains a negative charge on the surface, which can retain metals. The adsorption of metals on the surface of biochar reduces the risk of HMs exit to a longer extent due to the high durability of biochar. The study predicted that biochar could play an important role in limiting the mobility, bioavailability and toxicity of Cd in soil.

In this study, we mainly aimed at comparing the influence of RS and MS biochar application on the inhibition of the Cd bioavailability in pak choi based on the determination of total Cd levels and the distribution of Hg fractions in soil. The concrete objectives include: 1) clarification of the potential difference between RS and MS biochar application on Cd uptake and translocation of pak choi; 2) exploration of the insight of inhibition mechanism of Cd phytotoxicity from the changes of Cd fractions in soils; 3) determination of the appropriate level of biochar that will significantly prevent the uptake of Cd by pak choi.

2. Method

2.1. Experimental Materials

Agricultural soils were collected at a depth of 0 cm to 20 cm at the Chom Sao area, Hung Dinh commune, Thuan An town, Binh Duong Province, Vietnam according to Environmental Quality Standard of Vietnam (TCVN 5297:1995). Soil samples were completely air dried at room temperature, homogenized, and passed through a 5 mm sieve. The experimental soil is clay loam soil that basic physicochemical properties were as follows: proportion 3.09 g/cm³; density 1.15 g/cm³; humidity 21.1 %; pH 5.8; total N 0.132 %; total P₂O₅ 0.032 %; total organic carbon 4.07 %; and total Cd 0.6 mg/kg.

2.2. Pot experiments

Biochar was produced at 500 °C in an anaerobic environment and kept for 8 hours. The biochar was cooled to room temperature, pulverized and passed through a 2 mm sieve. The characteristics of biochar are show in Table 1.

Table 1. The characteristics of RS and MS biochar

Characteristics	Grain Size (mm)	Total C (%)	Total N (%)	Total H (%)	Total S (%)	pH	Surface Area (m ² /g)	Average hole diameter (nm)	Total Cd (mg/kg)
RS biochar	1.5 - 2.0	71.21	1.15	2.38	0.78	9.56	8.87	16.23	0.02
MS biochar	1.5 - 2.0	65.63	0.87	2.11	0.12	10.28	8.87	2.67	0.01

The dosages of metal exposure to soil samples in this study are set as 0, 1, 3, and 6 mg/kg soil for Cd (added as 3CdSO₄.8H₂O). One treatment without biochar and Cd was prepared and set as the control treatment. This experiment completely randomized designs with three replicates, including a total of 66 pots for 22 treatments (Table 2).

Table 2. Cadmium, biochar contents in single and combined treatments

Treatment	Content		Nghiem thức	Content		Nghiem thức	Content	
	Cd (mg/kg)	BC (%)		Cd (mg/kg)	RS (%)		Cd (mg/kg)	RS (%)
Cd1BC0	1	0	Cd3BC0	3	0	Cd6BC0	6	0
Cd1BC1	1	1	Cd3BC1	3	1	Cd6BC1	6	1
Cd1BC2	1	2	Cd3BC2	3	2	Cd6BC2	6	2
Cd1BC3	1	3	Cd3BC3	3	3	Cd6BC3	6	3

Note: BC: biochar; RS and MS biochar of each treatment are the same content.

Different concentrations of Cd-spiked solutions were aspirated on dry soil with a plastic nebulizer. After adding chemicals and mixing biochar, the soil was homogenized and equilibrated for 70 days, basal fertilizer that comprised 0.15 g/kg N (urea, AR) and 0.033 g/kg P (monopotassium phosphate, AR) were thoroughly mixed in a plastic pot (diameter: 18 cm; height: 15 cm) containing 2.5 kg of the equilibrated soil. The soil moisture content was kept at approximately 70% water holding capacity at equilibrating period. The pak choi seeds were sowed in each pot, and the seedlings were thinned to five in each pot after 10 days of germination. The plants were grown in pots in the greenhouse and watered periodically to keep soil moisture at 70% of the field capacity. Plants were harvested after 38 days.

2.3. Sample preparation

Soil samples were collected from each pot. Then, the soil samples were placed in the sealed polyethylene bags to prevent cross pollution, completely air dried at room temperature, homogenized, and allowed to pass through a 100-mesh sieve (0.15 mm) for chemical analyses of total Cd concentrations and fractions. Pak choi samples were thoroughly washed with deionized water, and their shoots and roots were separated. The samples were oven dried at 90 °C for 30 min and kept at constant weight at 50 °C. The dried samples were ground into fine powder and then stored in a dark room at room temperature.

2.4. Chemical Analysis

2.4.1. Determination of Hg concentration in plant and soil

Plant samples were digested using 2:3:8 (v/v) HClO₄ - H₂SO₄ - HNO₃ at 110-130°C, whereas soil samples for determining Cd concentrations were digested with an oxidative acid mixture of 3:1 (v/v) HNO₃-HClO₄ at 160 °C. In a typical procedure, 0.5 g of each sample was precisely weighed in a 100 mL glass tube. HNO₃ and HClO₄ with a combined volume of 10 mL was added and kept overnight at room temperature. Acid digestion was conducted

in an automatic temperature-controlled furnace until the digestion solution became clear. After acid digestion, the sample solutions were cooled and diluted with deionized water in a glass tube. Cadmium concentration in the digestion solution was determined with an atomic absorption spectroscopy (AAS AA-7000, Shimadzu Corporation, Kyoto, Japan) system according to the Standard Method TCVN 6496:2009 developed by the Ministry of Natural Resources and Environment of Vietnam.

2.4.2. Determination of Hg fractions in soil

Cadmium fractions analysis applied the five-step sequential extraction method. According to this method, Cd fractions were divided into exchangeable, bound to carbonates, bound to Fe-Mn oxidates, bound to OM, and residual fractions.

- (1) Exchangeable fraction (EXC-Cd): 0.1 mol L⁻¹ NH₄HAC 25 °C, shaken for 2 h, liquid/soil = 10:1;
- (2) Bound to carbonates fraction (CAB-Cd): 1 mol L⁻¹ NaAc 25 °C, shaken for 2 h, liquid/soil = 10:1;
- (3) Bound to Fe-Mn oxidates fraction (FEM-Cd): 0.1 mol L⁻¹ NH₂OH + 0.01 mol L⁻¹ HCl 25 °C, shaken for 0.5 h, liquid/soil = 10:1;
- (4) Bound to OM fraction (OM-Cd): 0.01 mol L⁻¹ HNO₃, 30% H₂O₂ heated for 2 h in 85 °C, shaken intermittently, liquid/soil = 10:1;
- (5) Residual fraction (RES-Cd): 15 mL of HNO₃, 5 mL of HF, 5 mL of HClO₄, heated to 300 °C for 2 h, until the solutions became clear.

The extracted supernatant was analyzed by AAS.

2.6. Statistical data analysis

Data were subjected to statistical analysis using SPSS 20.0 software. All results are presented as the mean ± standard deviation of three replicates. This study used Dunnett's multiple comparison test of one-way ANOVA. For all tests, $P < 0.05$ was considered as significant difference.

3. Results and Discussion

3.1. Changes of Cd fractions for different biochar applications

The distributions of Cd fractions in the soils with different content of biochar and Cd are presented in Figure 3.1. Cadmium fractions were arranged following the sequential mobile levels; such as mobile fractions (EXC-Cd, CAB-Cd), semi-mobile fractions (FEM-Cd, OM-Cd), and non-mobile fractions (RES-Cd). Before planting, Cd mainly existed in FEM-Cd (36.1%) and RES-Cd fraction (37.1%) in the native soil (control). According to the principle of hard and soft acids and bases, the 'classic' trace metals (Cu, Co, Ni, Al, Cd, and Zn) have strong binding abilities with hard ligands (O-

containing functional groups). Moreover, the other stable fractions also accounted for 12.7% (OM-Cd) of the total soil Cd; whereas the mobile fractions were rather low (5.3% EXC-Cd, 8.8% CAB-Cd).

For single Cd treatments, Cd tends to increase in mobile fractions. Comparing with the control, the researchers found that the proportions of EXC-Cd (56.8%), and CAB-Cd (26.1%) fractions significantly increased (3.0- to 10.7-fold) with the maximum value at the highest Cd level (6 mg/kg) when exogenous Cd were amended.

However, when soils were simultaneously exposed to Cd and biochar, Cd tended to transfer into stable fractions, indicating that biochar can enhance the compact Cd binding in soils. For RS biochar application, the proportion of RES-Cd fractions were markedly increased to 30.8%-422.5%, when compared with non-amended biochar; the maximum increasing proportion was at biochar 3%. However, EXC-Cd, CAB-Cd, FEM-Cd, and OM-Cd decreased to 11.6%-80.0%; 0%-47.2%; 7.8%-56.6%; 3.7%-80.0% compared with single Cd treatments. For co-exposed Cd and MS biochar, the distributions of Cd fractions also change following a similar trend but less effective. The proportions of RES-Cd fractions were less increased by 12.5%-334.3%; and the mobile and semi-mobile fractions, such as EXC-Cd, CAB-Cd, FEM-Cd, and OM-Cd were also less decreased by 6.4%-54.2%; 0%-36.8%; 7.0%-37.5%; 1.2%-80.0% compared with single Cd treatments. These results suggested that biochar application can also enhance the Cd binding in soils, but this binding is weaker than that in the MS biochar treatments.

The results of this study showed that although biochar application increased the organic matter content in the soil, the proportions of OM-Cd did not increase correspondingly as expected. These results are in full agreement with the previous study, Zubair et al. (2021) also showed that the addition of biochar significantly affected Cd mobility by reducing the fractions bound to organic matter, bound to carbonate, bound to Fe/Mn oxide; while increasing fractions of residual Cd (Zubair et al., 2021).

The conversion of Cd mainly to the immobilization fraction reduces the concentration of Cd in the soil solution, leading to a decrease in Cd bioavailability which can be explained by the following mechanisms: 1. Physical adsorption to the sites biochar activity site, ion exchange and complexation with its surface functional groups (eg, OH, COOH, R - OH) (Coumar et al., 2016); 2. An increase in soil pH enhances Cd calcification through precipitation between Cd and sulfate, carbonate, hydroxide and phosphate anions released from biochar (Gonzaga et al., 2020); 3. Biochar increases Fe concentration, increasing the fixation of Cd in soil.

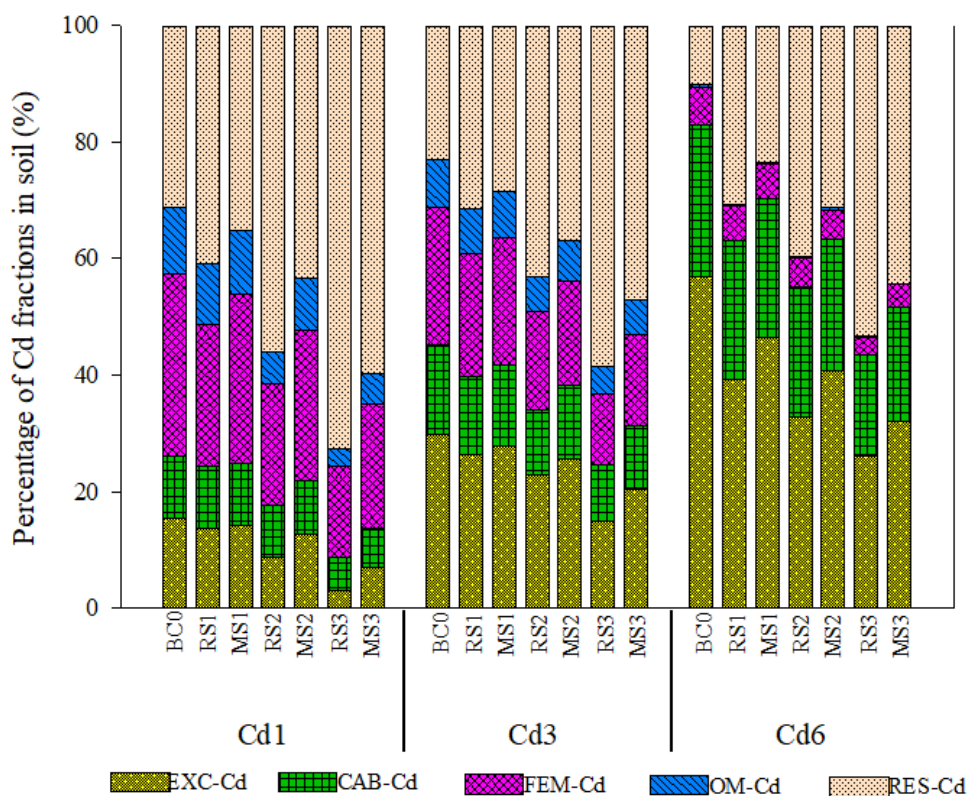


Figure 1. The Cd fractions proportions in soils for biochar application

3.2. Effects of biochar application on Cd bioavailability

The concentrations of Cd in various parts of pak choi for different treatments are shown in Figure 3.2. For the single Cd treatments, Cd concentrations in plants increased along with elevated Cd exposure levels. Comparing with the control, the researchers found that the maximum Cd concentration were increased by approximately 5.7- and 11.1-fold in shoots and roots of pak choi, respectively, indicating that Cd concentrations in roots is considerably higher than in shoots.

However, when pak choi were simultaneously exposed to Cd and biochar, biochar can inhibit the Cd phytotoxicity of pak choi; this inhibition completely depended on biochar species and doses. Indeed, the decreasing proportion of Cd in pak choi shoots for RS biochar treatments (11,9%-67,3%; $P < 0,05$) was higher than that for MS biochar treatments (7,0%-39,1%; $P > 0,05$), and a sharp decline of Cd accumulation was found at the highest biochar level (3%) treatment. From these results, the application of appropriate levels (3%) of RS biochar is an easy way to inhibit Cd accumulation in pak choi.

Previous studies have also demonstrated that biochar effectively inhibits Cd bioavailability. Jing et al. (2020) reported that when applying biochar prepared from wheat straw at a concentration of 40 tons/ha, the Cd concentration in the soil solution was reduced by 49.4% compared to the control treatment. Biochar reduced the concentration of Cd in the vegetable by 27.2% and 41.1%, respectively, when applied at content of 2.5 and 5 g/kg (Coumar et al., 2016). Sayyadian et al. (2019) found that the concentration of heavy metals in roots and shoots of maize were significantly reduced when the rate of biochar application increased compared to the treatment without biochar.

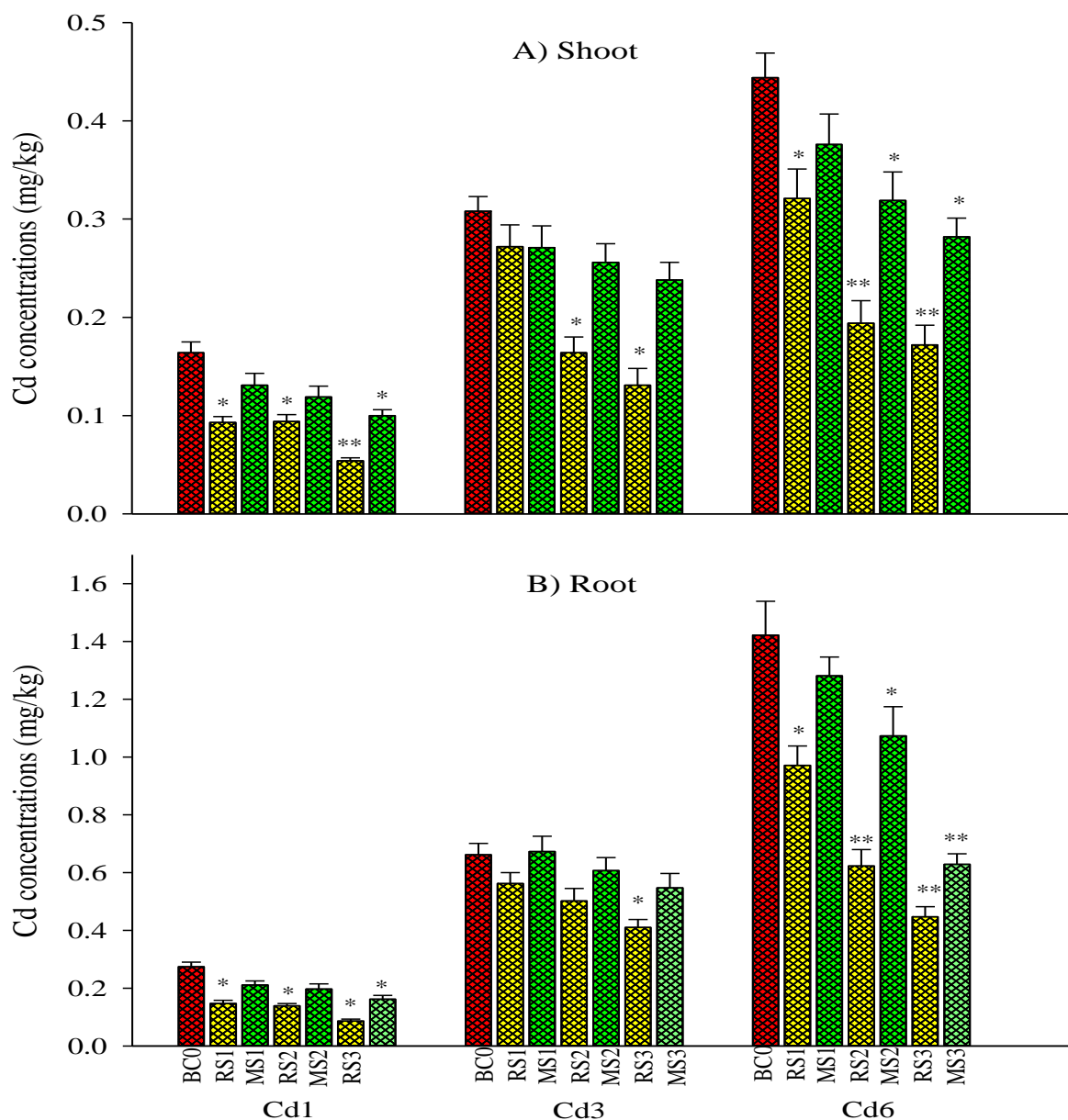


Figure 2. The concentrations of Cd in pak choi tissues: in shoot (A), in root (B)

Data are presented as means±SD (n=3). The stars indicate significant difference from no biochar treatments (One-way ANOVA, followed by Dunnett's test, * $P < 0.05$; ** $P < 0.01$).

3.3. Correlation between different Cd fractions in soil and uptake of Cd by pak choi

To consider the changes of Cd fractions and binding strength on Cd bioavailability in soils, we analyzed the correlations between them (Table 3.1).

The result showed that the uptake of Cd by shoots and roots were significantly positively correlated with both EXC-Cd and CAB-Cd fractions ($R^2 > 0.8$, $p < 0.01$); while they were significantly negatively correlated with RES-Cd fractions ($R^2 > 0.7$, $P < 0.01$). However, no correlation was observed with OM-Cd và FEM-Cd ($R^2 < 0.55$, $P > 0.05$) for RS biochar application but they were significantly negatively correlated ($R^2 > 0.7$, $P < 0.01$) for MS biochar application. This analysis only prioritizes the correlation of the mobile

fractions, such as EXC-Cd and CAB-Cd fractions, possessing high availability and easy absorption by plants. Whereas the semi-mobile fractions had lower availability posed to almost only exist in soils.

Table 3. Correlation between Cd fractions in soil with the uptake of Cd by pak choi

Correlation coefficient	RS biochar					MS biochar				
	EXC-Cd	CAB-Cd	FEM-Cd	OM-Cd	RES-Cd	EXC-Cd	CAB-Cd	FEM-Cd	OM-Cd	RES-Cd
Cd in shoot	0.945**	0.839**	-0.419	-0.405	-0.811**	0.979**	0.922**	-0.803**	-0.763**	-0.713**
Cd in root	0.964**	0.893**	-0.540	-0.532	-0.739**	0.973**	0.953**	-0.796**	-0.783**	-0.720**

4. Conclusion

In this study, we demonstrated that the reducing of Cd bioavailability fully depends on the biochar application species with pak choi. The RS biochar application plays a more important role than MS biochar application in limiting the absorption of Cd in pak choi. Notably, this inhibition may only significantly occur when biochar is at an appropriate level (3%). In addition, the good correlations between the proportion of mobile Cd fractions (EXC-Cd and CAB-Cd fractions) with the Cd concentrations in plants were observed, indicating that they all can be used to predict Cd bioavailability in soil. In conclusion, this study clarify comparing influence of RS biochar and MS biochar in inhibiting Cd phytotoxicity to pak choi, the importance of the transformation of fractions in the assessment metals bioavailability, and provides a useful reference to select biochar species.

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RELATIONSHIP BETWEEN CIRCULAR ECONOMY PRACTICES (CEP) AND SUSTAINABLE PERFORMANCE (SP) - THE CURRENT STUDY OF VIETNAMESE CONSTRUCTION MATERIAL INDUSTRY

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Abstract

Circular economy practices (CEP) is currently being prioritized in construction enterprises, particularly in construction materials production. After carrying out a context-based investigation and reviewing theories related to circular economy, sustainable performance (SP), the author has focally researched qualitative method on enterprises in Viet Nam from 2020 to 2021 in order to theorize hypotheses for coming statistical hypothesis test that will be finished by 2023. The objectives of current study are to explore the impact of CEP on products in construction materials manufacturing enterprises in Vietnam; develop model analysis and evaluation; suggest implications. However, the study is being on quantitative progress, key findings are identified from qualitative results: 4 sub-factors (resource consumption; environmental technology; sustainable supplier; environment practices) and awareness of Dynamic Capability (DC).

Keywords: *Circular economy practices, construction enterprises, construction materials, sustainable performance.*

1. Introduction

In recent years, Vietnam has made many environmental commitments in new-generation free trade agreements such as EVFTA and CPTPP. The commitments aim to minimize the impact from economic development on the natural environment and build a social model following the trend of sustainable development on all three pillars: economic, social and environmental (J. Wu et al., 2014).

Currently, the circular economy (CE) is considered an important component in sustainable economic development (Genovese et al. 2017). At the same time, the knowledge economy is built in parallel with regulations and policies from the government and efforts from all levels of government to create a strong green (Zeng et al., 2017) business system. In the knowledge-based economy, enterprises comply with environmental protection policies and consciously reduce waste and environmental pollution, and share useful resources (green materials, clean energy, efficient information, etc.) infrastructure and natural resources) and integrating the use of clean production forms is important (Bai et al., 2020a; C. J. C. Jabbour et al., 2019a). Along with that, when enterprises raise their awareness and carry out activities with more focus on sustainable development trends, they will bring

more economic benefits, social efficiency and improve environmental quality (C.-H. Yu et al., 2015). Stemming from the positive effects of the circular economy on enterprises, many previous studies have investigated the activities of enterprises in the process of implementing a circular economy (CEP) with the aim of achieving Sustainable Performance (SP) . Not only that, a number of studies have assessed the impact from CEP to SP with the intermediate influence being Sustainable Supply Chain Flexibility (SSCF) or Dynamic Capability (DC) in the context of economic events. many fluctuations (LAWSON & SAMSON, 2001).

Although the study of the self-contained economy has received attention from many scholars around the world, there are still limited studies evaluating the role of CEP in the development of the SSCF of enterprises (Bai et al., 2020a). Most studies have investigated the association between the concepts of CEP, SSCF, DC, SP in a distributed manner with little attention paid to understanding how this construct interacts with each other (Chirra et al., 2021a). This is considered a major limitation in the approach of many researchers - the research is in the form of preliminary inquiry, simple analysis and lack of an overall view. At the same time, due to the concept of CEP, SP is still limited in Vietnam; CEP is a new business and economic model (Edwin Cheng et al., 2021b) and not much empirical research has been done on CEP, SP (Bai et al., 2020a; Chirra et al., 2021b). In particular, there has been no research in Vietnam showing the influence of CEP on products in enterprises in the construction industry, specifically in the field of building materials (building materials) .

Currently, a number of enterprises in the field of building materials in Vietnam have prioritized sustainable development through the use of high and environmentally friendly technologies, activities related to the community and the environment, and application of support policies. support workers. However, actions towards CEP from building materials enterprises have not taken place continuously, so they have not created products for enterprises.

2. Theoretical framework

2.1. Circular economy practices

The basic economic model is applied to natural resource recovery activities. It aims to replace the traditional linear economic model of fast and cheap production with the purpose of producing durable goods, applying repair and recycling. In general, the application of production models based on the circular economy will have the aim of prolonging the life of the product, promoting repair, upgrading, reuse, and ultimately recycling into raw materials instead. because it is discharged into the environment. The general-purpose model is to simulate processes similar to those occurring in the natural environment (European Parliament, 2015).

Conceptually, there is no general agreement on the definition of a sustainable development economy, so the ways in which the basic economy, linear economy or sustainable development will be linked, compared in different ways can be applied to reality. However, scientists all agree that the implementation of a theoretical economy is an effective solution in sustainable development. For scholars in the field of environmental economics, sustainable development is a concept that is still independent, a social goal formed at the

macro level and includes many broad concepts of ecological sustainability, economic development, if the application of the market economy can bring better results for society, towards sustainability, then it is one of the effective tools for sustainable development (Bartelmus, 2013; Geng & Doberstein, 2008).

2.2. Theory of Dynamic Capabilities

The dynamic capacity theory proposed by (TEECE & PISANO, 1994) is based on the theoretical perspective on the strategic source of the enterprise (J. Barney, 1991; J. B. Barney, 1986). Based on the resource theory, firms in the industry operate differently because they have different types of resources (J. Barney, 1991; J. B. Barney, 1986), however, the resource-based theory is considered static in nature and is not sufficient to explain the competitive advantage of firms in changing the business environment (Priem & Butler, 2001). In addition, the resource-based view of enterprises is to consider unique and difficult to imitate resources so that the enterprise can have a solid competitive advantage for long-term growth (J. B. Barney, 1986), and the process of maintaining a competitive advantage is dynamic (Hung et al., 2010). As a result, scholars have made the claim that in order for companies to remain competitive in the business market, they need to develop their specific capabilities as well as undergo continuous learning. Argyris & Schon, 1978; Jashapara, 1993; Zott, 2003), comes from a dynamic point of view, especially in this new and ever-changing environment (Wilden et al., 2013). Indeed, the lack of dynamism limits firms to maintain their competitive advantage, especially in variable environment (Gnizy et al., 2014). Based on the previous research literature, an increasing interest in dynamic competence theory can also be seen, which also shows that dynamic capacity is a strong foundation for dealing with the complexity of the environment and international business (Hsu et al., 2013).

Indeed, scientists have also shown the product relationship between DC and the performance of enterprise based on experiments (Hung et al., 2010). The impact of firm dynamics on firm performance has also been demonstrated in different firms and in different DCs. From an international business perspective, (Luo, 2000) found that exploiting dynamic capabilities can increase a company's expansion in the international market and at the same time increase solid performance.

According to (Teece et al., 1997a), the initial proposals of DC also assert that it has a direct relationship with firm performance. (Zollo & Winter, 2002) also identified this direct relationship and emphasized that if the enterprise does not have the ability to be dynamic in the changing environment, the superiority and development of the enterprise is only temporary. Again reaffirmed by (Teece, 2007), whereby, the development of core competencies is identified as competitive advantages at the enterprise level and it also contributes to the success or failure of that enterprise.

However, there are also arguments about a direct relationship between DC and firm performance. As mentioned (Eisenhardt & Martin, 2000) also argued that the DC factor alone cannot guarantee the competitive advantage of enterprises, but the arrangement and stabilization of resources of enterprises are created by DC in a way. will lead to competitive

advantage. (Zott, 2003) also talked about the modification and change of the company's resources through the new DC, leading to the operational efficiency of the enterprise, not just the DC factor. (Eisenhardt & Martin, 2000) have also suggested that when firms are highly variable, they have an advantage over their competitors, indeed, (Zott, 2003) have also stated that firms have A good DC can develop different types of resources and produce different levels of performance as a result.

Furthermore, it should be noted that DC is not like other specific capabilities like supply chain or R&D etc. (Gnizy et al., 2014), which, in fact, DC represents as a spiritual resource, sustains the competitiveness of enterprises, especially in today's ever-changing environment (Wilden et al., 2013). DC is also associated with organizational factors such as habits, processes, management, learning (Easterby-Smith et al, 2009) and the ability to adapt, absorb and create (Grant, 1996; Pisano, 1994; Wang & Ahmed, 2007).

2.3. Sustainable Supply Chain Flexibility

The Sustainable Supply Chain Flexibility (SSCF) was first introduced by Slack, which, according to him, is the ability to respond to customer needs in a timely manner (Slack, 2005). (G. Li & Ma, 2009) also believes that supply chain flexibility refers to resource sharing, business integration and optimization, and cooperation between member enterprises in the supply chain to achieve the ultimate goal of satisfying customer needs at the lowest cost. Although the SSCF concept has not yet reached a broad consensus in academia, researchers also believe that supply chain flexibility is the ability to deal with uncertainty and meet customer expectations. goods (Gosling et al., 2010; Rojo et al., 2016). Supply chain flexibility is an important element of a business's dynamic ability to positively improve supply chain resilience and enhance its competitiveness. In this complex and volatile market, businesses need to actively improve the flexibility of the supply chain to reduce losses that may occur due to uncertain environment (Liu & Zhong, 2012).

2.4. Sustainable Performance (SP)

SP has been researched and proven in recent years. Enterprises tend to adopt sustainable technologies and optimize their operations in a sustainable way to be able to meet customer needs as well as market requirements (Nowak et al., 2011). Consistent with this, business leaders mentioned methods, techniques, and tools to research, analyze, and design business processes including improving cost factors. cost, quality, timing and flexibility, and according to (Seidel et al., 2015) also include sustainability. Based on the theory of three sustainable pillars, products can be approached from three aspects of economy, society and environment, according to which enterprises need to focus on all three factors simultaneously to be able to achieve products in the long term.

Objectives of the study

The overall objective of current study is to explore the impact of CEP on products in construction enterprises (specifically, manufacturing building materials) in Vietnam. Besides, the study sets out the following specific objectives: The theoretical basis system on

the impact of CEP on products in construction enterprises in Vietnam; Model analysis and model evaluation of the impact of CEP on products in construction enterprises in Vietnam.

This paper is organized in the following manner. Subsequently, we describe the methodology, conduct the analysis, discuss the qualitative result. By the end of 2023, the final study proposes solutions and recommendations towards Sustainable Development for Vietnamese construction enterprises, especially in the effective implementation of the concept economy.

3. Method

3.1. Qualitative method

Qualitative research methods create a tight and solid framework for the research work. After understanding the underlying theories and previous models, the study explores potential scales in the real context through qualitative research. The qualitative method chosen by the research is group and in-depth interviews. The goal of this process is to discover potential factors and complete the questionnaire for the survey process.

Interviews were taken from November 1, 2020 to December 15, 2021 with an interview sample of 115 managers from mid-level or higher from 15 construction enterprises across the country that selected according to large, medium and small scale. The interview process took place over two months from November 01, 2020 to December 15, 2021. Interview questions were developed and information about enterprises was collected preliminarily before conducting the interview.

Interviewees in this study are identified as middle-level leaders or higher in Vietnamese construction enterprises (heads / deputy heads of departments and directors, deputy directors). In order to have a representative quantitative survey sample, the study selected the subjects operating in construction enterprises based on the following criteria: size (large, medium and small), region (Northern region), Central, South). The subjects were contacted and scheduled via email with a commitment to ensure anonymity of all participants' personal information.

Research conducted to find out and select interviewees before contacting and expanding to select in many different departments. On average, each interview will conduct 3-5 leaders of the same business. Semi-structured interview method was used to facilitate meeting navigation and to maximize the amount of information collected. The general questionnaire is built first, then based on the operating characteristics of each enterprise, the interviewer will delve into specific contents. During the meeting, the interviewer needs to create a comfortable atmosphere for the subjects and at the same time follow their opinions and thoughts closely to ask appropriate provoking questions.

The interview form was conducted mainly through online software because of time limitations, geographical distance and the unusual situation of the COVID-19 epidemic.

The content of each interview was divided into 4 different sections based on the models and theories given. In the first part, the study was introduced and set out the

objectives. After that, the study found out the perceptions of the subjects about the knowledge economy and its application in the activities of enterprises. Part 2, interviewees were asked about activities related to the supply chain of enterprises and the DC of enterprises will be mentioned. Finally, the author collected the criteria for evaluating the enterprises' products. In order to minimize risks and errors in data collection and processing, the study conducted recording interviews with the support of Nvivo software.

3.2. Qualitative method

The study will be concluded preliminary and official quantitative research and method. Thus, preliminary follows the results of the qualitative research to distribute the preliminary survey sample, with 135 observations in the period from March 2022 to November 2022. The study used quantitative measures and techniques with the support of two software's SPSS.23 and Smart PLS 3.3 to remove unreliable scales, determine the reasonableness of the model, and calibrate as well as adjust the scale and survey form to enter the formal research process.

As the survey questionnaires adjusted from the preliminary research stage, the official research sample was collected from construction enterprises in three regions of Vietnam. Official quantitative research period: December 2022 - up to now with the aim of 608 valid survey questionnaires.

The study still uses two software SPSS.23 and Smart PLS 3.3, but analytical methods and quantitative techniques are performed with a more complete study sample. The study used exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) methods with the aim of removing unnecessary scales and checking the appropriateness of the model. Using the PLS - SEM path model, the relationships in the empirical model were explored. The results of the formal research phase will be used to propose implication for both policy-makers and enterprises.

4. Results

After 21 interviews, 96 pages were compiled from audio files. Research conducted to check, compare with the records to unify information. After that, the information is aggregated and classified with the help of Nvivo software, allowing research to analyze, group factors and find new scales. The qualitative result is epitomized as follows:

4.1. Result on awareness of construction enterprises to circular economy

From the synthesized interview results, the study determined the level of awareness of the leaders (representing their businesses) about the circular economy in the construction industry. In general, the circular economy is not an unfamiliar concept to industry insiders. This is explained by awareness-raising activities from the government and the industry's burning problems related to the environment that have led to the trend of the construction circular economy becoming the core solution of the Vietnamese construction industry. However, awareness of the circular economy is expressed at different levels in enterprises. Mainly, leaders from large enterprises with long-term operating experience will have a

deeper and more comprehensive view of this concept. In contrast, some small businesses have only approached the circular economy from the perspective of recycling and constructive circular production.

“The circular economy is a solution to extend the life of a product without harming the environment.” - Director of a small company in the South.

“The circular economy is about increasing the recycling of materials, increasing the reuse of products and minimizing negative impacts on the environment.” - Sales director of a medium-sized company in Hanoi.

“The circular economy is a new solution that is different from the traditional one-way economy that only cares about exploiting resources to maximize output. The circular economy focuses on the management and use of this resource in a closed circle in many forms such as recycling, repairing, reusing and collecting materials.” - Production manager at a large company in Ho Chi Minh.

“Construction waste recycling is a new program promoted by the company. We work closely with other dealers and dealers to get used construction back into the business cycle. The collection is made full use of human resources at the branches of enterprises and the labor force and consumers in the society, associated with agents and especially freelance workers, etc.” - Production manager at a large company in the South.

It can be seen that the circular economy has been widely spread to construction enterprises in Vietnam. However, the level of awareness and scope of application of this solution is still vague and not deep in many enterprises. However, the construction industry has recorded many efforts and efforts in environmental protection activities. It can be seen that the environmental accounting at enterprises is considered and implemented through many activities from ensuring waste treatment systems, meeting environmental regulations; extending the product lifecycle to the collection of used end products. These factors are completely consistent with the variables describing Circular economy practices (perform cyclical research) respectively Management systems; Eco-design and Investment Recovery Practices have been introduced in the theoretical model.

4.2. Sustainable Supply Chain Flexibility and Dynamic Capabilities of enterprises

Building a sustainable supply chain is interested by construction companies, but most of them focus on large enterprises with a clear ecosystem. However, businesses all react to change and solve problems that may arise in their production and business activities.

“This year has been a difficult year for business as the pandemic has disrupted economic activity. But we depend a lot on imported raw materials, while transportation is both difficult and expensive, raw materials also increase while customer orders are already placed. That's why the company came up with a plan to ramp up its recycling activities to cut costs that are exceeding the plan.” - Chief accountant of a medium-sized company in the North.

“Reverse logistics is an effective solution to help the company perform better in waste management. Recall operations are initiated from retailers back to distributors. We

recover all materials and parts or products that do not meet demand or product packaging, and then restore the economic - MT value of these products. This not only cuts costs, but also helps the company and other partners in the supply chain to reduce waste optimally.” - Strategic director of a large company in the South.

The results show that many construction enterprises in Vietnam have the ability to flexibly transform and adapt quickly to MT to promptly meet the needs of customers. This flexibility is reflected in many factors. Through the results of the interviews, the study has summarized and considered this flexibility based on 4 factors as outlined in the model, respectively Resource consumption; Environmental technology (MT Technology); Sustainable Supplier and Environment practices.

DC is a fairly new term in Vietnamese construction enterprises. However, the expression of DC is still shown in these enterprises. This is especially evident in the context of the outbreak of the Covid-19 pandemic. Enterprises to survive and develop in the industry need innovation and restructuring to adapt to new environmental conditions. Especially facing the difficulty in importing raw materials, enterprises have been constantly looking for new partners. At the same time, the decrease in product consumption during the epidemic season has prompted businesses to restructure and train to improve labor quality, grasp new trends and follow more sustainable strategies. The assessment of DC in enterprises has been studied based on three variables Sensing (Awareness); Seizing and Reconfiguring.

4.3. Sustainable Performance of construction enterprises in Vietnam

The assessment of sustainable development activities is based on three main aspects: economic, social and environmental. Many businesses identify economic activity as the most core factor to help the company develop sustainably because “only when it fulfills its financial obligations well and has annual growth, can the company ensure its different goals and missions.” Activities related to society and community are also interested by businesses, especially in creating jobs for workers, building environment and creating safe working conditions for workers as well as implementing other measures. regimes and obligations for employees. Activities to support and help the community are also promoted, especially support packages for people during epidemics and disaster areas, activities to support medical supplies and food for people. troubled people, etc. The assessment of environmental performance by businesses is based on reducing the amount of waste to the environment, improving recycling activities and prolonging product life cycles, increasing research and development activities of biological products. These factors completely coincide with the three factors that the theoretical model gives, respectively, Economic; Social and Environmental.

Thus, the interview results show that the theoretical model is completely feasible when put into experimental research. Circular economy is an issue of concern and attention in the construction industry in Vietnam. At the same time, the combined results also show a positive relationship between the circular economy and SP in enterprises. Fully aware and deeply implemented the measures of the circular economy help businesses record positive results in the sustainable development strategy. At the same time, businesses that have more flexibility

and adaptability in the supply chain as well as responsiveness to improve competitiveness (DC) also record more clearly positive results. In addition, the difference in size also causes enterprises to have different perceptions and production and business capacities, which is the reason to study using the Size variable as a moderating variable for the empirical model.

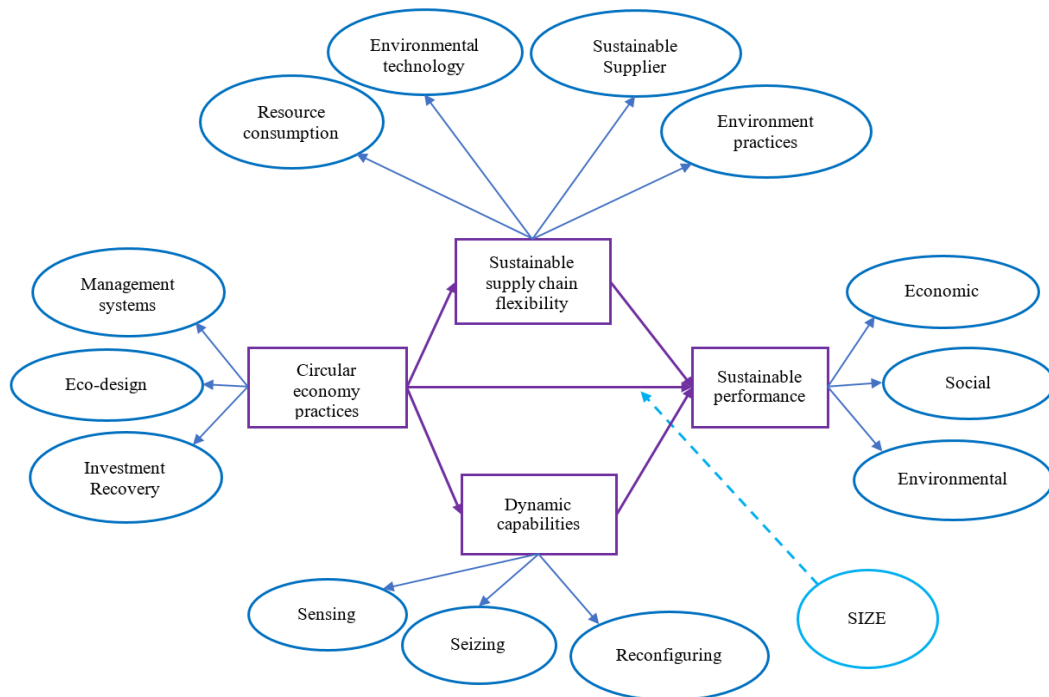


Figure 1. The Empirical Model

5. Discussion and Conclusion

5.1. Main findings

After qualitative research and data collection in preliminary quantitative stage, the study explored informations of 4 sub-factors (resource consumption; environmental technology; sustainable supplier; environment practices) and immediate factor (SIZE) in the expected model that could be identified for testing in the official stage. Besides, only a few of interviewees understand the concept of dynamic capabilities, so they reasked about the relevant activities of enterprises that ensure to interact with the author much more about the role of DC in enterprises and circular economy.

5.2. Limitations

In terms of both theory and practice, the circular economy in Vietnam is still unpopular that make the study face some few of challenges: the research model focuses on the construction industry in Vietnam and has not mentioned or suggested other sectors and fields in the economy. Although it can be seen that the study has marked successful steps in building a fairly detailed model of the correlation of CEP and SP. The last limitation of study is being dealt with data collection and analysis progress that leading to incomplete results and implication suggestion.

5.3. Implications

In context of the rapid development of the world and current market economy, while being well aware of the benefits of implementing a circular economy model is an indispensable requirement for Vietnam today, some implications should be seriously considered in the coming time as follows:

Firstly, focus on encouraging research and innovation. In the view of Stahel (2010), scientists recommend for all levels and fields of technology, society and commerce that research and innovation are the first and foremost factors.

Second, research and innovation play an important role and hold the first place recommended by Stahel (2010) for relevance across all levels and sectors. Specifically, the researcher emphasizes three key areas: technology, society and commerce. According to economists, making assessments and judgments about ecological impacts, the effects of costs and benefits of products is extremely important to determine the production and business efficiency of enterprises. To do these things well, it is necessary to do well in research and creativity at each agency and unit. At the same time, designing innovative products to meet consumer tastes and effectively serve the needs of reuse should become a mandatory goal and requirement of every business. Accordingly, products since the design stage have seen their role and position in the cycle.

Third, completing the legal corridor system to meet the development of the circular economy. Completing the legal corridor is the basis for effectively promoting the development of the circular economy. Therefore, the State needs to amend, supplement and perfect the Law on Environmental Protection. Specifying the specific responsibility of the manufacturer or distributor for the collection, sorting and recycling or payment of the costs of disposing of discarded products. At the same time, the Government needs to strengthen the completion and launch of preferential mechanisms and policies to support and leverage the development of the environmental industry, with the most emphasis being on the recycling industry.

Fourth, strengthening the construction of information systems and communication programs covering the whole country and expanding to the world. Thereby raising awareness of producers and consumers about their obligations and responsibilities towards products throughout their life cycle.

Fifth, encourage maximum internalization of exogenous costs such as pollution and discharge into direct costs of products through tight tax mechanisms. Promote a system of policies to encourage activities that bring benefits to society and establish a mechanism to punish behaviors with negative impacts. For the use of non-recyclable resources, it is necessary to have a policy to limit specific use such as tax increase... Value-added activities should be subject to value-added tax such as mining, construction or production. In addition, this tax does not apply to activities that maintain or preserve value such as a series of reuse, repair and production activities. At the same time, it is important to limit and prevent carbon-emitting activities in combination with promoting activities to reduce emissions...

Sixth, policies and programs set out towards a circular economy must be placed in the context of the Industrial Revolution 4.0, which has basic features such as the networking of all everyday objects, technology, and technology. Cloud computing technology and automation system with artificial intelligence. Because Industry 4.0 will play an important role in promoting the transition from a linear economy to a circular economy.

Finally, the construction and development of an in-depth economic growth model should be promoted. Focusing on using input resources effectively, increasing the application of scientific and technological advances to production processes, especially the process of collecting, sorting and treating waste in order to recycle materials.

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POTENTIAL AND SOLUTIONS FOR DEVELOPING THE TYPE OF TOURISM “HOMESTAY” IN THE COASTAL AREA OF PHU YEN PROVINCE, VIETNAM TOWARDS SUSTAINABILITY

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Abstract

Homestay is a relatively new type of tourism developed in the world and in Vietnam. Phu Yen province has great potential to develop homestay tourism. The article analyzes and evaluates the development of homestay tourism in the coastal area of Phu Yen province. With that goal, the author has conducted a survey of 30 typical homestay business households in the coastal area of Phu Yen province, combined with an analysis of the actual development of this type of tourism. The survey results show that Phu Yen has great potential for homestay tourism development, the development of homestay will contribute to socio-economic improvement, protection of environmental resources in the coastal area of the province.

Keywords: *development solutions, type of homestay tourism, Phu Yen.*

1. Introduction

Homestay is a type of tourism based on the local community in which visitors will eat, stay and live with local people. Following the trend of developing homestay tourism of the world and Vietnam, homestay tourism in Phu Yen has begun to kick in and show signs of prosperity in some coastal areas. Through the survey, Phu Yen currently has 30 homestays in operation, of which only 4 homestays operate in the true nature of homestay with experiencing real life like being at home with local people, while most other establishments are only a form of homestay accommodation.

Therefore, it is necessary to have a specific analysis of the current situation of homestay tourism in the coastal area of Phu Yen province, thereby offering some reasonable solutions to develop the type of homestay tourism with high socio - economic and environmental efficiency for the province.

The article studies the conditions for the formation and development of homestay tourism in the coastal area of Phu Yen province. From there, find out the current situation of developing homestay tourism in the local coastal area. Finally, propose some solutions to develop homestay tourism in the coastal area of Phu Yen province.

2. Method

2.1. The method of data collection

Primary data of the study is collected through the following process: Step 1: The author consults with industry experts to select a research site. As a result, the author selected 4 coastal districts - towns - cities in Phu Yen province with developed homestay tourism, namely: Song Cau and Dong Hoa towns, Tuy An district and Tuy Hoa city. The objects of the study are households participating in homestay tourism. Step 2: conduct a trial survey (10 questionnaires): the author conducts a trial survey to check the suitability of the questionnaire, and at the same time adjusts the questionnaire to suit the actual conditions. Step 3: conduct a formal survey (30 question names): After conducting a trial survey and correcting the questionnaire, the author conducts a formal survey. After calculating the number of communities directly and indirectly involved in homestay tourism activities, in addition to the conditions of time and project funding, the author proposes a sample size of 30.

2.2. Methods of data analysis

In this study, the author uses the case study method of homestays combined with descriptive statistics tools (criteria such as frequency, average, standard deviation, ..) to analyze the actual status of community participation in homestay tourism organization. At the same time, the expert consultation method is used to refer to solutions to meet the scientific and practicality of the solutions proposed in the research (Nguyen, 2013).

3. Results

3.1. Potential tourism resources for the formation and development of homestay tourism in the coastal area of Phu Yen province

3.1.1. Natural tourism resources

- Topography:

+ Coastal plain: tourism resources with potential for exploitation such as: Bai Bai, Bai Tien, Long Thuy beach, Hon Chua island, Bai Mon, hillocks, sand dunes, coastal sand dunes, coastal brackish water sea and lowlands. With such topographical features, this is a favorable place for the development of marine tourism activities such as swimming, sightseeing, photography, entertainment.

+ Topography of lagoons, bays, beaches: is a resource that plays an important role in the development of the province's coastal homestay tourism... creating a "charming landscape" that is a feature of the beaches. , is an ideal place for leisure activities, entertainment, picnics, camping, swimming, scuba diving and enjoying seafood specialties.

+ Ghenh stone, coastal islands: The coastal area of Phu Yen has 16 islands. Large and small islands include: Yen island, Chua island, Kho island, Pineapple island, Than island,

Nua island, Ro island, Mot island, Ban Than island, Nhat Tu Son island, Mai Nha island, Cu Lao Ong Xa island (*Department of Culture, Sports and Tourism of Phu Yen Province, 2012*).

- *Climate:*

In general, the climatic characteristics of the coastal area of Phu Yen are relatively favorable for the development of homestay tourism with the conditions of sunny weather, clear clouds, clear blue sky, cool all year round. Tourist activities can take place almost all year round, abundant solar radiation creates favorable conditions for sunbathing, relaxation, sightseeing, medical treatment and wintering activities for tourists, especially international tourists. Coming from temperate countries with long, cold winters. The main tourist exploitation period is mainly concentrated in the summer months, from April to August every year (*Pham, 2016*).

- *Hydrography, oceanography:*

+ Hydrology: The coastal area is located downstream of major rivers flowing through the following areas: Ba River, Ky Lo River, Ban Thach River, Cau River, etc., creating an abundant source of fresh water. In addition, there are about 21,000 hectares of water surface in lagoons, bays and estuaries creating a unique coastal ecological zone.

+ Oceanography: The tides in Phu Yen sea area belong to the irregular diurnal regime, the amplitude gradually increases from north to south. It is this marine condition that helps tourism businesses have a way to adjust tours reasonably.

- *Sea and island biota:*

The coastal area has 21,000 hectares of wetlands, 300 hectares of coral reefs, 504 hectares of seagrass beds and 210 hectares of mangroves that are home to many valuable aquatic species (*Nguyen, 2015*).

+ With the unique marine fauna, the coastal waters, especially the bays, and lagoons are very convenient in organizing for tourists to visit, recreated, cruise, go fishing.

+ Marine plants: Phu Yen sea area has 62 species of large-sized seaweed living on coral reefs, belonging to 35 genera, 4 branches, widely distributed in the North of the province; Seaweed is a marine resource because of its ability to stabilize the bottom, synthesize organic matter from inorganic, used as food, and to process specialty candies for tourists to Phu Yen.

+ Coral reefs: there are 151 species of hard corals belonging to 48 genera, 14 families scatteredly distributed, which are narrow strips running along coastal or island waters (*Phu Yen Provincial People's Committee, 2012*).

3.1.2. *Cultural tourism resources*

- *Physical cultural tourism resources*

The physical cultural tourism resources of Phu Yen have 73 monuments and landscapes, of which 22 are national-ranked and 51 are recognized as provincial - level monuments, spreading over 9 administrative units . Particularly, 4 particular coastal

districts, towns and cities account for 46/73 relics - scenic spots. Although accounting for a small proportion, the monuments - landscapes associated with the life of coastal residents play an important role in tourism development because of their uniqueness and characteristics. Tourists coming here besides visiting the mausoleum architecture also understand more about the culture and beliefs of the inhabitants of the coastal area (*Phu Yen Provincial People's Committee, 2012*).

- Intangible cultural tourism resources

+ Festivals in Phu Yen are quite rich associated with the culture and productive labor of the coastal area. Along with that, there are traditional craft villages that have existed for a long time such as making fish sauce, making salt, building ships, weaving nets, farming, catching and processing seafood...

+ Culinary culture: coastal cuisine is one of the cultural tourism resources that stimulate the development of homestay tourism in the coastal area because all visitors have a need to eat when traveling. By enjoying the unique dishes of Phu Yen sea, tourists will fully feel the beauty, beauty and mystery of the sea and the people here.

3.2. Homestay and status of community participation in homestay tourism organization

3.2.1. Homestay

Homestay is a type of "green tourism", "responsible tourism to the community"... When traveling, instead of staying at hotels or motels, tourists stay at the homes of local people to explore the natural - cultural environment in the new land and live close to the local community there. About 6 years ago, the homestay business model flourished in localities in the province.

The trend of homestay business is now quite popular in Tuy Hoa city and other localities in Phu Yen province, meeting the diverse accommodation needs of tourists. In order for the homestay tourism model to develop in the right direction and bring real benefits to the community, besides the investment of private businesses, it is necessary that state management agencies and local government to support, facilitation and guidance. From 1 or 2 establishments, up to now, the whole province has over 30 homestays, not to mention a number of points under construction, of which. Tuy Hoa city is home to the most homestays compared to other localities. Homestays such as Nau, Madam Le's, July, Trai Hoa Vang, PHD, Joy, Lotus, Bon, Say, Ni, Moc Mien... are designed according to different classical and modern trends; All have bunk beds, including individual single rooms, dormitory rooms, family rooms, kitchens, offices and gardens. All are ideal for serving visitors.

However, most homestay establishments just stop at the level of accommodation business, and as for the orientation to develop and create homestay tourism products according to its nature, in the province according to the initial survey, there are only 4 satisfactory homestays. Therefore, the homestays born later need to have a clear orientation to be able to fully exploit and promote their true role, to meet the needs of tourists' actual experiences in the local community.

According to localities, the demand for homestay services will increase sharply in the near future. In order to retain guests, homestays need to develop according to the regional culture, characteristic of coastal Phu Yen, that is, for visitors to experience the real life, understand the regional characteristics, participate in the host family's activities and productions. The owner of the homestay needs to orient visitors and guide visitors to experience the reality. This model will contribute to promoting the image and people of Phu and Yen land.

In Phu Yen province, the homestay model is new, mostly spontaneous; however, the Department of Culture, Sports and Tourism encourages people to develop this model. The homestay model is very likely to be effective in the future and connect with rural areas or form community tourism. The unit has been coordinating with the locality to review, inspect and appraise the conditions of business locations; then have a plan to guide the people.

Some typical homestays: PHD homestay, Dat Phu homestay, Ong Ba Tam homestay, An Hai homestay.

3.2.2. Status of community participation in homestay tourism organization

- *Reasons for participation and non-participation:* According to the actual research results shown in Table 1, there are many reasons for people to participate in the development of homestay tourism in coastal districts - towns - cities. The first thing to mention is creating more income for the family (72.5%), followed by following the local movement (40.0%), matching the family's occupation (29.5%), improving expertise (16.0%) and a number of other reasons. On the contrary, the two difficulties that most affect the ability of households to participate in the development of homestay tourism in the localities are insufficient service facilities (60.5%) and financial inability. (55.4%). In addition, two reasons also contribute significantly to households' participation in providing homestay tourism: lack of human resources (35.5%) and limited professional expertise, especially foreign language proficiency. 43.3%).

Table 1. Reasons for participating and not participating in homestay tourism development

Reason for Participation	Rate (%)	Rating
- Increase income	72.5	1
- Follow the local movement	40.0	2
- Suitable for family occupation	29.5	3
- Advanced level	16.0	4
<i>Reasons for not participating</i>		
- Inadequate facilities	60.5	1
- Inability to finance	55.4	2
- Limited professional qualifications	43.3	3
- Lack of human resources	35.5	4

Source: Author's 30-sample survey data, 2022

- *Time of participation:* The activity of organizing homestay tourism in districts - towns - cities in Phu Yen province has been established for more than 6 years. However, the number of households participating in the development of homestay tourism over 6 years accounts for a very small percentage (6.6%). In recent years, due to the growing tourism industry, the number of households participating in the development of homestay tourism is increasing, specifically, the percentage of households participating in the development of homestay tourism under 3 years accounts for 69.3%. from 3 to 6 years accounted for 24.1%.

Table 2. Time involved in developing homestay tourism

Participation Time	Rate (%)	Rating
- Under 3 years	69.3	1
- From 3 to 6 years	24.1	2
- Over 6 years	6.6	3

Source: Author's 30-sample survey data, 2022

Table 3. Ability to participate in tourism development Homestay

Characteristics	Rate (%)	Rating
<i>Highest level of foreign language in the household</i>		
- Don't know how to communicate	59.5	1
- Basic communication	33.0	2
- Fluent communication	7.5	3
<i>Tourism service activities</i>		
- Food service	60.5	1
- Provide accommodation service	50.4	2
- Practice farming	35.5	3
Performing arts transmission	20.2	4
- Souvenirs, crafts	10.4	5
- Souvenirs, crafts	10.0	6
<i>Household has good relationship with local government or tourism company</i>	50.0	

Source: Author's 30-sample survey data, 2022

- *Ability to participate:* According to the actual survey results summarized in Table 3, it shows that the foreign language proficiency of households providing homestay tourism services is still very poor. Specifically, the ability to communicate fluently is very little (7.5%), can communicate basic sentences (33.0%), the rest are mostly unable to communicate (59.5%). Limited foreign language proficiency greatly affects the level of satisfaction or service quality. The research results show that the majority of households in the areas only provide food services (60.5%) and accommodation services (50.4%). For food

service, households often choose to provide river specialties and traditional dishes. In addition, some households in the areas also expand entertainment services for tourists such as practicing farming (35.5%), performing traditional art activities (20.2%), displaying and selling souvenir products (10.4%) and some other recreational activities (10%).

- *Form of association:* According to the survey results presented in Table 4, signing commitment contracts with travel companies (accounting for 56.1%), profit sharing agreements between the participants (accounting for 17.5%). From that, it can be seen that the number of households participating spontaneously is still quite high (accounting for 26.4%). This has created differences in the quality of services provided between groups of household, affecting the image of homestay tourism in the areas.

Table 4. Forms of association of households participating in tourism development with travel agencies

Relationship	Rate (%)	Rating
- Sign commitment	56.1	1
- Participating spontaneously according to season	26.4	2
- Agreement (oral) profit sharing	17.5	3

Source: Author's 30-sample survey data, 2022

- Support policies: In 4 coastal districts - towns - cities of the province, localities authorities have made important contributions to the development of homestay tourism in the localities such as: promoting the image of local tourism. (40.5%), organizing professional training courses for households (30.6%) and upgrading infrastructure (31.6%), supporting loans (20.3%) and vocational training (7.8%).

Table 5. Policies to support tourism development of local authorities

Supporting policies	Rate (%)	Rating
- Promote tourism image	40.5	1
- Upgrading infrastructure for tourism	30.6	2
- Open a training course on tourism knowledge	31.6	3
- Loan capital	20.3	4
- Handicraft training	7.8	5

Source: Author's 30-sample survey data, 2022

- *Benefits received:* According to the survey data in Table 6, up to 72.5% of households have additional income and improved living standards; 39.6% of households created more jobs. Some other households received a lot of support from local authorities (22.5%), participated in professional training (16.5%), improved and expanded their knowledge (12. 2%).

Table 6. Benefits of participating in a community-based tourism organization

Benefits of joining	Rate (%)	Rating
- Increase income, improve good life	72.5	1
- Create more jobs	39.6	2
- Get the favor of the local government	22.5	3
- Participated in training tourism knowledge	16.5	4
- Improve and expand knowledge	12.2	5

Source: Author's 30-sample survey data, 2022

3.3. Comment on some shortcomings and causes affecting the development of homestay tourism in coastal districts - towns - cities in Phu Yen province

Through analyzing the reality of community participation in homestay tourism organization, the author identifies the causes and limitations affecting the development of homestay tourism in coastal districts - towns - cities in Phu Yen province, Vietnam as follows:

- *Firstly, the linkage in homestay tourism organization in the areas is not clear.* In fact, there are still quite a few households participating in spontaneous tourism service provision. This has led to heterogeneity in products and services, unfair competition among service providers, weakness in tourism organization, etc. These are the issues raised. Which need a solution soon.

- *Second, the professional qualifications of households providing homestay tourism services are still limited.* Most households do not understand much about the characteristics of homestay tourism, especially the understanding of the needs and characteristics of tourists has not been paid enough attention. The limitation of foreign language proficiency also partly affects the quality of homestay tourism services.

- *Third, lack of diversity, speciality and specificity of tourism products.* Most of the households and locations are all types of farming practice services, art performances, and souvenirs. The ability to create and change products and services is still limited, so it is difficult to retain tourists in the future.

- *Fourth, the promotion of the image of homestay tourism in the districts - towns - cities of the province has not reached a professional level.* Although the local government has support to promote the image of homestay tourism in the localities, the content and frequency are still very limited. As for households which organize homestay tourism, their understanding of marketing is very modest. Advertising signs at private homes are the only marketing tool of most households providing homestay tourism services.

4. Discussion and conclusion

4.1. Solutions to develop homestay tourism in the coastal area of Phu Yen province

From the results of analyzing the situation of community participation in homestay tourism organization, and identifying the causes and limitations affecting the development

of homestay tourism in the coastal areas of the province, the author proposed solutions to develop homestay tourism in the above locations as follows:

- *First, create a close association of "4 houses" including local people, the state, tourism enterprises and scientists.* In this connection, the state plays the role of an intermediary connecting households providing homestay services with travel companies. The local tourism industry needs to regularly organize meetings and dialogues between the four parties to strengthen the link of support and create a consensus between tourism service providers and travel companies. The local tourism industry needs to closely coordinate with the households participating in the homestay tourism organization to promptly support when necessary, and at the same time, it is necessary to study and review the planning to develop a strategy to develop this type of tourism. homestay in the long term. Scientists participate in the review of tourism development planning projects in order to exploit the highest efficiency, while minimizing harm to the environment and resources.

- *Second, improve the professional qualifications of the community providing tourism services.* Households participating in homestay tourism need to actively study and improve their education and foreign language skills as well as their knowledge and skills in tourism. In addition, households providing tourism services need to actively participate in professional skills training courses organized by local authorities and tourism companies, and at the same time constantly research, learn and grasp the needs of tourists to promptly adjust products and services to satisfy the increasing demands of tourists.

- *Third, create new, unique and specialized products and services.* Homestay sites need to pay more attention to the quality and quantity factors of services for visitors. In addition to the current activities, households can design other activities such as: trying out animal husbandry, learning how to grow clean vegetables, a night in the field, trying out cooking,..., or other cultural and artistic exchange activities typical of each locality. In addition, the local tourism industry needs to stipulate specific standards for homestay tourism services as a standard measure for the service provided. Especially, each locality has a number of typical products to avoid duplication of products in order to increase competitiveness and attract domestic and foreign tourists.

- *Fourth, develop a strategy to promote the image of homestay tourism to an increasingly professional level.* Homestay tourism in Phu Yen province is not without for a methodical promotion of the image of homestay tourism. The unity of images, media and events need to be professionally organized, large-scale and periodic. In addition, the construction and promotion of the "coastal homestay tourism" brand in Phu Yen province also needs to be properly invested by the local tourism industry, travel companies and the homestay tourism organization community.

4.2. Conclusion

Based on the extremely rich and diverse coastal tourism resources, Phu Yen has a lot of potential in developing homestay tourism. In the last 6 years, the situation of developing local homestay tourism has had many positive changes, but it has not yet met the current

tourism development requirements of the province. The type and product of homestay tourism need to be more local specific, must be a harmonious combination of traditional and modern elements, simple but new for the environment - a favorable resource for developing homestay tourism, to meet the needs of tourists and ensure competitiveness. The development of specific types and products of homestay tourism based on natural and cultural tourism resources needs to be linked to the development of diverse tourism services and at the same time long-term protection of the natural and cultural environment as well as effective conservation of the natural and cultural tourism resources, in order to ensure sustainable tourism development.

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GREEN FINANCE DEVELOPMENT IN VIETNAM: CURRENT SITUATION AND RECOMMENDATIONS

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Abstract

At the 26th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP26) in 2021, the Vietnamese Government committed to develop and implement measures to reduce greenhouse gas emissions to achieve net zero emissions by 2050. This commitment of the Vietnamese Government was appreciated by the international community as a very strong and clear commitment to reduce emissions of a developing country. To completely achieve this vital goal, Vietnam needs to drastically transform its growth model, from the traditional “brown economic” model - growth depends mainly on fossil fuel sources - to an eco-friendly green economy. However, the “greening process” the economy requires huge financial resources. Therefore, the development of a green financial system is an urgent task for Vietnam in the coming time in order to popularize and develop green and eco-friendly financial instruments and products, associated with sustainable development. This article summarizes the experiences of some countries in green finance development, analysis the current situation of green finance in Vietnam as well as proposes some recommendations to develop green finance in Vietnam in the future.

Keywords: *Green finance, COP 26, SDGs, MDGs, greenwashing*

1. Introduction

In 2015, the United Nations adopted the Sustainable Development Goals (SDGs) aimed at eradicating poverty, protecting the planet, and enjoying peace and prosperity for all people by 2030. These are universal goals and are concretized by the following goals: eradicating poverty, eradicating hunger, ensuring a healthy life, gender equality, clean water and sanitation, clean and sustainable energy, good jobs and economic growth, industry, innovation and infrastructure development, reducing inequality between countries, sustainable communities, responsible consumption and production, climate action, marine environment preservation, conservation of land resources and environment, peace, justice and strong institutions, partnerships for sustainable development goals. The SDGs are considered as a further development of the Millennium Development Goals (MDGs). Accordingly, the SDGs pay more attention to the voices of those most affected by poverty and other issues that hinder sustainable development. The scope and influence of the SDGs are expanded and more comprehensive, with the participation of the whole political system, ministries, branches,

localities, agencies, business communities, mass organizations, society, communities, and development partners in the implementation of sustainable development goals.

Vietnam is considered as one of the successful countries in implementing the MDGs and is actively implementing the SDGs. Vietnam has approved the approval of the Action Plan (Plan) for sustainable development in Decision No. 622/QĐ-TTg dated May 10, 2017. The National Action Plan was developed based on a review of Vietnam's major current development policies, strategies and plans, compared with 17 global sustainable development goals (SDGs) and 169 specific goals. Accordingly, the Action Plan includes 17 general goals and 115 specific goals. Specific tasks are phased out in two phases 2017-2020 and 2021-2030. Compared with the MDGs, the goals set are higher, related to new fields or areas where Vietnam's achievements still have many limitations such as climate change, environmental protection, sustainable poverty reduction... To achieve the aforementioned goals, one of the essential requirements is to develop a green financial system, freeing up the economy's resources for green projects, green and environmentally friendly programs. This article provides an overview of the experience of developing green finance in some countries such as the US, India, China, UK, Bangladesh; analyzes the current situation of green finance development in Vietnam and proposes some solutions to develop green finance in Vietnam in the coming time.

This article gives some overview about green finance, summarizes the experiences of some countries in green finance development and analysis the current situation of green finance in Vietnam.

2. Literature review

According to the United Nations Environment Program (UNEP): "Green finance refers to the diversification of financial products and services provided by financial institutions towards the sustainable development of the country." Green finance enhances financial resources from the public, private and non-profit sectors to sustainable development priorities. According to Chowdhury (2013), green finance is understood as financial support towards green growth through cutting greenhouse gas emissions and reducing environmental pollution. Green finance is related to the process of creating and distributing financial products and services that have a positive impact on the environment on the basis of ensuring economic goals for businesses/projects. In fact, green finance is a broad concept, in which there are two main areas: green credit and green bonds.

Regarding green credit, according to Aizawa and Yang (2010), green credit is understood as lending by credit institutions for consumption, investment, production and business needs without causing risks to the environment, contributing to protecting the common ecosystem. Green credit is one of the effective solutions applied by the financial industry to deal with environmental and social challenges through financial tools. According to Jin and Mengqi (2011), green credits are credits that are supported by credit institutions for production and business projects that do not pose environmental risks, or for the purpose of environmental protection, contributing to general ecological protection. Green credit is a part of green finance aimed at the sustainable development of the country and the whole

world. According to the Loan Market Association (LMA), green credits are green loans used to finance or refinance all or part of green projects. Green loans can be term loans or revolving loans. Accordingly, the purpose of the loan shown in the financial statements or promotional materials of the business will determine the "green" nature of the loan. LMA has launched a list of green projects, loans granted to projects under this category will be considered green loans. Nguyen Trong Tai and Nguyen Kim Oanh (2019) define green credit as credit capital flows directed to activities that do not pollute the ecological environment, establish an equilibrium of natural conditions, step by step direct human life in harmony with the natural environment. In terms of loan sources, green loans or green credits for green projects in an economy include loans from the State, commercial credit, bank credit and international loans. Green loans from the State are loans provided by the Government for green projects that have a deep and wide impact on the overall socio-economic development of that country. Therefore, the scale of green loans is usually large, with preferential interest rates, and organizations must meet strict standards, regulations and constraints to access these green loans. Green commercial credit is common in developed economies and is a deferred purchase and sale relationship between the transaction parties and green commercial paper is proof of this relationship. The use of green commercial paper brings benefits to businesses in applying a low discount rate from commercial banks. The flow of green loans from international organizations is diversified and implemented through many channels such as official development assistance (ODA), preferential loans between governments, cooperation with commercial banks, etc. The above three types of loans are often in the form of priming capital flows, in order to deliver policy messages and orientations for sustainable and environmentally friendly development.

For green bonds, Article 150 of the Law on Environmental Protection 2020 stipulates on green bonds as follows: "Green bonds are bonds issued by the Government, local authorities and enterprises in accordance with the law on green bonds. bonds to raise capital for environmental protection activities and investment projects that bring environmental benefits". According to the World Bank 2021, green bonds are defined as a type of fixed-income security to attract capital for projects with environmental benefits. Accordingly, the proceeds from this bond issue will be committed to invest in programs to enhance climate change adaptation and mitigation, including clean energy projects, efficient use of energy, public transport and clean water... Green bonds can be issued by governments, commercial banks, development banks, international financial institutions, corporations, etc. As estimated by the International Energy Organization, to halve global emissions by 2050, the world will need an investment of up to 46 trillion USD. In that context, green bonds are considered an effective solution, which can help mobilize hundreds of billions of dollars per year for the development of a "clean" and sustainable economy. Giuseppe Cortellini (2021) and Phung (2022) has suggested that green bonds are one of the most used sustainable investment instruments and according to the 2015 Paris Climate Agreement, the climate bond market is expected to thrive in near future. According to Ashima Verma et al (2020), Quang and Thao (2022), green bonds are one of the important tools to reduce environmental pollution and climate change that is taking place today. The author's research paper analyzes

green bonds from a comprehensive point of view, first about the current scenario of green bonds in India. The study also highlights the future prospects of green bonds. And finally, give practical suggestions in the Indian context. In general, there have been many studies in the world and in Vietnam on the role of green finance in general as well as of green credit and green finance in particular for the sustainable development of the economy. According to Kun et al. (2022), green finance is emerging as an important strategy to reduce energy intensity in the region in the context of “peak carbon” and “carbon neutral”. Green finance has the potential to promote energy efficiency on many levels. In addition, green finance can provide financial capital support to environmentally friendly businesses such as high-tech enterprises and green technology enterprises. At the same time, as green finance continues to grow, it will provide investors with more investment options and tools for environmentally friendly investments. It will create advantages for improving environmental efficiency and energy use in the region and around the world.

In the long term, the development of the green finance industry will significantly promote the upgrading of the infrastructure of industrial zones and thereby promote industry innovation. The capital allocation function of green finance will focus more on the financial resources of environmentally friendly and energy-saving industries, and then towards optimization and upgrading of the industrial structure. Green finance can also bring about positive externalities related to regional environmental benefits and levels of energy use. First, green finance can guide policies to accurately predict technological achievements in the region and ensure the effectiveness of environmental policies. Second, green finance can force the government to improve the intensity of environmental regulations and develop environmentally friendly policies. Moreover, the development of green finance has become an indispensable need for the innovation and sustainable development of the financial industry.

3. Method

The study uses qualitative methods based on previous studies to study the experience in developing green finance worldwide as well as the current situation of green finance development in Vietnam. For international experience, the research team uses the desk-based research method to find out the experience of developing green finance in some developed countries in the world such as the US, UK and some other large countries such as China, India. For analyzing of the current state of green finance in Vietnam, the research data is compiled from the State Bank of Vietnam and the General Statistics Office in the period 2017-2022, including two main components: credit balance outstanding and green finance credit balance. The research team also used the in-depth interview method and consulted with experts to propose some solutions to develop green finance in Vietnam in the coming time.

4. Results

4.1. Experience in developing green finance worldwide

Green finance in general as well as green credit and green bonds in particular are now increasingly popular and widely applied in many countries around the world. We will learn the lessons from some countries in green financial development as follow.

The first country is the United States. In March 2009, the United States introduced the Green Banking Act with two main pillars: internal green and green project financing. For internal green banking criteria, the first requirement is to reduce the use of paper in banking activities. Next is to build a clean and hygienic banking environment, green buildings, strengthen online banking, waste management, install solar panels on the roofs of banks and use fuel-efficient vehicles, reduce audio pollution, use a webcam for video conferencing instead of physical meetings, online reports, emailed documents are included in the internal green bank. For financing green projects, the banking industry supports green projects such as biogas plants, solar/renewable energy plants, bio-fertilizer plants, and water treatment plants... The USA also develops "green" rating and rating standards for banks, which are periodically published by the Federal Deposit Insurance Corporation (FDIC).

The second is India. In India, the application of green programs for the environment and community has been implemented since the early 2000s, mainly loan programs for women, providing credit for economic development projects. local economy... Since July 2010, the State Bank of India (SBI) has implemented "Green Channel Counters (GCC)" and "No Line Banking" in more than 5,000 branches across India, as a step towards innovation. new "green bank" paperless transactions for depositing, withdrawing and transferring money, making domestic and international payments. Some public sector banks and private sector banks have also adopted green banking policies and provided green products and services. For example, ICICI bank in India has a "Go Green" initiative including Green interaction, green communication and green partners. Specifically, ICICI has provided their customers with the convenience of online bill payment, online money transfers and paperless electronic statement registration; ICICI also aims to expand partnerships with green organizations and NGOs. The Co-operative Bank of India implements more preferential interest rate activities if people buy water heaters, water pumps, and solar-powered lighting systems. Or state-owned bank Punjab offers medium-term loans for people to build biogas tunnels, lighting systems using solar energy. In addition, the Institute for Development and Research in Banking Technology (IDRBT) established by the Reserve Bank of India (RBI) has provided guidelines for banks to implement strategies to improve the environment. IDRBT proposes guidelines for rating criteria according to green efficiency bank criteria. IDRBT has coined the term green rating standard as "Green Coin Rating". The green coin rating will be the same as the energy star rating for home appliances. Banks will be assessed based on the percentage of carbon emissions in their operations, the amount of reuse, refurbishment and recycling concepts being used in building fixtures and in systems used by them, such as computers, servers, networks, printers, etc. These banks will also be evaluated based on the number of green projects funded by these banks, the number of bonuses and the acceptance of the banks willing to pay for the transition to green business. In reality, however, the banking sector still plays a minor role in the positive environmental impact in India.

The third is China. In the context of environmental pollution leading to many political, security, and socio-economic consequences, the Chinese government was forced to adjust its development strategy towards the goal of greening the economy and sustainable

development. Accordingly, Beijing considers the development of a green financial system to be an indispensable need today. As the Chinese government sets a target of being carbon neutral by 2060, the financial sector has stepped up efforts to realize green development plans. In particular, the People's Bank of China (PBOC) has been playing an important and active role in promoting the green transition. As of the end of May 2022, the People's Bank of China has provided more than 210 billion yuan (about 31.39 billion US dollars) to financial institutions, helping to reduce emissions by more than 60 million tons of carbon dioxide equivalent, accounting for about 0.6 percent of China's annual carbon emissions. As of March 2022, green loans in China exceeded 18 trillion yuan. Green bonds in circulation reached about 1.3 trillion yuan, one of the largest in the world. In addition, PBOC has also made efforts to improve climate information disclosure and prevent fake reports, and prevent greenwashing of borrowers, in order to provide the most accurate information in the process of implementing green projects.

The fourth is The United Kingdom. The UK is currently one of the leading countries in providing sustainable 'green finance' services, with a great deal of experience and influence in Europe. In 2015, the London Stock Exchange was the first exchange in the world to launch a dedicated green bond segment, which offered the first certified green bonds from China, India, the Middle East and the first sovereign green bond from the Asia Pacific and the Americas. Besides green bonds, the London Stock Exchange also promotes the issuance of social and sustainable bonds. In 2019, the London Stock Exchange expanded the green bond segment into the more comprehensive Sustainable Bond Market (SBM). SBM offers issuers a variety of opportunities for sustainability-related debt instruments and investors with improved accessibility and transparency. Til the end of 2022, the London Stock Exchange is offering more than 200 types of green bonds, social bonds, and sustainability bonds from 23 countries, raising more than 56 billion pounds. The UK is also a leader in the development and internationalization of green finance solutions to help countries around the world meet their climate commitments. Globally, it is estimated that \$90 billion of investment will be needed by 2030 to achieve the global climate and sustainable development goals.

Also, in the UK, the Green Investment Bank (GIB) has played a role in completing the policy framework and providing the necessary financial support to address the failures of the free market, concerns risks, high transaction costs and lack of capital. GIB's intervention helps to mobilize funds from equity and debt markets, facilitating the valuation of risk in financial markets by improving transparency and openness. investment in sustainable development projects.

The fifth is Korea. Korea officially implemented the Emissions Trading Program (ETS) in January 2015 aimed at effectively reducing GHGs in different sectors of the economy. According to the Law on Emissions Transactions, which came into force in 2012, companies with 3-year average GHG emissions exceeding 25,000 tons of CO₂ will be designated as ETS - entities participating in an emissions trading scheme.

As of January 2015, 525 companies from 25 industries participated in the emissions trading system as ETS subjects, and this number reached 549 in January 2017. The Korean Ministry of Finance and Strategy normally reallocates GHG emissions to Emissions Trading Program participants every five years based on the total GHG emissions over the five years. According to Oh (2018), in the Korean emission trading market, the price of each emission quota unit (KAU) has increased by about 3.6 times compared to the starting price, from 7,860 won/KAU (02/02/02/02/02/month) 2015) to 28,000 won/KAU (June 2018). This shows that, over time, the pressure to reduce GHG emissions becomes more and more stressful for businesses and the price of emission limit units is expected to continue to increase sharply in the future.

4.2. Current situation of green finance development in Vietnam

On October 1, 2021, the Government issued Decision No. 1658 approving the National Strategy on Green Growth for the 2021-2030 period, with a vision to 2050. According to this Decision, the green sector includes 12 sectors, fields and subjects as follow: Green agriculture; sustainable forestry; green industry; renewable energy, clean energy; recycle and reuse resources; waste treatment and pollution prevention and control; natural environment protection, ecological restoration and natural disaster prevention and control; sustainable water management in urban and rural areas; green construction works; sustainable transport; provide environmental protection and energy saving services; other green fields. Aware of the importance of green credit, in Vietnam, according to Directive No. 03/CT-NHNN dated March 24, 2015, the State Bank of Vietnam has requested commercial banks to promote green credit for projects with clear targets on environmental protection, encouraging environmentally friendly business activities.

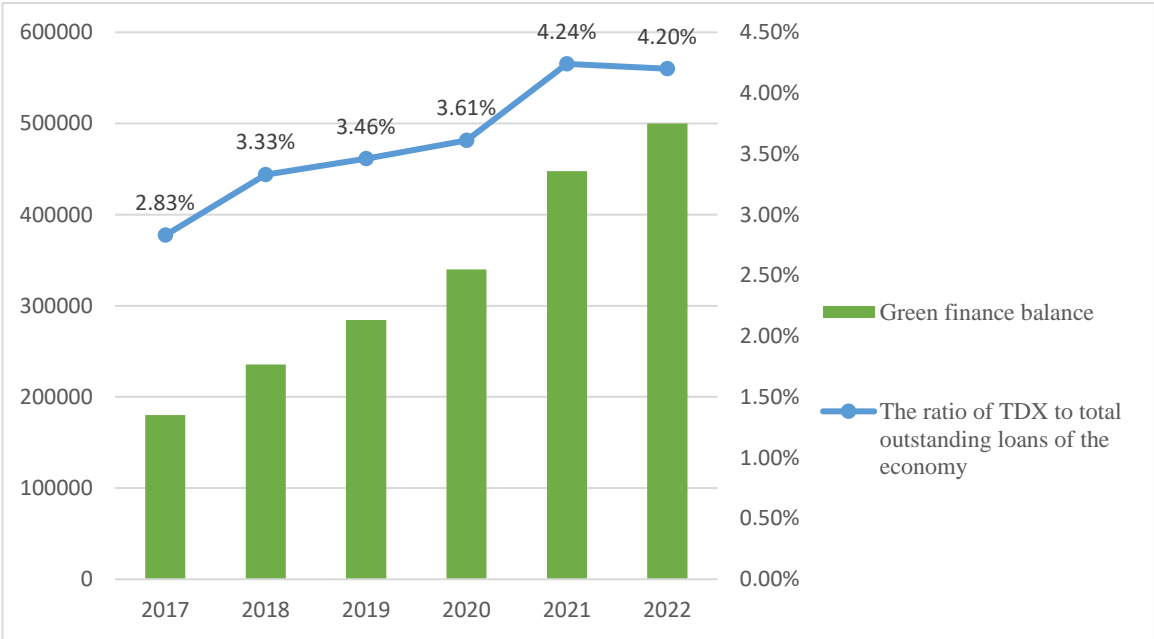


Figure 1. Green credit's share in total outstanding loans in Vietnam's economy in the period 2017-2022

Source: State Bank of Vietnam

According to data from the State Bank of Vietnam, although the proportion of green credit outstanding loans in Vietnam tends to increase year by year, the size of outstanding loans is still relatively small compared to the total outstanding loans of the economy. In 2017, the scale of green credit was at 2.83% compared to the total outstanding loans of the economy, in 2019 it reached 3.46% (up 22% compared to 2017). By 2021, this figure was at 4.24%, equal to nearly 1.5 times compared to 2017. By the end of 2022, outstanding loans for green projects (12 green industries are funded by the State Bank of Vietnam, which was built and issued in 2017) reached nearly 500,000 billion VND (accounting for about 4.2% of the total outstanding loans of the economy), focusing on renewable energy, clean energy (accounting for the highest proportion of 47%), followed by green agriculture (accounting for over 30%). Thus, it is clear that although there are up to 12 sectors, credit balances only focus on a few key industries such as clean energy and agriculture, showing a lack of diversity in green project investment.

The reason why it is difficult to invest in green projects is that these projects require high costs, large capital sources, and complex funding requirements. Furthermore, green project sponsors often do not have enough data to analyze the project in detail. The green project implementation period is long, leading to various risks, especially related to cash flows such as too-long maturities or lower-than-average interest rates in the market, and R&D cost for green finance is very high and only brings benefits in the long run while the support of the State is still limited, so resources for projects on promoting green growth, sustainable development Sustainability is still largely dependent on the state budget.

According to data from the Trade Promotion Agency, as of June 2021, there are 84 credit institutions that have submitted reports on the results of implementing Decision 1552/QĐ-NHNN dated August 6, 2015 on the Action Plan of the Bank. The banking industry implements the National Strategy on Green Growth until 2020, representing over 80% of the outstanding loans of the banking system. However, only 67/84 credit institutions have implemented relevant contents on the development of green banks and green credit, on the basis of integrating regulations and guiding documents in their operations. Some commercial banks in Vietnam have a high proportion of green credit such as: Agribank, BIDV, Sacombank, TPBank, Vietinbank, VPBank, Nam A Bank, HD Bank....

Specifically, regarding some pioneer banks in green finance, as of September 30, 2022, BIDV is the market leader in financing green projects with 1,210 customers and projects, with a total amount committed to credit over 61,700 billion VND. Green credit's outstanding balance is about 49,000 billion VND, accounting for 3.3% of the total outstanding loans of BIDV. Green credit outstanding loans mainly focus on the field of renewable energy, including more than 800 renewable energy and clean energy projects with a total credit amount of more than VND 53,200 billion, (accounting for about 97% of the green credit balance). For wind and solar power projects with a loan scale of over 500 billion VND, in the period 2020-2021, BIDV has sponsored 25 projects with a total loan amount of about 23,400 billion VND (equivalent to 1 billion USD). Or at TP Bank, this bank is also actively implementing green finance when giving priority to spending VND 2,000 billion in

credit packages for green development businesses, export businesses, and women-owned businesses from WSME. A credit package of VND 5,000 billion is provided by Tien Phong Commercial Joint Stock Bank (TPBank) for businesses in 5 priority areas, export, green development, women-owned enterprises, and customers who use multiple services. of the bank... Depending on the interest rate, the interest rate will be reduced by 1.5% to 2% compared to the normal interest rate. Women-owned businesses will receive an additional 0.2% discount compared to the above incentive. In June 2019, Vietcombank was funded by the Japan International Bank (JBIC) with a \$200 million package to finance renewable energy projects. Vietcombank is also a partner of the Project on Energy Efficiency for Industrial Enterprises in Vietnam - VEEIE, providing \$USD 158 million in capital for businesses in the field of energy-efficient technology.

5. Conclusions and recommendations

It can be seen that although green financial development is a major policy of the State in the green growth strategy, the results achieved so far are still quite modest, in the banking sector, the proportion of green credit is still low and mainly concentrated in a few large-scale banks. This can be due to many reasons, for example: green financial products in banks in Vietnam are still lacking in abundance; not available yet; financial support for green projects and green products is still limited... Besides, awareness of green finance is still limited; policies and laws are lacking or have not effectively supported the development of green finance. Thus, based on international experience in green finance and the existing problems in Vietnam, the author proposes some recommendations on promulgating mechanisms and policies; monitoring and enforcement, specifically:

Firstly, the Government needs to perform the function of creating, developing a development roadmap, creating an appropriate and feasible legal corridor, following the green growth strategy phases so that the components of the green financial system can be improved. At the same time, build a public-private partnership channel in the operation of a green climate fund and an environmental protection fund like in Korea. The Government and the State Bank need to continue to develop and complete the specific legal framework on green credit as well as business investment projects that have an impact on the environment, develop a list of green industries standards for general and uniform application - serving as a basis for commercial banks to evaluate when granting green credit. Vietnam needs to quickly implement the energy transition roadmap and build a reasonable green financial framework for projects that can get bank loans.

Secondly, Vietnamese banks need to quickly develop a set of rules on environmental and social risk management in credit granting activities; carry out environmental and social risk assessment in credit granting activities; apply environmental standards to projects financed by banks; incorporate an environmental risk assessment as part of a bank's credit risk assessment. In addition, banks need to build a department dedicated to environmental and social risk management. Commercial banks also need to strengthen the capacity of officers and employees in implementing green credit through training, propaganda and dissemination to raise awareness among officers and employees about the operation of the

green bank - green credit; raise awareness of efficient and economical use of energy, natural resources and environmental protection; improve the professional level of appraisal of environmental and social risks of projects.

Thirdly, in order for credit capital to really come to green and environmentally friendly projects, it is necessary to promote information disclosure from borrowers according to the ESG set of standards (E - Environmental/Environment; S - Social/Social; G - Governance/Corporate governance) accurately and transparently to limit the situation of "greenwashing", fabricating results leading to capital flows do not come to projects that are really environmentally friendly. The State Bank should require commercial banks to strictly control the quality of reports and published information of loan enterprises in order to contribute to increasing the transparency and reliability of the information. To do that, the Government and relevant ministries and sectors need to develop reliable ESG reporting standards and frameworks to create a premise for transparent reporting, thereby limiting "greenwashing" behavior. In addition, there should be strong sanctions for businesses that are dishonest in reports, fabricate or inflate results to attract green capital from banks into "brown" projects of enterprises.

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SUSTAINABLE TOURISM FOR ECONOMIC GROWTH AND EMPLOYMENT IN VIETNAM

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Abstract

Tourism that takes full account of its current and future economic, social, and environmental impacts, dressing the needs of visitors, the industry, environment, and host communities. Tourism growth directly contributes to the GDP of a nation and creates employment opportunities for its people. In Vietnam, the tourism industry boosts economic development and GDP growth. This studies the impact of private tourism sectors on Vietnam's economic growth and employment, using data collected during 1993 -2018. This paper employs Augmented Dickey-Fuller and Phillips-Perron unit root tests, Johansen cointegration test, and regression technique. The empirical results shed light on the roles of sustainable tourism in economic growth and employment in Vietnam.

Keywords: *Sustainable tourism, private sector, economic growth, employment rate, Vietnam*

1. Introduction

The tourism industry has emerged as a key force for sustainable socio-economic development globally (Wakimin et al., 2018; Hwang & Lee, 2019). Sustainable tourism means that taking a visit to locations doesn't harm the country in any fields like local community, nature, and economy (Tang, 2011). Tourism with its business lines such as transportation, accommodations, entertainment, shopping, etc. can be linked to leisure or business travel (Peeters & Dubois, 2010; Hwang & Lee, 2019). Currently, there is a widespread consensus that private tourism sector growth should be sustainable, although the question of how to achieve this is a subject of debate (Gössling et al., 2005).

Vietnam is famous for being a distinctive region with rich physical features from North to South and East to West. Vietnam become more attractive by its natural resources, beautiful beaches, mountainous areas, rivers, and diverse climates. So the tourism industry must be an image of economic development in Vietnam.

Travel and tourism are important economic activities in the Vietnamese economy (WTTC, 2018). In many tourist destinations, tourism takes an important role in employment and income in the private sector. Thanks to tourists' satisfaction, there is an increase in tourism leading to economic growth and development rapidly in Vietnam. Similarly, a developing country like Vietnam can engender a huge amount of foreign exchange from

tourism which could also boost its sustainable growth and development (Ekanayake & Long, 2012). In Vietnam, it is the main source and foundation for a country's economic development and growth (Shahzad et al., 2016). Tourism revenue complements the exchange derived from the overseas trade of goods and services. This sector also finances capital goods imports in the development of the economy's industrial sector. Alternatively, economic expansion in neighboring nations like China influences business travel (overseas visits), which can lead to a rise in the nation's overseas reserves (Mahmoudinia et al., 2011). International tourism has become increasingly important in Vietnam (Lea, 2016). Export earnings are replaced by tourism revenue contributing a lot to the balance of payment (Scheyvens & Russell, 2012). The revenue can be generated and also household income is enhanced through the development of this sector. In many cases, tourism has a positive effect on the economy of any country (Ringer, 2013).

Globally, third-world nations like Vietnam started tourism to advance their economy, promote peace, develop human resources, and reduce the poverty level (Hall & Richards, 2002). Tourism helps to "enhance employment opportunities and earnings, which can be of major economic significance to the local population" (Durberry, 2004). Regarding employment, the local community will improve their living standard when they have good earnings and socio-economic conditions. It means that tourism helps to reduce poverty (Manag, 2015).

This paper studies the private tourism sector's impact on Vietnam's economic growth and employment rate, using data collected during 1993 -2018. The finding shows that sustainable tourism has a positive impact on Vietnam's economic growth and employment besides a long-run relationship. The policy maker is suggested to focus on the standardization and management of the private tourism sector due to its great potential in tourist destinations in the whole country. We also mention policy implications and future research from the findings of this study.

2. Literature review and theoretical framework

2.1. Literature review

Each researcher has his own view on tourism's contribution to economic growth and employment rate in the world. The significant role of tourism in the growth of the economy is being discussed. Tourism is the activity of traveling for the purpose of leisure outside the day-to-day environs (by UNWTO). The economic benefits of tourism are analyzed accordingly (Ayeni & Ebohon, 2012). Tourism has an important role in economic development, its impact on creating foreign exchange and generating employment opportunities and local revenue is positive (Modeste, 1995; Ramesh, 2002; Steiner, 2006). A significant correlation between tourism and economic growth is shown in different studies around the world (Kulendran & Wilson, 2000; Croes et al., 2008; Manwa, 2012). It's posited that if tourism must be sustainable, the society must gain economically from it (Manwa, 2012). Smith (2007) tourism could have economic benefits or not depending on the aptitude of that country.

A significant and positive correlation between GDP and tourism revenues is investigated in Guizhou, China (Wang et al., 2015). Causal relationships among the tourism

sector and economic development of Turkey is demonstrated by Akan et al. (2008). The Granger Causality test, Phillips-Perron test, the co-integration approach, and a Vector Autoregression (VAR) model are used for the time period 1985-2007 revealing that the tourism industry in Turkey was positively affected by economic development. A long-term steady correlation between economic development and tourism growth exists.

It's estimated for the long-run relationship between tourism revenue and economic development (Adnan et al., 2012). The data from 1971 to 2008 is used to confirm that there is a long-term relationship between revenue from tourism and economic development. And, it explains the revenue from tourism leading to increasing economic growth.

It explained a direct relationship between employment, tourism, and economic growth (Sr & Croes, 2008). The employment and income opportunities are highlighted to derive from a transfer of income and wealth in comparison with developed countries. According to the Shan & Wilson K (2001) and Kulendran & Wilson (2000) there is a strong association between international travel and trade in both China and Australia. Regarding Kea's case, economic development can attract more business tourists. In other words, economic growth can lead to tourism expansion.

According to Bahmani-Oskooee (1993); Chow (1987); Marin (1992), a relationship between international trade and economic development exists and there is also a strong correlation between exports and economic growth. And, tourism growth is linked to economic development. But tourism income can be dropped due to export-oriented economic development. But tourism may not be effective with no direct relation, because it happens when tourism's impact on the economy is positive.

2.2. Theoretical framework

In Vietnam, there are not many studies of tourism's impact on economic growth. Therefore, the relationship between tourism, economic development, and employment rate is examined in the case of Vietnam. Therefore, the hypotheses are used:

Hypothesis 1 (H1). *The relationship between sustainable tourism growth and GDP is positive.*

Hypothesis 2 (H2). *The relationship between sustainable tourism growth and employment rate is positive.*

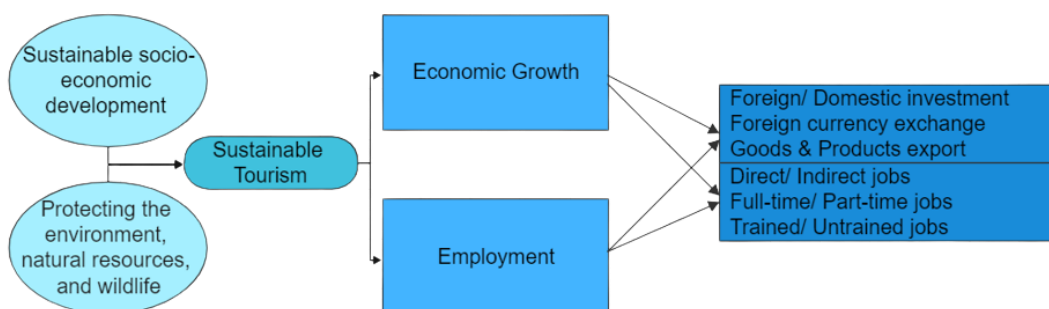


Figure 1. Relationship between sustainable tourism, GDP and employment in Vietnam

3. Method

We took the time series data from 1993 to 2018 to study the contribution of sustainable tourism to economic growth and employment in Vietnam. While the annual growth of tourism was taken as an independent variable, employment rate and GDP were used as dependent variables in this study. Maybe, there is an exhibition in some stationary or non-stationary variables. Before it was determined that we integrated all the series and applied a unit root test.

First of all, to study an empirical relationship between two variables and hypothesis testing, the bivariate regression model is used (Manzoor et al., 2019). Second of all, to study a long-run relationship between variables, co-integration analysis is used. We used E-view 9 not only for statistical analysis but also for econometrics model estimation. We used different sources for data collection such as the Tourism Yearbook, the Economic Survey of Vietnam, the Vietnam National Association of Tourism, the World Travel and Tourism Council, and the Tourism Economic Impact annual reports.

Unit Root Test Results

It's necessary to test for a unit root of the variables for the possibility of non-stationarity of the data. Therefore, to check the stationarity of the GDP, employment, and sustainable tourism growth series, the accepted ADF and Dickey and Fuller unit root test are adopted based on the following regression:

$$\Delta y_t = \alpha + \delta y_{t-1} + \sum_{i=1}^n \beta_i \Delta y_{t-1} + \epsilon_t$$

where Δ is the first difference, Y is the time series, t symbolizes linear time trend, α denotes a constant, n is the number of lags on predicted variables, and e represents the error term.

Cointegration tests

Commonly, there is a unit root in time series, however, it's stationary to a linear combination of two or more nonstationary series. If there is a linear combination (Engle and Granger, 1987), it is said that the nonstationary time series are co-integrated, and we use the stationary linear combination to specify a long-run relationship among variables.

In this study, we used a co-integration analysis (Johansen and Juselius, 1990) to determine whether a long-run relationship among tourism, economic development, and employment rate, and numbers of co-integrating relations exists. A maximum likelihood approach is used in this test to provide two different maximum likelihood ratios: maximum eigenvalues (maximum-Lambda statistics), and trace test statistics.

We also use the test to identify the numbers of co-integrating vectors which describes linkages among variables. It is most equal between the numbers of co-integrating relations and numbers of endogenous variables minus 1. For instant, among two endogenous variables in this thesis, we find at most 1 co-integrating relation. It is helpful if we know the numbers of co-integration to specify a vector autoregression (VAR) and to perform causality tests.

Regression Analysis

We used a regression analysis technique to examine the contribution of tourism to economic growth and employment rate. It can be expressed as:

$$Y_i = \beta_0 + \beta_i x_i + \varepsilon \quad (2)$$

It estimates Y_i = dependent variable, X_i = independent variable, β_0 = intercept, β_i = coefficient. The modified regression model is:

$$\Delta \text{GDP} = \beta_0 + \beta_1 \Delta \text{TG} + \varepsilon \quad (3)$$

$$\Delta \text{Emp} = \beta_0 + \beta_1 \Delta \text{TG} + \varepsilon \quad (4)$$

It estimates Δ = first difference, GDP = gross domestic product, Emp = employment rate, TG = annual tourism growth, β_0 = intercept, β_s = coefficient, and ε = error term.

4. Results

4.1. Data description

The time series data of per capita tourism development, per capita GDP and employment are used for the 1993-2018 periods in Vietnam, whose starting period is constrained by the available data and historical milestone. The thesis obtains sources like The Vietnam's General Statistics Office (1990), the World Development Indicators (2011), WTTC (World travel and tourism council), VNAT (Vietnam National Association of Tourism), ...

4.2. Testing results

Results of unit root tests

Since 1993, there may be structural breaks in the data in Vietnam. We used a Chow test for both per capita variables in the logarithm form to test for structural breaks/changes. No evidence of structural breaks in both intercept and trend of the logarithm of tourism, economic development, and employment in Vietnam during 1993-2018 was shown. There are no changes in the variables during the period.

The calculated values of ADF and PP test statistics on the level of the logarithm of per capita tourism development, per capita GDP, and employment are larger than the critical values, so the null hypothesis cannot be rejected.

So, the logarithm of per capita tourism, per capita GDP, and employment are non-stationary series at their level. The first difference between the two variables is implied to be stationary from these rejections. There are the same rejection/non-rejection decisions; therefore, per capita tourism, per capita GDP, and employment in Vietnam during 1993-2018 are integrated in the same order.

Root test results of sequence level values			Root test results of the sequence first-order difference		
Variable	ADF Level	PP Level	Variable	ADF Level	PP Level
GDP	-2.278210	-2.507044	Δ GDP	-5.691782 (0.0004)	-5.790326 (0.0004)
EMP	-4.718528	-4.999226	Δ EMP	-10.41913 (0.000)	-14.13080 (0.000)
TG	-3.763403	-3.934207	Δ TG	-9,251,041 (0.000)	-9.784209 (0.000)

ADF: augmented Dickey-Fuller test; PP: Phillips-Perron test.

Note: null hypothesis rejected at 5% significance level.

Cointegration test results

We selected Johansen's Cointegration test to investigate the stable long-run relationship between annual GDP amongst several other techniques available for time series data. Estimating the stationary linear combination was the main objective of the variables under study.

We used maximum eigenvalue and trace statistics to test whether a long-term relationship between the variables by Johansen and Johansen Juselius exists. We used many methods for the determination of the lagging length like the Schwarz criterion, which has been scientifically proven (Lütkepohl H, 1985), and the critical values are more unbiased relative to other criteria. Therefore, the lagging length is determined based on Schwarz critical values. For the Johansen test of cointegration, the precondition was that variables must be non-stationary at level, but we integrated three variables of the same order.

The same thing is indicated that variables were co-integrated and have a long-run relationship, so, they could move together.

Johansen cointegration. Series: EMP, GDP, TG Lags interval (in first differences)									
Unrestricted Cointegration Rank Test (Trace)					Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Trace	0.05		Hypothesized	Max-Eigen	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.749919	94.42756	29.77970	0.0000	None *	0.749919	77.58944	21.31621	0.0000
At most 1 *	0.568254	17.31881	15.74941	0.0672	At most 1	0.568254	12.68181	14.42660	0.0638
At most 2 *	0.418775	4.466993	3.684146	0.0636	At most 2 *	0.418775	4.466993	3.684146	0.0636

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

** MacKinnon-Haug-Michelis (1999) *p*-values

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

** MacKinnon-Haug-Michelis (1999) *p*-values

Estimated results

Tourism, the fastest-growing industry, is the largest source of employment opportunities and a huge wealth originator, and a greater contributor to the diversified

economy. Through the tourism sector, most of the regions could be developed easily. To tantalize the economies of the tourist destinations in Vietnam, it is professed tourism is a tool that avoids the scarcity of development resources.

The causality relationship running from sustainable tourism to GDP in Vietnam is explained in this section. In Vietnam, sustainable tourism growth may increase GDP via some channels. First, when international and domestic investment increases, it can transform the image of tourism to attract more tourists. Second, foreign currency exchange would increase goods and products exporting/ importing since tourism becomes one of the most important industrial sectors of Vietnam. In the long-run, sustainable tourism helps to increase the employment rate, firms would have an extra investment in direct or indirect jobs and trained or untrained individuals have opportunities for full-time or part-time jobs. In fact, sustainable tourism has put pressure on firms and the government, and indeed, the “hot” growth of tourism has become more serious in Vietnam recently. From the unit root and cointegration tests, we have some empirical results to light up the relationship between sustainable tourism, economic growth, and employment in Vietnam.

This study is to examine the relationship between tourism, employment, and economic development in Vietnam. The positive connection between sustainable tourism growth and employment and economic growth is explored. The employment rate, as well as GDP, are improved by tourism growth. It's demonstrated that causal relationships between tourism and economic expansion (Kim et al., 2006) showed a long-term equilibrium association. The economic deficit had been caused by tourism expenses, but it was found a positive and significant economic impact on the economic expansion (Sanchez et al., 2008). The empirical studies pointed out that tourism had a significant effect on the employment rate (Balaguer J & Cantavella-Jorda M, 2002, Onder K. & Durgun A, 2008). According to Archer (1996) and Mathieson (1982), tourism creates. Direct and indirect employment opportunities were created by tourism (Archer, 1996 Mathieson, 1982). The findings of our study showed that the correlation between tourism, employment, and GDP is positive. From this result, there is the existence of a relationship between sustainable tourism growth and GDP. Additionally, there is a long-run relationship between sustainable tourism growth and employment. Growth in tourism takes a major role in the economic growth as well as the employment rate.

With empirical and theoretical studies, the tourism sector has a positive impact on employment. Any effects on travel and tourism can produce an additional employment rate. The total economic impact of tourism becomes better when the tourism sector is encouraged to acquire domestic services and goods.

5. Conclusion

Examining the relationship between tourism to employment and economic growth in Vietnam is the main purpose this study and time series data from the year 1993 to 2018 is used. We use sustainable tourism as an explanatory variable and we take both employment and GDP as outcome variables. We employ bivariate regression and the Johansen

cointegration technique for the analysis. The relationship between tourism, employment, and economic growth is investigated to be positive. So, tourism has an important part in the economic development of the country.

It needs talented people and developed infrastructure in places. And, the government draws policies to create employment opportunities, income sources, and revenue for the local inhabitants as well as economic activities in the country through the development of tourism. It is necessary to provide the incentive to the tourism sector in the form of basic infrastructures such as a high-quality transportation system, roads, immense airports, and tax incentives to the tourism-related industries. Improving Vietnam's image to the world could be done thanks to political stability. The security of all tourists needs to be ensured and sustainable tourism policies are formulated.

The main focus of the policymaker should be on a law and order situation and quality education. The maximum share of tourists for the poverty, unemployment, inflation, and infrastructure development have been attracted in the whole of Vietnam. In conclusion, it's necessary to have an international-level promotion of tourism in local distance areas to alleviate poverty and enrich the standard of life.

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ORIENTATION AND SOLUTIONS TO DEVELOP LAO PDR'S ELECTRICITY GENERATION INDUSTRY IN A SUSTAINABLE WAY

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Abstract

Lao PDR is a developing country with favorable natural conditions with abundant natural resources, especially in the field of energy production and electricity transmission. The electricity generation industry plays a very important role in rising state budget revenue and national energy security, contributing to the socio-economic development of Lao PDR. Developing the electricity generation industry in a sustainable way is an urgent requirement of the country in the context of accelerating economic integration, social development, protecting natural resources and environment, and responding to climate change. Based on the approach to analysing of strengths, weaknesses, opportunities and threats (SWOT analysis), this paper proposes orientations and some solutions to develop the electricity generation industry of Lao PDR towards sustainability.

Keywords: *Sustainable Development, Electricity Generation Industry, Lao PDR.*

1. Introduction

Sustainable Development Goal 7 (SDG 7 or Global Goal 7) - one of 17 Sustainable Development Goals established by the United Nations General Assembly in 2015 - aims to "Ensure access to affordable, reliable, sustainable and modern energy for all". Access to energy is an important pillar for the wellbeing of the people as well as for economic development and poverty alleviation.

The report *Our Common Future* (also known as the Brundtland report) published in 1987 by the World Commission on Environment and Development (WCED 1987) describes four key elements of energy sustainability: capacity to enhance energy supply to meet growing human needs, economically and efficiently, public health and safety, and protect the biosphere and prevent localized forms of pollution. Since then, sustainable energy has been launched based on the three pillars of sustainable development. Environmental sustainability includes criteria on greenhouse gas emissions, impacts on biodiversity, generation of hazardous waste and harmful emissions; Economic sustainability includes criteria on energy costs, providing energy to users with high reliability, limiting the impact

on work related to energy production; Social sustainability includes criteria for preventing conflict in energy supply (energy security) and long-term availability of energy.

The electricity industry is a special economic sector, consisting of four closely related components: electricity generation, electricity transmission, electricity distribution and electricity consumption. In particular, electricity production is a field related to issues of natural resource use, environmental protection and response to climate change. Developing the electricity generation industry in a sustainable way will still include 3 aspects that combine harmoniously and reasonably, economic, environmental and social as mentioned above, but with its own characteristics.

Lao PDR was one of the earliest countries in Southeast Asia to define the Sustainable Development Goals (SDGs) and integrate them into the Eighth National Socio-Economic Development Plan (NSED) in 2016, with the NSED indicators linked to the SDGs in the three dimensions (economic, social and environmental) of sustainable development.

In the Lao PDR, electricity production plays a very important role in socio-economic development, ensuring energy security, protecting natural resources and the environment. However, the growth of the country's electricity production is still quantitatively increasing, using natural resources including soil, water, forests and minerals, but lacking effective planning and solutions to prevent damage harmful to the environment. Develop electricity production in a sustainable way to achieve greater economic value, ensure energy security, social security, protect natural resources, limit environmental pollution and respond to climate change is one of the urgent issues for Lao PDR.

This paper uses the SWOT analysis method to clarify the strengths, weaknesses, opportunities and challenges for sustainable electricity generation development in Lao PDR, thereby proposing orientations and development solutions to develop this industry in the period to 2030.

2. Strengths and Weaknesses for Electricity Generation Development in Lao PDR

Lao PDR is relatively well endowed with energy resources, especially hydropower, solar power and biomass.

In fact, Lao PDR is a country rich in natural resources, with forests accounting for nearly 47% of the land area and average rainfall ranging from 1,300 to 3,000 mm (UNDP, 2012). Laos has no sea but is blessed by nature with the Mekong River running along the length of the country and many other small rivers flowing from the North to the South.

The amount of water in the rivers of Laos is 334 billion m³/ year, which resulted in per capita 60,318 m³/ person/ year. About 35% of the Mekong River's water comes from rivers in Laos, the rest comes from rivers in neighboring countries. The combination of rich water resources and mountainous terrain helps Laos to have great potential in developing energy from hydroelectricity to serve domestic demand and export. Since 1990 resources are being intensively developed to provide electricity for the requirements of the country and neighboring countries. Currently, Laos only uses about 20% of the total potential of 26,000

MW available. The development of hydroelectricity with reservoirs not only ensures electricity production, but also contributes to the prevention of droughts, floods and effective use in other fields such as fisheries, irrigation in agriculture.

Laos is also a country with the potential to generate electricity from biomass, wind and solar energy. In 2015, 1.30 million tons of oil equivalent (Mtoe) of biomass, representing 13.7% of the total primary energy supply (TPES), was used.

Laos is located in the tropical monsoon climate area, with a lot of sunshine during the year with high radiation intensity, so it has the potential to be exploited and used in the production of electricity from solar energy. Especially areas in the central and southern regions with 1,800 hours of sunshine per year or more are considered to have very high potential.

The development of electricity generation from renewable energy contributes to limiting the impact of climate change, does not create any impact on wildlife and wildlife reserves, water reserves and aquatic animal sanctuary. Renewable energy, especially solar power, is classified as a clean energy and does not cause air pollution, especially during operation. The previous development of solar energy was in Lao's residential areas, water reservoirs, etc. almost did not affect natural forests and protected areas.

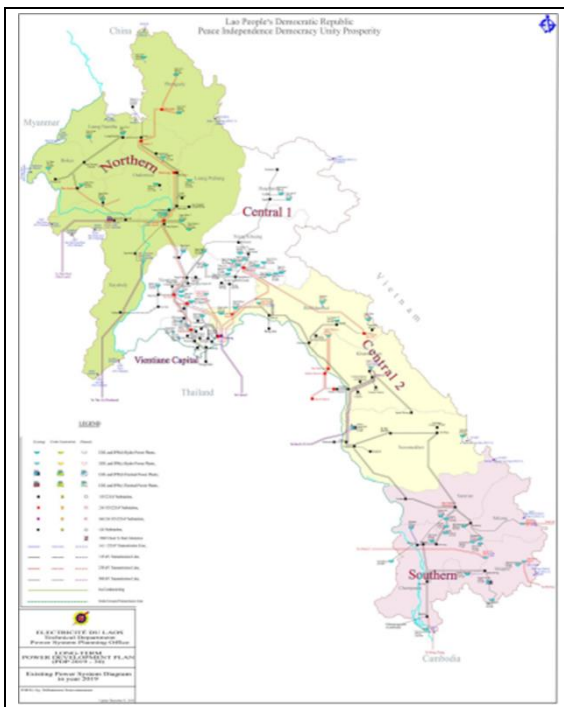


Figure 1: Power plants and transmission systems.

Source: EDL 2020

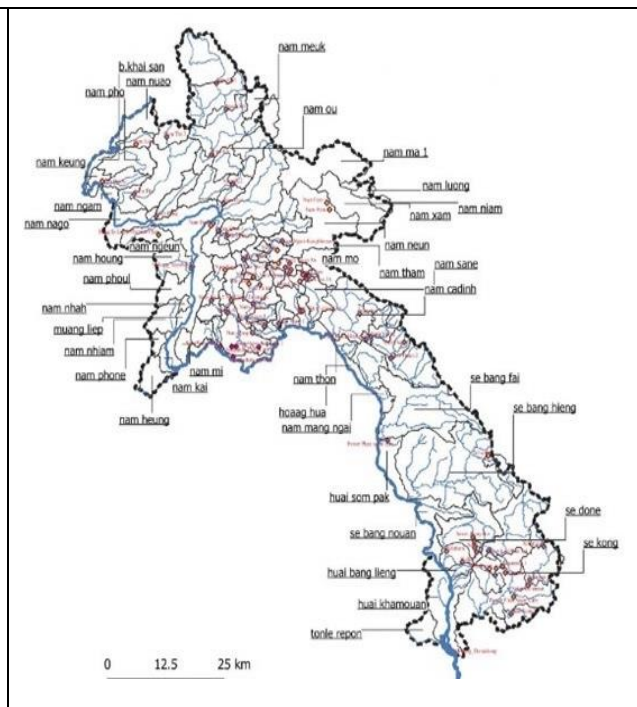


Figure 2: Hydroelectric projects in operation.

Source: MoEM, 2021

The electricity industry of Lao PDR has been established and developed over the years. So far it has always maintained a stable and continuous growth with a relatively high growth rate year after year. By 2020, Lao PDR has 85 power plants with a total installed capacity of 10,437.93 MW, which can generate a maximum electricity output of 54,029.03

million kWh/ year connected to the national power system. In the period of 2009 - 2020, the total electricity output reached 247,055 million kWh, the average growth rate is about 10-20%/ year.

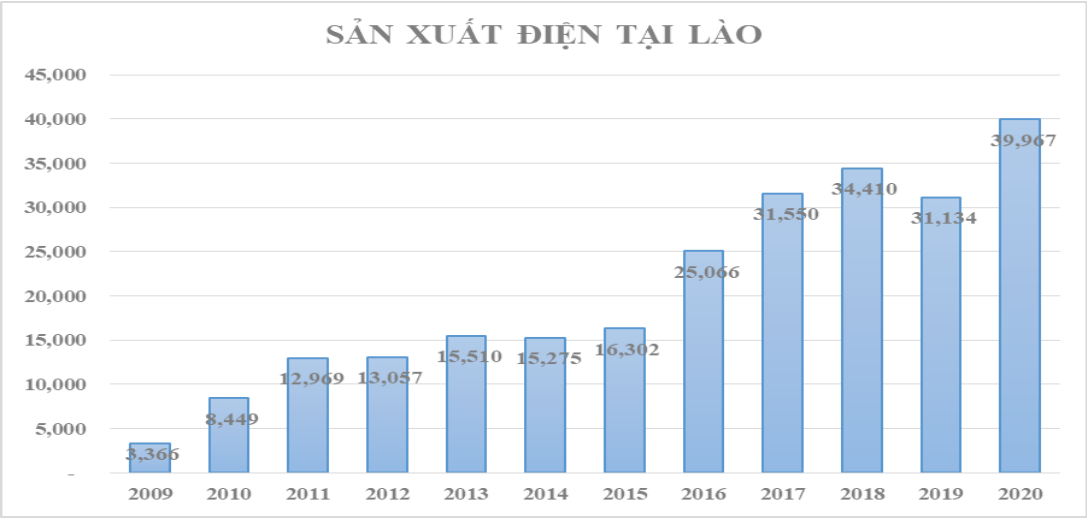


Figure 3. Power generation in Laos, period 2009 - 2020

Source: Authours' presentation, data from EDL, MoPI&MoEM

❖ **Weaknesses**

At present, hydroelectricity and coal-fired power still account for a major proportion in the power source structure (70.67% and 29.08% in 2020). These are two sources that have the potential to affect natural resources (land, forests, and water sources) and produce greenhouse gas emissions, affecting climate change. Renewable energy electricity has not yet developed.

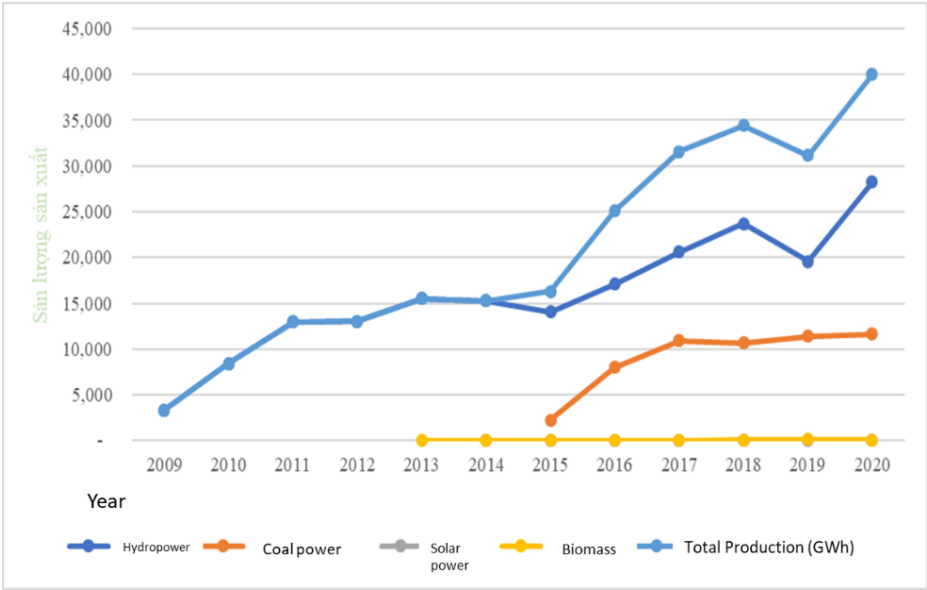


Figure 4: Electricity production from sources, period 2009 - 2020

Source: Authours' presentation, data from EDL, MoPI&MoEM

Despite having an abundant water source, it is not evenly distributed between seasons of the year, leading to instability in power output. In the dry season from December to April, especially the last 2 months of the season, the water level in the river drops, so electricity output also decreases. In that period of time, Laos still has to import electricity from Thailand to make up for the shortfall in output.

The development of hydropower plants with reservoirs will create more impact on forest areas, houses, agricultural regions and other areas than hydropower plants without reservoirs. From the data of EDL, MoEM and MoIP, it can be calculated that every 1 million kWh of electricity production will affect/ cause losses of about 1.17 to 1.47 hectares of forest. It is worth mentioning that hydroelectricity not only causes deforestation, but forest loss will lead to severe floods and continue to severely damage lands and forests, affecting biodiversity, life and economy activities of many people living in areas in the river basin.

Coal-fired power plants have been newly developed in Laos since 2014 but have quite a large impact on the environment, especially greenhouse gas emissions. Coal-fired power generates between 66% and 87% of the total greenhouse gas emissions in the Lao power sector. With the development of coal-fired power plants, the greenhouse gas emissions of the power sector increase from 4.866 million tons in 2014 to 23,084 million tons in 2020. In the future, if Laos continues to increase electricity output from coal-fired thermal power plants, the greenhouse gas emission factor will increase rapidly, greatly affecting the Lao's commitment on emission reduction.

Despite great potential, so far, the number of solar and biomass projects implemented in Lao PDR is very small. Renewable energy from solar and biomass currently accounts for less than 0.5% of the source structure. Wind power is hardly developed in Laos. Such slow development of renewable energy is due to the lack of strong and synchronous incentive policies, the lack of effective financial mechanisms for investment and operation of projects in remote areas. In particular, there is a lack of a master plan for renewable electricity development.

Infrastructure, especially the undeveloped power transmission system, is also a limiting factor in the development of the electricity industry in general and renewable energy in particular. In border areas, because there is no transmission system, Laos still have to import electricity to supply the needs of the people. In 2020, there are still about 5.7% of Lao's households that do not have access to electricity from the grid system (71,589 households of the total 1,254,748 households nationwide).

The technological level in electricity production has not reached the advanced and modern level. Human resources of the industry are still lacking in both quantity and professional qualifications as well as management capacity. The limited technical knowledge of some officials in the field of electric power in supervising power development projects is also a weakness of electricity production in Laos.

3. Opportunities and Challenges for Electricity Generation Development in Lao PDR

❖ Opportunities

The population and sustained economic growth are the main contributing factors to the increasing energy demand in the Lao PDR.

The economic reform and renovation policy of the Lao Government, which began in 1986, has helped Laos achieve a remarkably high economic growth rate. Figures from the Lao Statistical Office show that the country's average gross domestic product (GDP) growth rate was 7.79% in the period 2000 - 2016, the highest growth rate among all countries member states of the Association of Southeast Asian Nations (ASEAN) during the same period. The increase in GDP scale also helps the real per capita income of Lao PDR to increase rapidly. In 2009, the country's real GDP per capita was US\$907, rising to US\$2,408 in 2016 and US\$2,642 in 2020. Along with such development, per capita electricity consumption also increases from 367.21 kWh/person in 2009 to 1,075.65 kWh/person in 2020.

Also, the fast connectivity in terms of the electricity grid extension to remote areas brings additional demand in tandem with increasing per capita income. In 2009, the percentage of households without electricity accounted for 30.75% of the total 1,011,623 households nationwide. This number drops to 5.71% of the total 1,254,748 households.

Since the establishment of the Ministry of Energy and Mines in 2006, energy infrastructure is being developed and expanded. Also, energy policies are being developed and gaining public attention and support. The policies have gradually evolved from just the power sector policy to broader energy policies and the development of a sustainable and environment-friendly energy sector. The improvement of energy policies could be credited to the strong support from the Association of Southeast Asian Nations (ASEAN) and other international organisations, especially the Economic Research Institute for ASEAN and East Asia (ERIA) for their continued cooperation and support on energy policies of Cambodia, the Lao PDR, and Myanmar to catch up with other ASEAN countries.

Based on the policies of energy exchange in the platform of ASEAN energy cooperation, evidence shows that those countries have high energy demand and support the energy trade and power integration in this region because it can raise regional energy security and sustainable development. The Lao PDR has been trading electricity with Thailand for many decades; and now it expands this policy to other neighbouring countries to support regional energy cooperation. Particularly, the Lao PDR will increase power exports to 15,000 MW by 2030 - 10,000 MW to Thailand and 5,000 MW to Viet Nam, Cambodia, and Myanmar.

International cooperation and attracting foreign investment also bring many opportunities for the development of the electricity/ energy industry in general and electricity production in particular. Currently, Lao PDR has allowed French electricity to study the feasibility of a mixed floating solar energy project on Nam Theun 2 reservoir in Khammuan province with an installed capacity of 240MW, the goal is to build in 2022 and start operation from 2024. The development of floating solar power projects will take advantage of the

available space on hydropower reservoirs, save the development of power transmission lines and other works, thereby reducing capital demand for investors. Along with that, Laos has also approved many wind energy projects in Southern Laos invested by Thai, Chinese and Japanese enterprises.

Power exports are projected to increase sharply because of the government's agreements with neighbouring countries that, the Lao PDR should export to Thailand and to Viet Nam. In addition, in 2018 three hydropower projects are being constructed for the export of power. All export projects are being developed by foreign private investors through the build-operate-transfer (BOT) scheme.

❖ Threats

The challenge of developing the electricity generation sector depends on responsible resources, skills and investments, taking into account the economic, social and environmental aspects of sustainable management and development.

The biggest challenge that Lao PDR faces when developing renewable energy is the high investment costs and the ability of investors to arrange capital. Financial barriers have hindered economic project implementation due to lack of access to appropriate financial resources or lack of sustainable financing mechanisms. In addition, the power grid infrastructure in some areas with potential for renewable energy is not ready to release capacity, requiring large land use, especially solar power projects.

In terms of import dependency, the Lao PDR imported all its oil requirements and some electricity to meet consumption during the dry season and in the border areas without electricity access. Measuring import dependency is by dividing the total energy import to the total energy production. The total production of the Lao PDR consisted of coal, hydropower, biomass, solar and wind. The import dependency ratio was 19% in 2015, an increase from 17% in 2000 due to the increase in oil consumption, particularly in the transport sector. In the BAU scenario, the Lao PDR import dependency is projected to continue increasing and will reach 26% by 2040. If the Lao PDR increases domestic coal consumption for power generation instead of hydropower generation, the import dependency ratio should decline because of different thermal efficiency between coal power plants and hydropower plants. Nevertheless, oil consumption will increase faster than coal, which will result in an increase of the import dependency ratio.

Governance remains an important challenge that will increase over time, if the government does not consistently implement strategies and actions to strengthen the governance and capacity of the electricity enterprises.

Climate change and its consequences such as: global warming, heavy rain, hurricanes, floods and droughts have been challenges for the development of many economic sectors, including electricity production. As mentioned above, hydropower - the main source of electricity production in Laos today, could be severely affected by drought. Due to the effects of drought, Laos' electricity production has decreased by 10%, from 34,410 million kWh in 2018 to 31,134 million kWh in 2019.

4. Orientation to Develop Electricity Production in Lao PDR until 2030

Based on the actual development of the electricity industry in Lao PDR; Strengths, Weaknesses, Opportunities and Threats as analyzed above; Orientation to develop the electricity production industry in Lao PDR towards sustainability in the coming time should pay attention to:

- Following the policy of the Ministry of Energy and Mines set out in the *"Strategy for development of electric energy of Lao PDR for the period 2021-2030"* to improve the stable energy system, ready to supply enough electricity for domestic demand and export;

- Strictly implementing the conditions and processes for the development of electric power projects in accordance with the requirements in Laws and reflecting the reality of the project to improve the efficiency and effectiveness of the project;

- Select and develop power production sources with quality, low capital cost, high productivity and suitable production to meet the needs of domestic and export electricity markets;

- The development of power generation sources must be consistent with the master plan on expansion of the power transmission system and the plan on demand for electricity at home and abroad to ensure the system is stable and economically and technically feasible.

- The increase in electricity production output must go hand in hand with maximizing the resource recovery coefficient and protecting the environment in the process of exploiting hydropower, renewable energy and other power sources for electricity production;

- Regarding the import and export of electricity, it is not advisable to confirm the gradual reduction and cessation of electricity imports after year 2020. In order to match the socio-economic situation, the demand for electricity, after Laos joins the WTO and derived from the situation of the industry, it is worth to consider the point of view: "Exporting and importing electricity reasonably on the basis of prioritizing meeting the domestic electricity demand, ensuring socio-economic efficiency and financial balance for the electricity sector is suitable for each period, each locality, and each region according to the needs, electricity production capacity and socio-economic development situation of Lao PDR";

- Promote the mobilization of human resources in both terms: quantity and quality; improve professional qualifications in technology, professional management and understand the nature of employing energy sources to develop the electricity generation industry. Make a plan to submit to the Ministry of Education for scholarships in accordance with the plan to improve the qualifications of the industry's workers;

- Effectively implement the policy of socializing investment, mobilizing all resources - including international ones, to speed up the implementation of investment projects to improve power production capacity, ensure the construction progress of power plants, especially projects in key hydroelectricity, capable of exploiting more electricity.

5. Solutions to Promote the Development of the Electricity Generation Industry in a Sustainable Way

Policy solutions

- Promulgate, amend, supplement and complete current legal documents to create a favorable legal corridor for the management, exploitation, export and import of electricity according to the market mechanism with the state management and other related laws on the power generation industry in Lao PDR;

- Due to the big difference between domestic and imported electricity prices, it is necessary to have policies to encourage people to save electricity and use solar power instead of traditional electricity.

Solution on power source restructuring

- Restructuring sources to improve access to energy, energy efficiency, reduce greenhouse gas emissions, and increase the share of renewable energy in the energy structure. This alternative vision is consistent with the self-determined national contribution of Lao PDR and international commitments towards the Sustainable Development Goals (SDGs), including Goal 7 “Ensure access to affordable, reliable, sustainable and modern energy for all”. This requires an increase in the number of decentralized power producers; and reduce dependence on energy imports, fuel transportation;

- Continue to give reasonable priority to hydropower development, especially large projects with good flood and drought resistance; increase the proportion of electricity production by renewable energy such as solar and wind power; research and develop other renewable sources; develop thermal power plants with an appropriate ratio, in accordance with the power supply capacity and distribution of raw materials. By 2030, the proportion of hydropower will be 75%, coal-fired power 14% and renewable energy 11%.

Solutions for human resource

- Regarding human resource recruitment: to overcome the situation of the ask-for-grant mechanism, it is necessary to select human resources in a equally, objective and fair manner; develop recruitment criteria suitable to the power generation industry. Human resource recruitment must be based on the job positions to be recruited, each position needs its own criteria;

- After recruitment, it is necessary to pay attention to training and professional development for newly recruited employees. It is necessary to create conditions for new employees to quickly integrate into the working environment;

- Promulgating and implementing preferential policies, encouraging the attraction of highly qualified professional and technical workers to work in the power generation industry.

Solutions on science and technology development

- Focusing on research into advanced technologies, in-depth investment, renovation, upgrading and modernization in electricity production and consumption towards efficiency,

energy saving and minimizing impact on the environment; improve management, sales and customer service; applying 4.0 technology in production and business management.

Investment and financial solutions

- Speed up the progress of hydropower projects through diversifying investment forms to maximize resources and improve investment efficiency;
- Encourage investment in regions with difficulties in traffic, topography, environment and economy;
- Encourage investment in research and application of alternative forms of electricity production; encourage the expansion of investment in the development of overseas power source exploration and exploitation projects;
- Step up capital mobilization from domestic and foreign economic sectors through forms of cooperation, joint venture, association, and shares;
- Encourage enterprises producing electricity to mobilize capital through the stock market and commercial loans to invest in the development of electricity production;
- Allocate state budget capital and other preferential capital sources for the basic survey of electricity resources and formulation of development planning for the electricity production industry;
- The State partially supports from the state budget for research programs on energy efficiency, supports enterprises in the electricity industry with credit loans, ODA capital, etc.

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ENVIRONMENTAL SUSTAINABILITY: MEASUREMENT, PRACTICE AND POLICY DIRECTION FOR VIETNAM

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Abstract

Vietnam has achieved many socio-economic development achievements after carrying out economic reforms in 1986. However, the price to pay is the decline in natural resources and environmental quality, as well as existential threats from climate change. This article is intended to be an introduction to environmental sustainability, the measure of environmental sustainability used around the world. On that basis, assess environmental sustainability based on the criteria identified in Vietnam. The article also analyzes Vietnam's environmental problems from an economic perspective with an assessment of the growth model, on that basis proposes policy directions towards environmental sustainability in Vietnam in the coming period.

Keywords: *Environmental Sustainability, Sustainable Development, Economic Growth, Environmental Pollution, Environmental Performance Index.*

1. Introduction

Sustainable development has become an urgent need and an inevitable trend in the development process of society. The process of sustainable development requires a harmonious adjustment between economic growth and social security and environmental protection, especially in the context of the Fourth Industrial Revolution, innovation, The advancements of science and technology have changed a lot, geopolitical conflicts have taken place, as well as the impact of the Covid-19 Pandemic, which have affected the sustainable development goals for the period 2021-2030.

In 1987, in the Report "Our Common Future", the -World Commission on Environment and Development (WECD) introduced the concept of "sustainable development" as "development that meets the needs of the present without compromising compromised ability to meet the needs of future generations". WCED's concept of sustainable development mainly emphasizes the aspect of efficient use of natural resources and ensuring the living environment for people. In principle, sustainable development is the process of operating at the same time three aspects of development: sustainable economic growth, prosperous society, equity, stability, diverse culture and healthy environment are maintained sustainably. Therefore, the complete system of ethical principles for sustainable development includes principles of sustainable development in all "three legs" of economy, society and environment.

In Vietnam, the VI Congress (1986) marked an important turning point in the Party's awareness of sustainable development, completely in line with the world's concept. At the 6th National Congress, for the first time, the Party required the unification of economic policies with social policies, while emphasizing the meaning and importance of protecting forests and natural resources. In the VII Congress (1991), sustainable development was presented more clearly, specifically and fully, especially on the issue of environmental protection. Many phrases have been used to express the intrinsic content of sustainable development, such as "ensure the harmony between economic development and social development", "harmoniously combine economic development with cultural and social development, between economic growth and social progress".

After more than 30 years of strong socio-economic development after 'Đổi mới', Vietnam's lines and policies have always focused on harmonious development between economy, society and environmental protection. The XIII Congress (2021) pointed out, the overall development strategy of the country is to comprehensively and synchronously promote the Doi Moi, rapid and sustainable development of the country; ensuring close linkage and synchronous implementation of tasks, in which: Socio-economic development is the central task; Party building is key; Cultural development is the spiritual foundation; Ensuring national defense and security is vital and regular. Vietnam's awareness and views on rapid and sustainable development have both inherited the world's general development awareness and trends and have been applied, supplemented and developed in accordance with the specific conditions of the country. Vietnam.

This article is intended to be an introduction to environmental sustainability, the measure of environmental sustainability used around the world. On that basis, assess environmental sustainability based on the criteria identified in Vietnam. The article analyzes Vietnam's environmental problems from an economic perspective with an assessment of the growth model, on that basis proposes policy directions towards environmental sustainability in Vietnam in the coming period.

2. Foundation and measurement of environmental sustainability

Environmental sustainability is a part of sustainable development - a common trend that all regions and countries want to move towards. There is a close relationship between the environmental system and the economic system. The environment has three main functions with the economic system, including (i) providing space for economic activities, (ii) providing input resources and (iii) absorbing and transforming output waste. Environmental sustainability refers to the fact that environmental resources will be protected and maintained for future generations and used optimally by economic systems.

Environmental sustainability involves issues such as:

Ensuring the long-term health of the ecosystem: Protecting the productivity and long-term health of resources to meet future socio-economic needs, e.g. protecting food supplies, soil agriculture, fisheries, forest resources.

Intergenerational decision making: When making economic decisions, attention should be paid to integrating the interests of future generations, not just the present moment. For example, burning coal offers short-term benefits because fossil fuels are cheaper, but the extra pollution comes at a cost for future generations.

Renewable resources: Diversify and promote the use of renewable energy sources (solar, wind, tidal, geothermal etc.)

Preventing consequences of climate change: ensuring emissions are within the environmental load threshold, minimizing impacts and adapting to climate change

Protection of biodiversity and ecological structure: towards protecting species, their habitats and ecosystems from being removed or unduly invaded by impacts from economic activities.

Towards social welfare, not just GDP: social welfare includes the maintenance and improvement of resources and the environment, including use values and non-use values for the future (Figure 1).

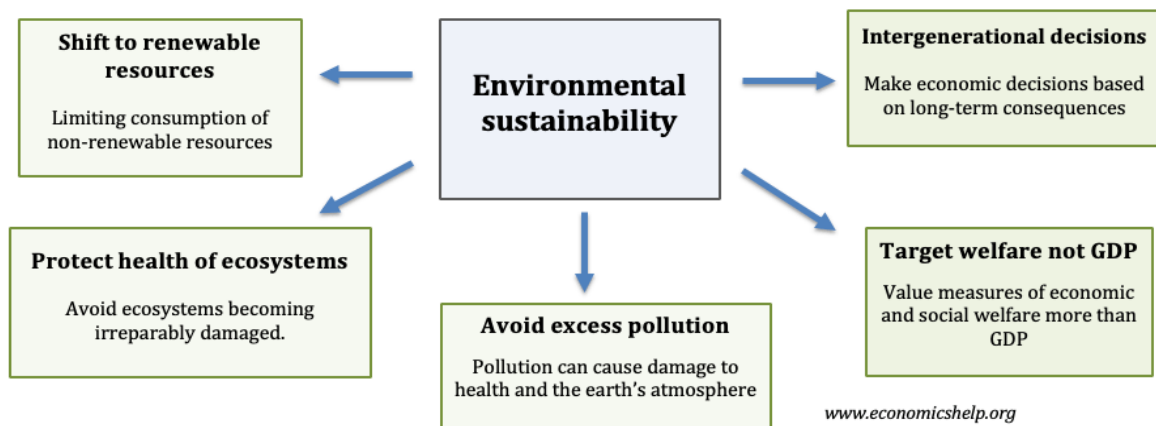


Figure 1. Concept of environmental sustainability

Environmental sustainability is a concept with broad connotations, multi-dimensional, but it is necessary to measure to compare the level of countries, and of each country over time to review and adjust development strategy towards more environmental sustainability and sustainable development. Currently in the world there are a number of indicators used to measure environmental sustainability, but the most commonly used indicator at the national level is the Environmental Sustainability Index (ESI) and since 2006 has been replaced by the Environmental Performance Index (EPI).

The EPI includes many component indicators and is divided into two broad themes. The first group to measure efforts to reduce pressure on the environment in terms of human health is called the Environmental Health index group. The second group measures the reduction of loss or degradation of ecosystems and natural resources, which is included in the Ecosystem Vitality index group. Indicators were selected on the basis of careful review of environmental policy studies, policy consensus through dialogues on the MDGs, and expert consultation. These indicators also represent a range of priority environmental issues that are quantifiable and measurable based on available data sources.

ESI is considered the "precursor" of EPI, which has been used since 2006. EPI is used to evaluate the effectiveness of environmental protection activities of a country. Up to January 2012, 04 EPI reports have been released - Pilot Environmental Performance Index 2006, and Environmental Performance Index 2008, 2010, and 2012. In 2012, YCELP continued to publish reports. EPI at the World Economic Forum aims to rank (EPI rank) and assess trends (Trend EPI rank) on environmental protection performance for 132 countries, allowing identifying which countries are improving and which country is in decline.

EPI in 2012 is calculated based on 10 groups of indicators with 22 specific indicators. The researchers divided the 10 groups of indicators mentioned above into 2 groups: Environmental Health (including 3 indicator groups) and Ecosystem Sustainability (including 7 indicator groups) (Institute for Health Metrics and Evaluation, 2017)

3. Measuring environmental sustainability in Vietnam

According to Yale's EPI ranking report, Vietnam has an EPI in 2012 of 50.6 points, ranking 79/132 countries, belonging to the group of countries with average environmental management capacity and equivalent to developing countries in the world such as Chile, Indonesia, Myanmar, Cambodia, Peru, Mexico, Venezuela, Honduras and the UAE (classified according to 5 levels: very good ability, good ability, average ability, poor ability and very good ability. least). In addition, ranking the trend of improving environmental management capacity, Vietnam reached 4.2 points and ranked 73/132 countries, belonging to the group of countries with small improvements in capacity (classified by 5 levels: very good improvement, good improvement, small improvement, relative decline, great decline) (YCELP 2012) (Table 1).

In the component indexes, the group of indicators on air quality affecting health: Vietnam ranks in the top 10 most polluted countries (class 123/132), equivalent to some Asian countries such as China, India, Pakistan, Nepal and Bangladesh. In the ASEAN region, Vietnam is currently ranked 7th out of 11 countries, in the same group as Thailand, Indonesia, East Timor and Myanmar. The highest ranking in the region is Singapore (ranked 49th) and the lowest is Laos (ranked 153).

Table 1. EPI and ranking of some OECD countries, NICs and neighboring Vietnam

	GPP/capita PPP 2017 (USD)	EPI (2018)	EPI 2018 ranking
OECD nations			
USA	59.495	71.19	27
Canada	48.141	72.18	25
Germany	50.206	78.37	13
Japan	42.695	74.699	20
Korea	39.387	62.30	60
Italia	37.970	76.96	16

	GPP/capita PPP 2017 (USD)	EPI (2018)	EPI 2018 ranking
New industrial nations (NICs)			
Brazil	15.500	60.70	69
Mexico	19.480	59.69	72
Malaysia	28.871	59.22	75
India	13.403	44.73	142
Án Độ	7.174	30.57	177
Some other nations			
China	16.624	50.74	120
Thailand	17.786	49.88	121
Indonesia	12.378	46.92	133
Singapore	90.531	64.23	49
Vietnam	6.876	46.96	132

Source: IMF (2017) và YCEPC (2018)

Basically, Vietnam's EPI is below the world average, in which the ranking trend is increasingly going down. If in 2102 Vietnam ranked 79/132, in 2016 it dropped to 131/178 and 2018 ranked 132/180 countries. In particular, in 2018, the Vietnam Environmental Health Index ranked 129/180 and the Ecosystem Health Index ranked 124/180 countries. In terms of points, Vietnam achieved 46.96 EPI points in 2018 compared to 50.6 in 2012. Thus, EPI shows that Vietnam is increasingly lagging behind in terms of environment compared to itself and other countries in the world.

4. Environmental issues in economic development in Vietnam

Vietnam's economy depends on natural resource exploitation, inefficient use of natural resources and increasing energy consumption

Natural resources have made great contributions to Vietnam's economy, especially in the agro-forestry-fishery industry, mining industry and commodity export, which is the basis for ensuring food security as well as creating foreign exchange revenue for the country. According to the OECD (2015), a significant contribution to Vietnam's economic growth over the past two decades has been the result of the exploitation of natural resources, especially the maximum use of land and water, and large areas of forest have been cleared to serve export-oriented agricultural production. For example, the total area of agricultural land in Vietnam increased by 61% between 1990 and 2012, mainly due to deforestation and occurred during the 1990s, since then the area of arable land has remained relatively stable. This shows that most of the arable land that can be exploited for farming is being used to its limit. If agricultural production is to grow further, productivity must be increased, although Vietnam's current productivity is already very high compared to other Asian countries. In

addition, deforestation due to the planting of highly profitable agricultural crops, especially coffee, took place very strongly in the early 1990s, significantly reducing the forest area and was only partially overcome through efforts. afforestation for nearly 20 years starting from 2000; As a result, the forest cover rate has increased gradually over time, namely 38.2% (2006), 40.8% (2015) (Ministry of Natural Resources and Environment, 2015) and reached 41.65% (Ministry of Agriculture and Rural Development, 2019). More than two thirds of the natural forest area is assessed as poor forest and the forest on the lowlands has been almost completely exhausted; Deforestation, forest degradation and fragmentation still occur in the Central Highlands, Central Coast and Southeast (OECD, 2015).

In Vietnam, the mining industry (including exploitation of energy sources such as oil, gas, coal; mining of metal ores such as iron, tin, bauxite; uranium ore mining, material extraction construction) plays an important role in providing input materials for the processing industry. On average, in the period 2010-2017, the mining industry contributed about 37.8% to the total value of industrial production and contributed about 10.4% to GDP. The main natural resources that are exploited to serve the mining industry are coal, crude oil and natural gas, and other minerals.

The norm of consumption of natural resources in production in Vietnam is still high. According to research by CSIRO and UNEP (2013), Vietnam has the highest level of domestic use of raw materials (coal, oil, steel) to produce a unit of GDP in the world. Not only that, the intensity of Vietnam's use of raw materials tends to go against the trend of the world. While the world is using less and less raw materials to generate a unit of GDP, Vietnam is increasing this proportion. For example, in 1990, Vietnam used more than 8 kg of raw materials to generate 1 USD GDP (the world average is 1.8 kg), in 2008, Vietnam used about 13 kg of raw materials. crude to generate 1 USD GDP (world average is 1.5 kg). In general, the rate of application of modern technology in production and business fields in Vietnam is still far from that of other countries in the region; Therefore, the production of goods requires more consumption of raw materials and energy, produces more waste, but the waste is not treated or treated improperly and causes environmental pollution (Ministry of Natural Resources and Environment). school, 2015b).

In addition, the growth strategy based on the export of raw products is also considered a priority development mode in Vietnam in recent years. Among the key export items of Vietnam, exports based on natural resource exploitation are agricultural and forestry products, fishery products, crude oil and coal. In the period 2010-2017, the total export value of these four commodity groups accounted for about 25% of the total value of Vietnam's exports.

Energy consumption in Vietnam is increasing

Energy consumption for production and consumption in Vietnam is increasing day by day. Total primary energy consumption has increased from 57,023 KTOE in 2010 to 64,797 KTOE in 2014. Total final energy consumption is also increasing, from 47,445 KTOE in 2010 to 52,248 KTOE in 2014. Considering the structure of primary energy consumption, fossil fuel consumption (coal, crude oil, oil and gas products) accounted for

70% in 2010 and increased to 72% in 2014. by consumption structure of final energies, consumption of fossil fuels (coal, oil and gas products) accounted for 55% in 2010 and 54.6 in 2014 (Ministry of Natural Resources and Environment, 2017). . In general, fossil energy consumption still accounts for a large proportion in the structure of energy use in Vietnam. The share of coal used for power generation will increase from 32% in 2014 to 54% in 2030, while about 60% of coal used for power generation will have to be imported (World Bank and Ministry of Planning and Investment, 2016). The depletion of fossil fuel sources in the face of pressure on energy demand also opens up opportunities to develop Vietnam's energy industry in a more sustainable direction while the country's wind power potential accounts for 63% of the total area. territory; solar energy potential, regional radiation gradually increases to the south with a relatively high total irradiance, enough to exploit solar power (Ministry of Natural Resources and Environment, 2015b). The energy policies issued in the coming years related to energy efficiency and renewable energy will determine the development trend of the energy sector and related issues. Promoting the development of renewable energy sources not only solves the problem of energy supply and demand balance and energy security, but also makes an important contribution to reducing greenhouse gas emissions and combating global climate change.

Environmental pollution from industrial production and transportation

Three major environmental problems for industrial production, especially in industrial zones (IZs) and industrial clusters (CCNs) are wastewater pollution, air pollution and solid waste.

Out of a total of 283 industrial zones operating in the country, 212 industrial zones have built a centralized wastewater treatment system (accounting for 74.9%), 24 industrial zones are building a centralized wastewater treatment system (accounting for 11. 5%); the remaining industrial zones are developing a roadmap to invest in a centralized wastewater treatment system. The centralized wastewater treatment systems in industrial zones can only treat about 60% of the wastewater generated. For the remaining amount of wastewater, partly because the facilities have been exempted from the connection and self-treatment, a part is not treated but discharged directly into the environment. Nationwide, there are only 66 CCNs with a common wastewater treatment system in operation, accounting for 10.5% of the total number of CCNs in operation (Ministry of Natural Resources and Environment, 2015). Some industrial production industries with large amounts of wastewater and high concentrations of pollutants if not treated are: food and food processing; textile dyeing, paper production, mining...

Air pollution due to industrial production activities is mainly concentrated in the vicinity of factories; production facilities still use outdated technology, poor environmental management, typically some factories in cement, metallurgy, mining, building materials, and processing, thermal power... Dust and emissions around these facilities often exceed the allowable standards many times.

The volume of industrial solid waste discharged at about 22,440 tons/day, equivalent to 8.1 million tons/year, mainly arises from industrial zones, export processing zones, high-

tech parks and production and business located outside the industrial zone. Notably, solid waste from mining industries (coal mining, thermal power industry, iron ore, non-ferrous metals, and bauxite mining...); shipbuilding and ship repair industry; thermal power industry; wine, beer, beverage industry... The average rate of solid waste collection and treatment in urban areas in the period 2013-2014 was about 84-85%, an increase of about 3-4% compared to year 2008-2010. The rate of hazardous waste collection and treatment in 2014 was about 40% of the national total and increased by 93.4% compared to 2012 (Ministry of Natural Resources and Environment, 2015).

Construction activities such as excavation and backfilling, demolition of old buildings, construction materials scattered during transportation, etc. often cause quite serious dust pollution to the surrounding air environment.

Transport activities are continuing to put great pressure on the environment, especially the air environment due to the increase in the number of vehicles and the density of traffic, especially in urban areas (for example, two cities). The big cities are Hanoi and Ho Chi Minh City, accounting for 30% of the total number of motorbikes and motorbikes and 50% of the number of cars of all kinds of the country) (Ministry of Natural Resources and Environment, 2015b). Transport activities are considered as one of the major sources of air pollution, especially in urban areas and densely populated areas where traffic activities thrive. In Vietnam today, the increase in road motor vehicles, especially cars and motorbikes, together with the quality of the roads not meeting the demand, the low quality of fuel used are the main cause of air pollution.

Vietnam's economy is vulnerable to the impacts of climate change

Vietnam is one of the countries most affected by natural disasters in the Asia-Pacific region due to its geographical location and topography. Of all types of natural disasters, storms and floods are the most frequent and dangerous. On average, Vietnam suffers from 6-7 storms each year; 74 floods occurred during the period 1990-2010. In addition, more droughts, saltwater intrusion, landslides and other extreme natural disasters have occurred (Institute of Meteorology, Hydrology and Climate Change and United Nations Development Programme, 2015). Most of Vietnam's population lives in river basins, lowlands and coastal areas, so more than 70% of the population is at risk of natural disasters (UNDP, 2012).

Climate change is increasingly evident in Vietnam. In the past 50 years (1958-2007), the annual average temperature has increased by about 2-3°C; sea level at Hon Dau station has risen about 20 cm; the average rainfall in the whole country has decreased by about 2%/year; and extreme weather events increase, especially storms with strong intensity appear more and the storm season ends later, cold air waves causing severe cold and damaging cold tend to last (Ministry of Finance, 2016).

Economic costs of environmental pollution

Environmental pollution has created economic costs for society and the economy. According to a 2008 World Bank study, Vietnam suffers from environmental pollution

losses of up to 5.5% of GDP annually; ie Vietnam's economy lost about 4.2 billion USD out of 76 billion USD in 2008. Environmental pollution not only causes economic losses but also has direct and negative impacts on human health. Every year, Vietnam suffers about 780 million USD in damages in the field of public health because of environmental pollution. The rate of payment for health care and protection due to the impact of environmental pollution in 2010 accounted for about 0.3% of GDP and is expected to increase to 1.2% of GDP by 2020. According to estimates of the Ministry of Finance If Vietnam's GDP in the next 10 years doubles without paying due attention to environmental protection, environmental pollution will increase 3 times and by 2025 may increase 4 times compared to the level of natural resources and environment. current level of environmental pollution (Vu Thi Hoai Thu and Dinh Duc Truong, 2014).

According to the Climate Change Vulnerability Index (CCVI), Vietnam ranks 23rd out of 193 countries and is ranked in the group of 30 countries most at risk to the impacts of climate change. Climate change (UNDP, 2012). According to the 2018 Global Climate Risk Index (CRI) assessment by Germanwatch, Vietnam ranks 5th among the countries most affected by weather-related damage (hurricanes, storms, hurricanes, hurricanes, etc.) floods, heat waves, etc.) in 2016 and ranked 8th among the countries most affected by extreme weather events in the period 1997–2016 with a total annual loss of about 2 billion USD (PPP). According to the General Statistics Office, in 2016, natural disasters caused an estimated damage of 39.7 trillion VND, equivalent to 1.7 billion USD, accounting for 1% of GDP. In 2017, natural disasters caused damage estimated at a higher level, about 60 trillion VND, equivalent to 2.6 billion USD, accounting for 1.2% of GDP and 1.5 times higher than 2016. On average over the past 10 years, the average damage caused by natural disasters in Vietnam is estimated to account for 1-1.5% of GDP/year although the actual losses could be much higher (Ministry of Natural Resources and Environment, 2015).

5. Forecast of EPI developments and EPI targets in Vietnam

Forecast of EPI

Vietnam's economy is showing signs of recovery after Covid. This recovery stems from a number of factors including (i) the impact of total social investment in the period 1998-2010, leading to the enhancement of material and infrastructure capacity for the economy (ii) economic integration. The deepening of international trade led to trade growth, the trade balance began to shift towards a trade surplus, contributing to growth (iii) gradually transforming the export structure to a number of valuable economic products. higher economic sectors such as electronic components and equipment (World Economic Forum 2018).

However, environmental developments in Vietnam will tend to decrease, leading to the decline of EPI, with some main reasons as follows:

Firstly, on the flip side of international economic integration, Vietnam will continue to attract FDI, but FDI flows still tend to be "dirty" falling into resource-intensive industries and generating a lot of waste, especially those mining, iron and steel, cement, textile dyeing, fertilizers, chemicals. The industries with high export value in the direction of more

integration such as electronic components also cause large pollution (heavy metals, emissions, wastewater, etc.)

Second, the process of industrialization in Vietnam is happening quite quickly, but structurally, the rapid growth falls in the groups of industries with a high risk of pollution such as processing and manufacturing. If not managed properly, industrialization will cause environmental disasters.

Third, the exploitation of natural resources is still an important contributing factor in growth and budget revenue. In the coming years, groups of industries exploiting and exporting resources such as oil and gas, coal, forest products, fisheries still play an important role in the economic structure.

Fourth, in the global value chain, Vietnam is still around in the lowest link, which is manufacturing and processing, but has not switched to "clean" and higher value-added links. Outsourcing and manufacturing will come with pollution.

Fifth, investment in environmental protection in Vietnam is still at the lowest level in the region with a total budget of only 1% for environmental protection. Vietnam has not yet mobilized resources from society, especially the private sector, in environmental protection activities.

EPI target in Vietnam

Currently, countries in the world are ranked EPI according to 4 main groups: countries with high EPI (top 50), countries with medium EPI (from 50-100), countries with low EPI (100-150) and weak EPI countries (150 to 180). In 2018, Vietnam ranked 132nd on EPI, which is the low group and close to the weakest in the world, with a tendency to increasingly lag behind in the rankings.

In the medium and long term, despite improving environmental quality, it is difficult for Vietnam to break into the top 50 EPI group because this group is mainly a country with very developed economies and social resources to invest in environmental protection investment. Therefore, the actual goal of Vietnam is to achieve environmental sustainability at a fairly average level like that of the advanced NICs. These are Brazil (#69), Mexico (#72) and Malaysia (#75) of EPI. The common feature of these countries is that they have a GDP per capita in PPP between 15-28 thousand USD/year currently. This is the level Vietnam can strive to achieve.

According to the Report "Vietnam 2035: Towards Prosperity, Innovation, Equity and Democracy" by the Ministry of Planning and Investment and the World Bank (2016), if the average growth rate of 6% is maintained, In the next 20 years, Vietnam will achieve a PPP per capita income of USD 18,000 in 2036. This level is equivalent to the current advanced NICs. Thus, if appropriate economic-environmental management solutions are implemented, Vietnam can achieve a good average EPI level of the world in 2035-2040.

6. Policy implications toward environmental sustainability in Vietnam

(i) Improve the valuation of resources and environmental pollution/degradation to fully account for the social costs of resource use and environmental pollution/degradation through environmental taxes/fees, taxes resources, eliminating inefficient subsidies;

(ii) Developing a circular economy to turn waste into a resource; dispose of plastic waste to contribute to the global effort to tackle ocean plastic waste;

(iii) Developing the marine economy to turn Vietnam into a strong marine country with developed marine economic sectors; restore and conserve important marine ecosystems; prevent the trend of pollution, degradation of the marine environment, coastal erosion and sea erosion; proactively adapt to climate change and sea level rise in coastal areas;

(iv) Towards a low-carbon economy through energy policy (saving energy, increasing energy efficiency, gradually increasing the share of renewable energy in energy production and consumption, natural clean and advanced fossil fuels and promote investments in energy infrastructure and clean energy technologies) and use market tools and carbon pricing to promote activities that reduce greenhouse gas emissions such as carbon markets, carbon taxes, climate finance, etc.

(v) Towards an economy that is resilient to the impacts of climate change by strengthening the capacity to adapt to climate change at the national, sectoral, local, community and individual levels in society.

(vi) Smart technology application in management areas of the natural resources and environment industry, including efficient exploitation and use of resources, waste treatment, smart and sustainable land management, environmental protection, water resource management, weather monitoring and forecasting; disaster prevention...

(vii) Creating an enabling business environment with the institutional reforms needed to promote growth and protect the poor, for example: creating new markets by boosting the demand for green technology, green goods and services, thereby creating opportunities for green jobs; investment in green infrastructure (especially in the fields of renewable energy, water, transport); mobilizing finance for green initiatives (eg public finance combined with private finance through PPP); institutional reform (better coordination of relevant ministries at central and local levels).

7. Conclusions

The result of more than 30 years of efforts to innovate is that a country of Vietnam has come out of underdeveloped status, become a middle-income country, a market economy strongly and deeply integrated into the system. global economy. The rapid growth of the Vietnamese economy in recent years has relied heavily on the contribution of natural resources. Exporting raw products has been a priority development strategy of the government. Along with that, inefficient exploitation and use of natural resources, losses due to weak technology, high consumption norms of natural resources in production are the causes leading to the risk of depletion of national resources. Another consequence of rapid growth in Vietnam is that production activities cause environmental pollution and degradation, which not only causes economic losses, but also directly and negatively impacts human health. . Vietnam's Environmental Performance Index (EPI) is currently ranked very low and Vietnam is increasingly lagging behind in terms of environment. Looking to the

future of future generations, the next five-year development plan needs stronger steps in efforts to restore the natural balance, as well as investment in finding alternatives to promote growth.

The Vietnamese government has recognized the need to develop an economy associated with resource management, environmental protection, and response to climate change in the country as well as complying with international commitments. However, Vietnam's environmental management capacity improvement trend ranking is currently 4.2 points, at 73/132 countries, in the group of countries with small improvements in capacity. This progress is certainly not enough for Vietnam to firmly follow the successful models in the region and move towards a desirable living environment. Current obstacles include institutions and policies related to natural resources, environment and climate change that have not been fully completed; Resources (human, financial, science and technology) in the country for resource management, environmental protection and response to climate change are limited.

In the coming time, Vietnam needs to make fundamental changes in its growth model in the direction of (i) gradually reducing dependence on natural resources and becoming more efficient in using natural resources; (ii) towards cleaner/cleaner production activities to reduce environmental pollution and degradation; (iii) low carbon emissions and increased resilience to the effects of climate change. Specific plans need to be prepared to transition the economy to a low-carbon and environmentally friendly growth model, strengthen capacity to adapt to the adverse effects of climate change and take advantage of international cooperation opportunities to strengthen resources and capacity to respond to climate change, green growth and sustainable development in Vietnam.

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AGRICULTURE DIGITAL TRANSFORMATION IN VIETNAM: DIFFICULTIES AND SOLUTIONS

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Abstract

The purpose of this article aims to assess the current status of the agricultural digital transformation in Vietnam, thereby suggesting some solutions to promote this process. Agricultural digital transformation in Vietnam has only been started since 2018, but it has brought many outstanding benefits, making an important contribution to the sustainable agricultural development and increasing income for farmers. Besides the advantages, the digital transformation of agriculture is facing difficulties that need to be overcome such as policies, laws on digital transformation have not met the practical needs of the agricultural production; the information technology infrastructure in the agricultural sector hasn't been synchronously invested and is still backward; awareness of agricultural digital transformation of most localities, businesses and especially farmers is still limited; the average size of arable land per household is very low and the level of mechanization is still low, the supporting technologies for agricultural development are inadequate.

Keywords: *Agriculture, difficulties, digital, transformation, solutions.*

1. Introduction

Agriculture is a foundation for a state's economic development, sustainable society, political stability, and national security. If agricultural development is managed well, it also preserves and promotes the national cultural identity and can contribute to ecological sustainability (Luong, 2013). Agriculture has always been a pioneer in the Doi Moi (renovation) process, contributing significantly to achievements in poverty reduction and

food security in Vietnam (Le & Carolyn, 2021; Otsuka, 2013; Wegren & Elvestad, 2018). Furthermore, Vietnam has a great role in ensuring food security of the world because it is a major exporter of rice, seafood, and coffee (D. L. T. Anh et al., 2023). Nowadays, agriculture plays a relatively important role in the development of the economy and society (Tu et al., 2021) with nearly half of the country's labor force working in this sector (N. T. Anh et al., 2022). In the context of the outbreak of the Covid-19 epidemic, agriculture was considered a bright spot and a pillar of the economy, with the growth rate reached 2.88%. Agriculture not only contributed to ensuring food security, but the export turnover of agriculture, forestry and fishery products in 2022 reached 24.73 billion USD, up 3.9% compared to 2021 (General Statistics Office of Vietnam, 2022). Although the agricultural sector has achieved encouraging results, it is also facing difficulties and challenges such as population growth, urbanization, climate change, epidemics, supply and demand disruptions, logistics costs, high input prices, which requires restructuring for adaptation. In addition, the share of the industry in GDP structure is only 13.96%, very low compared to the potential and advantages due to the small, inefficient production model and the lack of value chain linkages.

In order to solve all disadvantages completely as well as make a strong motivation in Vietnam's agriculture, which transforms thinking from "agricultural production" to "agricultural economy", towards an integrated multi-value agriculture, builds ecological agriculture with the objective of sustainable development agriculture, modern rural areas and civilized farmers, masters science and technology, promoting digital transformation in agriculture is an extremely inevitable trend. Digital transformation and high technology application are expected to help the sector improve production productivity, adapt to climate change, ensure income for farmers, and reduce food waste. However, digital transformation in agriculture in Vietnam is still local in nature and lacks comprehensiveness on the national scale. This article aims to assess the current status of the agricultural digital transformation in Vietnam, thereby suggesting some solutions to promote this process.

2. Method

The article uses document analysis method. The sources of documents are the policies and laws of the State; scientific articles, articles on agricultural digital transformation. Within the framework of this article, the arguments are analyzed and evaluated in order to make statements as a basis for proposing some solutions to promote agricultural digital transformation in Vietnam.

3. Results

3.1. Policy framework on digital transformation in agriculture

The Fourth Industrial Revolution creates many opportunities and poses many challenges for each country, organization and individual. In Vietnam, the Party and Government have recently led and directed all levels and sectors to promote the application and development of science, technology, research, and innovation, and improve the capacity to access and participate actively in the Fourth Industrial Revolution. Resolution No. 52-NQ/TW dated September 27, 2019, of the Politburo set out guidelines and policies to

participate actively in the Fourth industrial revolution, focusing on completing the institution that bring advantage to the active participation in the Fourth Industrial Revolution and the national digital transformation process (Central Committee of the Communist Party of Vietnam, 2019).

On June 3, 2020, the Prime Minister issued Decision No. 749/QĐ-TTg approving the "National Digital Transformation Program to 2025, with orientation to 2030". Digital transformation in agriculture is identified as 1 of 8 priority areas, in which farmers are identified as the center of digital transformation. Digital transformation of agriculture and rural development is an indispensable and objective requirement and is the responsibility, obligation and interest of the whole political system, enterprises and especially farmers; is a method to realize the goal of developing smart agriculture and modern rural areas, increasing the proportion of digital agriculture in the production, processing chain, as well as in market and economy. The main contents of digital transformation in the agricultural sector are as follows: (i) To develop high-tech agriculture in the direction of focusing on smart agriculture and precision agriculture, increasing the proportion of digital agriculture in the economy; (ii) To implement digital transformation in agriculture based on data. Focusing on building the big data systems of the industries such as land, crops, livestock and fisheries. Building an integrated observation and monitoring network in the air and on the ground for agricultural activities. Promote the provision of information on the environment, weather, and land quality so that farmers can actively improve productivity and quality of crops and support the sharing of agricultural equipment through digital platforms; (iii) To apply digital technology to automate production and business processes; managing and monitoring the origin and supply chain of products, ensuring fast, transparent, accurate, safe, and food hygiene. Consider piloting the implementation of the initiative "Every farmer is a trader, each cooperative is an enterprise applying digital technology" with the goal that each farmer is oriented and trained in digital technology application in produce, supply, distribute, forecast (price, season, ...) agricultural products, promote the development of e-commerce in agriculture; (iv) To implement digital transformation strongly in management to have timely policies and administration for agricultural development such as forecasting, providing market alert, managing master plan (Prime Minister of Vietnam, 2020).

Determining that the digital revolution will really create a breakthrough for the country in the coming decades, the 13th National Party Congress has set out a requirement to strongly promote national digital transformation, develop a digital economic and a digital society to create breakthroughs in improving productivity, quality, efficiency, and competitiveness of the economy. The specific goal of digital economic development in the Document of the XIII National Congress is to strive to complete the construction of a digital government by 2030, ranking at 3rd in the ASEAN in terms of e-government and digital economy (Communist Party of Vietnam, 2021).

On December 31, 2021, the Ministry of Agriculture and Rural Development issued Decision No. 5275/QĐ-BNN-VP on Promulgating the Digital Transformation Plan of the Ministry of Agriculture and Rural Development in 2022. In this plan, the Ministry of

Agriculture and Rural Development has set the goal of promoting enterprises and people to participate in agriculture activities, increasing the application of digital technology to the production process, providing agricultural services; managing and supervising product origin; forming a digital agricultural ecosystem... The ministry also set a target that 80% of agricultural databases will be built and updated on the platform of big data, which will be basically completed database on plants, livestock and aquatic products; building a digital agricultural map ready to connect, share and provide open data to perform online public services for people and businesses; 50% of observation and monitoring devices use digital technology, ensure direct reception of digital data, use the Internet of Things (IoT) to integrate in the air and on the ground to serve agricultural activities (Ministry of Agriculture and Rural Development, 2021).

On June 15, 2022, the Ministry of Agriculture and Rural Development issued Decision 2151/QD-BNN-VP on the plan for digital transformation of agriculture and rural development in the period of 2022 - 2025 with three specific purposes, they are as follows: (i) digital transformation in agriculture is to create an environment and an agricultural digital ecosystem as the foundation, create institutions, promote the transformation from "Agricultural production" to "Agricultural economy"; develop hi-tech agriculture in the direction of focusing on smart agriculture and precision agriculture, increasing the proportion of digital agriculture in the economy; (ii) Create a change from awareness to action on digital transformation of agencies and units in the industry and organizations and individuals participating in agricultural value chains; (iii) Propose orientations, plans and roadmaps for digital transformation of agriculture and rural development up to 2025, oriented to 2030 as a platform for formulating annual plans and organizing implementation a united, efficient digital transformation (Ministry of Agriculture and Rural Development., 2022).

Thus, up to now, the policy framework on digital transformation in general and on the agricultural sector in particular has gradually been completed, creating an important legal corridor to implement digital transformation in the agricultural sector in order to improve productivity, quality, and competitiveness; meanwhile, creating 3 axes of agricultural products: quality, food safety, and development towards green, clean and smart agriculture.

3.2. Situation of digital transformation in agriculture

In the agricultural sector the legal environment has been built and completed; the infrastructure has been developed and the technical platforms ensure and create favorable conditions for the deployment of digital transformation applications in agriculture: The Ministry of Agriculture and Rural Development has established a Steering Committee for Digital Transformation in the agricultural sector under Decision No. 2688/QD-BNN-TCCB dated June 16, 2021. The ministry has issued a plan for digital transformation of the agriculture and rural development sectors for the period of 2022 - 2025. Besides, this institution has implemented wide area network (WAN) that enable to connect the centralized headquarters of the units under the Ministry of Agriculture and Rural Development with 30 servers, of which 60% have been virtualized on VMware technology platform. Finally, the Ministry has also digitized the guiding document, providing data to connect, communicate

and share with local authorities and enterprises involved in the agricultural sector. Up to now, the Ministry of Agriculture and Rural Development has 113 types of databases and 32 specialized software for management and expertise activities in the fields of agriculture, forestry, fisheries and irrigation; deploying online public service applications through e-portals, online public service portals, e-one-stop office; synchronized and publicized 241 administrative procedures on the National Public Service Portal (Department of Informatization - Ministry of Information and Communications, 2021). In addition, the Ministry of Agriculture and Rural Development also applies digital technology to organize and host online conferences among departments; online conferences between the leaders of the Ministry and related Ministries and Departments and 63 online sites nationwide to promote agricultural product consumption in the context of the Covid-19 epidemic. Thereby, the management and administration of agricultural product consumption is more convenient, timely and effective.

Application of digital transformation in agricultural farming: Recently, most of the basic digital technologies in agriculture have been deployed or tested in Vietnam. According to Vietnam Digital Agriculture Association (2021), in farming, the IoT platform; big data; AI; autonomous technology (robotics); sensors; ... began to be applied through digital technology products such as software that allows analysis of data on the environment, genetic resources, plants and plant growth stages, which consumers can access and track these parameters in real time (Vietnam Digital Agriculture Association, 2021). Currently, many localities have issued identification codes to monitor and control production, track the origin, and improve the quality of agricultural products such as: Rice in the Mekong Delta; coffee, passion fruit in the Central Highlands; dragon fruit in Binh Thuan; longan, lychee in Hai Duong, Bac Giang, Hung Yen, Son La... (Nguyen, 2022). For animal husbandry, IoT technology, block chain, biotechnology apply for large-scale farms. The dairy industry leads the application of digital technology, with the prominent models being the modern farms of TH TrueMilk Group and Vinamilk Company. For fishery, the use of ultrasonic fish detectors, flow meters, satellite phones; seine receiver (standing); capture and drop net capture system, GIS and GPS technology are to help manage offshore fishing fleet. Applying biotechnology is to select and breed varieties with high yield, quality, disease resistance and good tolerance to the environment. Recirculating aquaculture systems - RAS, biofloc technology, nanotechnology, marine cage culture technology, cold water fish farming technology are all being researched and applied. Artificial intelligence (AI) technology has been used in shrimp farming to analyze water quality data, feed management and health of farmed shrimp. Automation technology has been widely applied in fishery processing from sorting, steaming, packaging, production lines..., helping to reduce production costs and ensure the quality of seafood products (Vietnam Digital Agriculture Association, 2021). For forestry, DND barcode technology is applied in the management of forest varieties and forest products; GIS technology (a tool used to collect, manage and analyze data from geospatial) and remote sensing images used to build forest fire warning software from satellite images, monitoring software in management forest, early detection of forest degradation or loss, thereby contributing to an effective assessment of forest resources as a basis for sustainable forest management, protection and development (Mien, 2022).

Many large enterprises such as VinEco, Hoang Anh Gia Lai, NAFOOD, and DABACO have also applied high technology in agriculture for their production, distribution and consumption. For agricultural cooperatives, according to the 2017 report of the Department of Cooperative Economy, there are 199/12,600 agricultural cooperatives (accounting for 1.5%) applying high technology, of which, 164 cooperatives apply high technology. Using cultivation, farming and preservation techniques, 17 cooperatives applied irrigation automation technology, 17 used biotechnology, 1 applied technology in the production of agricultural materials. Lam Dong is considered as one of the provinces that have achieved many achievements in the initial digital transformation for agriculture when up to 25/52 agricultural enterprises use IoT solutions... (Minh Le, 2022).

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Digital transformation application in marketing and consuming agricultural products: marketing and consuming products play a very important role in agricultural production in order to improve productivity, quality and value of agricultural products, at the same time, to increase the scale of commodity production, apply modern production processes, improve management, administration and production organization capacity for enterprises and households. Recently, to overcome difficulties from the consumption of agricultural products due to the impact of the COVID-19 epidemic, many localities and enterprises have applied digital technology to promote and consume products in diverse forms. Various methods such as connecting with e-commerce platforms, promoting through social media channels such as Facebook, Instagram, Tiktok,... assists enterprises and farmers to connect directly with consumers. To promote the development of digital economy in agriculture and rural areas, the Ministry of Information and Communications has issued Decision No. 1034/QĐ-BTTTT dated July 21, 2021, and Decision No. 350/QĐ-BTTTT dated February 24, 2022 on approving a plan to support agricultural production households on the e-commerce platform. The goal of this plan is that 100% of OCOP products that meet the 3-star criteria at provincial central-city level are posted on the e-commerce platforms postmart.vn and voso.vn; 100% of agricultural production households listed on the e-commerce platform receive trainings in business skills; setting up 10 million active accounts on the e-commerce platform; promoting the increase in the number of transactions and transaction value on e-commerce platforms (postmart.vn and voso.vn); supporting agricultural production households to promote consumption of agricultural products on e-

commerce platforms; promote, introduce products, expand domestic and international markets; Through e-commerce platforms and digital platforms, useful information to agricultural producers such as agricultural product market information, demand forecast and agricultural production capacity, weather information. , crops, varieties, fertilizers, ... are provided. Raw materials, input materials, tools for agricultural production with reputable brands, good quality, reasonable prices are selected to put on the e-commerce platform for agricultural production households; promoting the development of the agricultural and rural digital economy in localities across the country.

According to the Department of E-commerce and Digital Economy, Ministry of Industry and Trade, from the early months of 2022, interdisciplinary units in the Mekong Delta such as Can Tho, Dong Thap...; or the Northern region such as Bac Giang, Hung Yen... have issued plans to consume agricultural products through e-commerce promotion. These provinces and cities have also worked closely with the Department of E-commerce and Digital Economy in connecting local departments and sectors with major e-commerce platforms in Vietnam (Minh Hoa, 2022). The most typical is Bac Giang province that connected to the 6 largest e-commerce platforms including Vo So, Sen Do, Shopee, Tiki, Postmart, Lazada through "National online Vietnamese stall for lychee consumption". In the two years of 2021 and 2022, over 10,500 tons of lychee were consumed on e-commerce platforms, of which 8 tons of lychee were exported to European countries. Up to now, Bac Giang has over 113,670 enterprises, Cooperatives and households who have Voso.vn and Postmart.vn platforms created shopping space on the e-commerce trading floor; many agricultural products and 180 OCOP products of the province have been and are being sold. support to upload to Voso.vn, Postmart.vn... (Trang, 2022). Lang Son province so far has more than 202,000 selling accounts and more than 115,000 buying accounts on postmart.vn e-commerce platform and voso.vn, bringing 19,438 turns of specialty agricultural products and OCOP products to online stores, sales on e-commerce channels reached more than 13.7 billion VND, especially custard apple products. On the e-commerce platforms voso.vn and postmart.vn so far, there have been 593 orders with a consumption volume of 2,945kg ... (Thanh Hien, 2023). Nghe An ranked third in the country in terms of the number of agricultural products put on the e-commerce floor, as of September 31, 2022, the province had 266,373 agricultural production households and 6,923 products were posted on the e-commerce (Kim Oanh, 2022). As of November 2021, the whole country has nearly 50,000 agricultural products listed on e-commerce floors and thousands of electronic transactions have been made. Up to november 2021, the country has nearly 50,000 agricultural products put on e-commerce floors and thousands of electronic transactions have been made (Khoi Nguyen, 2021).

Thanks to the cooperation with e-commerce platforms and implementation of product promotion programs through social media channels along with the development of selling sites in central areas, agricultural products of localities are more and more well-known and chosen. The growth of specialty agricultural products will contribute to local economic development and improve the livelihood of local people.

3.3. Difficulties in agricultural digital transformation

- Policies, laws on digital transformation have not met the practical needs of the agricultural production. The credit support policy of high-tech agriculture is mainly for businesses and cooperatives, but it is difficult to access because the procedures are cumbersome and complicated. Criteria on high-tech agriculture, smart agriculture and regulations for each animal and plant haven't been promulgated yet.

- The implementation of agricultural digital transformation requires a modern and synchronous information technology infrastructure, software system and database. However, nowadays, the information technology infrastructure in the agricultural sector hasn't been synchronously invested and is still backward, leading to difficulties in connecting, sharing and effectively exploiting agricultural databases with relevant agencies and localities. The agricultural data system currently has 113 types, but it is still small scale, incomplete, inconsistent, and it has not yet complied with the e-Government architectural framework. Although the number of software systems in the fields of agriculture, irrigation, forestry and fishery is large (32 software), but the ability to link and integrate data is still limited. In addition, the cost of 3G and 4G is still high, which makes it difficult for people to access and apply digital technology to agricultural production and business, especially in remote and isolated areas. The synchronization and publicity of administrative procedures has been well done and publicized on the National Public Service Portal, but the percentage of online public services reaching level 3 and level 4 is still low (about 10%).

- In Vietnam, digital transformation started to be mentioned a lot about 2018 (Ministry of Information and Communication, 2021). Therefore, the awareness of agricultural digital transformation of most localities, businesses and especially farmers is still limited. This makes it difficult to apply modern technologies to agricultural production. Besides, Vietnam is very short of skilled, highly qualified and professional workers to meet the demand for human resources for agricultural digital transformation. According to statistics, the rate of trained workers in our country is very low, reaching only 24.1% in 2020 (General Statistics Office, 2021). Meanwhile, if you compared with countries right in the region, this rate in Indonesia is 42%, in Malaysia this figure is up to 66.8% (UNDP, 2020). The number of farmers trained in digital transformation skills is small, with only over 2 million agricultural production households by November 2021 (Khoi Nguyen, 2021).

- The average size of arable land per household is very low, over 69% of households have less than 0.5 ha of cultivated land, 25% of households have 0.5-2 ha of cultivation area, and the number of households with cultivation area over 2 hectares accounts for a small proportion, only 6% (General Statistics Office of Viet Nam, 2017). In addition, the current land law only allows households and individuals to receive a transfer of agricultural land use rights no more than 10 times the agricultural land allocation limit are also major barriers to the application of digital technology in agricultural production.

- The level of mechanization is still low, the supporting technologies for agricultural development (mechanics, deep processing, agricultural product testing lines, etc.) are

inadequate. In addition, resources from the state budget and credit capital for digital transformation and high-tech and smart agriculture developing are still limited. Although the research, application and transfer of science and technology has been intensively invested, it still has not kept up with the actual production requirements.

3.4. Solutions to promote agricultural digital transformation in Vietnam

- Developing and perfecting policies and laws to create a legal corridor to promote the development of smart agriculture and precision agriculture, and at the same time increase the proportion of digital agriculture in the economy. Completing the system of legal documents, standards, regulations and technical regulations to meet the requirements of the agricultural digital transformation. Simplifying procedures for accessing digital technology infrastructure, land and capital for high-tech and smart agriculture development. Reviewing and finalizing policies to encourage organizations and businesses to provide agricultural digital services. Formulating and promulgating regulations on receipt, digitization, storage and handling of electronic documents; regulations on management, operation and maintenance of digital infrastructures, information systems and databases to ensure information security. Completing support policies, specifying criteria for the development of high-tech agriculture and smart agriculture.

- Upgrading and building a modern and synchronous digital technology infrastructure for data connection, exploitation and sharing. Developing infrastructure and connecting high-quality broadband internet (4G, 5G mobile network infrastructure, IoT connection infrastructure) to communes, villages and hamlets. Improving the quality and ability to access telecommunications services for the people; supporting farmers to use information technology equipment. Providing free wireless internet at commune centers, community cultural activities, rural tourist spots. Developing digital platform and integration platform to share data. Building and developing application platforms on mobile devices to support people and businesses in using digital agricultural services and utilities. Focusing on building and standardizing the database of the agricultural industry, building agricultural digital maps on a synchronous big data platform to connect, share and provide open data. Developing software to manage, monitor, evaluate and classify agricultural products, especially typical products of each locality. Focusing on building a large database on land, crops, environment, climate, weather... to provide people and businesses. Encouraging people and businesses to digitize production processes, towards product integration and transparency with a QR code scanning system.

- Raising awareness of localities, businesses and especially farmers about the role and importance of agricultural digital transformation in management, production and consumption of agricultural products in the context of climate change, technology 4.0 and international integration. In order to adapt to digital transformation, training and improving digital skills for farmers is an urgent requirement that needs more attention from the State agencies. In addition, farmers can actively go on the e-commerce trading platform to interact with buyers and introduce different agricultural products. It is necessary to ensure that there are enough human resources to carry out digital transformation. For business owners, cooperatives and individual production households, in addition to the knowledge of digital

transformation, it is necessary to foster knowledge about the agricultural product market, and be able to forecast the supply and demand movements of the market. to decide to invest in expanding the area of agricultural production...

- The State should accelerate the process of land accumulation and concentration to attract financial resources outside the State budget, especially resources from the private sector to invest in agriculture, to develop the closed agricultural model and sustainable agricultural value chain. The limit on the transfer of agricultural land use rights should be necessarily removed. The procedures for renting and receiving transfer of agricultural land use rights should be simplified.

- Modern and advanced technologies in the processing and preservation of a number of typical and typical agricultural products of the region should be invested, thereby prolonging the shelf life of agricultural products, forming the foundation to push up these products traded on e-commerce platforms. By implementing measures to simplify loan procedures, develop consulting services to support loans and use loans; allocate adequate budget to implement preferential policies to encourage enterprises to invest in hi-tech agriculture it further strengthens agricultural credit capital, especially credit for chain lending. agricultural value. To generate more capital for innovation and digital transformation application in agriculture, it is necessary to form venture capital funds and credit guarantee funds with the initial investment and capital share of the State. These funds should be managed and operated directly by independent professional private organizations. The State supervises these funds through the application of modern management software, such as applications of cloud computing technology to manage and trace cash flows in a transparent manner. In addition, amending the post-investment support mechanism specified in Decree 57/2018/ND-CP according to the disbursement mechanism for each item to ensure timely capital support for enterprises investing in public applications. digital technology in agriculture.

- Research, application and transfer of science and technology to agricultural production should be strengthened. New and modern technologies must be applied to all stages of production, harvesting, preservation, processing, transportation, and consumption of products. Propaganda, awareness raising and encouragement, businesses expand the application of technical advances, integrated pest management programs (IPM), integrated crop management programs (ICM) and the program of improved rice cultivation into agricultural production should be promoted; agricultural extension program, safe crop production according to VietGAP process... must also be promoted; finally, trade promotion activities to support enterprises to find markets to consume products must also be strengthened.

4. Discussion and conclusion

Agricultural digital transformation is understood and approached in different ways. According to Skvortsov (2020), the digital transformation in agriculture is an objective process associated with a scientific and technological progress. This process is due to the use of technologies of a new generation, which include the IoT, Big Data, AI, and robotics. The main scientific idea is that digitalization of agriculture will result in a significant transformation of labour relations (Skvortsov, 2020). Digital transformation in agriculture is

applying digital technologies from production to processing, distribution and consumption of products. Digital transformation in agriculture includes basic activities such as applying modern technology in farming, linking value chains and changing management methods (Linh, 2022). Digital transformation in agriculture has been happening for decades, however, it was mainly considered behind the concepts of smart farming, precision agriculture or *precision farming*, *decision Agriculture*, *digital Agriculture*, and *agriculture 4.0* (Klerkx et al., 2019). All of these terms could be part of the digital transformation because implies that management tasks in any part of the food system are based on data obtained from the use of different technologies (Duncan et al., 2021; Eastwood et al., 2019).

Many studies have shown that digital transformation is an effective solution to solve the challenges that agriculture and rural areas face (Trendov et al., 2019), as part of a transition towards 'Agriculture 4.0' (Klerkx & Rose, 2020) contributing to agrifood system transformation (Klerkx & Begemann, 2020). Applying of digital technologies in agriculture are necessary to increase the efficiency and sustainability of its functioning by cardinal changes in the quality of management of technological processes, decision making at all levels of the hierarchy based on modern methods of production and further use of information on the state and forecasting possible changes in controlled elements and subsystems, as well as economic conditions in agriculture (Mustashkina et al., 2020).

Agricultural digital transformation in Vietnam has only been started since 2018, but it has brought many outstanding benefits, making an important contribution to the sustainable agricultural development, especially during the context of the Covid-19 epidemic. In addition, digital transformation helps Vietnam's agriculture to reduce risks and damages caused by climate change. Vietnam is one of the countries most affected by global climate change... Rising sea level rise, rising temperature, rainfall change, extreme weather phenomena, natural disasters... have been seriously affecting the agricultural activities. The inevitable consequence is a decrease in arable land area and productivity, quality of crops (Yen et al., 2023). Applying AI technology, data analysis in agriculture will help early warning of risks (72 hours before the storm passes). The application of IoT, big data and biotechnology has helped to analyze data about the environment, soil, plants, and plant growth stages. Based on the provided data, the producer will make appropriate decisions (fertilizing, watering, spraying pesticides, harvesting ...), thereby reducing costs, environment pollution and protecting biodiversity. In fact, the application of digital technology to agricultural production has reduced costs and labor by half, reduced greenhouse gas emissions by 50%, increased productivity by 30%, thereby increasing income for farmers. Moreover, the application of digital technology in agriculture helps to strengthen the connection between producers and consumers, between supply and demand, limiting the situation of "good season, bad price", so that production more efficient and sustainable agriculture.

Agricultural digital transformation play a particularly important role in restructuring the agricultural sector, developing the concentrated and large-scale commodity agriculture towards modernity, high added value and sustainability. Digital transformation is an important solution to help farmers and businesses produce quality agricultural products at

the lowest cost but with the highest profit. This goal is also being promoted by industries, localities, businesses and people, with the expectation of creating a breakthrough in productivity, quality and competitiveness for agricultural products.

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CORPORATE SOCIAL RESPONSIBILITY IN VIETNAMESE BANKING SECTOR: A LITERATURE REVIEW

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Abstract

Research on how to implement corporate social responsibility (CSR) has been launched since the 1950s in various industries, on a large scale in many countries. Among them, the banking and financial system - which is considered as a crucial of economic development - needs to apply the creation and use of CSR seriously, towards the development of a comprehensive system which is responsible for the environment and the community. Since the onset of many financial crises, especially after COVID-19, research on this issue has received more and more attention from policymakers around the world. Based on above consideration, the paper conducts research on the application of CSR for banking sector in the world in general and that of Vietnam in particular, through synthesizing 138 scientific articles, thereby giving some policy implications for CSR development in Vietnamese banking system in the coming years.

Keywords: *CSR, corporate social responsibility, Vietnamese banking system*

1. Introduction

Since the concept of corporate social responsibility (CSR) was born, its applications have been widely tested in many areas of life such as tourism, hospitality, media and so on. The application of CSR in the banking system has been carried out in a number of case studies nationally and internationally as it is believed that CSR can bring more positive impacts on not only customers, employees and organizations, but also at societal aspects. Different from the traditional development model that purely focuses on developing economic aspects and improving profits, many researchers believe that multi-dimensional focus, with more attention on environmental aspects, social and sustainable development should be concerned. In recent years, concepts such as sustainable banking, green banking or ethical banking flourished. In other words, the focus on social responsibility has been notably addressed.

According to The Global Economy (2022)¹, the attribution of banking assets on 140 countries was roughly 71.17 percent of GDP in 2021. The market capitalization of global

¹ https://www.theglobaleconomy.com/rankings/bank_assets_GDP/#:~:text=Bank%20assets%20to%20GDP%20%2D%20Country%20rankings&text=The%20average%20for%202021%20based,countries%20where%20data%20are%20available.

banking sectors accounted for approximately 7.5 trillion euros in the 3th quarter of 2022 (Statista, 2023)². It is to say that banking industry is generally considered as the backbone of national economies, which can support the international development as well as provide numerous financial services for millions of people all over the world. Within the sector, CSR initiatives are believed to play an important role on building sustainable and inclusive system. As such, further investigating in the topic, which integrates the past studies to get better understanding on CSR principles and practices may bring appropriate suggestions for the expansion of banking industry.

Vietnam has always been considered as a developing country with many progresses in financial and banking system. GDP contribution of finance, insurance and banking to Vietnam economy is around 4.73%, with total reserves of 109.37 billion US Dollar as of 2021. From the period of 4th quarter 2019 to the 1st quarter of 2022, number of bank cards in circulation increased significantly 34%. The value of online domestic transactions via internet and mobile banking in 2021 is around 29,470 and 23,649 trillion Vietnam Dong respectively. Although these data indicated a potential aspect, it still had to put into consideration with applicable and sound measures to improve the Vietnamese banking system. Thoroughly examining and fully utilizing the positive influence of banking industry is supposed to convey colossal value for indigenous people in particular and the national economy in general. By gathering and analysing 138 papers on this topic internationally, the paper aims at offering an updated insight of CSR main dimensions, its advantages and disadvantages as well as the CSR implementation in Vietnam' banking sector framework.

Based on these above considerations, this study aims at three main part: (1) delivering updated literatures on CSR, (2) explaining the impacts of CSR in banking sector internationally and (3) wrapping up with the application of CSR in that industry in Vietnam. From these stances, authors aim at providing policy implications. The paper is organized as follows. Section 2 denotes the research methodology. Section 3 emphasizes on literature on CSR dimensions, practices and implementation in banking industry. Last but not least, section 4 explains CSR practices in some countries in the world and in Vietnam.

2. Method

The study employed diverse methods through extensive literature review combined with secondary data collection. In order to make assessment and review high-quality papers, universally prominent citation databases, i.e. Scopus, Google Scholar and Web of Science are put into consideration. Papers with emphasis on CSR in general as well as CSR application in Vietnamese banking sector in particular are under review. Keywords, such as 'corporate social responsibility', 'banking', 'financial and banking' are used for searching appropriate articles. At the beginning, a number of 259 papers are obtained based on the analysis of title, keywords and abstract (**Figure 1**).

² <https://www.statista.com/statistics/265135/market-capitalization-of-the-banking-sector-worldwide/>

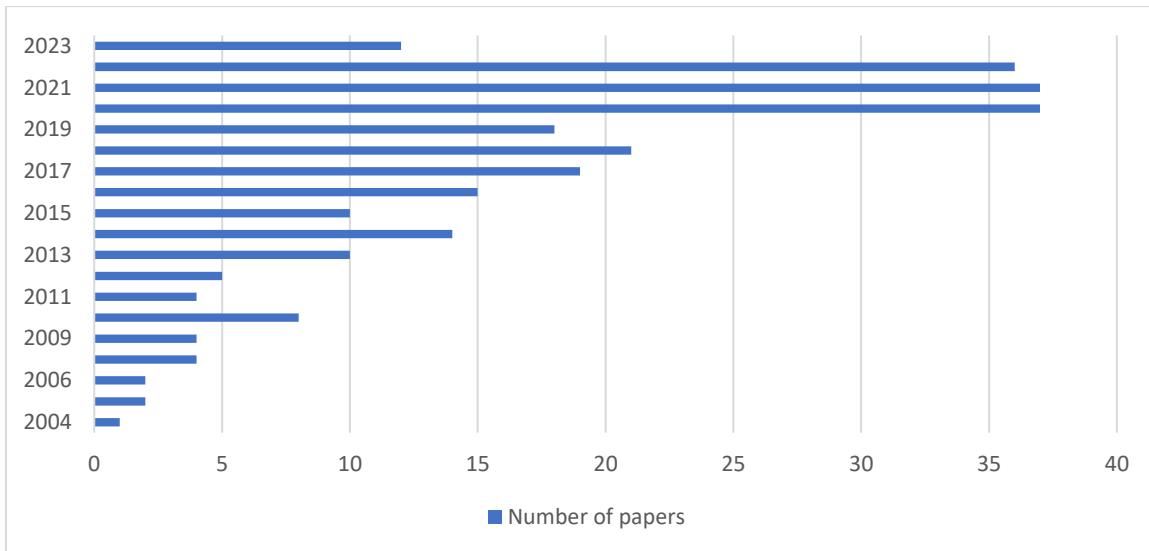


Figure 1. Number of papers by year

Source: Scopus, 2023

Notably, the focus on CSR has significantly increased over the period of 2004-2023, especially during 2019-2021 where COVID-19 pandemic happened. Of selected articles, only 10 papers are focused on Vietnam (Figure 2), which will be further processed and analysed in detailed in section 4.2.

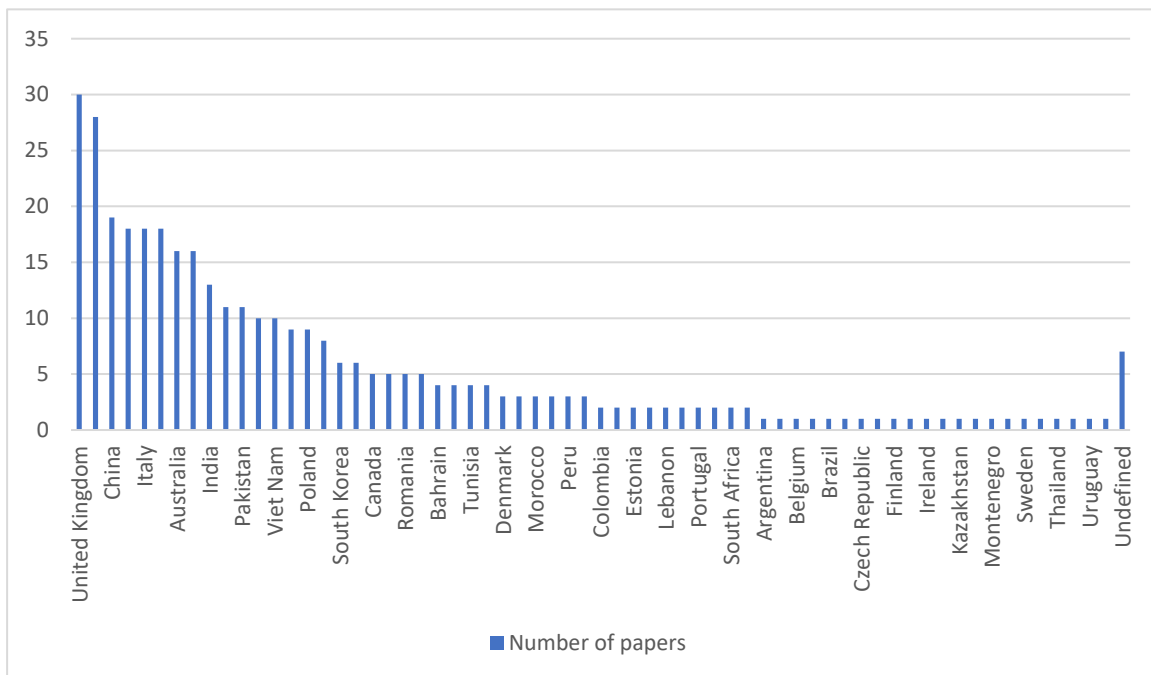


Figure 2. Number of papers by country

Source: Scopus, 2023

After reviewing thoroughly, only 138 papers are selected for better assessment. The remaining ones are eliminated as they are beyond the research scope on corporate social responsibility in banking industry. Papers on Vietnam are evaluated to figure out CSR

implementation and its impacts in Vietnam banking sector. Secondary data of this paper are collected from official reports of Vietnam Ministry of Finance, State Bank of Vietnam and Vietnam Statistical Yearbook during the period from 2004 to 2023.

3. CSR: Overview and components

3.1. Definition of CSR

Even the term “Corporate Social Responsibility (CSR)” has been long mentioned, the unified concept has not yet been affirmed. As suggested in various literature, the easiest and most approachable way to consider CSR is formed based on its name, which are broken down in three perspectives: Corporate - Social - Responsibility. While the first word “Corporate” only focus on the types of firms and business, the latter words “Social” and “Responsibility” come with society burdens, duties and obligations. This view is consistent with the very first annotation from Bowen (1953) to later literature of Carroll (1979), Zu (2009). It can be able to say that, the CSR framework should be established to satisfy not only (1) the corporate side, but also (2) the society development.

From the first angle, corporate is believed to fulfill the duty to work towards increasing values for stakeholders. This can in turn lead to the lessening of fraudulent and undesired activities which can do more harm than good to corporates’ health in particular and the whole economy in general. Even though, the famous literature on principal-agent problems could always happen, which can raise the interest conflict between managers and shareholders. Managers, in some cases, could try to improve their reputation and recognition from the CSR application socially and politically at the shareholders’ expenses. From 1960s, researches on CSR was intensively expanded to second perspective: society and community responsibility aspect (Tsoi, 2010). Carroll (1979), Wartick and Cochran (1985) has opened the boundary to further reach to social response, philosophical reputation and environmental orientation. This does not imply that corporate value was omitted, it does emphasize to tell that businesses could work to preserve financial gains via economics activities in more social and responsible method (Van Beurden & Gössling, 2008). One more aspect to consider is ethical and philanthropic doings (Kucukusta et al., 2013; Luo & Bhattacharya, 2006; Martínez et al., 2014; Oliver, 2014).

In general, the literature changed from authors to authors, especially in the time of digitalization era. It can be noted that, CSR can largely be perceived as a broad field covering several aspects, from financial to social, environmental, philanthropic and voluntary activities. It is believed to bring various and enormous benefits for both corporates and society, especially the value still works on even in the crisis time (Tosun & Köylüoğlu, 2023; Trinh et al., 2023).

3.2. Components and drivers of CSR

As mentioned earlier, the unification of defining CSR still appears to be in process, and therefore, the views on aspects of CSR varied over time (Freeman & Hasnaoui, 2011). Carroll (1979) proposed a CSR framework with four main components, which included

economic, legal, ethical and philanthropic dimension. The view was again confirmed in the author' research in 1997. From another angle, Tuzzolino & Armandi (1981) considered a corporate as a person who has several need as mentioned in the well-known Maslow scale developed in 1959. The firm was believed to have corporate social responsibility if several requirements such as physical existence, safety, association, self-esteem and self-recognition were met. With the development from Carroll's viewpoint, Dahlsrud (2008) put five dimensions regarding social responsibility of corporate such as voluntary, social, stakeholders, economic and environmental into consideration. Figure 3 represents the developments in dimension of CSR.

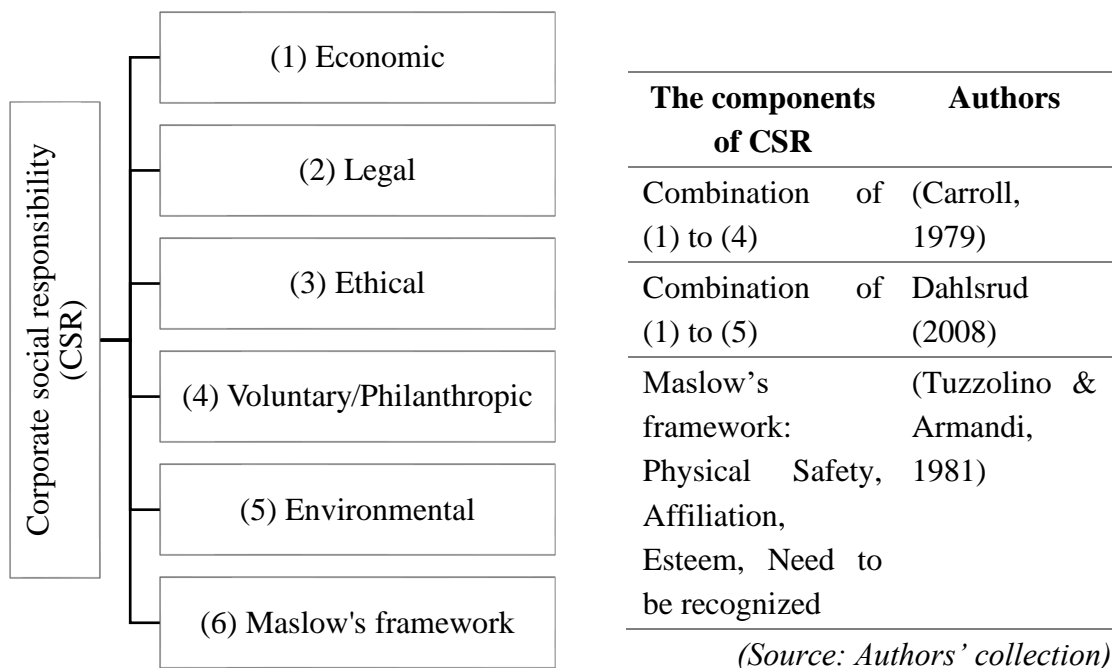


Figure 3. Different views on CSR Dimensions

The newest view on CSR component of (Dahlsrud, 2008) is now considered in widespread context. Among that, “economic” aspect can refer to financial performance, financial growth and advancement, “legal” mentions the level of compliance with legal system, legal structure both from inner and outer of the firm, “ethical” also indicated the following or moral norms and principles that control or have influence on the working motives, “voluntary/philanthropic” implies the doings and contributions to help others in willing manner. Last but not least, the newly-defined aspect “environmental” shows the responsibility toward preserving the natural world.

Another question to clarify is that what possible drivers of CSR could be. (Visser, 2008) divided the factors affecting CSRs could come from domestic and international issues. Domestic ones could include such demographic and cultural characteristics as traditions, customs, social values, governance, politics, corruptions, crisis responses and market reforms (Hossain & Alam, 2016). International drivers may come from overseas investors, the incentives of stakeholders, the impact of supply chain systems and international globalization and standardization (Galbreath, 2010).

4. Discussion on CSR application in banking industry

4.1. In the world

Even there could be several views on corporate social responsibility, the impact of it is believed to be of importance for most industries. For banking sector, the initiatives and implications of CSR are likely to support the banks in increasing profits, promoting efficiency as well as gaining the customer loyalty (Fauzi & Idris, 2009; Polychronidou et al., 2014). Even though, the results are not consistent between countries from different level of development.

In the recent study of (Djalilov & Hartwell, 2023) in 21 transitional countries with 319 banks, the authors show contradictory relationship between CSR disclosure and banks' financial performance. Positive relationship was only witnessed when CSR scheme was applied to banks which already experienced good profits. In China, the CSR appeared to be more helpful for domestic banks especially after COVID-19 than the foreign ones working there, and the CSR is not that could bring enormous changes in consumer's attitudes (Tosun & Köylüoğlu, 2023). The involvement of banks and financial institutions in shadow banking can put a detrimental effect on the development of the system as it could violate sustainability aspect, which in turn cause bad banking practices (Dong et al., 2023). The research in developing country with low level of social trust and modest philanthropic activities like Bangladesh seems to confirm that the spending on boosting CSR doings did not guarantee the efficiency and profitability, but the better financial performance, the higher expenditure could be for CSR (Kabir & Chowdhury, 2023).

From developed countries in the European areas and United States, CSR implementation always related closely to the components mentioned earlier: economic, ethical, legal, environmental and philanthropic. The application of CSR framework tends to be disclosed to public via media tools, digital platforms, websites or annual reports. This can in turn improve the reputation for the banks (Hossain & Alam, 2016). In the EU zone, the Directive 2014/95/EU on the requirements and guidance for non-financial reporting toward sustainability can be seen as a framework for CSR disclosure. With the dataset of 101 banks in Europe, (Cosma et al., 2022) indicated that the the banks reached the intermediate compliance level and data disclosure, but the existence of sole CSR committee could bring better results in achieving the sustainability goal. CSR framework is also extended to several aspects such as religion and social norm. In a research in United State banking sector context, Chantziarat et al. (2020), the CSR disclosure was again believed not only to have importance impact to the banks, but also positively related to the level of adherence to religion and religious as well as social norms. In general, these countries normally have higher requirement in information disclosure and public reputation, the implementation of CSR could be seen as one of the must-do-it activities. The balance between economic and society/voluntary/legal aspects is crucial, which is considered as a fundamental inspiration for sector in particular, and the whole society in general (García-Meca et al., 2018)

4.2. In Vietnam

The banking system is always considered as the backbone of the whole economy. After the eventful year 2019 with the outburst of COVID-19 pandemic, Vietnamese banking system have to deal with such a huge challenge to overcome, with lower growth and shrunk asset quality. However, thanks to the Government' policy, the support from State Bank of Vietnam and the high level of adaptability of the banks themselves, the system was still motivated in a more dynamic way (Finn Group, 2022)³. Besides, the application of digitalization, and the encouragement to maintain customers from the banks are some advantages to be put into consideration. In this scope of the paper, the authors do not focus on explaining how banks survived during and after pandemic but looking at older empirical studies to evaluate another important aspect: the corporate social responsibility.

The number of papers (both literature and empirical studies) covering Vietnam banks limited to 7, which seems to be modest. However, looking at these can bring several interesting points to (1) understand whether CSR is important in the case of Vietnam, and (2) if CSR proved to work, what could be the solutions to improve. Notably, these papers come mostly during the period of 2020-2022, where the banking sector has to face with several problems from integration and globalization and the post-COVID19 consequences. It can be said that, the developing of CSR within banking framework is regarded as a sound solution.

(Bui & Le, 2023) measured the relationship between CSR expenditure from public welfare undertaking, philanthropic and societal activities and the bank performance based on the information of 28 Vietnamese commercial banks, excluding the joint venture and 100% foreign capital ones during 2011-2019. Using the GMM model, the authors show negative correlation of total CSR expenditure where CSR society spending has positive link with banks' financial performance. Notably, the positive outcomes are more robust for listed banks. Explanation for the findings, the bigger and more transparent banks can improve their images through society contribution, which can in turn boost their financial results. This can also be implied as a solution for small and unlisted banks in order to thrive to the better. (Vo, Van, et al., 2022) used a dataset made from 13 Vietnamese listed banks from the period of 2011-2019 to evaluate the importance of CSR in banking industry. In the research, authors used the ratio between charitable offerings to bank profits as a proxy for CSR. The results showed robust findings on the positive correlation between CSR contributions to financial inclusions (Vo, Tran, et al., 2022). (Ady et al., 2022) made an empirical test hundred commercial banks in ten ASEAN countries from a more recent period: 2016 to 2011 using a FEM model to evaluate the relationship between the CEO incentives and the CSR implementation and the banks' financial performance. (Chi et al., 2022) employed they methodology called sys-GMM on the databases of 29 commercial banks in Vietnam from 2012 to 2019 to measure on aspects of CSR. The paper focused mostly on environmental responsibility and the financial performance through such ratio as net interest margin, return

³ Vietnam banking report 2022, <https://fiingroup.vn/upload/docs/fiinresearch-infographic-vietnam-banking-report-2022.pdf>

on equity, return on assets. The same significant positive correlation was also found, consistently with other researches in the scope of Vietnamese banking industry.

Besides the above mentioned consistent results, the paper of (Nguyen et al., 2021) showed an insignificant between financial performance and the CSR disclosure. The term “CSR disclosure” was being thoroughly researched, and also brings several policy implications for banking development. Another perspective such as examining the CSR on financial inclusion and consumer loyalty was seen in the paper of Vo, Van, et al., 2022. The interesting point of the research is that all aspects of CSR such as philanthropic, ethical, legal and economic were put into consideration on the primary dataset of 368 responses of Vietnamese commercial banks in 2019 through the SEM modelling. Among that, only philanthropic has significant effect on the loyalty of customers. Vo, Tran, et al., 2022 used the OLS regression on time series data of commercial banks in Vietnam during the period of 2015 to 2019 and clarified three determinants of CSR disclosure included board size, the existence of foreigner in board members and audit committee.

It can be noted that, these aforementioned studies share one in common, it is the positive impact of disclosure or implementation of CSR within commercial banks framework, even though they employed different databases or methodologies. The notation is not a newcomer in the world, but in Vietnam, it still appears to gain modest concern. Such aspects as philanthropic, economic, legal, ethical and environmental ones are of importance to improving financial efficiency, customer loyalty, income improvement and financial inclusion (Buallay, 2020). It implies that further consideration should be put into this aspect, to gain fruitful recommendation for future development of Vietnamese banking.

4.3. Policy implication and further research suggestions

It can be said that the CSR application is not just an announcement. It needs to have a specific roadmap and be monitored continuously throughout specific phases. Based on the analysis in countries around the world and in Vietnam, this section will give some policy suggestions to further develop the application of CSR in the banking system. Vietnam is a developing country with a large population, a developing economy, and limited infrastructure and legal system. These are common characteristics found in several studies taken in similar regions, so the application of CSR should base on international experiences, and redesign to fit in the country specific characteristics. Although numerous banks in Vietnam participate in sustainable development projects and community activities, most are still limited to aim at improving the bank’s image and reputation. As such, thorough CSR framework consisting of 5 elements will need to spend a lot of time developing, in order to create a balance between the benefits for society and the financial costs for the bank.

Under increasing pressure of integration and development, especially in a period when alternative technology is increasingly a trend around the world, the survival and success of the banking industry can be said to depend on significantly depends on customer loyalty. Customers are individuals using the service, and their behavior can be largely influenced by social, religious, and traditional factors, as well as their perception and

assessment of the banks' social responsibility. Therefore, in recent years, the two concepts "financial inclusion" and "sustainable development" have always been mentioned and promoted. In Vietnam, these concepts have hardly been focused on development, because of the limitation in financial ability, difficulties coming from global economic recessions, world political and social instability. Therefore, being socially recognized and building a system of social responsibility can be said to be a comprehensive strategy for the development of Vietnam's banking industry. As researched by (Nguyen et al., 2021), the legal framework is an effective factor to accelerate the development and implementation of CSR. Environmental and humanitarian are always sensitive issues, as such, clarity in the policy framework to separate the balance of finance and social performance needs to be seriously studied to achieve higher efficiency for CSR development in the coming time. Customers are a prerequisite for a bank's success or failure, so a customer-centric strategy, a closer study of customer-related CSR aspects will lead to higher customer satisfaction. banks, thereby contributing to improving financial efficiency. This is also considered as a form to help improve the competitiveness of banks.

In addition to the efforts of the management at the banks, State Bank of Vietnam is highly believed to address the needs to develop a legal, supportive and regulatory framework where necessary for CSR development. As some share in studies in developed countries, it is necessary to establish a CSR department for the banking system to assess compliance. This can contribute to improving the efficiency of information disclosure of banks, meeting the needs of customers, thereby towards the trend of integration of the banking system in the world economy.

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POTENTIAL, ORIENTATION AND SOLUTIONS FOR DEVELOPMENT OF CULTURAL TOURISM MANG LANG CHURCH, PHU YEN PROVINCE, VIET NAM TOWARDS SUSTAINABILITY

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Abstract

In recent years, promoting the development of cultural tourism coupled with the general unilization of local tourism resources is an inevitable trend. By analyzing and evaluating methods on the basis of an aggregate scale through criteria such as attractiveness, tourist capacity, location and accessibility, tourism service infrastructure, exploitation time... The evaluation results show that the potential for developing cultural tourism in the tourist site of in Mang Lang Church Phu Yen province is quite favorable. This is an important ground to promote exploitation, develop strengths and overcome limitations in order to link the destinations and tourist areas in the area with the purpose of sustainable tourism development in the future.

Keywords: *tourism, Mang Lang, Phu Yen*

1. Introduction

Mang Lang Church - one of the oldest churches in Vietnam, is located in a 5.000 m² campus about 35 km north of Tuy Hoa city in the division of An Thach commune, Tuy An district, Phu Yen province. It's built in 1892 by a Frenchman named Joseph de La Cassagne, whom the parishioners called in Vietnamese as Co Xuan, the first priest of Mang Lang parish.

After more than 130 years of existence, each wall, door, prayer table and the "marks" of the first martyred Master of the Catholic Church of Vietnam have been tinged with time, with the same uniqueness in the Vietnamese Catholic Church. The shape and lines are engraved with the architecture of the 19th century and the belief in God of the believers,

which has cultivated and created the unique features of the Church and the unique features of the life that the local people make, or called "Xu Dao".

Mang Lang Church consists of a number of tourist attractions such as Da Dia Reef, Sao Viet, O Loan lagoon... The historical sites of Da Trang pagoda, An Tho citadel, Le Thanh Phuong temple are attractive destinations for tourists, creating favorable conditions for economic development of tourism in Tuy An district in particular and Phu Yen province in general in the current period (en.wikipedia.org/wiki/Mang_Mang_Church).

2. Basics of assessment of cultural tourism resources for tourism development

2.1. Methods of evaluating cultural tourism resources

Cultural tourism resources are objects and phenomena created by humans through history. Cultural tourism resources include cultural traditions, cultural elements, folk arts, historical relics, revolutionary relics, architectural works, creative labor works of people and other natural resources. Other tangible and intangible cultural heritages may be used for tourism purposes.

Cultural tourism resources include historical and cultural relics (including archaeological relics, historical sites, cultural and artistic relics, museums, etc.), festivals, traditional crafts and villages, tourism objects associated with ethnography and cultural or sports objects associated with major events...

Evaluation of tourism resources in general and assessment of Cultural tourism resources in particular are assessment techniques to classify resources according to the degree of convenience for human tourism activities, relating to different types of tourism. Currently, there are two popular evaluation methods: evaluation by type and general evaluation of resources.

In this topic, the author has chosen the method of general evaluation of resources, as this method does not only stop at evaluating each type of resource based on defined criteria but also evaluates the conditions for exploiting that resource effectively. By this method, we can thoroughly see and recognize the potential of the evaluation site by the values that have been quantified through certain criteria.

2.2. The process of evaluating cultural tourism resources for tourism development

Based on travel documents and personal experience, the author has built an evaluation process that includes specific steps:

- *Determine the criteria, levels and targets of each assessment level*

In this study, the author has built 4 criteria, each criterion has 4 levels in the order K1, K2, K3, K4. Specifically:

+ **Attractiveness:** It is the most important criterion to evaluate tourism resources in general and humanistic tourism resources in particular because it determines the attractiveness and attractiveness to tourists. For humanistic tourism resources, the attractiveness is determined by the value of an architectural work (age, architectural style, preserved state...), the number - density of monuments, the number of ranked monuments,

the field of use, the artistic value... This criterion has 4 levels, the standard of each level is the quantity and quality of the resource in its ability to satisfy tourists. Tourism is based on exploiting the strengths and characteristics of that type of tourism resource.

- Very attractive: There are 4-5 recognized unique humanities or unique monuments and other resources that can be developed on 3 types of tourism.

- Quite attractive: There are 3 recognized unique human factors or at least 2 unique monuments and other resources that can develop 2 types of tourism.

- Attractive (average level): Having 1 or 2 unique humanities or at least 1 unique monument and other resources to develop 1-2 types of tourism.

- Unattractive: The value of humanistic tourism resources is monotonous, not unique...

- + Time of exploitation: This criterion represents the seasonal nature of tourism activities and is usually determined by the appropriate time to deploy tourism activities to serve the needs of tourists. Levels: Very long (tourism takes place almost all year round); Quite long (with 200 - 300 days/year suitable); Medium (with 100-200 days/year suitable); Short (with less than 100 days/year suitable).

- + Connectivity and accessibility: This criterion refers to the ability to link, the distance between tourist destinations in which tourists can use common means of transportation to ensure the purpose of travelling of the trip. Levels: Very convenient (there are more than 5 tourist attractions around, the distance is less than 100km); Quite convenient (there are 3-5 tourist attractions around, the distance is 100-200km); Advantages (with 2-3 tourist attractions around, distance 200-400km); Less favorable (with 1 or no tourist attractions around).

- + Tourist capacity: It is a fundamental element of a tourism territory, a concept of primary importance in tourism management. "Tourism capacity is the level of visitor use that an area can provide, providing a high level of visitor satisfaction and leaving very little impact on the resource." The concept of "capacity" includes four aspects: physical, biological, psychological and social. It also includes the level of tourism management (*People's Committee of Phu Yen province, 2020*).

It can be understood that tourism capacity is the maximum number of people that a tourist destination can accept, does not cause degradation of the natural ecosystem, does not cause social conflicts between the indigenous community and visitors, and does not cause degradation of the natural environment. recession of the traditional local economy.

The tourist capacity for an evaluation area is the total capacity of each tourist destination. It depends on the characteristics of visitors' activities (often changing with the seasons) and is closely related to the local population. Assessment of tourist capacity cannot be based on the trend of as many visitors as possible, but rather in accordance with local conditions as possible. Tourist capacity reflects the potential and scale of receiving tourists with the most suitable conditions... Tourist capacity reflects the capacity and scale of tourism activities at each tourist destination and is determined by the criteria established through design survey, experiment and practical experience...

- Very large: Can accommodate 800 - 1000 people/day
- Quite large: Can accommodate 500 - 800 people/day
- Medium: Can accommodate 100 - 500 people/day
- Poor: Can accommodate less than 100 people/day.

Determine the weight for each criterion, score for each level: Each criterion corresponding to the resource has different levels, properties and values, so to ensure the accuracy and objectivity of the assessment results. It is necessary to determine the coefficients for the criteria (R), scores for each level (K). Specifically (shown in Table 1)

Table 1. General assessment of cultural tourism resources for tourism development

Criterion	Coefficient	Degree			
		K ₁	K ₂	K ₃	K ₄
1- Attractiveness of tourism resources (A)	R ₁	R ₁ .K ₁	R ₁ .K ₂	R ₁ .K ₃	R ₁ .K ₄
2- Travel time (B)	R ₂	R ₂ .K ₁	R ₂ .K ₂	R ₂ .K ₃	R ₂ .K ₄
3- The synchronous combination between tourism resources and infrastructure, facilities	R ₃	R ₃ .K ₁	R ₃ .K ₂	R ₃ .K ₃	R ₃ .K ₄
4- Tourist capacity (D)	R ₄	R ₄ .K ₁	R ₄ .K ₂	R ₄ .K ₃	R ₄ .K ₄

- Conduct assessment: Conduct an assessment to determine the rating and grade of the resource for tourism development. The evaluation score consists of the individual score of each criterion and the total score of the criteria. Thus, the highest individual rating is $3 \times 4 = 12$ and the lowest is $1 \times 1 = 1$; The highest composite score is 28, the lowest is 7. Based on the maximum score, the assessment levels can be determined:

- + Very favorable: Over 80% of the maximum score (about 22 points or more).
- + Quite favorable: Reaching from 60-79% of the maximum score (about 17-21 points).
- + Average: Achieved from 40 - 59% of the maximum score (about 11 - 16 points).
- + Unfavorable: Less than 40% of the maximum score (below 11 points).

3. Results

3.1. The reality of Christianity in Phu Yen province

Along with the general trend of the country, Christianity in Phu Yen province also began to develop very early around 1627, although not the center of the Dioceses of the Vietnamese Catholic Church, its development of Phu Yen province has made many progress and is well known through historical evidences, it is the birthplace of Blessed Anre - the first martyr of the Church in Vietnam. The a special place of worship is Mang Lang parish with Gothic architecture in the 19th century.

Located on the harsh central strip of land, the difficulties of life have become a bond of affection and love between religions in Phu Yen. Every citizen, regardless of ethnicity or religion, works hand in hand, stands side by side under the common roof of harmony, and overcomes difficulties together towards a prosperous and happy life. That success shows Phu Yen's efforts in implementing ethnic and religious policies, in which the core role belongs to the Religious Affairs Committee of Phu Yen province (*People's Committee of Phu Yen province, 2004*).

After the re-establishment of the province (1989), although there were still many difficulties, the provincial leaders always paid attention to ethnic and religious affairs. Since 1994, the province has established a specialized agency for religious affairs. That shows that religion is always a matter of great importance to leaders of Phu Yen province. Together with economic development mechanisms and policies, ethnic and religious policies are the driving force for Phu Yen's success in its efforts to build a just, democratic and civilized society.

As of 2021, the whole province of Phu Yen has about 17.500 Christians, accounting for nearly 7% of the province's population, with nearly 80 priests. Christians are widely distributed in 9 districts and cities of the province. Currently, there are 23 parishes distributed mostly in districts. The parishes of Phu Yen province belonging to Quy Nhon diocese are located on the part of many communes and have partial churches where parishioners live, 23 parishes of the province are: Da Loc parish (Dong Xuan); Mang Lang parish (Tuy An), Dong My parish (Dong Hoa); Dong Tre parish; Go Duoi parish (Song Cau) with Go Duoi church; Hoa Chau parish (Tay Hoa); Hoc Gao parish (Phu Hoa); Song Cau parish (Song Cau); Son Nguyen parish (Son Hoa and Phu Hoa); Tra Kê; Tinh Son parish (Song Hinh), Tuy Hoa parish (Tuy Hoa city)...

All districts and cities of the province have each parish and living facility for parishioners, and every year parishes always have links and cooperation in organizing festivals with typical autumnal characteristics attracting parishioners a lot of tourists near and far, organizing charity activities with high efficiency. The most typical is the Paul monastic establishment in ward 2, Tuy Hoa city, Tuy Hoa parish, which has organized a "pot of love porridge" at the pediatric department, worth 36 million VND since 2004 to the present. The parishes of Song Cau and Son Nguyen have participated in humanitarian charity work through socio-political organizations, the Red Cross, the district's Vietnam Fatherland Front, and authorities such as: Helping to remove temporary houses for 5 poor households in Son Nguyen commune and cases of accidents, illnesses, families with difficult circumstances, the elderly, lonely, poor students and some charity activities of parishioners in the matter of overcoming the consequences of natural disasters in recent years have always been highly appreciated by departmental leaders.

3.2. Assessing the potential for tourism development of Mang Lang church

Mang Lang Church - Tuy An is a cultural and artistic relic that is most clearly associated with valuable architectural works belonging to the group of cultural and historical relics. Mang Lang Church in particular and humanistic tourism resources in general have cognitive and spiritual values rather than entertainment.

In terms of attractiveness, Mang Lang church has many unique humanistic elements:

- Mang Lang church is one of the oldest architectural works of Vietnam: More than 130 years ago, An Thach area was very sparsely populated, covered with forest trees, including a type of forest tree that grew a lot, large, wide canopy, oval leaves, purple-pink flowers bloom, local people call it Mang Lang, because it is related to Mang Lang tree. The traces of that mangosteen forest are no longer present, but the church at that time was named after this precious tree. Currently, in the church, there is still a round wooden table made of mangosteen from the time it was built, with a diameter of up to 1.5m. Built in 1892 with Gothic design of the nineteenth century, it has impressed visitors as a church in France or Rome full of fine art. On either side are two bell towers, in the middle is a cross that, when entering, you can see two zippers of bells announcing the ceremony.

- Mang Lang Church - the place to keep the first book in the national language of our country: Printed in Rome in 1651, it is the catechism "Eight-day preaching" of Alexandre de Rhodes (local people call Father Dac Lo) - the person who gave birth to the national language script. Currently, the book is displayed very solemnly in a glass box and placed inside the church next to the traces of the first martyred teacher of the Catholic Church of Vietnam through the engravings on the wall.

Next to the church there is a traditional room, named Anre Phu Yen, which solemnly stores and exhibits all the documents related to the blessed (title for missionaries and martyrs) Anre Phu Yen. This is the first of 117 martyrs who have been canonized. In this church, a little hair of Blessed Anre Phu Yen is still preserved. The next unique thing is the very old hanging lamps that are still intact. The space of the church is completely quiet, the door of the church is always open, except for the religious area of the priests.

The landscape around Mang Lang church is very airy, beautiful and quiet. In the church campus, there are many small hills, along with large and wide trees, which are a suitable place to develop resort tourism activities. At the same time, the land of "Xu Dao - An Thach" located next to Ngan Son river is one of the famous lands in Phu Yen with a number of traditional craft villages that have created special dishes. It is the thing that have created a tourist attraction when visiting this land.

Evaluate additional values for tourism development in the following criteria:

- Time to deploy tourism activities in Phu Yen in particular and the South-Central Coast: It takes place quite a long time during the year. The sunny period from January to August is the season for tourists to come a lot. The rainy season starts from September to December, along with storms and tropical depressions that concentrate a lot in October and November and directly affect the coastal strip. Thus, according to the statistics of the number of rainy days and adverse weather phenomena affecting sea tourism, there are more than 200 days/year here where tourism activities can be well deployed.

- In terms of connectivity and organizational ability: Along the coastal strip of Phu Yen province is a place where a lot of tourist resources are concentrated and a number of

tourist spots and resorts have been formed. Highlights are: Bai Bang, Da Dia Reef, O Loan lagoon, Sao Viet eco-tourism area, Long Thuy beach, Tu Quang - Da Trang Pagoda, An Tho citadel... Therefore, the ability to link to create routes Tours in the province are quite convenient. In general, the three study sites above are not too far from Tuy Hoa and surrounding tourist spots, about 50km on average, visitors can use popular means of transportation on National Highway 1A with a interval of about 50km, no more than 2 hours.

In fact, the tourist attractions of Phu Yen province have only been initially and effectively exploited The yield is not high, and there are still some places that are being invested and embellished... In the whole province, there are 2 tourist areas with the largest number of tourists and the most effective ones, which are Thuan Thao and Sao Viet eco-tourism areas. Therefore, the connectivity and organizational capacity are at a favorable level.

- In terms of tourist capacity: Mang Lang Church has an area of 5000m², with a large campus. Thus, with such an area, the church is considered to have a relatively large capacity (from 500 to 800 people/day), tourism activities take place with high efficiency (as shown in Table 2).

Table 2. Results of assessing the potential for tourism development of Mang Lang church

No	Coefficient	Degree	Points	Coefficient	Ingredients Points	TTotal points
1	Attractiveness of tourism resources (A)	Attractive	3	3	9	21
2	Travel time (B)	Very long	4	1	4	
3	The synchronous combination between tourism resources and infrastructure, facilities	Convenient	2	1	2	
4	Tourist capacity (D)	Big	3	2	6	

Thus: With a total score of 21, the assessment of the tourism development potential of Mang Lang church is quite favorable.

4. Results

4.1. Some orientations and solutions to exploit the potential for tourism development of Mang Lang church in Phu Yen province

Currently, Phu Yen province (especially localities with a lot of tourism resources) does not have many tourism business units, tourism activities are still limited, mainly created by tourists such as: Camping, swimming, fishing, organizing art, poetry, painting camps... Some travel agencies organize tours to visit Da Dia Reef, O Loan lagoon and enjoy specialties such as oysters blood, king crab, crabs, oysters, scallops, visiting Mang Lang church, Quang Duc pottery village... initially attracting domestic tourists to participate.

The province's tourism economy in general still has some limitations: The products and services are not rich, the quality of some services is still low compared to neighboring provinces; Infrastructure and human resources for tourism activities are lacking and weak, which has a significant impact on local tourism business during the implementation of the strategy of the Master Plan for Business Development socio-economic conditions in the sea and coastal areas of Phu Yen up to 2025.

On the basis of research and assessment of tourism development potential in Phu Yen province in general and humanistic tourism development potential of Mang Lang church in particular; Analysis of the current situation of tourism development; Based on practical conditions in the development of local tourism activities and based on "Vietnam Tourism Development Strategy to 2000, a vision to 2030 and the project of developing sea and island tourism" coastal areas of Vietnam to 2020", from the perspective of sustainable development, the author proposes some orientations and solutions for local tourism development.

- Orientation to develop types of tourism based on exploiting the values of natural resources: On the basis of exploiting the strengths of the province's humanistic tourism resources, developing a number of unique tourism activities, attract tourists with unique, high-quality and competitive tourism products. At the same time, here also concentrate a lot of natural tourism resources, these resources have unique geological and geomorphological values such as: Xuan Dai Bay, Da Dia Reef, O Loan lagoon, Da Bia mountain... Therefore, the combined investment between tourist attractions is essential to effectively exploit the resources. Types of tourism can develop here: Sightseeing, relaxation, study - scientific research (*Khanh, U. D; An, L. D & Thanh, N. N, 2010*).

- Orientation for spatial development: Invest in building local attractions, routes and tours by linking tourism resources together. Specifically, such as building tourist routes connecting humanistic tourist resource points such as: Da Trang Pagoda - An Tho citadel - Mang Lang Church, routes associated with natural tourist attractions related to potential exploitation at Mang Lang church such as: Xuan Dai bay - Da Dia reef - Da Bia mountain. Along this route, visitors can visit Mang Lang church, Da Trang pagoda, An Tho citadel relic, Sao Viet ecotourism area, Tuy Hoa beach... Some of the prominent tourist tours along this route are sightseeing, relaxation, entertainment, study - scientific research...

In addition, it is necessary to promote investment in the construction of inter-provincial tourist routes, in order to exploit tourism strengths in a continuous manner, highlighting the characteristics of each province's natural resources, and limiting the overlap repeat and avoid boredom for visitors, reduce tourism promotion costs but still achieve high efficiency. Tourist routes along Binh Dinh - Phu Yen - Khanh Hoa with the focus on tourist attractions with profound human values: Quang Trung Museum - Ghenh Rang tourist area - White Stone Pagoda - Mang Lang Church; combined with some natural tourism resources such as Quy Nhon Bay, Xuan Dai Bay, Da Dia Reef, Da Bi Mountain, Dai Lanh Cape, Nha Trang Bay, Hon Chong, Hon Mun... Typical development of tourism travel is: Sightseeing, convalescence, sports - adventure, convalescence and scientific research activities on the ecology of bays, lagoons and coastal islands (*Pham, 2003*).

- Other solutions: Invest in building infrastructure, especially traffic, restaurants, accommodation facilities for tourism in the locality. Focus on training human resources on the spot, open classes to improve professional qualifications, foreign languages for the guides... “Market development, promotion, and branding of tourism, protection , embellishing environmental resources towards sustainable tourism, investing and mobilizing capital for tourism, regional linkage...” (*thanhvien.com.vn/pages/20120916/nha-tho-co-mang-lang.aspx*).

4.2. Conclusion

Tourism has become an economic activity attracting a large number of tourists in recent years. Phu Yen is a locality with rich tourism resources in general and cultural tourism resources in particular. Initially, Phu Yen province has exploited these resources for tourism development and still has some limitations. In the coming time, based on national and local tourism development policies, programs and projects, provincial agencies and departments need to have appropriate policies and measures for tourism development on the basis investing in exploiting tourism resources of the province and linking with neighboring provinces. Especially cultural tourism resources, including tourist attractions with architecture and spirituality is the ancient church of Mang Lang with more than 130 years old...belonging to the central coastal strip; contribute to creating position and strength for the local socio-economic development in the integration period of the Industrial Revolution 4.0 globally.

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CONTRIBUTIONS OF SCIENCE AND TECHNOLOGY TO LABOR PRODUCTIVITY GROWTH IN THE MECHANICAL ENGINEERING SECTOR

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Abstract

This study measures the contributions of science and technology to labor productivity growth by size and type of ownership of enterprises in the mechanical engineering sector, which provides machinery and equipment, components and accessories to other sectors. In the past few years, machinery, equipment, and components have been Vietnam's third major export products group. Measurement results by estimating the production function of stochastic frontier on a sample of 78.590 mechanical engineering enterprises in the 2011-2020 period indicate relatively slow technological progress or technological change (0.119% on average), only accounting for 4.35% of the sector's labor productivity growth. In which, the group of micro-sized enterprises boast the highest technological change, hitting 0.121%, but have the lowest contribution of science and technology to labor productivity growth (2.4%). The group of medium-sized enterprises is featured with a technological change of 0.113%, only higher than the group of large-sized enterprises (0.110%) but have the highest contribution of science and technology to the growth of labor productivity (4.4%). The group of small-sized enterprises have the second highest level of technological change and contribution of technological innovation to labor productivity growth (0.119 and 4.2%, respectively). By type of ownership, foreign-invested enterprises (FIEs) have the lowest level of technological change (0.111%), but embrace the highest contribution of science and technology to labor productivity growth (9.9%); in which the respective ratios are 0.126 and 3.1% for state-owned enterprises (SOEs), and 0.121 and 3.8% for non-state enterprises or domestic private enterprises (DPEs). This result suggests that there must be adequate and appropriate policies for enterprises according to different sizes and types of ownership for them to enhance the level of technological innovation, access to modern technology, and master high technology in order to rapidly promote technological progress. This will help enhance the contribution of science and technology to labor productivity growth so as to improve labor productivity of the whole industry.

Keywords: *Science and technology, labor productivity, mechanical engineering*

1. Introduction

Mechanical engineering is an important sector, providing machinery, equipment, components, and accessories for other productive sectors. In general, the mechanical engineering sector has gradually controlled and improved localization, creating the dynamics

that drive other economic sectors forward, directly and indirectly generating jobs for million of workers (Do, 2022). By the end of 2022, there have been around 30.000 mechanical manufacturing enterprises nationwide, making up 30% of the total number of enterprises in the manufacturing sector with a total revenue of VND1.7 million, creating jobs for 1.2 million workers (Vietnam Industry Agency, 2022).

According to the General Department of Customs of Vietnam, the exports of the mechanical engineering industry has been increasing rapidly, yet the imports still prevail. Machinery, equipment, components, and accessories is Vietnam's the third major export products group. As depicted in Figure 1, the export value of these products was US\$27.19 billion in 2020 - a nine-fold increase since 2010, with an average annual growth of 24.4%. By 2022, the export value has reached US\$45.8 billion, a nearly fifteen-fold growth since 2010, exceeding the import figures. However, the larger export market share of machinery and equipment still belongs to the foreign direct investment (FDI) sector. In particular, the export value of machinery and equipment in the FDI sector estimates to stand at US\$42.58 billion, a 19.74% increase over the same period in 2021, accounting for nearly 93% of total export value (higher than 92.75% in 2021). Before export, mechanical manufacturing enterprises are to invest in production lines and create prototypes for sales. However, such products are beyond the capability of many domestic enterprises due to limited scale and resources.

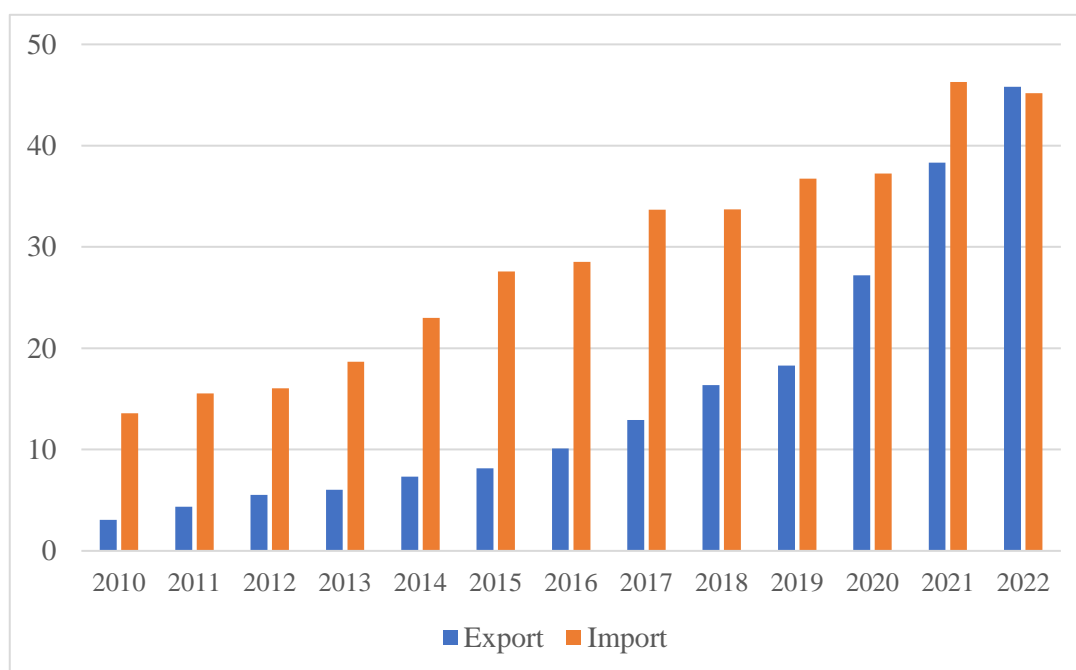


Figure 1. The export-import revenue of the mechanical engineering industry (US\$ billion)

Source: General Department of Customs of Vietnam

According to the General Department of Customs of Vietnam, from 2010-2021, Vietnam has had a trade deficit in machinery and equipment. However, the trade deficit has decreased since 2020 due to a modest annual increase of 10.6% in the 2011-2020 import value.

In 2022, such import value decreased by US\$1.1 billion, leading to an export-import revenue surplus of US\$607 million. The slower import growth during the period 2010-2021 and decline of import value in 2022 implies an increase in production capacity of mechanical engineering enterprises and less dependency on imported machinery as a result of continuous investment.

The mechanical engineering industry has gradually controlled and improved localization: some mechanical products are of equal quality compared to those in other countries in the region. Mechanical accessories manufacturing enterprises have been in good production capacity, such as enterprises in manufacturing of molds, mechanical and plastic components, cables, technical rubber. Domestically manufactured metal components currently meet 85-95% total manufacturing demand of motorbikes; about 15-40% of automobiles; about 20% of synchronization devices; about 40-60% of agricultural machines and movers; 40% of construction machines; and 10% of metal components for high-tech industries (Vietnam Industry Agency, 2022). Considering the relatively high demand in the supporting industries market, some enterprises have invested in advancing their production capabilities, prioritizing high-quality products, supplying to FDI enterprises, and heading towards the international market.

Nevertheless, the number of made-in-Vietnam products is limited, and the self-management competency of the mechanical engineering industry is insufficient. Enterprises have been facing limited manufacturing material supply and tough competition from imported products. There are additional difficulties in market expansion due to a lack of market information, poor brand recognition among potential customers, and limited competitiveness. Without an internationally standardized quality management system, many mechanical enterprises in the domestic market are not eligible for investment projects to install equipment in such industries as steel, chemicals, and energy (An, 2022).

The technological capacity and proficiency of the mechanical engineering sector are below the world standards. Many enterprises do not pay much attention and have few opportunities to accumulate and invest in innovative technologies and equipment. Most inputs (such as steel, iron, and colored alloys) are imported. The quality and quantity of human resources are under standards. Few mechanical, science, and technology workers are sufficiently skilled. Skilled workers lack internationally recognized vocational and foreign language certifications. Research and development forces, including design consultants, are not eligible to meet the requirements set in synchronization device projects (Ngoc, 2022).

Measuring the contributions of science and technology to labor productivity growth in the mechanical engineering sector in Viet Nam are necessary for better productivity and competitiveness. Therefore, this study aims to measure the contributions of science and technology or technological progress to labor productivity growth of the mechanical engineering sector in Vietnam by the size and type of ownership of enterprises. Findings from this study would be a scientific base for recommending adequate policies for improving labor productivity in the mechanical engineering sector in Vietnam by the size and ownership of enterprise.

2. Method

2.1. Methods to determine scientific and technological contributions to labor productivity growth

Science and technology in this context refer to technological change or technological progress. According to Godin (2015), technological change is a broad concept with different definitions. In a narrow sense, it is a change in production methods or techniques, while in a broad sense, it is the social, cultural, and economic change induced by technology. In a narrow sense, technological change is quantified by an output measure of productivity that uses a production function to connect inputs and outputs. Following this perspective, this study measures technological progress by estimating the production function.

Godin (2015) reviews studies and produces three meanings of technological change: creation of new technology (to assess the impact of technology on social and cultural change), new production techniques (used to study the role of technology in economic growth--productivity), change in production function (used in measurement). In all definitions, technological change or technological progress are synonymous and often used interchangeably.

Progressive technologies bring about gradual economic changes (Coelli et al., 2005). In this sense, the technological progress factor is often represented by the t variable (time) in the production function; in other words, the time variable represents the nature of technological changes. If the production function is $Y = f(L, K, t)A$, the technological change will be $\frac{\partial Y}{\partial t}$. Different production functions (Cobb-Douglas function, transcendental logarithmic function--translog) indicate different levels of technological changes. Thereby:

* *Cobb-Douglas function*

$$\ln Y = \alpha t + \beta_L \ln L + \beta_K \ln K$$

The level of technological progress would be:

$$\frac{\partial \ln Y}{\partial t} = \alpha$$

* *Translog function*

$$\begin{aligned} \ln Y = & \beta_0 + \beta_L \ln L + \beta_K \ln K + \beta_t t + \frac{1}{2} * \beta_{LL} (\ln L)^2 + \frac{1}{2} * \beta_{KK} (\ln K)^2 + \beta_{tt} t^2 \\ & + \beta_{LK} \ln L \ln K + \beta_{tL} t (\ln L) + \beta_{tK} t (\ln K) \end{aligned}$$

The level of technological progress would be:

$$\frac{\partial \ln Y}{\partial t} = \beta_t + 2\beta_{tt} t + \beta_{tL} \ln L_{it} + \beta_{tK} \ln K_{it}$$

Labor productivity of an enterprise i in year t is calculated by value added (at constant prices) divided by the average number of workers in the enterprise. The labor productivity growth rate equals the two-year labor productivity gap divided by the previous year's labor productivity.

$$LP_{it} = \frac{VA_{it}}{L_{it}}$$

$$LP_{gr_{it}} = \frac{LP_{it} - LP_{it-1}}{LP_{it-1}}$$

The contribution of technological progress to labor productivity growth in each enterprise (i) is calculated as the indicator of technological progress (TP) divided by the rate of labor productivity growth (LP_{gr}).

$$TP_{LP_{gr_i}} = \frac{TP_{it}}{LP_{gr_{it}}}$$

Following the production function measuring the impact of technological progress on productivity growth, this study was conducted according to the following procedure:

Step 1: Identify production function form. The two most common production functions, Cobb-Douglas and Translog, are based on different assumptions. In particular, the Cobb-Douglas function assumes the effectiveness to be the same regardless of size. In other words, when the input increases a time(s), the output increases a time(s) accordingly. This assumption is strong and applicable only when the enterprise or economy is in full swing. The Translog function gives no such assumption and any other assumption related to the elasticity of input substitution; therefore, it allows for a more flexible input substitution regarding the input substitution effect. The latter function supposedly better reflects how enterprises operate in practice (Le, 2010).

The Cobb-Douglas production function, in which output is the value added (VA) and two inputs: labor (L) and capital (K), is logarithmically represented as follows.

$$\ln Y_{it} = \beta_0 + \beta_L \ln L_{it} + \beta_K \ln K_{it} + \beta_t t + v_{it} - u_{it}$$

v_{it} refers to random error while $v_{it} \sim N(0, \sigma_v^2)$ and $u_{it} \sim N(\mu_i, \sigma_u^2)$ refers to technical inefficiency.

Similarly, the translog production function is represented in logarithm as follows.

$$\ln Y_{it} = \beta_0 + \beta_L \ln L_{it} + \beta_K \ln K_{it} + \beta_t t + \beta_{LL} (\ln L_{it})^2 + \beta_{KK} (\ln K_{it})^2 + \beta_{tt} (t)^2 + \beta_{LK} \ln L_{it} \ln K_{it} + \beta_{tL} t \ln L_{it} + \beta_{tK} t \ln K_{it} + v_{it} - u_{it}$$

To determine whether the function is Cobb-Douglas or Translog, a likelihood ratio test (LR) must succeed, assuming that:

H_0^1 : Cobb-Douglas production function

$$\beta_{LL} = \beta_{KK} = \beta_{tt} = \beta_{LK} = \beta_{tL} = \beta_{tK} = 0$$

H_1^1 :: Translog production function

$$LR = -2\{\ln[L(H_0)] - \ln[L(H_1)]\}$$

In which: $L(H_0)$ is the likelihood value with the H_0 assumption; $L(H_1)$ is the likelihood value with the H_1 assumption. LR is Chi-squared distributed, in which the degree of freedom equals the difference between the numbers of parameters in H_0^1 and H_1^1 or $LR \sim \chi^2(6)$ in assumptions. If LR is smaller than the statistically critical value of 5%, then H_0^1 is accepted, and vice versa. The appropriate critical value is obtained from Kodde & Palm (1986).

Step 2: No technical inefficiency test. A zero technical inefficiency has a null hypothesis of $H_0: \gamma = \mu = \eta = 0$. The likelihood ratio is $LR \sim \chi^2(3)$.

Step 3: The distribution form of random residual. A test must occur when the production function estimation with the production function of stochastic frontier is the distribution form of u_{it} . The distribution of technical inefficiency follows the two most common types, half-normal or truncated-normal. The null hypothesis is that technical inefficiency distributes half-normal ($H_0: \mu = 0$), while the alternative hypothesis distributes truncated normal. The distribution of the likelihood ratio is by the square of a degree of freedom $LR \sim \chi^2(1)$.

Step 4: Time-invariant inefficiency test. The null hypothesis is

$H_0: \eta = 0$. The likelihood ratio is $LR \sim \chi^2(1)$

Step 5: No technological progress test.

- If the test result in Step 1 indicates that the production function is Cobb-Douglas, the null hypothesis without technological progress is $H_0: \beta_t = 0$. The likelihood ratio is distributed accordingly by the square of a degree of freedom, $LR \sim \chi^2(1)$.

- If the production function is Translog, the null hypothesis is $H_0: \beta_t = \beta_{tt} = \beta_{tL} = \beta_{tK} = 0$. The distribution of the likelihood ratio is by the square of four degrees of freedom, $LR \sim \chi^2(4)$.

Step 6: Hicks-neutral technological progress test. The null hypothesis is $H_0: \beta_{tL} = \beta_{tK} = 0$ with $LR \sim \chi^2(2)$. If the null hypothesis is accepted, the technological progress will be neutral and vary from year to year, and all enterprises will have the same yearly technological progress.

2.2. Data

This study uses the unbalanced panel data collected from the enterprise surveys in the period 2011-2020 by the General Statistics Office. The data looks at 78.590 enterprises over the ten-year period. From 2011-2010, the nonstate enterprises or domestic private enterprises (DPEs) account for an average of 86% of total enterprises in the data. These enterprises, however, have the smallest labor size, capital, and performance results on average (value added). Foreign-invested enterprises (FIEs) make up 13% of the data. This small proportion accounts for the majority of the import-export revenue of machinery and equipment. On average, a FIE has around 126 workers (5 times as many as that in a DPE), VND31,9 billion capital (10 times as much as that by a DPE) and generates VND20 billion value added (8

times as much as that by a DPE). Making up only 1% of the data, state-owned enterprises (SOEs) have the highest business size and performance results, with labor size, capital, and added value 10.8, 9.7, and 19.8 times as much as those of DPEs, respectively. Micro-sized and small enterprises account for 96% of the data, within which small enterprises constitute around 50%. Labor size, capital, and the average value added of mechanical engineering enterprises are 40 workers, VND7.3 billion, and VND5 million, respectively.

Table 1. Statistics showing data in the mechanical engineering industry, 2011-2020

		Obs.	Mean	S.D.	Min	Max
Total	Value added (billion VND)	78,590	5.0	13.4	0.009	138.0
	Labor (per person)		40.1	95.8	1	3668
	Capital (billion VND)		7.3	35.3	0.0001	3828.6
Micro-sized enterprises	Value added (billion VND)	36,501	0.5	0.9	0.009	50.4
	Labor (per person)		5.8	2.5	1	10
	Capital (billion VND)		0.7	2.9	0.0001	131.0
Small-sized enterprises	Value added (billion VND)	38,831	5.5	10.3	0.014	119.7
	Labor (per person)		42.4	40.0	11	200
	Capital (billion VND)		7.7	22.5	0.0002	1020.4
Medium-sized enterprises	Value added (billion VND)	1,471	36.4	24.2	0.295	126.0
	Labor (per person)		245.2	29.1	201	300
	Capital (billion VND)		48.1	64.5	0.001	951.1
Large-sized enterprises	Value added (billion VND)	1,787	59.0	30.3	0.372	138.0
	Labor (per person)		521.8	277.8	301	3668
	Capital (billion VND)		97.6	172.5	0.018	3828.6
SOEs	Value added (billion VND)	655	26.7	28.7	0.039	135.4
	Labor (per person)		244.9	287.2	1	3613
	Capital (billion VND)		60.4	172.8	0.001	2080.1
DPEs	Value added (billion VND)	67,759	2.5	7.8	0.009	137.1
	Labor (per person)		25.2	56.5	1	1561
	Capital (billion VND)		3.1	14.2	0.0001	1020.4
FIEs	Value added (billion VND)	10,176	20.0	25.0	0.015	138.0
	Labor (per person)		125.5	181.2	1	3668
	Capital (billion VND)		31.9	73.9	0.0004	3828.6

Source: Author's calculations; Note: Value added and capital are at the 2010 constant price.

3. Results

3.1. Contributions of science and technology to labor productivity growth of the mechanical engineering industry

Figure 2 shows that the average labor productivity of the mechanical engineering industry increased from 2011-2018. This period consists of two stages. Labor productivity underwent a slow increase in 2011-2014, then speeded up in 2015. However, there was no sharp increase from 2015 to 2018. The average labor productivity in 2018 was VND148.7 million per employee, a 48% increase compared to 2011. However, this figure decreased by 29.4% to VND105.0 million per employee in 2019. In 2020, it rose by 22.4% compared to 2019, reaching VND128.5 million per employee though not as much as in 2015. The author's calculations from a business survey data conducted by the General Statistics Office in 2021 shows that the labor productivity of the mechanical engineering industry remained lower than that of the energy industry (VND479 million per worker), the chemical industry (VND185.4 million per worker), steel (VND144.2 million per laborer), and plastics (VND132.8 million per worker). Meanwhile, it is higher than the industries of leather and footwear (VND59.8 million per worker), textile and garment (VND70.4 million per worker), and electronics (VND116.9 million per worker). Thus, the labor productivity of the mechanical engineering industry in eight key industries remains at a medium level, while this industry plays an important role in the economy, as it provides machinery and equipment, components, and spare accessories for many other manufacturing industries. It has a great impact on productivity and competitiveness of other sectors in the economy.

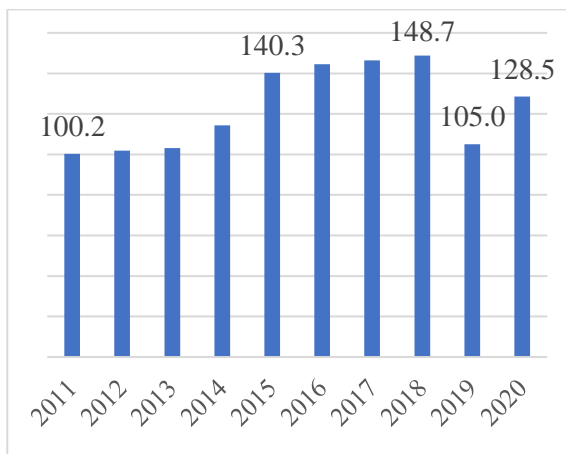


Figure 2. Average labor productivity of the mechanical engineering industry (constant price in 2010, million VND per employee)

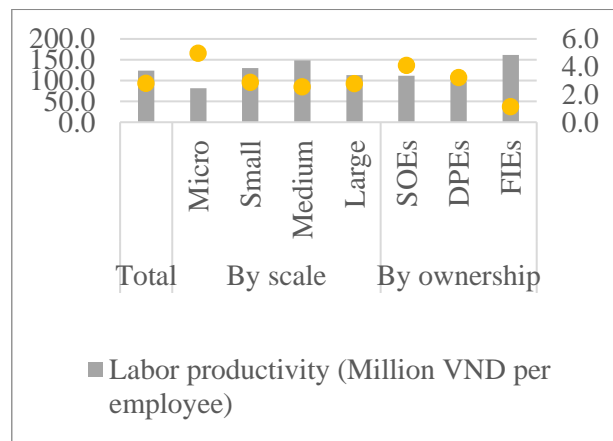


Figure 3. Average labor productivity of the mechanical engineering industry in terms of size and ownership (constant price in 2010, million VND per employee)

Source: Author's calculations.

Figure 3 shows that, from 2011-2020, the average labor productivity of the mechanical engineering industry (at the constant 2010 price) was VND123.9 million per employee, an annual increase of 2.8%. Labor productivity tends to increase according to business size, which varies inversely with the rate of labor productivity. Medium-sized

enterprises have the highest labor productivity (VND148.3 million per employee - 1.8 times as much as very small enterprises), although the annual increase is only 2.5%. Very small enterprises have the lowest labor productivity yet the highest growth rate (5.0% per year). Small enterprises come second in labor productivity and growth rate. FIEs are more labor-productive than SOEs, with an average labor productivity of VND161.3 million per employee; however, these enterprises have the lowest growth rate (only 1.1 %/year). SOEs have the highest labor productivity growth rate (4.1 %/year), higher than DPEs (3.2%).

Estimations of production function using the production function of stochastic frontier and data tests of mechanical engineering enterprises during the 2011-2020 period (as shown in Table 2) indicate that the production function is translog; technical inefficiency is half-normal and time-varying; there is technological progress and technological progress is non-neutral. It means that technological progress varies by individual enterprise.

Table 2. Test results for the parameters of the stochastic frontier production function for the mechanical engineering industry

Assumptions	Date estimated	Value estimated (5%)	Conclusion
Production function form	475.04	12.59	Translog function
No technical inefficiency	815.14	7.045	Technical inefficiency
Distribution of technical inefficiency	553.81	3.84	Half normal distribution
Time-varying technical inefficiency	725.71	3.84	Time varying inefficiency
No technical progress	354.89	9.49	Technical progress
Neutral technical progress	8.28	5.99	Non-neutral technical progress

Source: Author's calculations

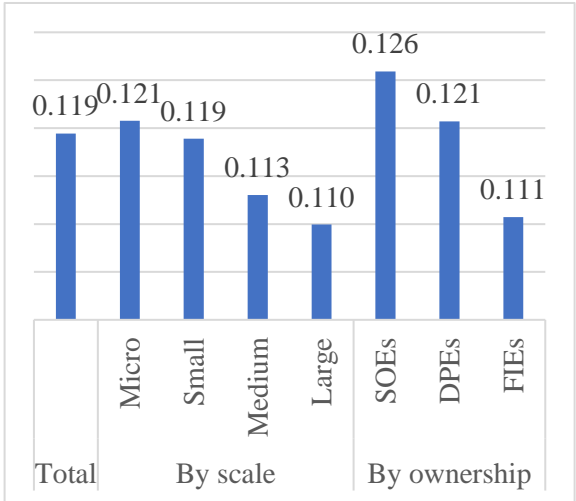


Figure 4. Average technological progress in the mechanical engineering sector by size and type of ownership in 2011-2020 (%)

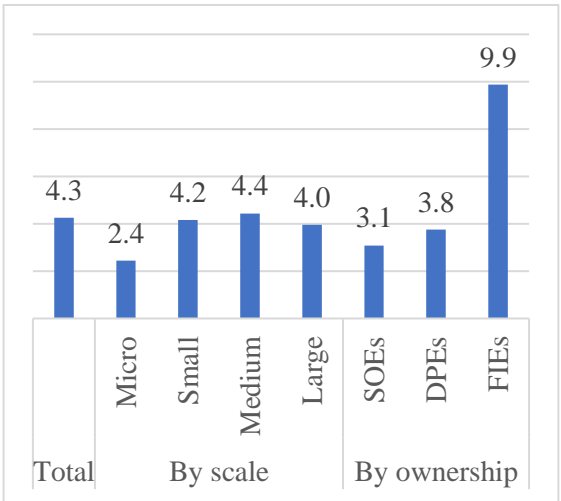


Figure 5. Contributions of technological progress to labor productivity growth in the mechanical engineering sector in 2011-2020 (%)

Source: Author's calculations

Overall, mechanical engineering enterprises and groups categorized according to size and ownership did achieve technological progress; however, the rate is low. From 2011-2020, mechanical engineering enterprises made a slight technological improvement of 0.119% on average (Figure 4). It indicates that mechanical engineering enterprises have not paid much attention on creating new technologies, or/and on changing production functions, or technical or method adjustments to optimize existing equipment and machinery.

Technological progress tends to slow down inversely with business size, with very small enterprises making the most impressive progress. Perhaps, larger firms have more resources and tend to increase output by investing in new machinery or new technology instead of making optimal use of existing machinery and equipment. Meanwhile, smaller firms with scarced resources must do some changes or adjustments with given machinery and equipment and then achieve higher technological change rate. However, differences in the rate of technological progress among groups of various sizes are minor.

Comparisons among different ownership groups show similar developments in the rate of technological progress and labor productivity growth. FDI enterprises having the lowest labor productivity growth also make the slowest technological progress (0.111%). On the contrary, leading SOEs in labor productivity growth also make the most technological progress.

Given relatively slow technological progress, the contribution of science and technology to the mechanical engineering industry's labor productivity growth from 2011-2020 stands at only 4.3%. This result suggests that there is a big room for mechanical engineering firms to improve technological change in order to enhance labor productivity.

These contributions in domestic enterprises are less significant than those in their FDI counterparts. However, this figure in FIEs is approximately 10% compared to only 3.1% in SOEs and 3.8% in DPEs. This aspect is worthy of attention as slow technological progress that can reduce domestic enterprises' competitiveness and participation in the supply chain of FDI enterprises in Vietnam before becoming part of global value chains.

The contribution of science and technology to labor productivity growth tends to be more significant in larger enterprises; however, differences among groups are minor, and the contribution is moderate. Technological progress makes up 4.0-4.4% of labor productivity growth in small and larger enterprises, compared to 2.4% in micro firms.

4. Discussion and Conclusion

From 2010 onwards, the mechanical engineering industry has developed in size, production and business results, securing its major role as the input provider of many other economic sectors. However, enterprises in the industry made small technological progress (0.119%) in the 2011-2020 period, contributing 4.3% to the industry's labor productivity growth. This modest figure indicates the need for enterprises in this industry to gain improved access to and accelerate progress in modern technology, which can ultimately lead to more rapid technological advancements.

The State needs to provide adequate consultancy and financial support for businesses, especially micro-sized ones, to improve technological progress, especially prepare and

adjust business plans as well as production methods in an efficient manner and apply new production techniques to improve labor productivity. Meanwhile, enterprises need to proactively equip machinery and equipment, and advanced technology. It is also necessary for them to pay attention to applying new production techniques, and rearrange performance to improve their technical progress, productivity, and competitiveness. Also, large-sized enterprises with sound financial health should invest not only in new machinery, equipment, and advanced technology but also in applying new appropriate solutions to optimise the use of existing machinery and equipment.

Smaller-sized enterprises, especially micro-sized enterprises, need to conduct appropriate changes and adjustments such as business methods, and rearrangement of appropriate business divisions to improve technological progress so as to ameliorate the contribution of science and technology to increasing their labor productivity and competitiveness.

By type of ownership of enterprises, SOEs have the highest level of technological change, but they embrace the lowest contribution of science and technology to labor productivity growth. This means that the effectiveness in using inputs remains humble - especially ineffective machinery and equipment can lead to the fact that contribution of technical progress to labor productivity growth is lower than that of DPEs and FIEs. Thus, it is recommended that the government should accelerate the process of equitisation of SOEs, especially ineffective ones, in order to ameliorate the contribution of technological progress in increasing productivity and promoting the competitiveness of enterprises.

It is advisable that the Ministry of Industry and Trade, as the governing ministry, execute the following: *(i)* developing and activating the pathways for technological innovations in mechanical engineering enterprises following real-world conditions, needs, and trends in the 4th industrial revolution; *(ii)* promoting cooperations among administrators, scientists, and enterprises in technological research, application, and transfer; supporting enterprises and scientific bodies in advancing studies while investing in science and technology potentials for research, adoption, and transfer, heading towards taking control of designing and manufacturing production lines to provide equipment for all economic sectors; *(iii)* Reviewing and finalizing national technical regulations and standards for mechanical engineering products to match international standards; *(iv)* Encouraging continuous developments of the downstream sector to provide favorable conditions for supporting industries.

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SUSTAINABLE DIRECTIONS FOR COMPANIES PROVIDING ADVENTURE TOURISM IN PHONG NHA - KE BANG NATIONAL PARK, QUANG BINH PROVINCE

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Abstract

Despite the harsh climate, Quang Binh has got the advantage of topography, unique geological tectonics and wild magnificent scenery. Including a diverse system of caves, beautiful rivers, and green primeval forests, Quang Binh has been a fascinating destination attracting many domestic and foreign tourists. These characteristics of Quang Binh are extremely favorable for the development of adventure tourism combined with experiential discovery - one of the types that attract a large number of tourists today. However, types of tourism have not been diversified. The promotional activities are limited, and ineffectively linked with localities and businesses. The article gives views and comments on sustainable tourism development, analyzes the advantages and disadvantages of Quang Binh in developing adventure tourism. It both gives appropriate directions to develop this type of tourism in a sustainable way with the desires of tourists.

Keywords: *Quang Binh Province, Adventure Tourism, Phong Nha - Ke Bang, Sustainable*

1. Introduction

In Vietnam, tourism not only brings economic benefits, protects the natural environment but also plays a role in promoting and preserving the traditional cultural values of the nation. However, it is the massive development of the tourism industry that has led to the copying of other types of tourism and tourism products such as ecotourism, shopping tourism, and medical tourism... In this context, Vietnam in general, and localities, in particular, need a completely new type of tourism to attract tourists and develop sustainable tourism. Quang Binh is a province that possesses advantages with diverse terrain, geological tectonics and a various system of caves, primeval forests, rolling mountains as well. Therefore, besides sightseeing tourism, adventure tourism is also increasingly being exploited and developed by businesses. Conquering one's limits is always attractive to everyone. That is why adventure tourism is more and more popular. Realizing the unique and mysterious geological advantages of the caves in Phong Nha - Ke Bang National Park, travel companies in this area have exploited various types of adventure tourism, turning this place into a tourist destination. It is an attractive destination for adventurous travelers who love to explore.

2. Method

2.1. Data collection

- Collecting information from published research works, reports, summaries, seminars to get data on travel companies, companies providing adventure tourism services in Phong Nha - Ke Bang National Park, Quang Binh Province.

- Collecting data on natural and socio-economic conditions of Quang Binh province at departments related to tourism such as Department of Statistics, Department of Natural Resources and Environment, Department of Information and Communication.

- Collecting information from reports, research on sustainable tourism, adventure tourism.

2.2. The method of analysis

From the advantages and disadvantages of economy, society, nature... in the development of adventure tourism in Quang Binh province, show the appropriate directions and solutions for sustainable development of this type of tourism.

3. Results

3.1. Perspective on Sustainable tourism and Adventure tourism

3.1.1. Sustainable tourism

There is no official concept of sustainable tourism but there are many different perspectives on this issue.

“Sustainable tourism development is the process of developing tourism products that satisfy the current needs of tourists, the tourism industry and local communities without compromising nature, future generations”.

According to the World Tourism Organization - WTO, this development is concerned with long-term economic and social benefits. Moreover, this ensures the contribution to the conservation and protection of resources, maintains the cultural integrity for the development of future activities; In addition, this helps to contribute to the living standards of local communities.

Clause 14, Article 3 of the Law on Tourism 2017 defines: “Sustainable tourism development is the development of tourism that simultaneously meets socio-economic and environmental requirements, ensures harmony between the interests of the subjects participating in tourism activities, does not harm ability to meet future tourism demand”.

3.1.2. Adventure tourism

According to the Adventure Travel Trade Association, “Adventure tourism is a tourist activity that includes physical activity, a cultural exchange, or activities in nature”. Adventure tourism is about connecting with a new culture or a new landscape and being physically active at the same time. It is not about being risky or pushing our boundaries. In fact, it is especially important to know and respect our limits while we are in an unfamiliar area.

This type of adventure tourism can be done domestically, abroad and overnight as well. “Adventure tourism is a journey of discovery, requiring participants to have certain skills to overcome known risks and challenges”.

This type of tourism also emphasizes the natural and cultural environment. Accordingly, participants will have physical activities to visit a new land or culture without having to take risks or push themselves beyond their limits. Adventure tourism is a type of travel through dangerous areas with intelligence, physical strength such as mountain climbing, canyoning, caving... “Adventure tourism is a form of tourism with many elements to explore, and experience different emotions from traveling to dangerous terrains, so the danger is also increased. And together with adventure tourism, there are adventure sports that are adapted and suitable for each type of tourism separately”.

3.2. The advantages and disadvantages of Quang Binh in developing adventure tourism

3.2.1. The advantages

Adventure tourism has been a current trend that becomes more and more popular in the world. This has attracted many tourists to explore. With the advantage of many hills, caves, rivers and streams, Quang Binh province in general and Phong Nha - Ke Bang in particular has great potential for developing adventure tourism.

** Mysterious caves, springs system*

In Phong Nha - Ke Bang, there is a system of about 300 large and small caves. Phong Nha cave system has been evaluated by the British Royal Cave Research Association (BCRA) as the world's top valuable cave with the 4 most points: having the longest underground rivers, having the highest and widest cave mouth, the widest and most beautiful sandbanks, the most beautiful stalactites.

Each cave in Phong Nha - Ke Bang National Park is a different wonder with unique and mysterious geological formations that make the adventure travel journey more interesting and attractive.

No	Cave	Length, height
1.	Son Doong Cave	5 km long and 200 m high
2.	Tra Ang Cave	667 m long and 15 m high
3.	Thung Cave	3351 m long
4.	En Cave	1645 m long and 78.6 m high
5.	Khe Tien Cave	520 m long
6.	Vom Cave	15.05 km long and 145 m high
7.	Dai Cao Cave	1645 m long and 28 m high
8.	Duot Cave	3,927 m long and 45 m high
9.	Ca Cave	1,500 m long, 62 m high
10.	Tiger Cave	1,616 m long and 46 m high
11.	Over Cave	3,244 m long and 103 m high
12.	Pygmy Cave	845 m long

In particular, Son Doong cave is considered the largest natural cave in the world. This cave is located in the Phong Nha-Ke Bang cave complex. Son Doong cave is a part of an underground system that connects more than 150 other caves in Vietnam near the border with Laos. The New York Times ranked Son Doong cave at number 8 out of 52 places on the list of places to visit in 2014. This is a unique adventure tourist destination of the Phong Nha - Ke Bang.

The development of adventure tourism can focus on 3 product groups: Group of adventure tourism products in the air (travel by helicopter, paragliding, skydiving...); Group of adventure tourism products on land (picnic tourism, climbing, climbing cliffs, exploring by car, motorbike, mountain bike, exploring national parks, caves...); Group of underwater adventure tourism products (boating, rafting, exploring waterfalls, experiencing hot mineral springs ...) Phong Nha's natural features are suitable for implementing these activities of adventure tourism.

** Dynamic travel agencies*

In Quang Binh province, there are 15 destinations for adventure tourism organized by companies providing different types of adventure tourism in Phong Nha - Ke Bang. The highlights are Oxalis Adventure Tours, Jungle Boss, Greenland Travel and Phong Nha Heritage. With their own services and destinations, companies offer tourists different experiences depending on the needs and adventurous nature of the destinations that tourists want.

Greenland Travel and Phong Nha Heritage provide easy-to-use tours suitable for all ages and genders such as camping, fishing, eco-tourism, bird watching... with typical destinations such as Mooc Spring, Phong Nha Botanical Garden, Ozzo Park... Particularly, two companies - Oxalis Adventure Tours and Jungle Boss specialize in organizing adventure tours such as Forest trekking and exclusive tours exploring caves in Phong Nha - Ke Bang National Park area; surrounding areas with difficulty levels and challenges. Two companies are licensed to operate tourism at the caves: Son Doong, En, Va, Tien, Nuoc Nut caves, and the cave system of Tu Lan. In particular, Jungle Boss company is exclusively licensed to explore the Tiger Cave system with 3 large caves: Tiger, Pygmy, Over with the point connecting these 3 caves is Kong sinkhole - the highest sinkhole in the world found so far.

With challenges tailored to each type of traveler, the companies listed above won the 2019 Certificate of Excellence from TripAdvisor, based on the best reviews from customers after experiencing adventure tourism products. These companies are aware that providing adventure tourism products requires a team of experienced consultants, senior technical guides, cave experts, porters team that ensure the safety for visitors. Therefore, all tours are carefully designed. The tour guides are also well-trained by experienced experts of the Royal Cave Research Association. The tours are organized exclusively and their program departs with a maximum of 14 guests per tour. Therefore, visitors will be completely released into nature, mountains, and forests. When visitors explore and enjoy the caves, they will be so comfortable without having any noise or jostling. Over the years, travel companies in Phong Nha - Ke Bang have created jobs for local people, Moreover, they attract more than 40,000

bookings to participate in the annual discovery, contribute to bringing Phong Nha - Ke Bang closer than with friends all over the world.

3.2.2. Disadvantages

Quang Binh has a lot of potential to develop adventure tourism, but the product has not been exploited commensurate with its strengths. In addition to the advantages above, the products of adventure tourism, technical facilities, human resources for business activities are still in their early stages. The implementation of adventure tourism programs is often difficult because of the long procedures, high costs and the need for well-trained tour guides. Moreover, the companies mentioned above still find it difficult to reach many tourists because of the adventurous nature of the tours they are exclusive.

In addition, specialized adventure tours are still very limited. That leads to less revenue from this type of tourism. The tourism products are not really diversified. In particular, there are no annual policies to develop adventure tourism from local departments and agencies

3.3. Sustainable Directions for Companies Providing Adventure Tourism in Phong Nha - Ke Bang National Park, Quang Binh Province

3.3.1. Coordinating between provincial authorities, local authorities and companies providing different types of adventure tourism

To do this, it is necessary to have a long-term strategy and adequate investments to realize the potential of adventure tourism and develop this type in a sustainable way. This means that the development of adventure tourism must harmoniously share benefits for Quang Binh province, for Phong Nha - Ke Bang, for businesses and especially for local people. In order to know how to do tourism, especially adventure tourism, and how to combine with travel companies, the local authorities need to open classes. The classes will train on tourism work such as welcoming guests, serving the needs of guests: entertainment, travel, dining, accommodation... These classes also consist of teaching English for learners. Developing tourism in general and adventure tourism in particular was not only the task of the authorities, travel and accommodation businesses but also the task of the whole community.

To step up the promotion work, it is so important to strengthen the link between the Vietnam National Administration of Tourism, the Tourism Association and Quang Binh Department of Culture and Sport in the construction of tourism promotion strategies, programs and plans. In addition, Quang Binh province need to coordinate with businesses to carry out promotion, link the promotion of local tourism images and brands with the promotion of adventure tourism products of enterprises.

3.3.2. Travel companies need to grasp the trend of tourists' access to tourism in the integration period

The 4.0 technology revolution helps tourists to change the way they travel. They can choose where to stay everywhere and change the habit of finding out tourist information. Instead of using books, newspapers, leaflets... they turned to look up tourist information on

the internet. Therefore, companies providing adventure travel services in Phong Nha - Ke Bang need to change to match the trend of the world, from the way of tourism, from management to promotion and advertising, travel services.... Besides managing and promoting the company's image through its own website, it is necessary to promote advertising of its exclusive types of tourism through travel websites and networks, Facebook, Instagram, videos, especially through the posts of famous Travel Bloggers.

In recent years, tourism marketing strategies have emphasized interaction and experience. The obvious manifestation is that the creation and spread of travel videos on social networking platforms Youtube, Instagram, Facebook, TikTok ... have increased sharply. Many experts consider the use of social networks as a main tourism promotion tool. It is said that Social networking platforms have been still a channel to exploit potential customers for agencies, organizations and businesses in the tourism industry because of their huge user base. However, it is also the most competitive in the technology age in providing travel knowledge and trends. Therefore, besides researching popular markets and changing policies of each social network, it is necessary to pay attention to how to make and create content to catch up with new trends. In addition, when using multiple social networks in promotion, it is advisable to focus on the facilitate management, target identification, market and promotion.

In particular, travel companies need analyze and research carefully in order to develop, connect with GenZ tourist groups, tourists from new target markets such as India, the Middle East... Moreover, creative and attractive communication campaigns through digital platforms will stimulate the needs of visitors to experience. The task in the coming time is to continue deploying technology applications and approaching new creative communication trends. This helps to carry on the effectively implement of the Digital Tourism Development Plan for the 2021-2025 period.

3.3.3. Combining various types of adventure tourism

Adventure tourism not only includes climbing rapids, deep-sea diving, but also lighter activities such as camping, kayaking.... so that visitors can overcome their limitations in a new destination. Companies should divide discovery types that are appropriate for different ages and backgrounds. Each tour must always meet different requirements compared to other tours so that customers will feel special. Moreover, in order to become the capital of adventure tourism, Quang Binh in general and Phong Nha - Ke Bang in particular need develop various types of adventure tourism. There are not only caves but also tourism companies need to exploit other types such as mountain climbing, zipline, cycling, trekking, kayaking, paragliding, diving ... This can attract tourists, compete with famous adventure tourism destinations in the region.

3.3.4. Integrating historical - spiritual elements into tours

Spiritual tourism exploits spiritual cultural factors in the process of tourism activities that based on tangible and intangible cultural values associated with the history of shaping people's perception of the world, values of faith, religion, beliefs and other special spiritual values. Accordingly, spiritual tourism brings about spiritual emotions and experiences of

people while traveling. It's so amazing to know about culture and history of destination where the travelers discover. Therefore, the travel companies should integrate historical - spiritual elements into tours in order to attract many visitors.

The guides of adventure travel companies need to be trained in different languages. This is a careful preparation to introduce the development history of mountains and caves of Vietnam with foreign languages. In the process of experiencing the tour program, Phong Nha - Ke Bang area will attract the attention of tourists, release the stresses in each line of exploring different types of tourism.

In addition, along with the development of the adventure tourism model, companies need to focus on community development by participating in community programs to conserve nature, protect the environment or contribute to the community.

4. Discussion and Conclusion

In the future, Quang Binh province in general and Phong Nha - Ke Bang area in particular is expected to become one of the centers of adventure tourism and nature discovery attracting many tourists everywhere in the world. The growth of companies providing different types of adventure tourism will contribute to promoting the province's adventure tourism potential. The authorities of Phong Nha - Ke Bang, local people are willing to improve conditions for companies so that they can promote and introduce this type of service to a large number of domestic and foreign tourists.

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INVESTMENT IN DEVELOPING AGRICULTURAL PRODUCTION ACCORDING TO VIETGAP STANDARDS IN HAI DUONG PROVINCE

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Abstract

Investment in developing agricultural production according to VietGap standards of Hai Duong province is a potential field and opportunities for investors. However, to achieve success in investing and developing agricultural production according to VietGap standards, investors need to have knowledge, experience and interest in issues related to agriculture, product quality standards, risk management and environmental protection. The Government and relevant agencies also need to introduce investment support policies to create favorable conditions for investors in developing agricultural production according to VietGap standards.

Keywords: *Agricultural production, Investment in agricultural production, VietGap standard*

1. Introduction

Hai Duong province is one of the agricultural production centers of Vietnam. The application of VietGap standards in the agricultural production will help Hai Duong farmers convert from traditional agricultural production to VietGap standard production, creating high quality agricultural products and meeting market requirements. Therefore, the research about investment in developing agricultural production according to VietGap standards in Hai Duong province is necessary. The aim of research will focus on some contents

- What is the situation of investment and development of agricultural production according to VietGap standards in Hai Duong province?

- What solutions can be applied to improve agricultural production and support investment in developing agricultural production according to VietGap standards in Hai Duong province?

2. Conceptual Framework

2.1. The concept of VietGap standard

VietGap standard is issued by the Ministry of Agriculture and Rural Development for each product, group of aquatic products, cultivation and animal husbandry.

VietGAP includes principles, order and procedures to guide organizations and individuals in production, harvesting and post-harvest treatment in order to ensure safety, improve product quality, ensure social welfare, health of producers and consumers; at the same time protect the environment and trace the origin of production.

VietGAP standards are based on 4 criteria:

- Standards on production techniques: specify production techniques from soil selection, seeds, fertilizers, feed sources to harvest in accordance with specific regulations for each field of cultivation, animal husbandry and fishery.

- Food safety: Including measures used to ensure that food does not have contaminated chemicals or physical contamination when harvested, absolutely safe when reaching consumers.

- Working environment: good arable land, adequate water sources to meet standards to prevent the abuse of labor power of farmers.

- Product traceability: This standard allows consumers to easily identify products through the process from seed source to finished product and market. At the same time, through traceability, users will know full accurate information about the manufacturing enterprise.

Products meeting VietGAP standards are good quality products, ensuring food safety and hygiene, not using chemicals and substances harmful to the human body as well as the environment. The products are produced and harvested in accordance with the process, with a clear source of traceability information.

2.2. The roles of VietGap standards for agricultural production

The application of VietGap standards to agricultural production has brought many benefits to farmers, consumers and society. Here are the specific roles of VietGap:

- For society: This is evidence to affirm the name of Vietnam's aquatic, crop and livestock products, increase export turnover by overcoming technical barriers, not violating regulations and requirements of importing countries. Applying VietGAP changes current production practices, society reduces health costs, people can use safe and hygienic products, which means improving the quality of life of the community and ensuring the sustainable development of society.

- For producers: Help manufacturers react more promptly to production issues related to food safety and hygiene through production control in the stages of tillage, animal husbandry until harvest, creating high quality products, stable. Manufacturing facilities that apply the process and are granted VietGAP certification will bring confidence to distributors, consumers and regulators. VietGAP certification helps manufacturers build product brands and create more stable consumption markets. Agricultural products certified according to VietGAP standards have higher value in the market, thereby increasing income for farmers. One study found that farmers who comply with VietGAP standards have an average income of 25-30% higher than farmers who do not.

- For processing and exporting enterprises: The source of raw materials ensures quality, so it will ensure the output quality of products, thus maintaining reputation with customers and improving revenue. Because the source of input materials has been guaranteed, businesses can reduce costs and time for inspecting input samples. Reduce the risk of products being banned from import or 100% inspected when imported due to non-compliance with chemical residue requirements.

- For consumers: Consumers will be able to use products with food safety and hygiene, which is also the main goal and biggest benefit that VietGAP brings. By setting out risks and implementing regulations, VietGAP will create the right of consumers, thereby contributing to creating a generation of consumers who easily identify products that ensure food hygiene and safety in the market when they see VietGAP product certification or certification mark, this is also the main motivation for people and manufacturers to innovate to produce and supply good products from agriculture to society.

- For the environment: VietGAP standards set high standards of environmental protection, requiring farmers to comply with regulations on waste management, soil and water protection, minimizing negative impacts on the environment.

3. Results

3.1. Investment situation for agricultural production development according to VietGAP standards in Hai Duong province

3.1.1. Scale of investment capital

Through the period of 2017-2022, the scale of investment capital in developing agricultural production according to VietGAP standards in Hai Duong province has recorded a significant increase. Below is a detailed statistical table of the size of investment capital by year in the above period:

Table 1. Total scale of investment capital in agricultural production development according to VietGAP standards in Hai Duong province in the period of 2017-2022

(unit: billion VND)

Year		2017	2018	2019	2020	2021	2022
Total Investment Scale (billion VND)		17,4	21,6	19,5	21,3	11,7	49,5
Rate of increase (%)		28,8	24,1	-9,7	9,2	-45,1	323,1

Through the above statistics, it is possible to assess an overview of the total investment capital in agricultural production development according to VietGAP standards in Hai Duong province in the period of 2017-2022 as follows:

- Scale of investment capital: From 2017 to 2022, the scale of investment in agricultural production development according to VietGAP standards in Hai Duong province has had noticeable fluctuations, increasing from 17,4 billion VND in 2017 to 49,5 million

VND in 2022. This is a positive sign, showing the interest and investment in developing agricultural production according to VietGap standards in Hai Duong province.

- Growth rate (%) and volatility: The growth rate of the scale of investment is uneven throughout the period 2017-2022. 2017 and 2018 recorded growth of 28.8% and 24.1%, respectively, indicating positive investment and development. However, 2019 saw a decrease of -9.7%, and 2021 saw a significant decrease of -45.1%. In contrast, 2022 recorded a very high increase of 323.1%. This shows the large disparity and fluctuation in the growth rate of the scale of investment during the aforementioned period. It is possible to explain the decrease of the scale of investment capital in agricultural production development according to VietGap standards in Hai Duong province in 2019 and 2021, mainly due to the impact of the Covid-19 epidemic.

3.1.2. Structure of investment capital sources

Table 2: Structure of investment capital in agricultural production development according to VietGap standards in Hai Duong province in the period of 2017-2022

(unit: billion VND)

Funding	Year					
	2017	2018	2019	2020	2021	2022
State capital	10,2	12,9	11,4	13,2	2,5	42
Private capital	6,6	8,1	7,5	7,5	8,6	6,9
Others	0,6	0,6	0,6	0,6	0,6	0,6
Sum	17,4	21,6	19,5	21,3	17,1	49,5

According to the table above, the significant increase in state capital and the stability of capital from other sources can create favorable conditions for the development of agricultural production according to VietGap standards in Hai Duong province in the future. However, in terms of capital structure, Hai Duong province still requires attention and support from private investors to maintain agricultural production activities according to VietGap standards.

3.1.3. Contents of investment in agricultural production development according to VietGap standards in Hai Duong province

Table 3: Statistics on investment capital structure in agricultural development according to VietGap standards by industry in Hai Duong province period of 2017-2022

(unit: billion VND)

Fields	Year						Sum
	2017	2018	2019	2020	2021	2022	
Livestock sector	9,75	5,58	4,0	4,26	7,32	20,7	51,61
Field of cultivation	6,03	6,15	6,2	4,11	2,31	24,69	49,49
Fisheries	1,62	9,87	9,3	12,93	2,07	4,11	39,9
Sum	17,4	21,6	19,5	21,3	11,7	49,5	141

The statistical table of investment capital structure in agricultural development according to VietGap standards by each industry in Hai Duong province shows that the investment distribution varies between key sectors of agriculture such as animal husbandry, crop cultivation and fisheries.

Livestock production is the most invested industry in the period of 2017-2022, with a total investment capital of 51,61 billion VND, accounting for more than 36% of the total investment capital in agricultural development according to VietGap standards in Hai Duong province. However, there is a significant change in the allocation of investment capital between years, with a significant increase in investment in 2022. It can be seen that investment capital in the livestock industry has tended to increase gradually in recent years, especially in the period of 2021-2022. The prospects for investors in this industry are also quite positive because the demand for poultry, cattle, poultry and pork is still increasing and the domestic and international markets are very potential

Meanwhile, the field of cultivation and fishery sectors both have relatively close total investment capital, 49,49 billion VND and 39,9 billion VND, respectively. However, the horticulture sector has a significant difference in investment levels between years, while the fishery sector has a significant growth in investment in the period 2018-2020.

For cultivation industry: Investments in the horticulture industry gradually increased throughout 2017-2022, especially in 2021-2022. However, the prospects for investors in this industry are not very large due to many challenges such as difficulties in production, low product quality, fiercely competitive market, unstable weather, and difficulties in accessing capital.

About the fisheries industry: Investments in the fisheries industry increased steadily throughout the period 2017-2022, especially the period 2020-2021. The prospects for investors in this industry are quite large because fishery is one of the key economic sectors of Hai Duong province, with many development potentials such as using high technology, expanding export markets and improving product quality.

In summary, the outlook for investors in the livestock and fisheries industry is quite positive, while the prospects for investors in the cultivation industry still pose some challenges. However, with investment in important factors such as science and technology, improving infrastructure and improving production capacity, the horticulture industry will also have better prospects in the future

3.1.4. Guidelines and policies of the State and local authorities on creating conditions for the production of VietGap agricultural products in Hai Duong province

In order to promote the development of agricultural production according to VietGap standards, the state and authorities in Hai Duong province have introduced policies and policies to contribute to creating favorable conditions for VietGap agricultural products, with support policies, capital incentives, etc Education and training, along with the development of a system of regulations, inspection, quality inspection, ensuring food safety, accompanying the sustainable development of the agricultural sector :

- Creating conditions for land settlement for agricultural production: Local authorities are committed to creating favorable conditions and settling land for agricultural enterprises and households meeting VietGap standards. Locally, agricultural production areas have been planned land and made a list of clean land to serve agricultural production meeting VietGap standards.

- Funding to support investment capital: The State and local authorities have sponsored and supported enterprises and households doing agricultural production to meet VietGap standards. Specifically, Hai Duong provincial government has implemented many financial support programs, including the program "1 commune, 1 product" and a support program for agricultural production enterprises meeting VietGap standards.

- Preferential loan policy of Vietnam Bank for Social Policy (VBSP): VBSP provides loans with preferential interest rates to households, collectives and agricultural production organizations according to VietGap standards.

- Tax exemption and reduction policy: According to the provisions of the CIT Law (amended), agricultural production enterprises according to VietGap standards are entitled to exemption or reduction of corporate income tax, registration tax, value-added tax, import tax on machinery and equipment.

- Policies to support investment in agricultural development: Local authorities provide investment capital support, financial support, market development support, professional training for agricultural enterprises and collectives according to VietGap standards.

- Policies to encourage cooperatives: Local authorities encourage households producing agriculture according to VietGap standards to join cooperatives to strengthen economic strength, jointly produce, consume, manage and share profits.

- Policies on training and improving professional qualifications: Local authorities provide training courses, programs to support training, innovation and professional improvement for households and collectives of agricultural production according to VietGap standards.

- In addition, implementing the Project "Development of commodity agricultural production focusing on high-tech application, organic agriculture in the period of 2021-2025, oriented to 2030", in 2022, Hai Duong province will support 12 smart agricultural facilities associated with digital transformation. These facilities will be supported with funds to purchase equipment to use digital platforms in production management, remote control systems, automatic irrigation water, forecasting systems, pest warnings, etc. The supported facilities are membrane houses, net houses with a minimum scale of 3,000 m² to produce hydroponic vegetables, melons, fragrant melons, seedlings ... for high economic value

3.2. Investment activities evaluation and some solutions

3.2.1. Achieved results

VietGap product production area of Hai Duong province increased significantly: According to the report of the VietGap National Steering Committee, as of September 2021,

Hai Duong is one of the leading localities in the country in terms of VietGap product production area with about 13,000ha, an increase of more than 2,000ha compared to the previous year. The number of VietGap agricultural products increased: VietGap products of Hai Duong were certified to meet international standards, trusted and selected by domestic and foreign units. Hai Duong's VietGap products have been exported to many fastidious markets such as Japan, Korea, EU, USA, Canada, Australia, China, Taiwan ... The number of VietGap agricultural products of Hai Duong sold to the domestic market and exported is increasing year by year. Specifically, in each field of agriculture, certain successes have been achieved:

3.2.2. Existing limitation

Although there have been policies and efforts of Hai Duong province in investing in the development of VietGap agricultural product production, however, there are still some notable shortcomings and limitations, from complicated investment procedures, difficulties in accessing capital, training a team of quality agricultural workers, etc to difficulties in building a system of monitoring, inspecting and evaluating the quality of agricultural products, contributing to limitations in the process of developing VietGap agricultural product production in Hai Duong province.

- Difficulties in implementing VietGap standards: Currently, the implementation of VietGap standards is still facing many difficulties due to the lack of knowledge and experience, and there are not enough resources and funds to fully implement these standards, especially for small farmers.

- Limited investment capital: Despite the attention and support from the government and donor organizations, the investment capital in developing VietGap agricultural production in Hai Duong is still limited. It is difficult for investors and businesses to access investment capital to implement agricultural production projects according to VietGap standards, making it difficult to improve product quality.

- Poor infrastructure: Transportation, electricity, water, waste treatment and other utilities infrastructure in Hai Duong is limited, especially in rural areas. This makes it difficult for businesses to transport and circulate goods, reducing the competitiveness of VietGap products of the province.

- Difficulties in securing human resources: Farmers need to be trained to master production knowledge and skills according to VietGap standards, however, this is still a big challenge for Hai Duong province.

- Poor management: Despite the application of VietGap standards, however, the management and control of production are still not fully guaranteed, there is also a situation of reality that is not in accordance with the set standards. Because the post-inspection work has not achieved results, 80 pigs have recently been found to have lean substances mixed into pigs raised according to VietGap standards easily in Ho Chi Minh City.

- Lack of coordination between units: Units in the process of producing, processing and consuming agricultural products according to VietGap standards do not coordinate well

with each other, which causes many difficulties in product quality management, and also makes products not accessible to full consumption markets.

- Lack of technical support and advice: To produce agricultural products according to VietGap standards, businesses need to have professional knowledge of agriculture, technology, management, and meet the requirements of quality and food safety. However, there is still a lack of adequate and quality technical support and advice for VietGap agricultural production enterprises in Hai Duong.

- Lack of attention and support from local authorities: To develop agricultural production according to VietGap standards, it is very important to have attention and support from local authorities. However, this is still a problem that many farmers in Hai Duong face.

4. Discussion and conclusion

a. Solution for planning

Organize the implementation of the planning of agricultural production zones and areas, especially agricultural land areas with high productivity and quality, to update in the planning of Hai Duong province to 2030 with a vision to 2045.

For rice areas that need to be strictly protected, they need to be managed by digital maps (GPS). Identify and develop key areas, specializing in the production of key agricultural products of the province in advantageous localities.

b. Solution for capital attraction

Increase the enlistment of central funding sources and prioritize local budget capital for the implementation of programs, schemes and projects of the agricultural sector on the basis of proper purposes and efficiency. Increase annual career capital for the agricultural sector to ensure the full implementation of the tasks: transfer of technical advances, agricultural extension, forestry extension, fishery extension, development and replication of new effective models; implement policies to support the development of agricultural production and infrastructure for agricultural production, programs, topics, research and application projects in the agricultural sector, especially research topics and projects on hybridization, selection and breeding of plant breeds and productive children, high quality, resistant to pests and diseases, adaptable to climate change conditions; preservation, processing, reduction of post-harvest losses.

c. Solution for developing technology and scientific

Continuing to innovate and improve the efficiency of scientific and technological research and application activities, transfer technical advances and new technologies, create strong changes in the application of new scientific and technological achievements in all branches and fields in order to accelerate the process of industrialization, modernization of the agricultural sector and rural development.

d. Solution for developing agricultural production infrastructure

The investment in production infrastructure projects needs to be focused, avoid spreading, and at the same time need to invest evenly between the fields of cultivation,

animal husbandry and aquaculture. Develop irrigation systems in the direction of multi-objectives, improve irrigation capacity, active pepper for crops, first of all, the entire rice land, aquaculture area and vegetable crops with high economic value. Consolidate, build and consolidate the river system to ensure safety for production and people's lives. Continue to pay attention to investment to improve the system of rural roads in general and internal roads in particular, contributing to bringing mechanization into service of production, reducing labor for farmers.

e. Solution for developing human resource

Plan to train and improve the quality of scientific and technical human resources to meet the requirements of agricultural and rural development in the direction of industry restructuring. Review and evaluate resources of scientific and technical personnel, paying attention to specialized human resources of key fields, most importantly the field of hi-tech application agriculture and organic agriculture. Complete and renovate teaching contents and curricula, associate training with the needs of society and enterprises, associate theory with practice, pay attention to training skills and skills, strengthen training in business management knowledge in the market economy mechanism; modernize teaching methods, enhance learners' initiative in the spirit of learning in conjunction with practice.

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REDUCING POVERTY IN VIETNAM THROUGH SUSTAINABLE LIVING MODELS

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Abstract

One of the causes of poverty in Vietnam is lack of livelihood. In recent years, there have been many livelihood models to help reduce poverty in Vietnam. However, in order to improve the effectiveness of these models further to suit each locality, region and to ensure the sustainability of these models, the participation of many stakeholders, especially farmers to successfully implement Vietnam's poverty reduction policy in the 2021-2025 period.

Keywords: *poverty reduction, model, livelihood, sustainability*

1. Introduction

According to the report on assessment of poverty and equality in Vietnam in 2022 published by the World Bank (WB) in April 2022, the period 2010-2020 is the decade that witnessed Vietnam achieve high growth and poverty reduction has achieved impressive results. On average, household consumption is growing at a rate of about 5% per year. Based on the World Bank's low-middle-income country (LMIC) poverty line (US\$3.20/day in 2011 purchasing power parity), the poverty rate has fallen from 16.8% last year in 2010 to 5% by 2020, which means 10 million people have been lifted out of poverty, the number of poor people has decreased to 5 million people in 2020. However, Vietnam's escape from poverty is not very sustainable. Households who have escaped poverty are at high risk of falling back into poverty, especially in the context of many fluctuations in the domestic and foreign macroeconomy, accompanied by the impacts of climate change and epidemics. The waves of Covid-19 epidemic in Vietnam in the past time have been a test for the economy in ensuring social security and reducing poverty. Facing the negative impacts of the Covid-19 pandemic, Vietnam's poverty reduction progress has been delayed.

In addition, in the coming period, if Vietnam measures the poverty level according to the multi-dimensional poverty standard for the period 2021-2025 with the income standard, nearly twice as high as the poverty line of the 2016-2020 period. At the same time, the standards of deprivation of social services and the indicators that consider it are also higher. Poverty reduction programs from the Central Government, in particular, the National Target

Program on Hunger Eradication and Poverty Reduction are a long-standing policy tool and play an important role in poverty reduction. In the Socio-Economic Development Plan for the 2021-2025 period, there are 3 national target programs targeting individuals, households and localities according to the aspects mentioned in this chapter (rural, rural, and rural). occupation and ethnic minorities). National target programs invest heavily in communes, with nearly 560 trillion VND (equivalent to 25 billion USD) being allocated to commune-level programs under National Target Programs since 2010. However, the actual implementation also shows that it is worth noting that the projects implemented under the National Target Program on New Rural Areas (2016-2020) invest heavily at the commune level, but only a small part reaches the poorest communes, as these communes are more dependent on direct central support and have less access to external financing options. In addition, most of the spending of the national target program is for socio-economic infrastructure investment, instead of other basic social services.

Therefore, in the coming time, in order to achieve 4 poverty reduction targets in the 2021-2025 period, in which the poverty rate maintains a reduction of 1.0 - 1.5%/year, it is necessary to choose investment options into smart and appropriate livelihood models in localities. Only local authorities can grasp the socio-economic characteristics as well as the advantages of each region to design sustainable livelihood models, contributing to ensuring stable jobs and creating long-term income for people. When people have income, it will help them escape poverty, secure their lives and in the long run have a source of accumulated income to be able to cope with the fluctuations of the economy in the future. Over the past decade, as the poorest households have increasingly focused on low-income agricultural activities, these groups are at risk of falling further behind and becoming more disconnected from areas of energy development. movement of the economy. Job creation and wage income growth are key drivers of poverty reduction. Therefore, the development of sustainable livelihood models in the agricultural sector is very necessary.

2. Theoretical Framework

2.1. Contents of sustainable livelihood model

There are different views on livelihoods. According to Vietnamese dictionary, “livelihood” is understood as "work to earn a living, to make a living". However, later on, the term livelihood has been recognized with a broad and complex meaning since support policies from the government, non-governmental organizations, and civil community - who are vulnerable to shocks caused by natural disasters and production risks. Since then, there are many definitions of livelihood. According to Chambers and Conway (1992), a livelihood includes the capabilities, capital resources (including physical and social capital) and activities necessary for a means of living. Based on the above points of view, within the scope of the research, it can be understood: a livelihood is a way of earning and supporting people's lives and contributing to enriching themselves and the community.

The concept of “Sustainable Livelihood” is rooted in sustainable development introduced by the Brundtland Commission on Environment and Development in 1987,

which sees sustainable livelihoods as a way to link the socioeconomic and ecological factors with policies and institutions. At the United Nations Conference on Environment and Development (1992), the concept of sustainable livelihoods was defined with a broader connotation, specifically: Sustainable livelihoods are seen as a goal to reduce poverty, i.e. sustainable livelihoods can act as an integrator that allows policies to simultaneously address three important issues, including: development, sustainable resource management, and poverty alleviation. A person's or a family's livelihood is sustainable when they are able to cope with and recover from stresses and shocks and sustain or enhance their abilities and assets and in the future. without harming environmental resources (Chambers and Conway 1992). From the perspectives of sustainable livelihoods above, within the scope of the research, the author views sustainable livelihoods as the use of necessary resources to implement livelihood strategies to achieve desired outcomes. wants and has little impact on environmental, economic and social factors.

Sustainable livelihoods are implemented through models. Accordingly, the sustainable livelihood model refers to the modeling of people's livelihoods (earnings) in accordance with specific conditions of a defined time and space with the aim of improving their lives and contributing to their livelihoods. contribute to the socio-economic development of rural areas. The sustainable livelihood model is not invariant over time, but its content and nature exist for a relatively long time. On the other hand, the sustainable livelihood model is also the solution for the socio-economic development of the community or, more generally, a certain group of people. Sustainable livelihood model Sustainable livelihoods are expressed in aspects, such as:

- (i) Livelihoods are highly efficient and relatively stable over a long period of time. That is, it is effective in a relatively stable increasing trend for a long time. Thereby bringing a prosperous and happy life for a long time, being accepted and excited by the people
- (ii) Little or no negative impact from climate change and from market changes
- (iii) No negative impact on other livelihoods and no negative impact on other livelihoods.

2.2. The role of sustainable livelihood models in poverty reduction

Sustainable livelihoods are the foundation to improve people's living standards both physically and mentally. Sustainable livelihood models suitable to local characteristics and needs of poor households have created many jobs, good incomes, improved people's quality of life and adapted to climate change. at the same time, contributing to realizing the goal of transforming the economic structure and labor structure for the locality. The experience of the previous period also shows that the cultural values of the nation and environmental protection, if promoted in the livelihood model, are more effective in helping sustainable economic growth.

3. Results

3.1. Some typical livelihood models to help reduce poverty in Vietnam

In the past years, there have appeared many livelihood models to help reduce poverty effectively by central and local agencies, international organizations, businesses, and young

people in poor localities. ...Generally, there are livelihood models deployed in fields such as agriculture, forestry and tourism such as:

The model of rice - shrimp, rice - fish is a new direction in the development of organic agriculture in recent years. This model appeared in the early 2000s in the Mekong Delta provinces. In this model, by-products from shrimp and fish farming will be used as nutritional supplements for rice plants; conversely, when the rice is harvested, by-products from rice production are a source of food for shrimp and fish. With this crop rotation model, plants and animals do not have to use pesticides and antibiotics, creating clean, safe products and protecting the environment, helping farmers improve their incomes. Up to now, this model is being transformed into "fragrant rice - clean shrimp" and "fragrant rice - clean fish" model. This is the product of the process of co-innovation and creation based on knowledge and natural conditions of the region. This model is considered to bring benefits, such as sustainable agricultural development, reducing environmental pollution, maintaining the ecological environment, creating and supplying the market with clean products. In particular, this model is a way for households in low-lying and flood-prone areas to shift production, improve income, and minimize negative impacts caused by climate change. The shrimp - rice model from some places in Ca Mau, Hau Giang, Kien Giang... has brought about efficiency and high income for farmers. The model has helped farmers earn an average profit of 60-70 million VND/ha/year, helping many households get out of poverty and have a better life.

The agro-forestry model is a land-use management system for intercropping, in which annuals, shrubs, and herbaceous plants are planted around or between perennial crops. combine pasture or livestock. This combination creates diversity, productivity, profitability, ecology and sustainability in land use. Biodiversity in agroforestry systems is generally higher than in conventional agricultural systems. Therefore, many farms and farmers have chosen to convert to agro-forestry models to diversify products, improve livelihoods as well as adapt to the impacts of climate change. In Vietnam, there are many forms of agroforestry farming that are applied in practice, in which, the model of planting legume species according to the contour line on the annual tree cultivation area in order to reduce erosion and green manure in situ; model of planting agricultural crops in combination with forestry trees; cropping models reserve a part of land for livestock; small-scale afforestation model combining food production, fruit trees and food crops; fruit tree model combined with long-term industrial plants. Typically, the Northwest provinces, when applying this model in the combination of growing longan, maize, and livestock grass, has brought high economic efficiency, when spending 1 dong of capital to cultivate agro-forestry models, Ethnic minorities can earn from 3.3 - 14.1 dong after the business cycle, even with this model, farmers start to make profits from the second year (about 6.1 million/ha), initial investment return (44.2 million VND/ha) after the fourth year and the profit in the 5th year onwards is about 29.3 million VND, more than 2 times higher than before planting a single crop [3]. Thanks to that, the income of upland people has increased significantly besides social benefits such as reducing the rate of forest loss, avoiding the situation of migratory farming.

Sustainable landscape agriculture is an integrated approach to address environmental degradation, adapt to climate change and enhance biodiversity, while improving food security, food and nutrition. Up to now, there are many models of sustainable landscape agriculture, such as landscape coffee model in Lam Dong and Dak Lak provinces; model of wetland ecosystem management and conservation and sustainable ecological development in Tram Chim National Park, Dong Thap province.

4F (Farm - Food - Feed - Fertilizer: Farm - Finished Products - Animal Feed - Organic Fertilizer) is researched and developed by Guilin Group to build an ecosystem. eco-agriculture through the implementation of organic agricultural product processing complexes, control of safe pork production by a closed farming system. Waste in the farm is collected and treated to produce microbial organic fertilizer for cultivation, forming a closed agricultural production process from livestock to cultivation, from trees to soil. The model contributes to improving economic efficiency, preventing epidemics, contributing to environmental protection, and reducing greenhouse gas emissions.

The model of agriculture combined with ecotourism is a system that uses the resonance principle of ecological agriculture. Eco-agricultural tourism is a model that has been increasingly invested and focused in Vietnam in recent years, creating a lot of attraction for domestic and foreign tourists as well as increasing income for agricultural producers. In the past time, there have been many successful agro-ecotourism models in Vietnam, such as agritourism in Hoi An (Quang Nam province); agricultural tourism in Ba Vi (Hanoi city), Tam Duong (Lai Chau province), Sa Pa (Lao Cai province),... Besides, there are eco-tourism models in the western mountainous provinces North. The Northeast mountainous region has many livelihood activities associated with local community eco-tourism, including accommodation services (homestays), tour guides, cooking, navigation, packing, service activities. serving tourism (weaving, making handicrafts, bathing with medicinal herbs of the Dao people, cultural markets, developing community-based eco-tourism towards creating sustainable livelihoods for the highland people...); performing arts (khen dance of the H'Mong ethnic group, bell dance of the Dao ethnic group, the pipe character of the Thai people...). In addition to direct livelihood activities, indirect livelihood activities in community-based tourism development areas are also developed, contributing to improving the quality of community life, such as agricultural activities. (cultivation of agricultural products, medicinal herbs; raising livestock and poultry...), small trading services, production of traditional handicraft products... Thanks to that, people's income and living standards are improved. In Sapa, households participating in tourism activities have a rate of hunger eradication and poverty reduction 3 times faster than households not doing tourism. The income of households doing tourism services is also 5 times higher than that of other households, reaching from 25 to 60 million VND/household/year [4].

Organic production model: Recently, organic agricultural production models have also been interested. Many models of organic agricultural production in cultivation, animal husbandry and aquaculture have been developed. Up to now, 59/63 provinces and cities across the country have implemented organic agriculture and spread it more and more

strongly. In 2021, the area of organic agricultural land in Vietnam will reach more than 174,000 hectares, an increase of 47% compared to 2016, ranking 9th in the 10 countries with the largest organic agricultural land in Asia. Hanoi is currently the locality where many high-quality organic agricultural models have been built, both in line with the development trend of modern agriculture, and bringing high economic value to farmers, reducing the percentage of poverty households in the city.

3.2. Challenges in developing a sustainable livelihood model to reduce poverty in Vietnam

In general, livelihood models in various fields are quite diverse and there is a tendency to combine sectors to take advantage of the available potentials of localities. At the same time, the general development trend of livelihood models is to apply technology towards the production of organic and environmentally friendly products according to a cyclic chain. Besides taking advantage of available resources of localities, the implementation of sustainable livelihood models also faces many difficulties (Table 1).

Table 1. Summary of sustainable livelihood model development in various fields

Model	Available resources and development situation	difficulty
Agriculture sector		
Agricultural development with high technology application	Just developed small and odd without the necessary linkage along the value chain	Lack of big business involvement; Lack of geographical indications, traceability and lack of trademarks
Developing organic agricultural products	There has been a development step in the production of rice and green vegetables; There is no necessary linkage along the value chain	Lack of capital, high cost and lack of certification of organic and food safety standards; lack of organic farmers' floors or markets; lack of geographical indications, traceability and lack of trademarks
Developing clean agricultural products	Developed in some districts both in the fields of cultivation and animal husbandry; There is no necessary linkage along the value chain	Lack of food safety certification, lack of clean farmers' markets or floors; lack of geographical indications, traceability and lack of trademarks
Forestry sector		
Sustainable forestry development according to EU standards accompanied by sustainable forest management.	People actively plant, care for and protect forests, so the effect is relatively good.	Lack of suitable forest tree varieties bring high efficiency.

Model	Available resources and development situation	difficulty
Agro-forestry development.	Effectively use the sloping land fund, at high altitude and bring economic value, thereby contributing to better forest preservation and increasing income for forest people.	It is difficult when there is no planning to develop a model of agro-forestry combination.
Tourism sector		
Developing a model of Homestay associated with craft villages and ecological zones	Make use of human resources, material and technical facilities of households.	Nhỏ lẻ, nếu không phối hợp sẽ dẫn tới nhầm lẫn.
Develop a model of tourism combined with eco-zones.	There are already agro-ecological zones and ecological forests, bringing dual values (improving the face of the countryside and raising people's incomes.	If you do not coordinate well with the travel company, there will be no guests and the income is not really high and stable.
Developing cultural and spiritual tourism models.	Availability of monuments, festivals, traditional culture and added economic value to the local community.	Lack of knowledge about promoting the values of monuments, festivals, culture and communication.

Source: Author's compilation

4. Discussion and Conclusion

In order to overcome the limitations in sustainable livelihood development in order to reduce poverty as well as exploit the potential, the strengths of localities should focus on a number of basic solutions as follows:

Firstly, completing the local master plan on the basis of exploiting and promoting local livelihood resources associated with the requirements of sustainable development, conservation and embellishment of natural resources, ecological environment community culture identity. On the basis of the approved planning, make investment projects to develop infrastructure and facilities for the development of agriculture, forestry and tourism in accordance with principles and resources for sustainable livelihoods, promoting the role of the community in participating in the implementation of planning projects. Improve the quality of construction planning and production plans; strengthen coordination, supervision, appraisal and evaluation of the effectiveness of projects implemented in the locality; promptly propose adjustments and supplements to the production planning to suit the market mechanism and local implementation conditions.

Second, it is necessary to identify key product groups and key production areas. Developing groups of products that are local specialties: localities based on reality, review and identify their own specialty products, develop plans to develop specialty products associated with specific geographical indications. body. Besides, organizing the production of key products along the value chain, strengthening trade promotion, taking production-consumption linkages and agricultural product quality as the center of the process of restructuring the agricultural sector. Focusing on developing the cooperative economy and attracting all economic sectors to participate in the value chain in crop production. Focusing on attracting businesses, especially in the tourism sector, need to cooperate with travel agencies to develop tourism products with characteristics of the local community in a methodical manner.

Third, attract private investment and support business-farmer linkages. Implement the highest preferential policies according to the State's regulations to attract enterprises to invest in agriculture; enterprises associated with farmers, have contracts with farmers. Investment priority policies, including: (i) Infrastructure, land and tax support for enterprises directly linked with farmers, preservation and processing enterprises using high technology; (ii) Credit incentives for businesses associated with farmers from the supply of input materials, drying services, storage and incentives for people to buy production machinery and apply new varieties; (iii) Conduct market research and development for key products; (iv) Strengthen the effective implementation of credit to support agricultural and forestry enterprises operating in disadvantaged areas to promote the exchange of agricultural products.

Fourthly, Strengthen the propaganda and mobilization to apply technical advances to agricultural production for the people. In particular, in livestock production, attention is paid to supporting information to propagate about the risk of disease; recommend to renovate husbandry methods to ensure disease safety, completely abandon uncontrolled grazing. Community capacity building is also demonstrated through the building of mechanisms, creating close relationships between "houses", especially between farmers and businesses, traders.

Fifth, developing human resources through training and transferring science and technology. Currently, most people lack scientific and technical knowledge in agricultural and forestry production, so production efficiency is not high. Therefore, the training and transfer of scientific and technical knowledge to people in production is a necessary requirement. In addition, it is necessary to strengthen guidance for indigenous communities to invest and trade in tourism services according to standards to improve investment efficiency.

Sixth, In order to avoid the fact that products from models such as fruit trees, medicinal plants, livestock, etc. cannot be sold or consumed at very low prices, the government needs to have some measures to support the market. market for the following products:

- + It is necessary to have the support of local authorities in market information, link with long-term and stable purchasing establishments of agro-forestry products in the form of signing product purchase and sale contracts.

- + To build facilities for processing and preserving agricultural and forestry products in the locality.

- + Set up local intermediary purchasing points, strengthen and develop product distribution channel networks./.

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ON THE RELATIONSHIP BETWEEN STRUCTURAL SOCIAL CAPITAL AND ECO-INNOVATION ADOPTION IN AGRICULTURAL COOPERATIVES IN VIETNAM - THE MEDIATING EFFECT OF OPEN INNOVATION

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Abstract

With increase in the focus on environmental protection, agricultural cooperatives are integrating sustainability issues in process and product innovations. However, the adoption of eco-innovation practices depends on the structural social capital. In this paper, the author studies the relationships between structural social capital and eco-innovation adoption. Further, the paper examines the mediating effect of open innovation between structural social capital and eco-innovation adoption. The proposed framework is tested by data collected from 293 agricultural cooperatives and using Structural equation modeling (SEM). The findings demonstrate structural social capital as an important antecedent for eco-product innovation adoption. Second, open innovation mediates between structural social capital and eco-process innovation adoption. The results of the study are useful for directors of agricultural cooperatives as well as policy makers.

Keywords: *structural social capital; open innovation; eco-innovation; agricultural cooperatives; Vietnam*

1. Introduction

Agricultural cooperatives have been recognized as important actors for economic development given their ability to increase the gains of local economies, promote regional development and the well-being of populations (Castilla-Polo et al., 2017). It can also be said that cooperatives play an important role in agribusiness development. They can contribute to increased bargaining power, production scales, crop diversification and stabilization, adding value to agricultural products, expanding markets and capitalizing producers. Innovation has become a major source of farmer cooperatives' competitive advantage (Luo et al., 2017). Indeed, technological innovation has been found to be critical for agricultural cooperatives' scaling up, and even survival in developing countries (Garnevska et al., 2011). Recent studies have focused on analyzing 'eco-innovation', which is described as a type of innovation that combines innovation and environmental phenomena in the context of this sector (García et al., 2018). These studies have identified a number of internal and external factors related to eco-innovation. Internal factors, including chairpersons' profiles, technological characteristics (Luo et al., 2017), research and development (R&D) resources (Triguero et al., 2018), are all considered useful sources of

product and process innovation. As for external factors, it is widely accepted that market and regulatory forces are the main drivers of eco-innovation (Qi et al., 2021). However, the current literature on eco-innovation in agriculture has several limitations. First, the majority of eco-innovation literature has focused on traditional investor-owned firms (IOFs) because co-operatives differ significantly from IOFs in terms of their objectives, governance, and financial structures, resulting in disparities in innovation management (Drivas and Giannakas, 2006). Second, studies on innovation and eco-innovation in general and eco-innovation adoption by co-operatives in particular have been conducted primarily in the context of developed countries (He et al., 2018).

Social capital is a relevant asset in the creation of innovation capabilities. Social interactions enable people to learn how to effectively share important information with others and develop a common agreement on tasks or goals, as well as gain other resources and ideas (Chen et al., 2017). Because social capital enables a greater transfer of knowledge, many authors argue that it encourages innovation, particularly in cooperatives where the members have an undoubted role in the creation of structural capital. In addition, for cooperatives, the effect of social capital in innovation is crucial as they almost all place innovation among their top three priorities (Brat et al., 2016). Therefore, this research investigates the relationship between structural social capital and the adoption of eco-innovation by agricultural cooperatives, a topic which has never been explored in the literature. Moreover, as micro-enterprises, agricultural cooperatives need external knowledge sources to conduct its eco-innovation adoption. Open innovation as a new paradigm for managing innovation, introduced by Chesbrough (2003) is defined as “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively”. However, the existing literature has been focusing on open innovation in large enterprises. This research argues that structural social capital is necessary but not sufficient to generate eco-innovation adoption. What matters is that an agricultural cooperative can transfer the network ties to the knowledge sources needed for the adoption of eco-innovation.

Innovation requires the convergence of different forms of knowledge, which is not always available within the organization. Consequently, innovation is not perceived as a series of isolated events deriving from inventors, but as the result of interactions and knowledge exchanges that involve a diversity of interdependent actors (Zheng, 2010). The relationships with other agents are essential for innovation performance, as they grant access to external knowledge and resources. In this vein, the social capital theory highlights the relevance of social relationships in the economy.

Social capital is “the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit” (Nahapiet & Ghoshal, 1998). This definition of social capital includes different aspects of the social context such as interactions and social links - structural social capital, trusted relationships, relational social capital, and systems of shared values that facilitate the interactions between individuals located in a specific social context - cognitive

social capital (Nahapiet & Ghoshal, 1998). This paper focuses on structural dimension of social capital. By allowing firms access external knowledge, it is widely agreed that social capital has a positive effect on innovation (García-Villaverde, Parra-Requena and Ruiz-Ortega, 2010).

The objective of this study is to investigate the relationship between the structural social capital, and the adoption of eco-process innovation and eco-product innovation as well as the mediating effect of open innovation on the relationship between structural social capital and the adoption of eco-process innovation and eco-product innovation.

2. Hypotheses development

2.1. Structural social capital and open innovation

In this research, structural social capital refers to the network ties of agricultural cooperatives to other agricultural cooperatives, the customers, universities and other other agencies such as Non-profit organizations (NGOs). Network ties with other cooperatives provide access to tacit know-how and privileged resources (Zhou et al., 2014). In open innovation, when facing unfamiliar situations, the close ties with other cooperatives enable agricultural cooperatives to gain access to market information, which helps them better understand their primary innovation value and commercialized potential in unfamiliar markets (Lichtenthaler, 2010). The ties with the customers enables agricultural cooperatives to understand about the needs of the customers to tailor the innovation process. Research also suggests that universities and NGOs can play an active role in supporting innovation activities (Etzkowitz & Leydesdorff, 2000). Network ties with academics and scientists at universities and NGOs provide unique opportunities to access the latest scientific information and convert knowledge-based resources. Moreover, close personal connections with universities and NGOs enable the training of cooperatives' members. Therefore, the following hypothesis is developed:

H1: Structural social capital of an agricultural cooperative is positively related to its innovation openness.

2.2. Open innovation and eco-innovation

Open innovation as a new paradigm for managing innovation, introduced by Chesbrough (2003), defined as “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively”. In this research, open innovation refers to the knowledge source from customers, other agricultural cooperatives, universities and other other agencies such as Non-profit organizations (NGOs). Some studies (Busse & Siebert, 2018) highlight the importance of customers/consumers as key actors in the co-creation of new products. Particularly, market-based sources (e.g., customers and suppliers relationships) are beneficial for incremental innovation and marketing time periods, whereas science-based sources (relationships with academia members and independent experts) are more beneficial for radical innovation. Therefore, the following hypothesis is proposed:

H2: Innovation openness of an agricultural cooperative is positively related to its eco-process innovation adoption.

H3: Innovation openness of an agricultural cooperative is positively related to its eco-product innovation adoption.

2.3. Structural social capital and eco-innovation

Structural social capital determines relationships among firms and access to resources; that is, structural capital covers the scope and intensity of network contacts (Nahapiet & Ghoshal, 1998). Agricultural cooperatives with broader network connections and greater network intensity are more likely to obtain resources conducive to environmental innovation through a wide range of structural relationships and close links, such as government policy support and advanced technology exchanges in their industry. Agricultural cooperatives boasting more structural holes connect with different units through network exchanges, making it easier to access superior resources and valuable information and establish a heterogeneous competitive advantage. Meanwhile, the stronger the relationship an agricultural cooperative maintains with external organizations with more unique resources, the easier it will be for the cooperative to obtain the resources for eco-innovation. Therefore, this study proposes the following hypothesis:

H4: Structural social capital of an agricultural cooperative is positively related to its eco-process innovation adoption.

H5: Structural social capital of an agricultural cooperative is positively related to its eco-product innovation adoption.

2.4. The mediating effect of open innovation between the relationship of structural social capital and eco-innovation

Structural social capital is chiefly considered to have a positive impact on innovation performance. Dense and cohesive social networks enable learning and the exchange of knowledge and resources, which ultimately fosters innovation performance (Tsai and Goshal, 1998). Nonetheless, such networks can also generate problems of redundancy in the information exchanged (Koka and Prescott, 2002), as well as opportunity costs that arise from the time, money, and energy needed to keep and expand the actor's social network (Zheng, 2010). In light of these controversial results, it has been seen that the availability of structural social capital is necessary but not sufficient to generate eco-innovation adoption. The important thing is that an agricultural cooperative can transfer the network ties to the knowledge sources needed for the adoption of eco-innovation. Therefore, the following hypothesis is proposed:

H6: Innovation openness of an agricultural cooperative mediates the relationship between structural social capital and eco-process innovation.

H7: Innovation openness of an agricultural cooperative mediates the relationship between structural social capital and eco-product innovation.

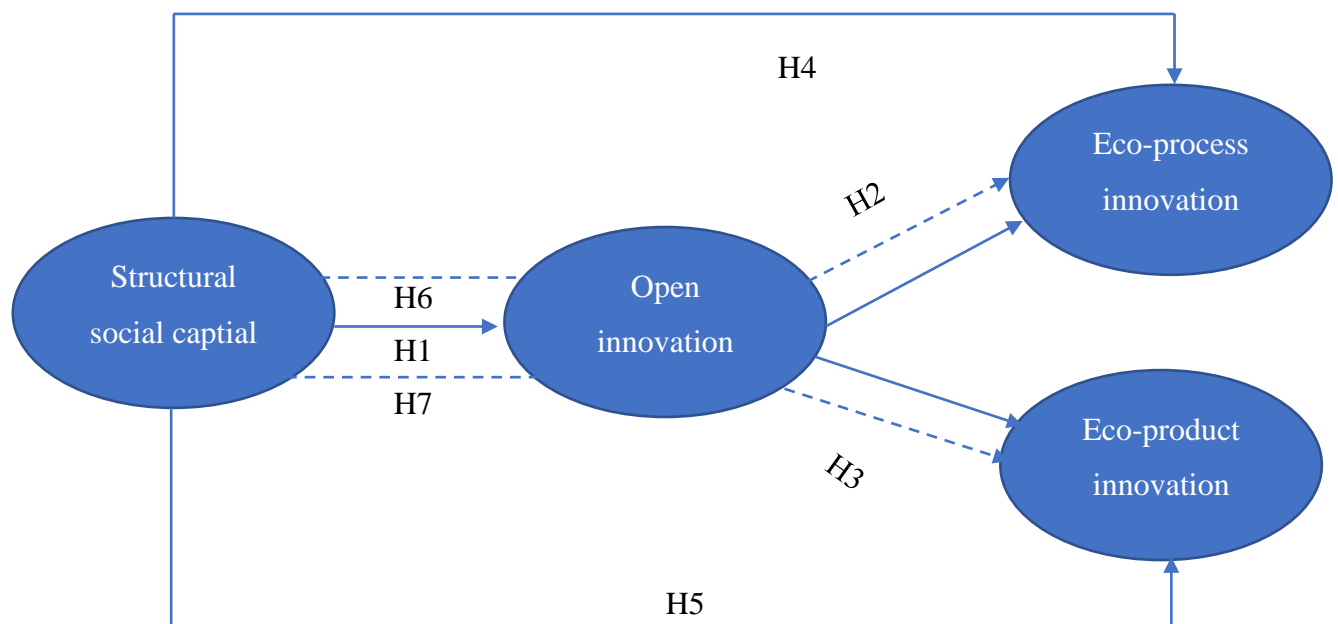


Figure 1. Proposed model

3. Method

3.1. Sampling and data collection

The author first conducted in-depth interviews with five directors of different agricultural cooperatives to gain first-hand knowledge of eco-innovation practices. In order to test the proposed research model, a survey method was employed to collect quantitative data. Following the procedures recommended by Anderson and Gerbing (1998), the author developed the questionnaire. For the formal survey, The author initially selected a random sample of 350 agricultural cooperatives from eleven midlands and Northern mountainous cities of Vietnam including Thai Nguyen, Son La, Hoa Binh Lao Cai, Ha Giang, Bac Can, Lang Son, Tuyen Quang, Yen Bai, Phu Tho and Bac Giang from the list of the local agricultural cooperatives taken from the the websites of Provincial People's Committee. The author contacted by telephone all the directors to set up appointments and presented the questionnaire and collected the surveys after their completion. The author then collected 293 valid questionnaires to use in the analysis. This represented a response rate of 84% (293 out of 350 telephone contacts).

3.2. Measurement instruments

Structural social capital, a second-order factor construct, were measured through four reflective first-order factors. The items were derived from Wang et al. (2021). Six items for Open innovation items were adapted from Yang and Roh (2019), Chesbrough and Crowther (2006), Chesbrough et al. (2006). Four items for Eco-Product innovation were derived from Li et al. (2010), Triebswetter and Wackerbauer (2008) and Horbach et al., (2012). Five items for Eco-Process innovation were derived from Chen et al. (2006), Chen (2008) and Chiou et al. (2011). The Likert scale is often used to measure the sample's attitude or opinion on something and can be divided into five, seven, or nine levels. Compared to other scales, the

five-point scale has a high degree of discrimination that can increase the accuracy of the measurement and reduce measurement error. Therefore, the 5-point Likert scale was used in the questionnaire, and the most realistic option was selected from the number “1 (strongly disagree)-5 (strongly agree)”.

Table 1. Constructs and measurement items

Construct	Label	Items	Sources
Structural social capital (SC)	SC1	Have cooperative relations with other co-ops, enterprises and organizations in the network.	Wang et al. (2021)
	SC2	Communicate frequently with suppliers, customers, universities, scientific research institutions, and other cooperative units.	
	SC3	Communicate frequently with the government, trade associations, etc.	
	SC4	The communication between the various part and members of the co-op is frequent and close.	
Open innovation (OI)	OI1	Among the external innovation activities performed by our cooperative, customer is an important source of information.	Yang and Roh (2019); Chesbrough and Crowther (2006); Chesbrough et al. (2006)
	OI2	Among the external innovation activities performed by our cooperative, research institution and university are an important source of information.	
	OI3	Among the external innovation activities performed by our cooperative, Non-governmental organization is an important source of information.	
	OI4	Among the external innovation activities performed by our cooperative, the associations are an important source of information.	
	OI5	Among the external innovation activities performed by our cooperative, Conferences, fairs and exhibitions are an important source of information.	

Construct	Label	Items	Sources
	OI6	Among the external innovation activities performed by our cooperative, other cooperatives are an important source of information.	
Eco-Process innovation (EPCI)	EPCI1	The manufacturing process of the cooperative effectively reduces the emission of hazardous substances or waste.	Chen et al. (2006), Chen (2008) and Chiou et al. (2011)
	EPCI2	The manufacturing process of the cooperative minimize the use of agrichemicals (e.g., through use of petiole analysis, optical weed spray controllers).	
	EPCI3	The manufacturing process of the cooperative reduces the consumption of water.	
	EPCI4	The manufacturing process of the cooperative recycles waste that allow them to be treated and re-used.	
	EPCI5	The manufacturing process of the cooperative use alternative energy sources (e.g., green electric power, solar, wind)	
Eco-Product innovation (EPDI)	EPDI1	Increase of the green product's variety	Li et al. (2010), Triebswetter and Wackerbauer (2008)
	EPDI2	Quality improvement by using standards	
	EPDI3	Advocating the use of green product labels	
	EPDI4	Expanding the market coverage of green product	

3.3. Analysis method

Structural equation modelling (SEM) was adopted to test the hypothesised model. Structural equation modeling (SEM) is a multivariate statistical framework that is used to model complex relationships between directly and indirectly observed (latent) variables. Before testing the hypotheses, the measurement scales of each construct were evaluated following the guidance proposed by Anderson and Gerbing (1988). In order to test and estimate the path coefficients for hypothesised relationships in the model, AMOS 24 was employed for SEM analysis.

4. Results

4.1. Assessments of measurement model

The measurement model analysis confirmed whether the constructs were measured correctly by the proposed variables. The author followed the guidance on the use of structural equation modelling in practice suggested by Anderson and Gerbing (1988) and Churchill (1979) to assess the measurement model in terms of overall fit with the data, reliability and convergent and discriminant validity. Firstly, the author conducted confirmatory factor analysis (CFA) on AMOS 24 to test the convergent validity of measurement items used for each latent variable. Table 2 shows factor loadings and t-values resulted from the CFA. According to CFA results for multi-item constructs including Social capital, Open innovation, Eco-Process innovation, Eco-Product innovation, all factor loadings were statistically significant. However, the measurement scale item OI1, EPCI1 and EPDI4 were lower higher than the cut-off value of 0.5 suggested by Hair et al. (2010) and therefore were removed. All other measurement scale items of the four variables were retained for further exploratory factor analysis (EFA) on SPSS with principal factor as extraction method followed by a varimax rotation. The EFA results showed four factors emerged subjected to how these constructs were initially measured. The construct validity and the unidimensionality of the measurement scales of the four latent variables, therefore, are confirmed (Straub, 1989). Moreover, a CFA on the four-factor model also revealed a good model fit (CMIN/df = 2.843; $\rho = 0.000$; RMR = 0.056; GFI = 0.916; CFI = 0.931; AGFI = 0.862; RMSEA = 0.079) as shown in Table 3.

Cronbach's alpha was calculated to evaluate the reliability or the internal consistency of the constructs. According to results shown in Table 2, the Cronbach's alpha coefficients for all four constructs were higher than 0.7 which is the threshold value suggested by Hair et al. (2019); therefore, their reliability were satisfactory. In addition, as shown in Table 4, Average Variance Extracted (AVE) value for Social capital, Open innovation, Eco-Product innovation exceeded the recommended level of 0.5 (Bagozzi and Yi, 1988) except that of Eco-Product innovation. The author therefore, removed the measurement scale item EPCI5 to improve AVE (Anderson and Gerbing, 1988; Fornell and Larcker, 1981). The author further used Fornell and Larcker which is extensively accepted technique by Fornell and Larcker (1981) to assess the discriminant validity in the study, following the recent literature (Ashfaq et al., 2020). The first technique in Table 4 satisfied Fornell and Larcker's (1981) criteria.

Table 2. Measurement model

Construct scale items	Factor loading	t-value
SC1	0.695	_____
SC2	0.782	11.479
SC3	0.791	11.576
SC4	0.715	10.682

Construct scale items	Factor loading	t-value
OI1	0.459	_____
OI2	0.696	7.207
OI3	0.679	7.129
OI4	0.782	7.531
OI5	0.756	7.444
OI6	0.688	7.172
EPCI1	0.479	7.161
EPCI2	0.667	_____
EPCI3	0.755	10.482
EPCI4	0.723	10.164
EPCI5	0.547	8.066
EPDI1	0.742	13.984
EPDI2	0.908	_____
EPDI3	0.754	14.254
EPDI4	0.457	7.818

Note(s): Measurement model fit details: CMIN/df = 2.843; ρ = 0.000; RMR = 0.056; GFI = 0.916; CFI = 0.931; AGFI = 0.862; RMSEA = 0.079; '____' denotes loading fixed to 1

Table 3. Convergent validity and reliability (N = 293)

Construct	Label	Composite reliability	Average variance extracted (AVE)	Cronbach's alpha
Social capital (SC)	SC1	0.834	0.558	0.809
	SC2			
	SC3			
	SC4			
Open innovation (OI)	OI2	0.844	0.522	0.843
	OI3			
	OI4			
	OI5			
	OI6			

Construct	Label	Composite reliability	Average variance extracted (AVE)	Cronbach's alpha
Eco-proces innovation (EPCI)	EPCI2	0.775	0.537	0.763
	EPCI3			
	EPCI4			
Eco-product innovation (EPCI)	EPDI1	0.845	0.647	0.832
	EPDI2			
	EPDI3			

Table 4. Discriminant validity test (N = 293)

Variables	SC	OI	EPCI	EPDI
SC	<i>0.747</i>			
OI	0.512***	<i>0.722</i>		
EPCI	0.379***	0.637***	<i>0.732</i>	
EPDI	0.385***	0.148*	0.475***	<i>0.805</i>

Note(s): *Italic values are the \sqrt{AVE}*

4.2. Hypotheses testing

The author examined two models in this phase of analysis. In the first model, the proposed mediating variable is not considered. The results show significant positive effect of SC on EPCI ($\beta = 0.432$; $p < 0.01$) and SC on EPDI ($\beta = 0.407$; $p < 0.01$). The variance explained (R2) for dependent constructs are 18.7% (EPCI) and 16.6% (EPDI). In the second model, mediating constructs (OI) is also included, and relationships are examined. The findings support the following hypotheses: H1 (SC and OI, $\beta = 0.507$; $p < 0.01$); H2 (OI and EPCI, $\beta = 0.547$; $p < 0.01$); H5 (SC and EPDI, $\beta = 0.406$; $p < 0.01$). Hypothesis H3 (OI and EPDI) and H4 (SC and ECPI) are not supported by the data; rather, SC indirectly affects ECPI through OI.

Table 5. Hypotheses testing

Hypotheses	Path	beta	t value	p value	Supported?
H1	SC \rightarrow OI	0.507	6.496	0.000	Yes
H2	OI \rightarrow EPCI	0.547	6.013	0.000	Yes
H3	OI \rightarrow EPDI	-0.029	-0.386	0.699	No
H4	SC \rightarrow EPCI	0.145	1.915	0.056	No
H5	SC \rightarrow EPDI	0.406	4.997	0.000	Yes

4.3. Mediation analysis

To examine the mediating effect, two statistical tests are conducted. First, mediation is tested by Baron and Kenny (1986) method. Two models M1 and M2 are considered to test the mediation effects. Model M1 includes only the link between SC and EPCI and EPDI, while the proposed mediating variable is not considered. Model M2 also includes the indirect relationships between SC and EPCI and EPDI, through OI. Table 5 shows the path coefficients. In model M1, SC positively affects EPCI and EPDI. In model M2, the direct path from SC to OI is significant. Further, the path from OI to EPCI is also significant. However, the path from OI to EPDI is statistically insignificant. Moreover, the path from SC to EPDI is statistically significant while the path from SC to EPCI is statistically insignificant. Therefore, OI fully mediates between SC and EPCI. The author further examines the mediating effect by using bootstrapping technique. Bootstrapping technique statistics are given in Table 5. The results from the above two statistical tests confirm the mediating effect of OI between SC and EPCI.

Table 6. Mediation analysis

Path	M1	M2	Std. error	Bootstrapping (p value)	Decision
SC → EPCI	0.432***	0.145	0.088	0.001	Full mediation (H6 is supported)
SC → EPDI	0.407***	0.406***	0.064	0.730	No mediation (H7 is rejected)
SC → OI		0.507***	0.047		
OI → EPCI		0.547***	0.175		
OI → EPDI		-0.029	0.1		

5. Discussion and Conclusion

In this section, we summarize key findings and managerial implications, which can be useful for improving eco-innovation adoption, specifically through innovation openness. The study tests a theoretical model demonstrating the role of SC on OI and mediating effect of OI between SC and EPCI and EPDI. First, the author found significant positive effect of SC on OI. It implies that the network ties with other agricultural cooperatives, customers, universities and other agencies such as NGOs and the intensity of such ties help agricultural cooperatives to get access to tacit know-how and privileged resources. It can help agricultural cooperatives to take advantage of different source of knowledge like the needs of customers, the successful innovation models from other cooperatives in the industry, the latest scientific information from universities and capacity building programs from NGOs. Second, this research has revealed that SC has a significant positive effect on EPDI while SC does not have a significant positive impact on EPCI. Rather, the relationship between SC and EPCI is mediated through OI. It can be explained that SC is enough for agricultural

cooperatives to adopt EDPI. The adoption of EPDI by agricultural cooperatives is mainly to increase the variety of the products; improve the quality of the products by applying standards such as VietGAP, GlobalGAP, PGS organic...; advocating the green product labels. Therefore, the more network ties and the stronger intensity of the ties will help agricultural cooperatives to adopt EPDI. However, the EPCI is more complicated than EPDI because it is related to the changes in the production process of the agricultural cooperatives therefore required in-depth knowledge and technology transfer process from different sources of networks through the innovation openness. This research therefore proposes some recommendations. First, agricultural cooperatives should improve personal contacts to expand network ties with customers, other agricultural cooperatives, universities and other agencies such as NGOs. Second, local government should take actions to hold trade shows and exhibitions, scientific conferences so that agricultural cooperatives can take part in. Moreover, more capacity building programs from NGOs should be introduced to agricultural cooperatives so that the members can be trained by experts and receive technology transfer in order to adopt EPCI.

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SUSTAINABLE DEVELOPMENT OF SOLAR POWER IN DANANG CITY

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Abstract

Vietnam is currently one of the fastest-growing economies in the world. Along with the development of the economy, Vietnam's electricity consumption demand has increased significantly in the recent decade. According to EVN, the average annual growth rate of electricity consumption is about 11%. According to data about the climate of Da Nang city from RETScreen software provided by NASA: Da Nang is located in a tropical climate zone, with an average temperature of about 26°C and a relatively high number of sunny hours a year around 2000 - 2600 hours/year, has a high solar heat radiation potential of about 4.87 kWh/m²/day. This is favorable for exploiting solar power to serve industries in Da Nang city. Solar power will partially replace electricity and other forms of fossil energy such as coal, oil, gas, etc., to reduce production and operating costs and use energy economically and efficiently. The study has identified the factors that affect the sustainable development of solar power in Da Nang; the results of this study help relevant agencies business owners to apply and replicate the application. Solutions to save energy using solar energy sources in Da Nang city and a valuable reference document for provinces across the country to study and apply

Keywords: *Solar power, Renewable energy, Danang, Vietnam*

1. Introduction

Energy-intensive companies can make a positive contribution to increasing solar energy usage if business owners actively participate in the work of replacing energy sources and using power by the electricity. application of the power of the face of the public host [2].

The identification of industrial fields with significant potential for solar energy application to meet business requirements is an inevitable trend in line with the Government's development policy to promote the development of solar energy. Rooftop solar power projects help reduce the load on the grid. Moreover, when installing solar power systems at factories, businesses not only save operating costs when they are self-sufficient in some of their electricity consumption needs, but also can sell to the national grid. family. Therefore, the potential application of solar energy for industries needs to be replicated nationwide

Da Nang is a political-economic center of Central Vietnam, according to a report by the General Statistics Office [3], in January 2018, Da Nang leads in industrial growth with a growth rate of 48, 7%. Along with the rapid growth of industries in the city, the demand for electricity is increasing rapidly, leading to an increase in investment capital to develop the power system to meet the reliability of power supply for industrial parks. Karma. The

economical and efficient use of energy as well as the exploitation of solar energy to reduce the amount of electricity consumed from the national grid and fossil energy sources are essential to contribute to the goal of the whole country on keeping the environment clean and reducing greenhouse gas emissions as committed

2. Theoretical Basis and Hypothesis Development

2.1. Theoretical Basis

Renewable energy is a broad, scientific concept that is currently being conceptualized in many different ways. A physical science approach, whereby renewable energy is understood as energy sources or methods of energy extraction that, if measured by human standards, are limitless. Infinite has two meanings: (i) energy exists so much that it cannot become exhausted because of human use (eg solar energy); (ii) short-term and continuous self-renewable energy (e.g. biomass) in processes that continue for a long time on earth. **renewable energy** approach, no matter how it is considered, shows that these are non-fossilized, renewable forms of energy, including: small hydroelectric sources, marine energy (generation electricity by waves, tides, ocean currents), wind energy, solar energy, geothermal energy; biomass energy and biofuels.

Regarding the theoretical models related to consumer behavioral intention, there are many theories, typically: Technology approach theory and model (TAM) was developed by FDDavis (1989) based on the theory. “Theory of Reasoned Action”, proposed by Ajzen.

Many researchers have developed components from this TAM model into new technology acceptance theory (TAM2). According to this technology acceptance theory, customers' desire to use technology depends on factors such as: (i) perceived ease of use; (ii) perceived ease of use. There are 3 factors that need to be taken into account constituting the TAM technology acceptance model, including: (i) Perceive Usefulness (PU); (ii) Perceive Easy of Use (PEU) and (iii) Attitude towards use

However, depending on the characteristics of the technology, many researchers have added some features in the use of different technologies (Adams, Nelson, Todd (1992); Venkatesh, Davis (2000). In high-tech services, in addition to the factors in the theory of technology acceptance, there are other characteristics, such as: the risk caused by the use of technology, the perceived cost... like Venkatesh (2000), Venkatesh, Morris, Davis, Davis (2003), or Workman's (2007), Venkatesh, Bala, (2008),...

On the basis of previous studies, this study continues to use the technology acceptance model based on the concepts in the extended Davis (1989) TAM model to solve the behavior in the intention to use technology. solar energy technology in Da Nang city. The study has included specific variables affecting the application of this service based on the concepts of this TAM model, including perceived usefulness, perceived ease of use, perceived cost perceived risk. In there:

Usefulness: is the degree to which you believe that using solar technology in Danang will improve job performance.

Perceived ease of use: is the degree to which it is believed that using solar power technology in Danang will take no effort.

Perceived risk: is the risk that households perceive when using solar power technology in Da Nang.

Perceived convenience: is the convenience that households feel when using solar power technology in Da Nang.

Policies on the use of solar power: are the government's incentive policies when using solar power technology in Da Nang.

Perceived cost: is the cost that households perceive when using solar power technology in Da Nang.

Trust: is the belief in the use of solar power technology in Da Nang

Intent to use: expressing intention and interest in using solar power technology

2.2. Research model and hypotheses

On the basis of theory and empirical studies as mentioned above, the research model of factors affecting the intention to use solar power in Da Nang City is as follows:

The proposed hypotheses to be tested in this study are as follows:

H1: Perceived usefulness of solar power technology has a positive (+) impact on intention to use solar energy.

H2: Perceived ease of use of solar power technology has a positive (+) effect on intention to use solar energy.

H3: Perceived risk of solar power technology has a negative (-) impact on intention to use solar energy.

H4: Perceived convenience of solar power technology has a positive (+) impact on intention to use solar energy.

H5: The policy on the use of solar power has a positive (+) impact on the intention to use solar power.

H6: Perceived cost has a negative effect (-) on intention to use solar power.

H7: Trust has a positive effect (+) on intention to use solar energy.

3. Method

The methodology in this study consists of two steps: preliminary research and formal research. Preliminary research using group discussion skills to calibrate the model and design the questionnaire. The formal study used closed-ended questionnaires modified during the preliminary study to collect and analyze data to test models and hypotheses. All research data will be supported by SPSS software.

3.1. The scale

To measure research concepts, the author uses a 5-point Likert scale with 1: completely disagree to 5 completely agree for 26 observed variables.

H1: Perceived usefulness is measured by 4 observed variables, including: Using solar power as a renewable and inexhaustible source of energy, using solar power as a renewable energy source less polluting the environment, using solar power saves costs in the long run, using solar power helps to be more active in daily life and production.

H2: Perception of the ease of use of solar **power technology** measured by 3 observed variables, including: Easy installation and maintenance of solar power equipment, using solar power is easy to use, given that solar power equipment is easy to operate.

H3: Perceived risk is measured by 6 observed variables, including: Products and services are not the same as guaranteed under warranty, the quality of solar panels is not as expected. Expectations about longevity, poor quality, slow payback, solar panels can produce harmful substances into the environment, the use and sale of solar energy depends on the government. According to the State's policy, the life of solar panels is reduced compared to the transaction.

H4: Perceived convenience is measured by 4 observed variables, including: Solar energy can be used anywhere, solar energy is active in daily life and production, installation Installing solar power is easy to implement, not technically difficult, and the production and use of solar power matches the time frame of high demand.

H5: The policy on the use of solar power is measured by 3 observed variables, including: The government needs to facilitate the deployment of solar power technology application, financial support for the development of solar energy. installed in Da Nang on the development of solar power, and it is necessary to issue regulations on the development of solar power in Da Nang

H6: Perceived cost is measured by 3 observed variables, including: Cost of installing solar power system in line with income. Cost is the most important factor when installing solar power technology, the cost of installing solar power technology is competitive compared to other energy sources.

H7: Trust is measured by 3 observed variables, including: complete trust in the consulting/providing services of consultants on solar power technology, complete confidence in the provision of solar energy technology. power output from excess solar power (if any), fully believe in the mechanism and policy of investment in energy infrastructure.

3.2. Survey sample and study site

According to Bentler & Chou (1987), the minimum number of samples for an estimator is 5 samples. In this study, there are 29 observed variables, so the required number of samples is 145 (Nguyen Dinh Tho, 2011). However, to ensure representativeness of the population, this study will survey 279 samples. The study sample was selected by non-probability quota sampling method with a sample size of 279 .

Scale test results

The scale is evaluated through the following methods: reliability assessment, exploratory factor analysis. Evaluating the scale through Cronbach's Alpha coefficient allows assessing the reliability of establishing a composite variable on the basis of many

single variables. To calculate Cronbach's Alpha for a scale, there must be at least 3 measurement variables. Cronbach's Alpha coefficient has a variable value in the range [0,1] and the total correlation coefficients are all greater than 0.3.

In the results of testing the reliability of the observed variable, the correlation coefficient of the perceived usefulness variable is 0.721; of perceived ease of use margin is 0.927; of the perceived risk variable is 0.987; of the perceived variable of convenience is 0.828; of the policy margin on the use of solar energy is 0.802; of the perceived cost of solar power system investment is 0.620; of the perceived variable of trust in buying, selling and using solar energy is 0.858; of intention margin for the use of solar energy in Da Nang is 0.831.

Thus, the observed variables are not uniformly required and no variables are excluded and the component variables in the study all have a fairly high confidence coefficient.

4. Results

4.1. Current status of solar energy development

4.1.1. Solar energy, potential and technology to exploit solar energy

Solar energy is electromagnetic radiation produced by the sun. It is the cleanest, most abundant source of renewable energy available for use on earth and is estimated at 3.8 million EJ, more than 10,000 times the consumption of fossil fuels and nuclear fuel. consumed in 2002. Solar energy that keeps the earth's surface at a temperature warm enough to support human life can be converted into useful forms of energy through thermal conversion, photosynthesis electrically or through high-temperature centralized receivers. Solar energy has long been captured through collectors and used for heating purposes very efficiently. The total installed capacity of solar thermal energy systems in the world increased from 62 GWth (89x10⁶ m²) in 2000 to 472 GWth (675x10⁶ m²) in 2017, corresponding to an increase in heat production from 51 TWh. in 2000 to 388 TWh in 2017 [6].

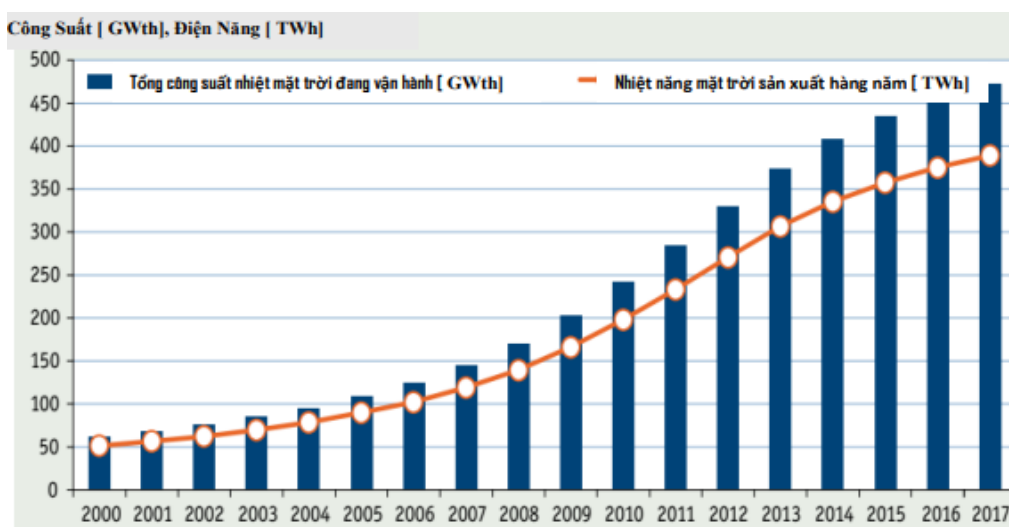


Figure 1. Installed capacity of solar thermal systems in the world and annual thermal energy 2000 - 2017

Source: *Solar thermal worldwide 2018* [6]

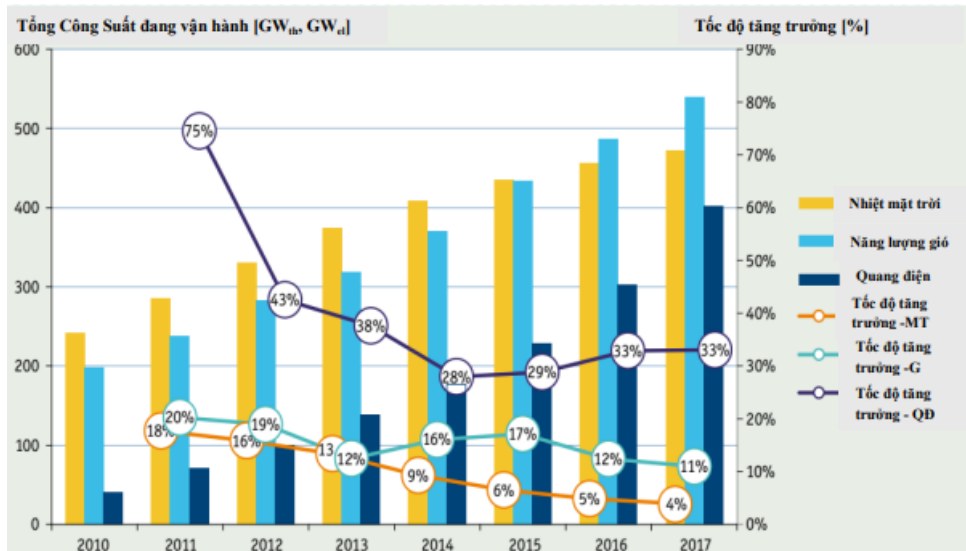


Figure 2. Installed capacity of wind and solar energy systems in the world and growth rate from 2010 to 2017

Source: AEE INTEC, Global Wind Energy Council (GWEC), SolarPower Europe, REN21 - Global Status Report 2011 - 2018

Solar radiation can also be converted directly into electrical energy through the use of photovoltaic cells [7]. The above data shows that the development rate of solar battery systems is much faster than that of solar thermal and wind energy systems.

4.1.2. Solar potential in Vietnam

Vietnam is one of the countries rich in solar energy potential. Scientists estimate the average solar radiation intensity about 5 kWh/m²/day (1,825kWh/m²/year) [8]. Solar energy in Vietnam is available all year round, is quite stable and widely distributed across different regions of the country.

Table 1. Solar radiation data in Vietnam

Region	Sunshine hour of the year	Solar radiation intensity (kWh/m ² /day)	Evaluate
northeast	1600-1750	3,3-4,1	Medium
northwest	1750-1800	4,1-4,9	Medium
North Central	1700-2000	4,6-5,2	Good
Central Highlands and South Central	2000-2600	4,9-5,7	Very good
Southern	2200-2500	4,3-4,9	Very good
National average	1700-2500	4,6	Good

The provinces from Da Nang on average have about 2,000-2,600 hours of sunshine, the amount of solar radiation increased by 20% compared to the northern provinces. Therefore, for localities in the South Central and South Vietnam, the source of solar radiation

is a great resource to exploit and use. Solar energy can be used to successfully develop the solar energy industry, including solar photovoltaic (PV) as well as solar thermal (ST) applications for the production of heat for hot water. services for commercial, industrial and civil purposes. A recent study by the German development cooperation agency in May 2015 [10] estimated that in two decades, rooftop solar PV systems could reach capacities from (2,000 -5,000 USD).) MW and solar power plants using solar cells can reach a capacity of 20,000 MW. Although the potential of solar thermal radiation in Vietnam is very high, in fact, the implementation of new solar energy applications is in the first stage, only a few projects with small capacity have been inaugurated and put into operation. into mining. According to statistics as of May 15, 2019, Vietnam has a total installed capacity of 866.5 MW including 10 solar power plants and 1800 rooftop solar power plants.

Table 2. Solar power plants put into operation

TT	Projec	Province	Total installed capacity (MW)	Annual power output (GWh)	Test run
1	TCC Phong Điền	Hue	35	60	05/10/2018
2	TCC Krông Pa	Gia Lai	49	103	04/11/2018
3	BP Solar 1	Ninh Thuan	37,5	74	20/01/2019
4	Vĩnh Tân	Binh Thuan	6,2	10,5	30/1/2019
5	BP Solar 1	Ninh Thuan	100	74	20/01/2019
6	Srepok 1 and Quang Minh	Dak Lak	19,2	150	09/03/2019
7	Mộ Đức	Quảng Ngãi	204	35	26/04/2019
8	Trung Nam	Ninh Thuận	330	450	27/04/2019
9	BIM	Ninh Thuận	20,5	600	27/04/2019
10	Đắk Mi	Bình Thuận	30,12		13/05/2019

Source: Vu Quang Dang, energy expert, May 2019

In particular, after the Prime Minister issued Decision No. 11/2017/QĐ-TTg dated April 11, 2017 on the mechanism to encourage the development of solar power projects in Vietnam, many solar power plant projects According to data from Electricity of Vietnam (EVN), after 2 years of implementation, up to now, there have been 365 registered and supplemented solar power projects. added to the plan with the total expected capacity 29,000 MWp. Currently, there are 141 projects added to the plan with a total capacity of over 14.00 MWp, of which 95 projects have signed power purchase agreements with EVN. As for roof-mounted solar power, after 2 years, only 1,800 customers (offices, businesses, households...) have joined offices, businesses, households, and accumulated electricity output to the grid. is 3.97 million kWh. This capacity is very modest compared to the potential.

As for rooftop solar power, although the rooftop solar power potential is assessed to reach a capacity of (2,000 -5,000) MW, according to EVN data [11], by the end of February

2019, only There are 1800 rooftop solar power projects deployed across the country, with a total installed capacity of 30 MWp. Some typical grid-connected rooftop solar power projects for commercial and industrial purposes with a capacity of over 100 kWp have been deployed and put into operation.

Currently, the deployment and installation of equipment using solar thermal energy is quite popular [10]. About 30,000 to 40,000 domestic solar hot water systems are installed annually for small-scale residential and commercial purposes, totaling an estimated 100,000 systems operating nationwide, corresponding to installed capacity is about 280 MWth with an annual capacity of 340 GWh. Up to now, only a few large-scale commercial and industrial solar thermal systems have been mentioned in the reports.

4.1.3. Current status of solar energy use in Da Nang city

Currently, the deployment of solar energy exploitation applications in Da Nang is at the beginning stage, most of the solar energy exploitation systems are heating for hot water for domestic and commercial purposes, only one several systems for industrial purposes

The deployment and installation of rooftop solar battery systems has only just begun, according to data from Da Nang Power Company provided by July 2018, a total of only 29 agencies and businesses. Businesses and households have registered to sell rooftop solar power to Da Nang Power Company with a relatively small installed capacity of 192.79 kWp. In addition to the systems registered to sell electricity to Da Nang Power Company, a small number of rooftop solar PVs with larger capacity are installed to produce electricity to serve the needs of the units.

After issuing Official Letter 1532/EVN-KD dated March 27, 2019 of the Electricity of Vietnam on guiding the implementation of rooftop solar power projects, Central Power Corporation (CPC)) held a seminar "Developing rooftop solar power" on April 19, 2019, DSED organized a training program "Developing rooftop solar power in Da Nang towards efficient and sustainable energy use". sustainable" on April 25, 2019, and especially on May 16, 2019 Vietnamese television station in Da Nang city VTV8 organizes a live TV program following the current news with the theme "Use electricity to get more money". ", the awareness of people and businesses about rooftop solar power increased very quickly, by the end of May 2019, there were 157 households and businesses in Da Nang installed rooftop solar power. with a capacity of 1,028 kWp. With the rapid development of rooftop solar power, people and businesses in Da Nang aim to use energy efficiently and sustainably.

4.2. Analysis results

Exploratory factor analysis is used to test the validity of the scale's concepts. Observable variables with factor loading weights less than 0.4 will be excluded (Clack & Watson, 1995). In this study, the method of extracting the coefficients of the main components (Principal components) is used with the factor rotation is Varimax and the index represents the amount of variation explained by the factor greater than 1 (Eigenvalue > 1). (Ngoc & Trong, 2005). A total extracted variance value greater than or equal to 0.5 will be accepted (Hair et al., 1998).

In exploratory analysis, the analysis results draw out 5 factors. KMO coefficient = 0.913 with significance level of 0.000. Research results have given 5 factors with factor weighting coefficients greater than 0.4. At levels of Eigenvalue greater than 1, 5 factors have been extracted with extracted variance of 71,666%. This means that 5 factors explain 71,666% of the variability of the data. Besides, most of the variables have factor loading coefficients greater than 0.4. Thus, the scales reach convergence value.

There are 5 factors drawn including: (i) Risks caused by using solar power equipment (RIST); (ii) Convenience and confidence when using solar power equipment (TRUSCONV); (iii) Ease of use of solar power equipment (EAS); (iv) Government utility and policy towards solar power (GOVUTIL); (v) Cost of installing solar power equipment (COST).

From the results of EFA analysis, it shows that the scale is extracted into 5 corresponding factors, these factors have factor loading coefficients of 0.4 or more, so the scales have convergence. However, there are a number of scale components that all belong to different factors. Therefore, the scales are not unidirectional.

Results of regression analysis and hypothesis testing

The results of regression model estimation by OLS estimation method with dependent variable BI and independent variables RIST, TRUSCONV, EAS, GOVUTIL, COST, showed that the data set explained the variation of the dependent variable. The dependence on the independent variables of the model is quite good. From the R^2 Adjusted index, it shows that the data set has explained 65.5% of the influence of the independent variables on the dependent variable, the statistical index $F = 34,137$ at the significance level of 0.000 (Sig. = 0.000) with the assumptions of multiple regression being satisfied. In which, most of the explanatory variables have the expected sign and have statistical significance at 1% significance level. Factors with positive regression coefficients imply that, if other factors are constant, an increase of one unit of the independent variable will increase the intention to use solar technology by β units (where β is the regression coefficient). In contrast, for factors with negative sign (-) regression coefficient, an increase of 1 unit of the independent variable will reduce the use of solar technology by β unit (with β is the regression coefficient).

The results show that, 4 out of 5 factors of the model have a statistically significant influence on the intention to use solar power technology in Da Nang city. In which, the factor Perceived cost of installing solar power equipment has the greatest influence; Perceived usefulness and Government policy has the second biggest influence; Perception of convenience and confidence when using solar power technology has the third biggest influence; Perceived ease of use of solar technology has the smallest effect. The results of the analysis are shown in Table.

Perceived factor of convenience and trust when using solar power equipment ($\beta = 0.446$): This factor has a regression coefficient of $\beta = 0.446$. Thus, if other factors remain the same, when the perception of convenience and trust when using solar power equipment increases by 01 point on the 5-point Likert scale, the intention to use solar energy increases

by 1 point. Da Nang's solar power in Da Nang increased to 0.446 points. Thus, if Da Nang is locally aware of the convenience and confidence in using solar power equipment, they will increase their intention to use this type of energy for Da Nang. The analysis results of the scale components in this factor are the lowest 1 and the highest 5. The average score ranges from 2.9913 to 3.9561 points on the 5-point Likert scale.

Perceived factor about the ease of use of solar power equipment ($\beta = 0.250$): This factor has a regression coefficient of $\beta = 0.250$. Thus, if other factors are held constant, when the perception of ease of use of solar power technology increases by 1 point on the 5-point Likert scale, the intention to use solar power technology increases by 1 point. of Da Nang in Da Nang increased to 0.250 points. Thus, if local people perceive the ease of use of solar power technology, they will increase their intention to use this type of energy. The analysis results of the scale components in this factor are the lowest 2 and the highest 5. The average score ranges from 3.3313 to 3.5826 points on the 5-point Likert scale.

Factor perceived usefulness and government policy ($\beta = 0.479$): This factor has a regression coefficient of $\beta = 0.479$. Thus, if other factors are constant, when Da Nang perceives the usefulness and the government's policy on the use of solar energy increases by 1 point on the 5-point Likert scale, the intention to use solar energy increases by 1 point. Da Nang's solar power in Da Nang city increased to 0.479 points. It can be seen that if the locality perceives the usefulness and the Government's policy on using solar power technology, they will increase their intention to use this type of energy. The analysis results of the scale components in this factor are the lowest 1 and the highest 5. The average score of the scales is quite high, ranging from 4,5304 - 4,991 points on the 5-point Likert scale.

Perceived factor about the cost of installing solar power equipment: This factor has a regression coefficient of $\beta = 0.368$. Thus, if other factors remain constant, when Da Nang's perception of the installation cost of solar power technology increases by 1 point on the 5-point Likert scale, then the intention to use solar energy technology Da Nang's sun in Da Nang City increased to 0.368 points. The analysis results of the scale components in this factor are the lowest 2 and the highest 5. The average score of the scales is quite high, ranging from 2.7977 to 3,956 points on the 5-point Likert scale.

Regression analysis results show that only 4 out of 5 factors have an impact on **use of** solar energy in Da Nang city, that is: perceived usefulness and ease of use have the greatest impact; Perceived trust has the second biggest impact; perceived convenience in using solar power has the third biggest impact; ease of use in installation, maintenance, operation with minimal impact. In which, 4 factors have a positive impact on the intention to use solar power in Da Nang and have statistical significance at the Sig.= 0.000 significance level.

The research results of the topic are quite similar to the studies of the author (Davis, 1989). These studies all use technology acceptance model (TAM) as the base model. In the author's research (Davis, 1989), there are perceived usefulness and ease of use, Da Nang's trust factor and perceived risk factor mentioned similar to the research results. . In which, the perceived usefulness and ease of use and the trust factor of Da Nang have

a positive influence on Da Nang's attitude in using solar power technology. In the author's study, the factors of perceived usefulness, perceived ease of use, convenience, trust of Da Nang and perceived risk are similar to the research results. The perceived usefulness, perceived ease of use, convenience, and trust factors of Da Nang all have a positive impact on the intention to use solar power technology. The risk perception factor was not statistically significant. Through relevant studies at home and abroad, the author can draw conclusions and research results that are quite consistent with the reality and the factors that affect the intention to use solar power technology. heaven in Vietnam in general and in Da Nang city in particular.

5. Discussion and Conclusion

First, promote the usefulness and ease of use of technology. Promote propaganda and dissemination of knowledge, documents, leaflets, brochures, organize seminars, training and training on the usefulness and ease of use of solar power technology. First of all, propaganda for cadres, civil servants, public employees and business sectors in the city; Next are the people about the usefulness and ease of use of the technology of solar power. In addition, propagandize the importance, about the great economic, social and environmental protection of the development and use of renewable energy in the process of sustainable development, so that there are practical actions to contribute to the development and use of renewable energy.

Second, reduce risks in using solar power. In fact, there are many factories at home and abroad that manufacture solar panels. Therefore, for Da Nang who intend to invest in solar power (attic), choosing solar panels is a difficult problem for them, because there is not enough information to determine What are the good or bad quality products? Da Nang needs to pay attention to the following information: (i) Certificate of quality insurance issued by independent insurance companies. This is common practice in international trade, especially for high-tech products; (ii) Manufacturers of solar panels must be certified to meet international standards IEC (International Electrotechnical Commission) and UL standards (Underwriters Laboratories Inc.). IEC and UL standards differ greatly. IEC standards specify minimum equipment safety requirements. UL standards by contrast provide comprehensive specifications for product safety and application; (iii) Solar panels must have a design solution against potential inductive degradation - PID (Potential Induced Degradation); (iv) For each shipment of solar panels, upon delivery, the seller must provide the buyer with an ex-factory inspection report for each model indicating the product's serial number; (v) After the purchase - sale contract is signed, the seller must facilitate the buyer to visit/survey at the manufacturing plant at the right time to test the output and pack the products for release. solar battery.

Third, support the cost of investing in solar power equipment for Da Nang. The development of rooftop voltage energy has many obstacles, such as high investment costs; lack of information on product quality, construction unit, installation and operation and maintenance mode. In the coming time, authorities or management agencies need to step up propaganda work so that each Danang can understand the economic benefits as well as

investment capital, the usefulness and ease of use of technology. and environmental friendliness. Since then, the State should have mechanisms and policies to support the investment costs of rooftop electric energy equipment for Da Nang and a number of other policies, specifically: Credit support policies; support each Da Nang to install 1 kWh roof voltage energy, support 3 million VND but not more than 9 million VND from the environmental protection fund; or exempting Da Nang from tax for the period not yet paying back; at the same time, establish a center to support operation, maintenance and consulting on rooftop voltage energy...

In addition, promulgating mechanisms and policies for preferential loans (low interest rates), simple and convenient loan procedures for all Da Nang; create conditions for domestic and foreign donors to support Da Nang to install roof voltage.

Fourth, there is a policy of buying - selling electricity for **Da Nang** using rooftop voltage energy. In the context that the power system is under a lot of pressure to ensure electricity supply, especially after 2020, when there is no new source of exploitation in the whole country, the development of rooftop solar power for Da Nang is considered an important consideration. is one of the solutions contributing to reduce pressure on the Power industry; At the same time, this is also a favorable condition to accompany the country's economic development in the future.

With the goal of developing solar power to reach 1GWp by 2020, the Prime Minister issued Decision No. 2068/QĐ-TTg dated November 25, 2015 approving Vietnam's renewable energy development strategy to 2030, vision to 2050; Decision No. 11/2017/QĐ-TTg dated April 11, 2017 on the mechanism to encourage the development of solar power projects in Vietnam (Decision 11) and Decision No. 02/2019QĐ-TTg dated January 8 2019 of the Prime Minister on amendments and supplements to a number of articles of Decision No. 11; The Ministry of Industry and Trade issued Circular No. 16/2017/TT-BCT dated September 12, 2017 stipulating project development and sample power purchase agreement applicable to solar power projects (Circular 16) and Most recently , Circular No. 05/2019/TT-BCT was issued on March 11, 2019 on amending and supplementing a number of articles of Circular 16. In order to improve the mechanisms and policies of electricity purchase and sale between units. electricity with Da Nang investing in rooftop electric energy for living and doing business.

The application of the expanded technology acceptance theoretical model in explaining the intention to use new solar power technology stops at the survey level in Da Nang city, which is one of the localities in the world. selected to be the national center of renewable energy, and at the same time used the traditional regression analysis method to test the intention to use solar power technology in Da Nang for the research variables. The generality and persuasiveness of the study will be higher if the research model evaluates the impact shown from the intention to use the service to the actual installation investment. This is also a direction for further research.

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ASSESSING THE POTENTIAL AND STRENGTHS OF SPECIAL TOURISM RESOURCES CLUSTERS IN PHU YEN PROVINCE, VIETNAM TOWARDS SUSTAINABILITY

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Abstract

General assessment of resources for tourism development is a common trend of countries around the world, because resources play an important role in guiding tourism activities. Phu Yen is located on the Central - Central Highlands heritage road, having many advantages to develop tourism into a spearhead economic sector of the province. This is a locality with unique natural and cultural resources; the basis for developing tourism products with specific characteristics of the province, with high competitiveness. This paper uses the synthetic scoring method to analyze and evaluate the following criteria: the number of tourism resources in the cluster; time can be activated travel; infrastructure and material - technical facilities for tourism. The assessment results show that the potential for the development of a cultural tourism cluster in Phu Yen province is quite favorable. This is an important basis for the province to promote exploitation, strengths, and overcome limitations to build tourist clusters in the direction of sustainable tourism development in the period of regional and international integration.

Keywords: *tourist cluster, Phu Yen, assessment, tourism resources*

1. Introduction

Currently, the exploitation of natural and cultural resources of Phu Yen for tourism activities is still limited compared to the inherent potential of the province. In some coastal localities, tourism potential has not been converted into tourism resources (Phạm, 2016). Over the years, there have been a number of topics and projects to assess natural and cultural resources for tourism development. However, most of these topics only stop at the level of general assessment, preliminary assessment on a large space, not clearly seeing the

differentiation in the evaluation of clusters of integrated tourism resources specifically. To overcome the above unfavourable situation, our article focuses on assessing the potential resources of tourist clusters. Based on the calculation of scores of cultural tourism clusters, we estimate the ranking potential of all tourist clusters.

The results of the article contribute to supplementing documents, serving as a research basis for planning and building specific tourist clusters, typical and effective products, suitable for sustainable tourism development in Phu Yen province.

2. Results

Evaluation is the estimation of the role or value of the research object. Or evaluation is to determine the degree of convenience (very favorable, favorable, unfavorable) of the object for a certain socio-economic requirement. Evaluation tasks are often associated with specific research objectives and objects and from that, an appropriate assessment method is selected. Assessments can be classified into different categories: elemental resource assessment and territorial resource assessment; qualitative assessment and quantitative assessment (*Phu Yen Provincial People's Committee, 2012*). In this paper, the author chooses a cluster-based synthetic resource assessment method, combining qualitative and quantitative assessment, which is suitable for the situation of economic development in general and the tourism industry in particular in Phu Yen province.

2.1. Synthetic assessment method

Step 1: Build a system of criteria for evaluating tourist clusters

Based on the reality of tourism development in Phu Yen province, tourism resources, socio-economic conditions and inheriting the studies of previous authors, the author of the article builds a system of evaluation criteria. tourism clusters include: Number of tourism resources in the cluster; Travel time can be flexible; Infrastructure and material - technical facilities.

In the organization of the provincial tourism territory, the tourist cluster plays an important role in orienting the exploitation and use of resources and tourism development. The number of tourist resources is an important criterion to be able to classify clusters, which clusters with more tourism resources will have more potential for development than those with fewer tourism resources. However, having tourism resources with little tourism activity time, tourism business efficiency is not high, so tourism operation time is considered an important criterion. Infrastructure and material - technical facilities for tourism are the criteria to evaluate the convenience of tourist clusters. If there are many resources, but the infrastructure system and physical and technical facilities are weak, the tourism revenue is not high and the number of days of stay is short (*Nguyen - Vu, 2017*).

a. Number of tourism resources

Tourism is one of the industries with a clear resource orientation. Tourism resources directly affect the organization of the territory, the formation of specialization and the economic efficiency of tourism activities in each cluster. The quantity and quality of resources are essential in determining the scale of tourism activities. The quantity of tourism resources is assessed by 4 levels:

+ Agreatmany: tourist clusters with 31 or more tourism resources, density >0.04 resources/km².

+ Many: tourist clusters have from 21 to 30 tourism resources, density from more than 0.025 - 0.04 resources/km².

+ Average: a tourist cluster has from 10 to 20 tourism resources, the density is from 0.01 to 0.025 resources/km².

+ Several: tourist clusters with less than 10 tourism resources, density less than 0.01 resources/km².

b. Tourist activity time

Tourist activity time is the time of year when tourism activities are likely to be organized. The exploitable time will determine the seasonality and rhythm of the tourist flow. This time is based on the climatic conditions to evaluate. This criterion is divided into 4 levels:

+ Very long: clusters with more than 200 days a year can well deploy tourism activities and have the most suitable climatic conditions for human health;

+ Long: clusters with 150 to less than 200 days a year can well deploy tourism activities and have climate conditions suitable for human health;

+ Average: clusters with between 100 and less than 150 days a year can well deploy tourism activities and have relatively suitable climatic conditions for human health;

+ Long term: clusters with less than 100 days a year can carry out tourism activities and have relatively suitable climatic conditions for human health;

c. Infrastructure and material - technical facilities for tourism

If tourism resources are one of the basic factors to create a tourist area, the infrastructure and physical - technical facilities create conditions to turn the potential of the resource into reality. There is a close relationship between these two criteria, complementing and supporting each other. Without the infrastructure and physical - technical facilities, tourism resources will only forever be in the form of potential. Tourist clusters with good infrastructure and facilities are attractive to tourists, and at the same time can retain tourists for longer and generate greater tourism revenue. This criterion is assessed on the convenience of traffic, at the capacity of hotels and restaurants, and is divided into 4 levels: very good, good, average, and poor.

+ Very good infrastructure and physical and technical facilities: are tourist clusters with convenient transportation, all types of vehicles can operate to tourist destinations in the cluster, operate tourism is from 8 to 12 months a year, has a system of motels, hotels, and restaurants that can meet over 1,000 people/day;

+ Good infrastructure and physical and technical facilities: are tourist clusters with quite convenient transportation, all types of vehicles can reach most tourist destinations in the cluster, only from 1 to 2 places are inoperable, can operate tourism for 6 to 8 months, have a system of motels and hotels to meet the needs of 500 to less than 1000 people/day;

+ Average infrastructure and material - technical facilities: tourist clusters have quite convenient transportation, only cars with less than 30 seats can operate at all tourist destinations. The rest of the cars with over 30 seats cannot operate in tourist spots. Tourism in the cluster lasts from 4 to 6 months, has a system of motels and hotels to meet the needs of 300 to less than 500 people/day;

+ Poor infrastructure and physical - technical facilities: as a tourist cluster with unfavorable transportation, only vehicles with less than 16 seats can operate at all tourist destinations. In the cluster, tourism can be operated for less than 4 months, there is a system of motels and hotels to meet the needs of less than 300 people/day (Son, 2000).

Criteria hierarchy, score determination: Each criterion in the assessment is divided into 4 levels, each level corresponds to a certain number of criteria and is determined with a different score as follows: 4 points - very favorable : 4 points - favorable : 3 points - average favorable; 2 point - poor favorable: 1 point.

Determining the weight for each criterion: Each selected criterion will have a different degree of influence on the evaluation object, so determining the weight in the evaluation is very necessary. Weighting will give more objective and accurate assessment results.

To determine the weights, we apply both qualitative and quantitative analysis methods. For example, the number of tourism resources in the cluster is essential in determining the scale of tourism activities, and the possible time of tourism activities will determine the seasonality and rhythm of the tourist flow, so it is a very important factor 3; while infrastructure and material - technical facilities are the criteria to evaluate the convenience of tourist clusters, currently tourist clusters in Phu Yen are almost similar, so there is a coefficient of 2.

On the basis of evaluating the scores of each criterion by a weighted multiplier, we finally aggregate the scores of the criteria to obtain objective and quantitative evaluation results and ensure the correct level of accuracy for each criterion. tourist attractions as well as scientific results.

The weights can be determined in many different ways, such as the triangular matrix method, the expert method, the AHP hierarchical analysis method, etc. In this paper, we determine the weights. by applying the expert method. The evaluation weight is defined as an integer. Corresponding to the value of each evaluation criterion according to previous works such as (Nguyen, 2005; Ngo, 2016; Nguyen 2015; Thanh, (2005); Mai, 2019). In addition, we based on the results of field studies in Phu Yen to choose the appropriate coefficient.

Step 2: Determine the score for the evaluation criteria

The rating score for each scale is similar to that of tourist attractions and is determined with 4,3,2,1 points depending on the rating level.

a. Number of tourist resources in the cluster: a great many: 4 points; many: 3 points; average: 2 points; poor: 1 point.

b. Tourist activity time: very long: 4 points; length: 3 points; average: 2 points; short: 1 point.

c. Infrastructure and facilities - technical services for tourism: very good: 4 points; good: 3 points; average: 2 points; poor: 1 point.

Step 3: Presenting the results of the integrated tourism cluster assessment

The results of the evaluation are presented in the form of a statistical table. The assessment results will be the basis for proposing and discussing the rational use of cultural tourism resources for sustainable tourism development in Phu Yen. The overall evaluation results are shown in Table 1.

Table 1. Criteria, level and weight of tourist attractions synthetic assessment

Criterion (Cr.)	Coefficient	Degree			
		4	3	2	1
(Cr. 1) Number of travel resources	3	12	9	6	3
(Cr. 2) Tourist operating hours	3	12	9	6	3
(Cr. 3) Infrastructure and technical facilities	2	8	6	4	2
Total		32	24	18	8

Source: Nguyen & Vu, 2017

Through the above summary table, the score is divided into 3 levels. Level 1 from 24 - 32 points, Level 2 from 18 - 23 points, Level 3 from 8 - 17 points. Each tier has a different level of convenience and meaning. The maximum score is 32 points, the minimum score is 8 points. Thus, tourist clusters will be rated from 8 to 32 points. The summary of the meaning of each tourist cluster is determined as shown in Table 2.

Table 2. Criteria for assessing the convenience of tourist attractions

No	Assessment degree	Point
1	Very favorable	24-32
2	Favorable	18 - 23
3	Unfavorable	8 - 17

Source: Tran & Dang, 2015

2.2. The assessment results

Based on the spatial distribution of tourism resources, as well as the socio-economic conditions, infrastructure, etc., tourism space organization in Phu Yen province is divided into 4 clusters. The key spaces for assessment and exploitation are as follows:

2.2.1. Tuy Hoa city and surrounding areas

- *General characteristics:* this tourist cluster includes Tuy Hoa city and Dong Hoa town with a natural area of 373.2 km², and a population of 353,340 people, accounting for 7.4% of the area and 37% of the province's population. Average density: 947 people/km²,

the highest in the province. This is the driving space for tourism in Phu Yen province today. Tourism activities are mainly associated with Tuy Hoa urban area with advantages in infrastructure, physical - technical facilities and human resources. Most of the important traffic hubs are concentrated here: National Highway 1A, Highway 25 National Highway 29, North-South railway station, Dong Tac airport, Vung Ro port.

- *Tourist center*: Tuy Hoa city is the center of this tourist cluster and also the tourist center of Phu Yen province. Vung Ro Trade and Service Center is an auxiliary center associated with South Phu Yen Economic Zone.

-*Tourism resources*: tourism resources here are diverse and abundant: Tuy Hoa beach, Long Thuy beach, Vung Ro, Da Bia mountain, Dien cape, Bac Deo Ca forbidden forest... There are many craft villages here, unique living habits: Vinh Phu knitting, Hoa Vinh pottery, Binh Ngoc flowers...

- *Main tourism products*:

+ Tourism products associated with natural tourism resources: sightseeing, sea resort, eco-tourism, mountain climbing, yacht...

+ Tourism products associated with cultural tourism resources: visiting scenic spots, learning historical - cultural relics, learning about traditional craft villages...

+ Tourism products associated with urban areas: sightseeing, shopping, public services, MICE, transit, entertainment.

In this tourism space, the focus of investment and development of tourism products is concentrated in Tuy Hoa City, Vung Ro Bay area.

- *Main tourists*:

+ Tourism products associated with natural tourism resources: sightseeing, sea resort, eco-tourism, mountain climbing, yacht...

+ Tourism products associated with cultural tourism resources: visiting scenic spots, learning historical - cultural relics, learning about traditional craft villages...

+ Tourism products associated with urban areas: sightseeing, shopping, public services, MICE, transit, entertainment.

In this tourism space, the focus of investment and development of tourism products is concentrated in Tuy Hoa City, Vung Ro Bay area.

- *Main tourists*:

+ Tourists with commercial and official purposes associated with Tuy Hoa City, South Phu Yen Economic Zone, Vung Ro port.

+ Domestic guests from Ho Chi Minh City, Hanoi, Central Highlands, South Central coastal provinces, and internal guests.

+ International guests: Russia, USA, Japan, Korea, Taiwan, China...

2.2.2. Song Cau town and its vicinity (North Phu Yen)

- *General characteristics:* This tourist cluster includes Song Cau town and the east of Tuy An district with a natural area of 904 km², a population of more than 231 thousand people, accounting for 17.87% of the area and 26.1% of the population. whole province. Average density: 255.7 people/km². This is the main space for beach and island resort activities of Phu Yen, experiencing the culture of coastal residents. Tourists can come here by road, rail, or water.

- *Tourist center:* The main center is Song Cau town with the landmarks of Xuan Dai Bay, Tu Nham beach, and Ganh Da Dia. Among them Xuan Dai Bay is one of the most beautiful bays in Central Vietnam. The auxiliary tourism center is the Cu Mong lagoon area.

- *Tourism resources:* The North Sea of Phu Yen has many beautiful scenes and typical tropical ecosystems. The winding coastline, and mountains close to the sea create large bays, lagoons, islands and beaches with high tourist exploitation value: Xuan Dai bay, Cu Mong lagoon, O Loan lagoon, Yen island, Chua island, Beach Bang, Bai Bau, Beach Rang, Beach Xep... In addition, this is also home to many historical sites and special festivals of local residents: fishing festival, O Loan lagoon festival, and horse racing festival. Go Thi Thung... This is a favorable place for general tourism development.

A very important feature that increases the value of tourism space is that the natural environment here is quite wild and has not yet been affected by socio-economic development activities. However, if aquaculture activities here are not strictly controlled according to the plan, it is possible that in the near future, the tourism values of this area will gradually disappear.

- *Main tourism products:*

+ Tourism products associated with natural tourism resources: sightseeing, sea resorts, eco-tourism, mountain climbing, scuba diving, yachts, culinary culture such as blood cockles, king crabs, oysters, crabs, lobsters...

+ Tourism products associated with cultural tourism resources: visiting and learning about the archaeological relics of An Tho citadel, Long Binh palace, Le Thanh Phuong tomb and temple, Dao Tri famous tomb ...

In this tourist cluster, the focus of investment in tourism products is concentrated in O Loan lagoon, Da Dia reef - Xuan Dai bay, and Cu Mong lagoon.

- *Main tourists:*

+ Domestic guests from Ho Chi Minh City, Hanoi, Central Highlands, Binh Dinh...

+ International guests: Russia, USA, Japan, Korea, Taiwan, China...

2.2.3. Van Hoa Plateau and its vicinity (in the west of the province)

- *General characteristics:* This tourist cluster includes the entire Dong Xuan district, a part of Son Hoa district and Tuy An district. The area is 1,543 km², accounting for 30.6%. This is an area where many ethnic minorities live, a revolutionary base area. The biggest limitation here is traffic, topography, promotion, etc. Currently, this tourist cluster is still underdeveloped, with only a few sporadic tourist spots.

- *Tourist center:* The tourist center of this cluster is Van Hoa plateau. The auxiliary tourist center is La Hai town.

- *Tourism resources:* The most important tourist resources are the landscape and climate of Van Hoa plateau, ethnic minority cultural villages, landscapes along the Ky Lo river, hot mineral water source Tra O, Triem Duc, and Go Thi Thung tunnels...

+ Tourism products associated with natural tourism resources: mountain resort tourism in Van Hoa plateau, sightseeing tourism associated with unique landscape areas along the Ky Lo river, and resort tourism in Triem mineral springs Virtue.

+ Tourism products associated with cultural tourism resources: community-based tourism associated with learning about the national culture in the village of Xi Thoai and Ha Rai, tourism about sources to learn about revolutionary bases.

In this tourist cluster, the focus of investment to develop tourism products is concentrated in Van Hoa plateau resort.

- *Main tourists:*

+ Domestic guests: Binh Dinh, Khanh Hoa, and domestic customers.

+ International visitors: prioritize the visitor market segment associated with research activities, learn about local cultural values, adventure discovery, long-stay tourists: Japan, France, Australia, and Russia...

2.2.4. Sông Hinh and its vicinity (Southwest Phu Yen)

- *General characteristics:* this tourist cluster includes the entire district of Song Hinh, Tay Hoa, Phu Hoa and a part of Son Hoa district. The area is 2,236 km², accounting for 46.1%. This is an area where many ethnic minorities live, a revolutionary base area, and majestic mountains. The biggest limitation here is traffic, topography, dispersion of tourist attractions, advertising and promotion... Currently, this tourist cluster has only a few sporadic tourist spots.

- *Tourist center:* The tourist center is Hai Rieng town associated with Song Hinh hydroelectric lake. The auxiliary center is Cung Son town associated with Krong Trai nature reserve, Song Ba Ha hydroelectric lake, and Hoa Nguyen waterfall.

- *Tourism resources:* natural tourism resources include: Krong Trai nature reserve, Phu Sen mineral water, Lac Sanh hot spring, Hoa My spray area, Dong Cam dam, Song Ba Ha hydroelectric lake, lake Song Hinh hydroelectricity... Cultural tourism resources include: Hoa Thinh co-origin relic, Eo Bong prehistoric relic, Duong mound, Dinh mound...

- *Main tourism products:*

+ Tourism products associated with *natural* tourism resources: eco-tourism associated with Krong Trai nature reserve, Song Ba Ha hydropower reservoir, Song Hinh hydropower reservoir. Medical resort tourism associated with Lac Sanh and Phu Sen mineral water sources.

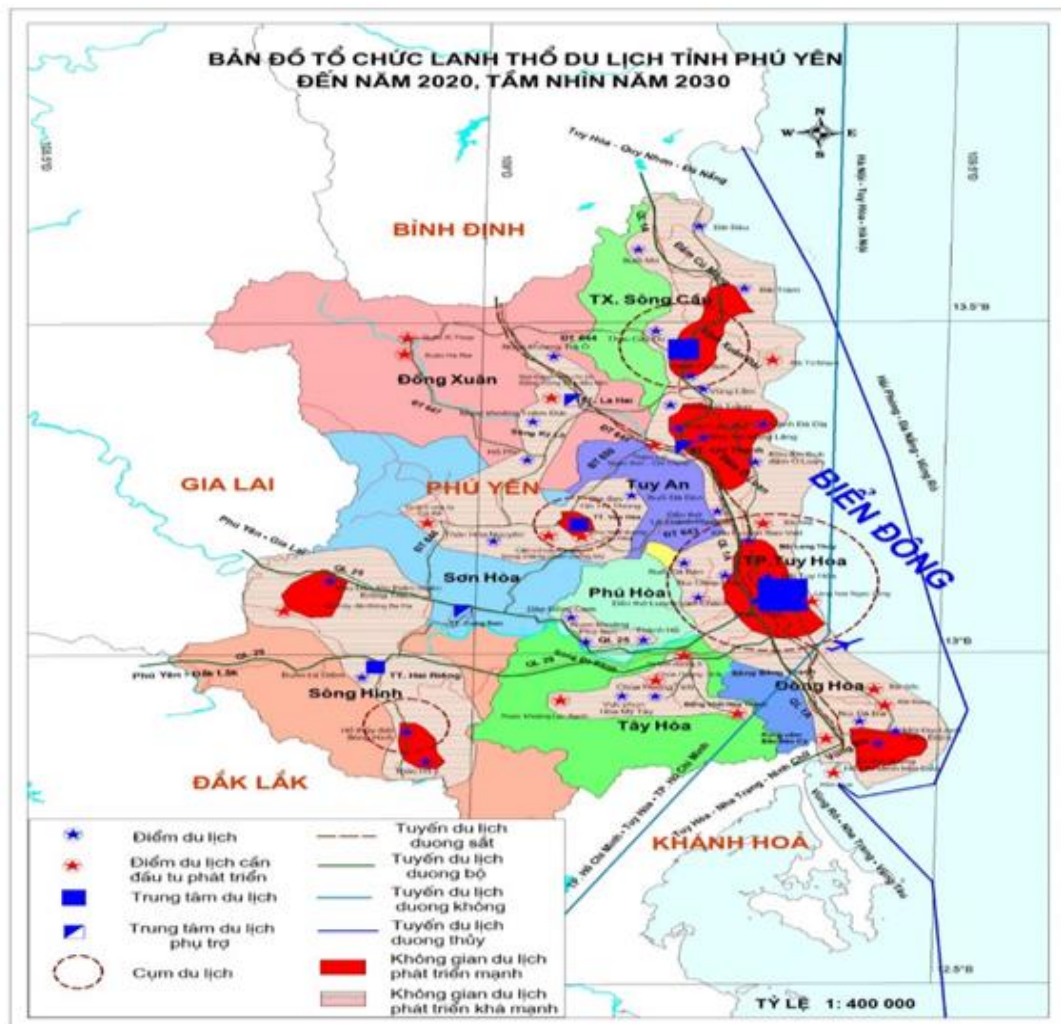
+ Tourism products associated with cultural tourism resources: tourism associated with learning about the culture of ethnic minorities and forming routes connecting with the Central Highlands, craft village tourism: brocade weaving, knitting... Develop a number of cultural and tourist villages of ethnic minorities, develop Dong Cam dam festival.

In this tourism space, the focus of investment and development of tourism products is concentrated in the northern and western areas of Song Hinh hydropower reservoir, Krong Trai nature reserve.

- *Main tourists:*

+ Domestic tourists: Binh Dinh, Khanh Hoa, Central Highlands and domestic tourists.

+ International visitors: prioritize the visitor market segment associated with research activities, learn about indigenous cultural values, long-stay tourists: Japan, France, Australia, Russia... where there are mountain tourism activities to change the "taste" for sea tourists.



(Source: Phu Yen Department of Culture, Sports and Tourism)

Author: Cluster tourism and evaluate

3. General assessment of tourism resource cluster in Phu Yen province

3.1. Evaluation of criteria for the composition of tourist clusters

Table 3. Assessment the number of tourist resources of the tourist cluster

Tourist cluster	Area (km ²)	Number of Natural Resources	Resource Density (resources/km ²)	Multiply Points factor 3
- Tuy Hoa city and surrounding area	373,2	20	0,053	12
- Song Cau Town and its vicinity	904	37	0,040	9
- Van Hoa Plateau and its vicinity	1.545	12	0,007	3
- Song Hinh and its vicinity	2.236	20	0,009	6

Source: The author's survey, 2022

Table 4. Evaluation of the operating time of the tourist cluster

Tourist cluster	Number of days can deploy tourism	Most favorable days	Multiplier points factor 3
- Tuy Hoa city and surrounding	240	180	9
- Van Hoa Plateau and its vicinity	240	180	9
- Song Hinh and its vicinity	240	180	9
- Song Cau Town and its vicinity	240	180	9

Source: The author's survey, 2022

Table 5. Assessment of the infrastructure and physical - technical facilities of the tourist cluster

Tourist cluster	Infrastructure	Technical Infrastructure	Multiplier points factor 2
- Tuy Hoa city and surrounding area	Very good	Very good	8
- Van Hoa Plateau and its vicinity	Good	Good	6
- Song Hinh and its vicinity	Poor	Poor	2
- Song Cau Town and its vicinity	Poor	Poor	2

Source: The author's survey, 2022

Table 6. Results of the overall assessment of tourist clusters in Phu Yen province

Tourist cluster	Number of Natural Resources	Tourism operation time	infrastructure and technical infrastructure	Total points
- Tuy Hoa city and surrounding area	12	9	8	29
- Van Hoa Plateau and its vicinity	9	9	6	24
- Song Hinh and its vicinity	3	9	2	14
- Song Cau Town and its vicinity	6	9	2	17

Source: The author's survey, 2022

3.2. Evaluation of the tourist cluster aggregator score

Table 6. Results of general assessment of the convenience of tourism clusters in Phu Yen province

Tourist cluster	Total points	Degree
- Tuy Hoa city and surrounding area	29	Very favorable
- Van Hoa Plateau and its vicinity	24	favorable
- Song Hinh and its vicinity	14	Unfavorable
- Song Cau Town and its vicinity	17	Unfavorable

Source: The author's survey, 2022

Thus, summarizing the criteria, the tourist cluster with the greatest potential and high exploitation efficiency is the tourist cluster of Tuy Hoa city and the surrounding area. The score is 29, the maximum score to score ratio is 90.6 %, degree very favorable. Song Cau town cluster and surrounding areas have the second highest exploitation potential and efficiency. The score is 24, the maximum score to score ratio is 75%, degree favorable. The cluster with the third highest favorable level is Song Hinh cluster and its vicinity with 17 points, the ratio compared to the maximum score is 53.1%. The cluster of Van Hoa Plateau and the surrounding area has the lowest score of 14 points, the ratio of the maximum score is 43.7%. This is the cluster with limited visitor attraction and the worst exploitation efficiency, degree unfavorable.

In general, the biggest limitation of the tourism in Phu Yen is the limited infrastructure and facilities for tourism. Many tourist cluster spots are recognized at the national level but are still exploited spontaneously, sketchy, lack of strict management in the stages of marketing, advertising, passenger transportation, catering services, security. environment ... so the efficiency is not high. . The most effective is Tuy Hoa city cluster and surrounding areas.

4. Discussion and conclusion

Phu Yen has special valuable natural and cultural tourism resources, which are widely distributed in the territory of the province, which is an important basis for developing tourism products according to its own characteristics. However, to effectively exploit the province, it is necessary to develop tourism services in balanced and appropriate clusters. Therefore, the locality needs to focus on assessing the overall tourism resources in terms of spatial distribution accurately and objectively; At the same time, focus on investing in infrastructure, upgrading material and technical facilities, training highly qualified tourism human resources, proficiently using technological means of the 4.0 era to manage the industry. travel. Combining promotion with the enhancement of local culture, creating a strong competition for products in specific tourist clusters of the province, bringing high efficiency in terms of economy, society and environment, deserves to be the spearhead economic sector of the province as planned by the provincial plan.

The results of the research article have shown the strengths and limitations of tourism resources for sustainable development. On that basis, the locality will develop suitable

specific tourism products, increasing competitiveness with other provinces and cities in the country. The results of this paper also show that, in addition to the assessment of tourist spots and routes; It is also necessary to comprehensively assess resources in tourist clusters to develop sustainable tourism for the locality. In terms of methods, the author chooses a research method that combines both qualitative and quantitative assessment as appropriate, helping to achieve the most accurate and objective evaluation results. In particular, these results will contribute to the stable and sustainable development of Phu Yen tourism in the future, contributing to the province's tourism industry to integrate with the whole country and international friends.

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MANAGING AND DEVELOPING THE TEACHING STAFF IN VIETNAM TODAY ACCORDING TO HO CHI MINH'S IDEOLOGY

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Abstract

President Ho Chi Minh was a great educator who aimed to establish a comprehensive and scientific education system in Vietnam with profound contemporary values. His views on the training of teaching staff, including management quality, educational management methods and manners, professional training, building a healthy, democratic, and synchronous educational environment, and linking schools, families, and society, are very important and necessary issues for management agencies to contribute to improving the quality of training and development of teaching staff in Vietnam today.

Keywords: *Vietnam, teaching staff, Ho Chi Minh*

1. Introduction

The management and development of the teaching staff is of special importance and is a decisive factor in the quality of training at all levels in Vietnam. Therefore, the creative application and development of Ho Chi Minh's ideology on management innovation and development of the teaching staff has theoretical and practical values today.

2. Method

This study is based on the methodology of dialectical materialism and historical materialism. The study uses a combination of specific methods, including the historical method, logical method, analytical method, synthetic method, comparative method, generalization-abstraction method, expert method, survey, and statistical methods, to carry out study tasks.

3. Results

3.1. Ho Chi Minh ideology on the management and development of the teaching staff

Firstly, about the quality of management and development of the teaching staff.

Management of the teaching staff is the conscious influence of the management agencies on the teaching staff in order to bring the most effective activities of the pedagogical system. Management and development of the teaching staff come in many different ways in terms of levels, but their common point is administrative management according to law and management according to training objectives. Ho Chi Minh advised the education management team: “Editing the education system to suit the people's new circumstances”¹.

¹ Ho Chi Minh (2021), *Complete Volume*, National Political Publishing House, Hanoi, vol. 15, p. 617.

Training institutions must ensure a scientific and synchronous process in the design of programs, curricula, learning materials, and methods of examination and assessment. In order to do well in teaching tasks, management levels need to form for teachers pedagogical competencies such as teaching capacity, language capacity, organizational capacity, communication language capacity and occupational skills, etc. The ultimate aim of the management and development of the teaching staff is to improve the overall quality of teachers in order to “train successors to the great revolutionary cause of our Party and people”². Therefore, He suggested the need to “review carefully the work of “reform” in terms of programs, policies and implementation to find shortcomings for modification, advantages for further development”³ to contribute to improving quality in all aspects for the teaching staff.

Ho Chi Minh paid special attention to the training and retraining of teachers - the main objects of the cause of education. He said: “Now the task of education is different from before. The teachers have very important tasks: Nurturing the next generation of citizens and officers. The purpose of education now is to serve the people and the country, and train new citizens and officers”⁴. The management of training must create a team of teachers who love their job, ready to dedicate themselves to the profession, for the education of the whole people, “everyone can learn”⁵. He advocated: “Popularization of education according to agrarianization”⁶. Therefore, the management agencies of teachers need to associate education and retraining with scientific research and practical application of teaching in a practical and effective way for educational institutions.

Stemming from the role of the teaching staff, He emphasized: “Without education, without officers, there is no cultural economy”⁷. In management work, it is necessary to well implement all regimes and policies, honour, reward and correct discipline in a timely manner, replicate advanced examples, the teachers striving for excellence in study, work and contributing to the cause of education. He said: “No matter how difficult it is, we must continue to emulate and teach well and study well”⁸.

Secondly, methods and manners of training the teaching staff in the direction of modern, advanced and practical education.

Management leaders always have the orientation that education must combine tradition and modernity, the nation and the world, in line with development trends. He affirmed: “Society is developing day by day. Action thinking also evolved. If we don't try, we don't do something for ourselves”⁹. The management of education needs to innovate thinking on the basis of theory associated with practice. He said: “There are two ways to

² Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 15, p. 508.

³ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 7, p. 139.

⁴ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 10, p. 344.

⁵ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 4, p. 187.

⁶ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 3, p. 1.

⁷ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 10, p. 345.

⁸ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 15, p. 507.

⁹ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 8, p. 55.

train theory: One way is to just fill our brains with dry theory. *That's empty and useless theory*. The other way is while making theory, it is necessary to study actual work and practical experience. *That's practical and useful theory*"¹⁰. In renovating the teaching method, President Ho Chi Minh instructed the Ministry of Education to issue a statement stating that the purpose, method and organization of the new education are to abolish the formal learning style, to help learners have a scientific perception, develop critical analytical and synthesis thinking, creative spirit and practical mind. For teachers, it is necessary to learn how to teach, to innovate teaching methods when the curriculum and textbooks have been reformed so that learners can understand quickly, remember for a long time and progress quickly; Avoiding the way of overload teaching, running after achievements, not achieving practical efficiency but also wasting money and effort. The teacher training must also ensure the sequence, science, update, so that teachers have good pedagogical methods. He said: "Teaching gradually from less to more, from easy to difficult, from low to high, not be greedy, not cram. Teaching in a practical way"¹¹.

In order to successfully complete the task, the teaching staff must be good at professional skills, good at grasping the psychology of learners, have the personality, love the job, be eager to learn and update modern education, seek new things. He said: "Officers and teachers must also progress to keep up with the times to be able to perform their duties. Don't be complacent and then stop. Because stopping is to take a step back, to be backward, to eliminate ourselves first. Therefore, we must try our best to study to reform ourselves, to reform our thoughts, to reform our children, and to help in social reform"¹².

He has the view that "education is linked with the people's life, with the resistance war and national construction of the nation"¹³. For the management of teachers, it is necessary to unify the orientation for learners not only in books, but also to put knowledge in the economic, political, cultural and social contexts of the region, the country and the world. Education management through the teaching staff should aim at the highest goal of raising people's knowledge, training good citizens, good workers, good soldiers, good officers to serve the union, the country and the people. "Teaching and learning to serve the country and the people. The school must be associated the reality of the country with the people's life. Teachers and students, depending on their circumstances and abilities, need to participate in social work, benefiting the country and the people"¹⁴. Therefore, the management of education has been linked with social reality, directly participating in the construction and defense of the country. He said: "Enhancing the people's cultural level is also a necessary thing to build our country into a peaceful, unified, independent, democratic and prosperous country"¹⁵.

¹⁰ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 5, p. 311-312.

¹¹ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 8, p. 467.

¹² Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 12, p. 266.

¹³ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol.. 7, p. 139.

¹⁴ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 10, p. 185-186.

¹⁵ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 10, p. 459.

Thirdly, on professional training for teachers.

According to Ho Chi Minh, teachers are intellectual workers, creating knowledge, without good teachers, there is no good school, “without teachers, there is no education”¹⁶. The training and retraining of teachers should focus on comprehensive education, political ideology, ethics, expertise, health and lifelong learning. He wrote: "In education and learning, it is necessary to pay attention to all aspects: revolutionary ethics, socialist enlightenment, enlightenment of culture, technology, labor and production"¹⁷. In order to educate learners to be ethical, the teaching staff must be ethical and set an example for learners to follow. Good teachers have a good impact on learners, on the contrary, they have a bad impact on many learners and generations. He said: “In education, there must be not only common knowledge but also revolutionary ethics. Talent goes hand in hand with virtue. Talent without virtue, corruption is harmful to the country”¹⁹. In addition, he asked educational administrators to “promote the research and dissemination of science and technology in a focused, steady step-by-step manner”²⁰.

Ho Chi Minh paid special attention to and gave valuable instructions on building the teaching staff imbued with educational methods, specifically:

Educational methods are suitable for the target audience, associated with skills and practical applications. Education must ensure appropriateness and suitability to age characteristics, and at the same time ensure systematicity, solidity and continuity in the educational process. He required that the teaching must be based on the capacity, conditions and qualifications of the learners; side by side with learners, thereby finding suitable teaching methods for each subject. He said: "No matter how big or small, we must clearly examine and match our cultural level, living habits, enlightenment level, struggle experience, desire, will, and the practical situation of the people"²¹.

Educational methods must be practical and basic, evoking intelligence and creativity of learners. He pointed out how to teach: “The core is more practical and thoughtful than being greedy. The main thing is to make the learners understand the problem”²². He criticized the custom of cramming knowledge and advised teachers: Training must be practical, clear, easy to understand, so that those who come to study, then return to the locality, they can practice immediately. He reminded teachers to promote the initiative of learners, make learning practical, fun, not formal, giving them a positive sense of independent thinking, automatic research and learning, accessing to the truth, promoting their full potential and creativity in the learning process. Teachers need to focus on emotional education methods to promote voluntariness, self-discipline, and persuasive discussion, not binding for both teachers and learners. In training management, special attention should be paid to the training

¹⁶ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 10, p. 345.

¹⁷ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 127, p. 647.

¹⁹ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 10, p. 345-346.

²⁰ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 14, p. 69.

²¹ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 5, p. 288.

²² Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 6, p. 357.

of exemplary methods for teachers and pedagogical students. All behaviours of teachers have a great influence on the education of learners; “Good or bad students are due to good or bad teachers”²³. He said that if the society wants to have many good and useful people, the elderly must also be examples and have the responsibility to guide and help the young generations. He said: “The elderly are very precious, examples of perseverance in fighting, guiding, retraining and training the young people. The elderly must help the young people to progress”⁵. Thus, each of his points, for administrators and teachers, is a valuable pedagogical lesson.

Fourthly, creating a healthy, democratic and synchronous educational environment; connecting school, family and society.

Stemming from the importance of teacher training management towards a civilized education, the goal of comprehensive human development. Ho Chi Minh said: "Our school is the school of the people's democracy, aiming to train good citizens and officers, who are good future owners of the country"⁶. For each level and age of education, there are differences in training content, methods and objectives, but it is required that the teaching staff always respect the education career as the most glorious, to create a healthy and fair educational environment. In pedagogical schools, he said: "It is not only a pedagogical school but also a didactic school of the whole country"⁷. He emphasized the issue of democracy and discipline in the educational environment, "at school, must respect the teachers, love the friends"⁸, and at home "must love and help the parents and siblings"⁹.

The management of training should not run on quantity but should pay attention to the quality of training. “Open any class, serve that class. Choose teachers and learners carefully. Do not open poor quality classes”¹⁰. The process of classroom organization must combine synchronously between the training program and methods, between learning and practice, between theoretical and practical knowledge, between lesson plans and testing and assessment. On October 21, 1964, speaking to teaching staff and students of Hanoi National University of Education, He said: “Students should not mug up and learn by rote, etc. Learning must go hand in hand with thinking, learning must be related to reality, must have experiments and practice. Learning with practice must be combined”¹¹. Learning goes hand in hand with practice is a golden rule in pedagogical education. Implementing this rule will at the same time form both knowledge, skills and methods for learners.

The society is changing more and more, science is developing, there are more and more jobs, each teacher must uphold their spirit of non-stop learning to improve their capacity, qualifications and quality; learn anytime, anywhere, “learning at school, in books,

²³ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 12, p. 269.

⁵ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 13, p. 293.

⁶ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 10, p. 185.

⁷ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 14, p. 404.

⁸ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 10, p. 175.

⁹ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 4, p. 472.

¹⁰ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 6, p. 363.

¹¹ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 14, p. 402.

learning from each other and learning from the people”¹², lifelong learning to progress forever, effectively serving the cause of “human development”. He affirmed: “Learning never ends. Learning forever to improve forever. The more we progress, the more we see that we have to learn more”¹³. Knowledge is endless, learning is infinite, “to stop is to step back, to be backward, to eliminate ourselves first”¹⁴. “The coach who thinks he enough is the most ignorant”¹⁵. He advised educational administrators and teachers to follow “Democracy in which students must respect teachers and vice versa”, discuss and debate together to find the truth and the right results, democracy and equality but not “six to the one and half a dozen to the other”¹⁶.

The cause of education is the cause of the Party, the Government and the whole people, so it is necessary to “build a very good relationship and close solidarity among teachers, between teachers and students, among students, among officers at all levels, between the school and the people” to successfully complete the educational task. He taught “Educating students is a JOINT task of the family, school and society”¹⁷. Each component has different roles, but creates a unified and synergistic whole, need to really pay attention to the cause of educating teachers to train “revolutionary forces for the next generation”. Education results depend on the attention, care and active leadership and support of the Party committees, authorities, departments and unions. Because it's not enough just for the school to do the educational work, “no matter how good it is, the lack of education in the family and in the society, the results are not complete”¹⁸.

3.2. Orientation to apply Ho Chi Minh's ideology on management and development innovation of the teaching staff in Vietnam to meet the requirements of the current situation

Firstly, state management and school management ensure to improve the training quality of the teaching staff.

State management of teacher training is a system of institutions, mechanisms, and management apparatus and staff in training and retraining teachers at all levels. In management, there are three components: the management subject, the management object and the management goal. The management subjects are state agencies at all levels, school councils; the management objects are teachers, students and trainees of pedagogical schools, pedagogical research centres and agencies; The management goal is to ensure compliance with the provisions of law in the activities of teachers, for the purpose of improving people's knowledge, training human resources, retraining talents for the society, perfecting and developing citizen's personality.

¹² Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 6, p. 361.

¹³ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 6, p. 61.

¹⁴ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 12, p. 266.

¹⁵ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 6, p. 356.

¹⁶ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 9, p. 266.

¹⁷ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 10, p. 175.

¹⁸ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 10, p. 591.

The leadership of the Party, the educational management sectors and levels is very important, in order to create a driving force for the strong development of the cause of education at all levels. Therefore, education management focuses on implementing resolutions and conclusions of the Party and National Assembly, guiding and operating documents of the Government and the Prime Minister on education and training, especially the effective implementation of the Resolution of the 13th Party Congress, Conclusion No. 51-KL/TW dated May 30, 2019 of the Secretariat on continuing to implement the Resolution of the 8th Central Conference of the XI term on fundamental and comprehensive renovation of education and training; Conclusion No. 49-KL/TW dated May 10, 2019 of the Secretariat on continuing the implementation of Directive No. 11-CT/TW of April 13, 2007 of the Ministry of Politics on strengthening the Party's leadership over the with study promotion, talent promotion, building a learning society; thoroughly grasping the Government's motto of “breakthrough” action to complete the 5-year plan 2016-2020. Strictly complying with Decree No. 72/2015/ND-CP dated September 8, 2015 of the Government stipulating the classification and ranking framework and criteria for ranking university institutions in association with Circular No. 24 /2015/TT-BGDĐT, dated September 23, 2015 of the Ministry of Education and Training stipulating national standards for higher education so that each training institution is responsible for building an educational philosophy associated with the motto, process and assessment of training quality accreditation to meet current practical requirements. “It is necessary to have a supporting mechanism to build a number of large universities and pedagogical universities to become prestigious training centers in the region and the world”¹⁹. Leaders of the education sector and related organizations need to closely coordinate, develop specific and appropriate plans in accordance with the school's capabilities and the current human resource needs of the country. State agencies need to support funding for training and building physical foundations and equipment for schools, creating conditions for teachers and pedagogical students to have the opportunity to train and exchange, learn from experience in teaching methods and add new knowledge to the curriculum inside and outside the country. In addition to the policy of assigning autonomy to schools, educational management levels also need to have inspection and supervision activities for enrollment and training of the school to combat negativity, overcome credit mania and promptly direct the work of education and training.

Strengthening the inspection and evaluation of the teaching staff. It is necessary to change the thinking about management, not to administrativeize, not to be conservative in the management of lecturers and teaching activities of teachers, to attach importance to creativity and innovation in management methods according to output goals. All activities of teachers are directed towards dual goals: for themselves and for the school. Normally, criteria for evaluating lecturers are concretized from the following four main factors: Teaching; research; professional services serving the community and civic duty as a teacher and scientist. Therefore, the evaluation of teachers today needs to adhere to one principle:

¹⁹ Communist Party of Vietnam (2021), *Document of the 13th National Congress of Deputies, National Political Publishing House, Hanoi*, vol. 1, p. 234.

contributing to improving the quality of the teaching staff, being the orientation and motivation for the teaching staff to self-improve according to the standards; promoting the active role of teachers so that they can voluntarily participate in the assessment and self-assessment process, and at the same time, the assessment must be practical and suitable to the actual conditions, socio-cultural factors of the schools and referring to the advanced school models in the world.

Once there is a way to evaluate, the conduct of the test must follow a scientific process, it is necessary to build a team of competent and experienced experts in assessment. These objects can be the teachers; colleagues inside and outside the agency; managers at all levels; students (currently studying, or graduated); social organizations in which the teacher participates. Evidence is collected from these subjects through various forms as follows: questionnaires, interviews, observations, and evaluation by writing. For each type of teacher's work, there may be different sources and methods of assessment. Evidence can be classified according to four main types of work that fall under a teacher's responsibilities: teaching, scientific research, professional service, and civic duty.

In addition to the above solutions, it is necessary to increase investment, create favorable conditions for facilities (classrooms, specialized classrooms, laboratories, libraries, etc.), working conditions of teachers and strengthen the teaching means for the innovation of teaching methods and testing, assessment, and application of information and communication technology in the teaching process.

Secondly, well performing of the recruitment, supplementing and retraining of specialized expertise and pedagogical methods for the teaching staff.

Teachers at all levels are the core force, playing a decisive role in the quality of education and training. The 2005 Education Law affirmed: “Teachers play a decisive role in ensuring the quality of education. The State organizes teacher training and retraining; adopts policies on the use, treatment, and assurance of necessary material and spiritual conditions for teachers to perform their roles and responsibilities; preserve and promote the tradition of respecting teachers and honoring the teaching profession. In Vietnam's education development strategy for the period 2009-2020, the Ministry of Education and Training has also emphasized: “Improving the quality of teachers is a strategic and breakthrough solution”. Building a teaching staff with sufficient numbers, high professional qualifications, capable of accessing and practicing advanced educational methods, good moral qualities and clear professional conscience. Doing well in the selection and training of officers and lecturers through professional examination and entrance examination. The Council of pedagogical schools needs to strengthen the high-quality recruitment process to train teaching human resources in the future.

UNESCO has come up with a new 21-point education strategy, which states: “Teachers must be trained to be educators rather than experts in imparting knowledge”²⁰

²⁰ <https://moet.gov.vn/giaoducquocdan/giao-duc-thuong-xuyen/Pages/default.aspx?ItemID=5493>

(Point 18). Facing that reality, universities in the Federal Republic of Germany have set out a strategy to build a teaching staff, focusing on capacity of lecturers with 2 activities: teaching and being an education expert; teaching capacity includes: Preparation capacity (selecting references, determining lesson objectives, knowledge and skill requirements, choosing teaching methods and techniques, anticipating the possibilities and handling); performance capacity (including skills of directing new content, practicing skills, developing knowledge, testing and motivating students); assessment capacity for the ability to absorb lessons and organize social activities inside and outside the school²¹.

Educational institutions need to consult and apply valuable educational experiences of organizations and countries around the world and continue to grasp the Party and State's policy on building the teaching staff, such as Decision No. 16/2008/QĐ-BGD DT, issued by the Ministry of Education and Training, promulgating the Regulation on teacher ethics, with specific criteria including solid political courage, clear professional quality and conscience, active learning, constantly improving professional expertise and pedagogy, having a lifestyle and standard behavior, being really an example for learners to follow. This point of view is the inheritance and development of Ho Chi Minh's educational policy, which is valuable for building the teaching staff. Good implementation of the Resolution of the 13th Party Congress is: "Paying more attention to education on morality, personality, creative capacity and core values, especially education in patriotism, pride and self-respect of the people, etc., arousing the aspiration to develop a prosperous and happy country and firmly defending the Socialist Vietnamese Fatherland"²²; Resolution No. 29-NQ/TW, dated November 4, 2013 of the XI Central Executive Committee on fundamental and comprehensive renovation of education and training with the overall goal: "Striving to 2030, the Vietnamese education reaches an advanced level in the region"²³. Resolution No. 29 discusses innovating major, core and urgent issues from guiding viewpoints and ideas to objectives, contents, methods, mechanisms, policies and conditions to ensure implementation; innovating from the leadership of the Party, the management of the State to the management of education and training institutions and the participation of families, communities, society and learners themselves; innovating at all levels and disciplines".

State and school management need to continue to thoroughly grasp the awareness of teachers and pedagogical students about their positions, roles and professional responsibilities. Ho Chi Minh pointed out: An ignorant nation is a weak nation; Education is the leading national policy in national revival. Every teacher and pedagogical student must constantly consolidate, improve knowledge, research and master theoretical knowledge to

²¹ See: Dr. Pham Hoang Tu Linh (2019), "Development of competency-oriented university lecturers in the Federal Republic of Germany", Proceedings of the National Workshop on *Developing quality criteria for the teaching staff and administrators of educational institutions to meet the requirements of educational innovation*, Nghe An, p. 149-160.

²² Communist Party of Vietnam (2021), *Document of the 13th National Congress of Deputies*, National Political Publishing House, Hanoi, vol. 1, p. 136.

²³ <https://thuvienphapluat.vn/van-ban/thuong-mai/Nghi-quyet-29-NQ-TW-nam-2013-doi-moi-can-ban-toan-dien-giao-duc-dao-tao-hoi-nhap-quoc-te-212441.aspx>

effectively serve the educational cause of the Party and State. He confirmed “don't learn theory, your will is less resolute, see no further than the end of your nose, you will easily lose your way during the struggle, resulting in “political blindness” even degeneration and alienation from the revolution”²⁴ and “lack of theoretical and practical research, when faced with victory, becoming an overoptimist, when faced with difficulties, easily fluctuating, being pessimistic, unstable revolutionary stance, lacking the spirit of independent thinking and creative initiative. Therefore, there are many difficulties in work, and the leadership effect is limited”²⁵.

Strengthening the organization of scientific seminars on professional content and educational methods, contests of excellent teachers at school and departmental levels. School administrators at all levels focus on leading and directing innovation to improve teaching quality, create conditions for lecturers to attend training and retraining courses, and create a forum to exchange academic issues, sharing experiences of learners and responsibilities of teachers. Regularly sending teachers to participate in advanced pedagogical classes in order to equip the teaching staff with pedagogical capacity and to apply professional teaching methods. Maintaining and organizing contests for excellent teachers at all levels to encourage and motivate lecturers to actively teach well and to interactively apply teaching methods to achieve the best results.

Strengthening the administration and organization of summarizing, drawing lessons and experiences on the management and training of teachers. Education management agencies need to further strengthen the close coordination between functional units in activities such as regularly organizing emulation movements, organizing research clubs for pedagogical sciences, practical application of teaching, etc., contributing to improving the quality of learning and research for teachers and students, meeting training requirements and output standards in education at all levels.

4. Discussion and Conclusion

Ho Chi Minh's views on the management and training of teaching staff provide the theoretical basis for determining the strategy for training people, the policy, and the direction of the Party's development of education in Vietnam throughout the revolutionary periods. These lessons and practical educational experiences are very vivid, practical, and effective for those in charge of state management, school council management for teacher development strategies at all levels. With the requirements of current educational innovation, it is necessary to innovate the management and training of teachers to increase the effectiveness of conveying scientific information, creating the ability for qualitative transformation in the formation, fostering, and updating of the knowledge system of teachers and pedagogical students. The management of teacher education plays a decisive role in the quality of education. Therefore, in the process of teaching quality management, administrators must apply President Ho Chi Minh's views in the following directions:

²⁴ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 8, p. 234.

²⁵ Ho Chi Minh (2021), *Complete Volume*, Ibid, vol. 12, p. 24.

strengthening the quality management of teachers according to the education and training orientation of the Party and State, improving the quality of enrollment, recruitment, and in-depth training of teachers in expertise and teaching methods, closely following the learning object, promoting the activeness and creativity of learners, linking theoretical content with real life, maximizing the effectiveness of teaching techniques, and regularly training the teaching methods for the teaching staff to meet current training requirements and objectives.

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SMALL AND MEDIUM ENTERPRISES INCENTIVES FOR HUMAN RESOURCE DEVELOPMENT IN TIEN GIANG PROVINCE: POLICY AND PRACTICE

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Abstract

The purpose of this paper is to review incentive policies for small and medium enterprises (SMEs) for human resource by identifying, outlining and discussing definitions of SMEs, incentives from other countries that are relevant for SMEs' incentives. Besides, this paper contributes an overview of human resource development in policy design and in practical meaningfulness applied in Tien Giang province that has not yet been sufficiently reviewed. It provides value for both researchers and retail practitioners. In Tien Giang province, provincial policies for SMEs human resource development is the most influential factor on human resource development in Industry 4.0.

Keywords: *SMEs, human resource development, incentive policies, human capital*

1. Introduction

The majority of firms that comprise almost every country's business sector are small and medium enterprises (SMEs), and these firms have become central to the debate on the role of the business sector in sustainable development (Amankwah-Amoah et al., 2019). Small and medium enterprises are an important role and contribute a large part of GDP in the economy. According to (Kiêm, 2013), small and medium enterprises create more than a million new workers, employing up to 51% of labor and contributing more than 40% of GDP. Small and medium enterprises (SMEs) create jobs and income, improve skills in enterprise management, and promote entrepreneurship and creativity. Besides, SMEs also help build a flexible system with close linkages exploiting all potential of localities and creating more labor resources.

Therefore, the study of supporting SMEs should be paid attention to as well as human resources incentives for business activities, contributing to contribute to economic growth and social stability. Recent studies in Vietnam and the world have focused on SME incentives from different perspectives. Recent studies have mentioned SME incentives in general, however human resource incentives for SMEs in Vietnam are still limited. Recently, some of the current support policies for women-owned enterprises, and types of business. In order to help small and medium enterprises overcome difficulties and promote

production and business, it is necessary to continue reviewing and reforming policies and mechanisms to create a favorable environment for increasing human resource incentives.

Human resource policies for SMEs are complicated from practical and theoretical perspectives. Thus, this paper has systematized the literature review of SMEs and clarified their role in the social economy. To further clarify research gaps, this paper has studied some human resource incentives for SMEs in some similar countries in the world. The paper also analyzed the advantages, disadvantages, and limitations of effective incentives to support SMEs in Tien Giang province. The paper focuses on the analytical criteria based on the comparison of data with a basic indicator, the analysis of the factors affecting the development of SMEs in Tien Giang province.

2. Literature review

2.1. Review of SMEs

There are some different definitions of SMEs in Vietnam and other countries. According to the countries of the Organization for Economic Cooperation and Development (OECD, 2010), SMEs are financially independent companies but not affiliated companies of big companies. SMEs have a labor force of 10-250 people in the European Commission (2007) and 10-200 people in the USA. According to the World Bank Organization, SMEs are business having labor force of from 10-300 people. Pecuniary assets are also used to define SMEs. In the EU, SMEs must have annual revenue equal to or over Euro 40 million and/or the balance sheet value must not exceed Euro 27 million. In Vietnam, the basic criterion for classifying SMEs is based on the number of the labor. According to Decree 80/2021/NĐ-CP dated 26/8/2021, SMEs can be classified into micro-sized enterprises, small-sized enterprises, and medium-sized enterprises in certain sectors. Besides the features of enterprises, SMEs have their own specific characteristics. SMEs are often limited both capital and labor, budget for doing business is often not high. Moreover, the competitive capacity of SMEs is still low with economic crises, so their profits are not high. In addition, the labor force of SMEs is usually at an average level (from 10-300 people) with restricted working skills.

With that backdrop, human resource development in SMEs plays an important role in 4.0 industry. Many previous studies have empirically investigated the human resources development in enterprises. Existing studies on the human resource management models focus mostly on the measuring components that enhance the effectiveness of human resource management (Pravdiuk et al., 2022). There are extensive researches on the factors affecting SMEs human resource development. In general, these studies point to SMEs human resource development (Miloloža, 2018; Rozsa et al., 2019). Knowledge around world evolves and it is vital for companies to keep pace with new trend. Thus, training becomes vital especially for the new employees. Also investing in workers' health including flexible leave policies, can easily save more money than these new policies cost to implement", workers that are not only healthy but also satisfied with their jobs becoming the essential element in generating greater productivity, as well as lower absenteeism and turnover rates. Many current studies have empirically investigated necessary skills, education and training

activities for human resources in enterprises, organizations and countries in the Industrial Revolution 4.0. The findings of the study support the idea that human resource positively affects productivity and economic efficiency.

2.2. Incentives policies for SMEs from countries

Recently, there are several policies supporting SMEs in the world. The country's growth relies on enterprise development strategies. SMEs' incentives can create different comparative advantages. In comparing with countries, this paper aims to analyze incentives policies in supports of SMEs in some countries, such as The Europe Union, Malaysia, South Korea, Singapore, Japan. In order to help SMEs, the government attached special importance to the development of solutions in support of science and technology (Autio et al., 2007).

In Europe Union, there are several incentives provided timely support for SMEs, creating internal relationships among the countries in the use of the common currency and the European Central Bank. Different business environments in the EU stimulate different economic development levels among the countries. These policies not only create the potential for enterprises to develop but also act as support for enterprises to overcome crises from other countries apart from the EU. The State's incentives policies in providing information for SMEs about trade promotion, market opportunities, and development trends of the region and the world, enhancing the relationships among SMEs. Especially, financial policies play a crucial role in the sustainable development of SMEs. In short, the State's policies in support of SMEs involve finance, credit; legal policies; information technology development, human resources; information and consultation; market opportunities. However, policies in supporting SMEs depend on the country's economic characteristics.

In Malaysia, government promulgated the Law on investment encouragement in 1986 and Law on Corporate Tax in 1967 aimed at supporting enterprises in general and SMEs in particular in solving problems and creating momentum for development. These laws applied incentives in each specific sector such as agriculture, forestry, and service(Autio et al., 2007). For industry, the State effectuated re-granting capital credit to SMEs at preferential interest rates Malaysia Central Bank and Negara Bank, from that to solve the problem of capital for SMEs inside the country, particularly enterprises involved in export. Along with this are policies to encourage SMEs to expand the market by exporting to non-traditional markets. These enterprises are entitled to charge twice as much credit insurance premium. These enterprises are entitled to charge twice as much credit insurance premium and this has been approved by Minister of Finance. For agriculture, in order to support SMEs activities in agriculture, the State permits full exemption from import tax on raw materials in the case such raw materials are not domestically produced. As to enterprises with export activities, support in export equals 5% of export turnover so as to encourage enterprises to export some certain agricultural products.

South Korea is a developed economy in Asian region. This country has a incentives for SMEs in economy and in science and technology. These support policies have focused on the credit, investment in technology sectors(Lilischkis, 2011). The government encourages financial organizations to permit SMEs to borrow loans when these enterprises have prospective projects but do not have sufficient mortgage assets nor credit

documentation. Based on these incentives, SMEs in South Korea can easily get access to bank loan resources through financial institution when there is an agency comes forwards with guaranty and evidence to prove their financial capacity. Especially, the government can research support programs in the regions. Regional research centers have been supported in capital and 80% of salary for experts.

Singapore is a small country in in geographical conditions in Asian region. Singapore ranked third for global competitive capacity with 99% of SMEs. Hence, government gives considerable priorities to SMEs. To support SMEs, those enterprises with high potential and creativeness will be considered by the Government. Good graduated students will be selected for supporting in setting up enterprises to become excellent entrepreneurs. The government supports capital through guaranty with the banks to permit SMEs to borrow. The government also has some support policies in human resource training for SMEs, especially in the export sector. The Government sets up training funds to improve leadership and management's competences for SMEs. Market-related information for SMEs is an effective support channel of Singapore. Internal Enterprise Singapore (IE) directly under Singapore Ministry of Industry and Trade has a network of over 30 offices in many countries over the world. The duties of these offices are to collect and provide market opportunities; looking for partners; strengthen co-operation with other countries to help them understand more about Singapore. Through these offices, domestic enterprises can gain crucial information for their business. In Vietnam, there are two IE branches of Singapore in Ha Noi capital and Ho Chi Minh City.

In Japan, most of support policies for SMEs aimed at narrowing the gap between enterprises. The goal of these incentives is to provide support in technology, finance, labor and to creating legal environment for SMEs. The support network for SMEs in Japan is divided into several levels. In order to gain these incentives, SMEs in Japan have confirmed their competitive capacity in the domestic and international markets.

2.3. The status of SMEs incentives in Vietnam

Statistical data from Vietnam Association of SMEs indicated that till the end of 2014, throughout the country, there were over 500 thousand small and medium-sized enterprises, accounting for 97.5% of the total number of enterprises. According to the Ministry of Planning and Investment (2021), SMEs have contributed over 60% to the GDP and attracted 51% of the labor force annually in Vietnam. Up to 2020, there were more than 800 thousand active enterprises. On average, there are 8.3 SMEs operating with over 1,000 people. It is clear that SMEs play a crucial role in the economy. SMEs with less than 300 employees play an crucial role in the economic development of Vietnam. SMEs account for 98% of the total number of business enterprises in 2019, contribute 50% of the country's gross domestic product (GDP) and generate 50% of the total employment(Roxas, 2021). After Doi Moi reform in 1986, private business sector development, especially SMEs has become a major focus of government reforms(Angelino et al., 2021). The development of small and medium enterprises has opened a local economy for sustainable growth as well as the integration of Vietnam with world markets. Since 1986 reforms, Vietnam has become one of the growing economies in Asia and a close integration with the world economy(Jaax, 2020). Although

recent studies related to SMEs in Vietnam have addressed innovation, performance, and business constraints (Long, 2021), some studies still exist. Empirical studies examining how Vietnamese SMEs relate to human resource support policies are still limited. (Machmud et al., 2018) argue that efficiency is an important tool to measure the operational performance of the enterprise. This need to use a minimum of input resources to create effective output levels for firms. Therefore, efficiency is considered the use of the head input to produce the most optimal output. According to (Mujeyi et al., 2016), economic theory, three types of efficiency have been developed (1) Technical efficiency refers to the ability to the combination of inputs (such as labor and capital resources) to produce levels of certain output; (2) allocative efficiency reflects the optimal combination of factors of production from the price given inputs and technologies; (3) the combination of technical efficiency and analytical efficiency supplements become economic efficiency. However, resource allocative efficiency and economic efficiency are based on the assumption of adequate technical efficiency, so the estimation of technical efficiency is the foundation for reviewing the overall performance of enterprises. New business is considered a responsibility mandatory by workers, so there is no need necessarily reward or encourage those improvements. In developed countries such as Japan, Korea, Singapore, human resource is always taken into account. Therefore, human resource are always provided with the best conditions to develop to create added value for the business. Human resource have a proactive, passionate working attitude, make continuous improvements in the company individual work and group work. When human resource created and combined with other factors, businesses will achieve steps significant breakthrough in business activities. Working together for a common goal is the key to success and creating characteristics of the corporate culture. Vietnam's human resources index ranks 62nd in the world and 14th in the Asia Pacific region; only 5% of the laborers are proficient in English and only 10.4% are skilled workers (*Manpower Group Solutions, 2018*).

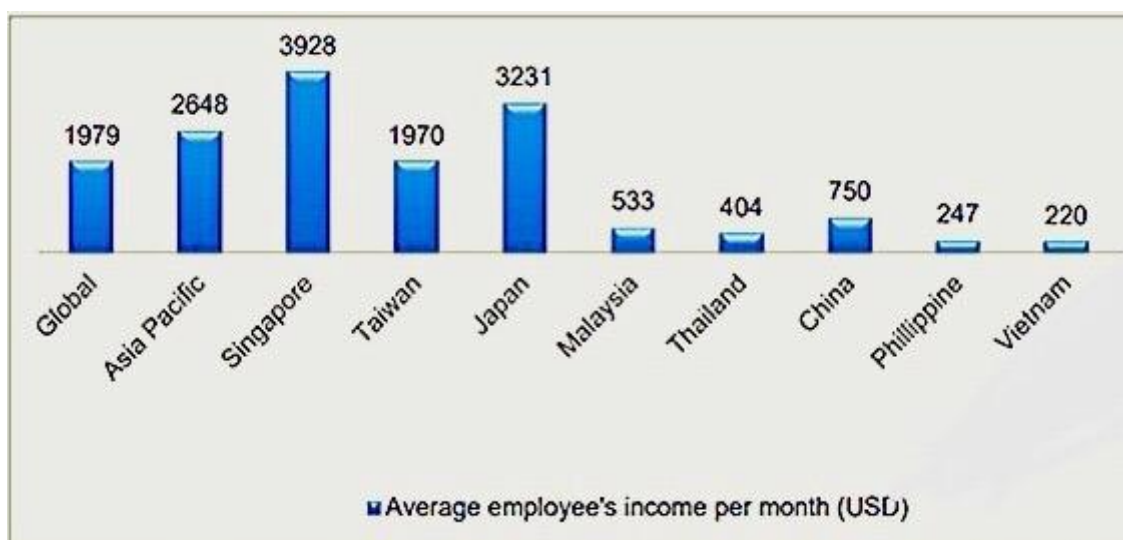


Figure 1. Average employee's income per month in Vietnam and some Asia Pacific countries

Source: Manpower Group Solutions, 2018

However, the growth in the economy has begun to slow down and decline from the post-Covid-19 pandemic. Although there are some incentives of the Vietnam government aimed at reducing difficulties for SMEs and focusing on recovery and socio-economic development have been implemented, the business sector still suffers many negative impacts of the Covid-19 pandemic.

In Vietnam, the government has developed, adjusted and completed many policies to support human resources development in general and SMEs human resource development in particular in Industry 4.0. The most recent support policies for SMEs, such as Decree 80/2021/NĐ-CP of Government detailing a number of articles of the Law on Supporting SMEs, Circular 06/2022/TT-BKHĐT of Ministry of Planning and Investment but mainly developing general human resources and there is no specific policy on developing human resources for SMEs in Industry 4.0. Human resource development policies for SMEs are related to recruiting, locating, training and evaluating human resources performance. Therefore, SMEs need to take advantage of incentives to develop their own business capacities, enhance their employee competence to adapt the changes in the world. It is clear that human resource development is considered as a long-term strategy recently, besides financial or tangible resources (Craciun, 2015; Rozsa et al., 2019)

3. Discussion

In recent years, Vietnam government has provided SMEs incentives policies supporting for small and medium-sized enterprise development dated on 30/6/2009. Human resources are the sum total of human labor potentials in a particular country. Human resource in an enterprise is a part of an overall human resource, having the following characteristics such as enterprises can mobilize from human resources of the country; the working ability of the employees in the enterprise, it depends on the ability to work in groups of the people in the organization. Human resource development is the process of creating a change in the quantity and quality of human resources with the improvement of the efficiency of their use in order to better meet the needs. Human resource development of enterprises should pay attention to the following main influencing factors of macro-environmental factors (economic environment, law on labor and labor market, science and technology and cultural and social factors) and micro-environmental factors (competition to attract human resources of enterprises and the supply capacity of training institutions). From the overview of policies in support of SMEs in Vietnam and in the world, it is necessary to have legal policies, as follows:

Firstly, reorganizing organizational structure, SMEs need to build a team of leaders and managers with knowledge and skills in human resource development. In order for human resource development to be highly effective, it is necessary to organize the human resource management at all levels in order to move towards a modern human resource management with the main function and task of advising and assisting the director in directing and managing the organization, personnel work and human resource development of the enterprise.

Secondly, enhancing the awareness and management skills of leaders. Human resource development capacity of leaders and managers is a decisive factor to the effectiveness of human resource development of enterprises. Because, they are the ones who

direct and organize the implementation of human resource development in their organization. Therefore, SMEs need to build themselves a team of leaders and managers with awareness, knowledge and skills on human resource development. Leaders can share information with their employees about the direction of development, the actual situation as well as the challenges and opportunities facing the business.

Thirdly, building human resource strategies in a systematic, scientific manner to ensure the enterprise's human resources are sufficient in quantity and suitable in structure. However, human resource planning in SMEs is still fragmented and passive with short-term business plan. Recruitment can be considered as one of the key solutions to ensure that enterprises have a sufficient number of human resources, suitable in terms of structure, and fully meet the requirements of the company. qualifications, experience and necessary qualities to realize the strategic development goals of the enterprise.

Last but not least, it is necessary to harmonize the interests of enterprises and employees; maintaining the optimal relationship between the accumulated share and the share for the self-organizing employees to reproduce their labor and the share for general organization of the whole enterprise; use forms of payment that best suit the urgent needs, prioritizing satisfaction of each type of worker. Design and rebuild the salary system for each group of specific job titles on the basis of professional qualifications, processing skills, complexity and consumption of mental and physical strength of the employees. each title with the content to ensure a reasonable correlation between the titles as well as between the coefficients of the same specific title, on the basis of reference to the labor price on the labor market of the country. Tien Giang province.

4. Conclusion

Small and medium enterprises play an extremely crucial role, but they are still very young, inexperienced, lack of capital, lack of knowledge, etc. Human resources are the most valuable asset that every business has and how to use that resource effectively. However, there are still many important contents that have not been mentioned such as: labor motivation, labor relationships, labor safety. The author will continue to research to first implement human resource management activities at enterprises effectively. There will be more scholars and authorities focusing on research on human resource management issues at the micro-level to support SMEs to get solutions be feasible and be applied in practice.

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NEED TO CHOOSE ECONOMIC DEVELOPMENT MODEL SUITABLE FOR SOCIAL DEVELOPMENT IN VIETNAM TODAY

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Abstract

Under the impact of the accelerating technological revolution, the fundamental characteristic is the increasingly close connection between the real world (physical systems) and the digital space (cyber systems). Accordingly, in the medium to long term, technology and innovation will play an increasingly important role in the global economy, starting to disrupt many traditional production methods in agriculture, industry and services, creating new opportunities and challenges that strongly affect the development choices of all countries in the world and this is no longer a story of the future but a story of the present, therefore, no There may be more delay, but each individual, each organization, and each country needs to choose development goals and development paths. The article contributes to Vietnam choosing an appropriate economic development model for social development to meet the current trend.

Keywords: *Model; Economic development; Vietnam*

1. Introduction

There are many different conceptions and interpretations of social development management. However, from the overall view, it can be seen that, although different concepts and understandings, they all agree to understand that social development management is a targeted activity through different tools and solutions, especially is through and by policy to promote the development of society. The concept of social development management in a broad sense is understood as: "management of the overall social development, including economic development management, political system development management, cultural development management, etc. management of social development in a narrow sense, management of human development, management of man-made material resources, especially socio-economic infrastructure"¹. In this sense, social development management is understood as the totality of management activities in all different fields constituting society, which includes both material and immaterial elements. With this understanding, the management of socio-economic development plays a very important role

¹ Pham Ngoc Thanh (2020): Managing social development in the Central Highlands in hunger eradication, poverty alleviation, social protection and health care, Communist Journal, No. 132 (May), p.24.

in the social development model. Starting from this slice, we focus on considering the appropriate economic development model for social development in Vietnam today. That is the “chasing” economic development model.

2. Method

The article uses document collection methods, document reading and data analysis, synthesis, comparison, generalization, take into consideration

3. Results

3.1. The choice of economic development model in Vietnam

After 35 years of reform, Vietnam successfully applied the East Asian development model, bringing about many positive changes and proud achievements in the economic development of the country. The economy has clearly changed, from a planned economy, centralized bureaucracy and subsidies to a multi-commodity economy, operating under the market mechanism and managed by the state. People's living standards are continuously improved, social security is ensured, and the position and strength of the country are maintained.

The East Asian development model, also known as the state-protected development model, is a system of economic policies and guidelines that are invested and supported by the state to develop certain areas especially in industry in the private sector, to stimulate economic growth.

This is a model applied very successfully in East Asian countries such as Japan and the four Asian dragons (Korea, Taiwan, Singapore, Hong Kong). Today, with its achievements in economic development after 40 years of doi moi and reform, China is also considered a successful country in applying the East Asian model.

In essence, the success of the East Asian model is the perfect combination of a free market economy with strong state support and regulation. Governments, recognizing some of the limitations of the market in the Western liberal development model, have thoroughly applied interventions to promote economic development.

3.2. The inadequacy of Vietnam's economic development model

The Covid-19 pandemic has completely changed the global economic and political life. The biggest consequences are slowing global economic growth, broken product supply chains, and rising transportation costs.

According to the International Monetary Fund (IMF), global economic growth in 2021 will be at 6%, higher than the figure forecasted by the World Bank (WB) of 5.6%. However, with economic growth falling by 6.17% in the third quarter of 2021, Vietnam's economic growth forecast has been dragged down to 3.8% (according to data from the European Development Bank). Asia - ADB).

It shows that, with an "open" economy like Vietnam, any bad influence from the world will have a direct, negative impact on the economic growth rate, affecting the economic plans. , 10 years, 20 years vision.

Politically, the Covid-19 pandemic is considered a bell signaling the end of the globalization movement, promoting nationalism with the idea of upholding national interests above international interests. The immediate consequences are likely to cause political instability and armed conflicts in many hot areas of the world.

When comparing the Vietnamese economy with the world, we should look at it from two perspectives. First, in 2020, Vietnam's economic growth rate will reach 2.9%, the lowest in the 2011-2020 decade. However, if you look at the world, the figure of 2.9% is a small number. A proud number, Vietnam is among the few countries with double victories, both repelling the Covid-19 pandemic and maintaining positive economic growth. In the second aspect, the world enters 2021 With advances in vaccine development, vaccination speed in many countries, and global growth showing positive signs, Vietnam's economic growth is in a state of "short of breath".

Vietnam's economy still has a lot of potential for development, the goal of turning the country into a high-middle-income country by 2030 is achievable. However, looking at the long-term vision, position, and national strength, Vietnam needs to change a lot, in order to fulfill its goal by 2045 to become a developed country with per capita income in the country. high level.

In essence, Vietnam's economic development model has signs of inadequacy for two reasons: first, the Vietnamese economic development model itself, applied according to the East Asian model, has been going all the way to development. development; Second, the global economic and political situation is revealing many challenges, creating negative impacts on the Vietnamese economy.

3.3. About Vietnam's economic model itself

In essence, the economic model Vietnam pursues takes exports and foreign direct investment (FDI) as the driving force for growth.

Firstly, in terms of exports, in 2019, Vietnam's total export and import turnover reached over 200% of GDP. This is a proud number but also worth paying attention to, when any negative impact of the global economy or politics will directly affect Vietnam's economic growth rate.

In 2020, Vietnam had a trade surplus of 19.1 billion USD, but only in the first 7 months of 2021, Vietnam had a trade deficit of 2.7 billion USD. The problem is that an "open" economy like Vietnam is under a lot of pressure and pressure comes from the "health" of the international market.

Not only that, the Vietnamese economy is in a state of dependence on a few foreign-invested enterprises. The first case is Samsung, whose total investment capital in Vietnam is announced at 17.3 billion USD, bringing in export sales of 59 billion USD (2019), equivalent to 22% of Vietnam's export turnover. Thus, as long as Samsung encounters production difficulties and product defects like the Note 7 case in 2017, Vietnam's economy will be affected.

Secondly, the achievements in attracting FDI into Vietnam have not achieved much desired expectations in spreading, creating linkages and supporting domestic enterprises, to form a supply chain of goods for enterprises FDI industry.

The gain in attracting FDI is obvious, but the loss is less noticeable. Vietnam offers a lot of tax incentives and policies when attracting foreign-invested enterprises, which will cause an imbalance to the development of domestic enterprises, especially private enterprises. This is the fundamental and sustainable strength of the Vietnamese economy.

Third, the FDI sector has contributed a lot to Vietnam's economic growth, reducing the rate of trade deficit, but the value Vietnam receives in the global supply chain is not high. The reason lies in the fact that Vietnamese enterprises often only receive the task of processing and assembling ... while the highest value of the product is technology and copyright, Vietnam has not yet obtained it.

Fourth, is the low quality of Vietnam's human resources, which has a direct impact on two factors: the development of the private enterprise system in the global supply chain and the value received by workers, respectively income and expenditure levels of the people.

This is a very difficult problem for Vietnam when building a new development model, the world is entering the Industrial Revolution 4.0, Vietnamese workers have the advantage of being industrious, smart, hardworking....but The most important and necessary virtue in the Industrial Revolution 4.0 is "creativity", which Vietnamese workers do not have.

Fifth, the competitiveness of Vietnamese enterprises compared to enterprises in the world and the region is still weak. After more than 35 years of doi moi, the biggest success is that Vietnam has successfully transformed from a centrally planned and subsidized economy to a commodity economy with many sectors operating under the market mechanism.

The private sector is an area that is identified as the economic future of the country, making the most of the dynamism of businesses and creativity of employees to compete fairly with businesses in the region in the world, and is the driving force for Vietnam's economy to grow sustainably.... but do not receive as many incentives as the foreign-invested enterprise sector and the state-owned enterprise sector.

Sixth, the state's management in two aspects, the economy and the management of state-owned enterprises still have many shortcomings. The state-owned enterprise system with a focus on corporations and corporations is facing many difficulties in operation, failing to fulfill its goal of becoming the "steel fist" of the economy, promoting, attract small and medium enterprises of the country to go up. The reason is that in the management work, Vietnam applies too many administrative orders to the operation of enterprises.

On the national level, Vietnam's economic growth model takes exports as the driving force for economic growth, but the major export market is the United States, which has not yet recognized Vietnam as a country with a free market economy, and the future prospect, the risk of conflict, trade dispute with the United States is possible.

Seventh, inequality, the gap between rich and poor is widening by the negative side of the market economy. As a result, the achievements in economic development are not evenly distributed among all classes of people, in all regions of the country, more or less causing social unrest.

Economically, income imbalances will affect domestic consumption. A sustainable economy is one that achieves a harmonious balance of income, improves living standards and spending levels, and creates its own and strong market for domestic enterprises.

Eighth, Vietnam is about to enter the golden population phase, the immediate consequence is the "not rich and old" status of the Vietnamese population, directly causing pressures on social security issues, the social security system and the social security system. health care, family relations... for the future economy.

3.4. Implement the “chase” model to ensure fast and sustainable growth for Vietnam in the coming years

Vietnam should give maximum priority to economic development along with ensuring social security, improving welfare and protecting the living environment. Only with rapid growth, Vietnam will not be left behind in the world and regional economy. Therefore, renewing the growth model and restructuring the economy to ensure fast and sustainable growth are the core requirements of Vietnam in the coming time.

The current international economic situation is characterized by the globalization of the post-industrial era. Therefore, the problem that Vietnam faces and has to deal with is development to "chase" both the industrialization and the post-industrial era. The industrial production capacity based on the potential of science and technology will determine the economic "chase" of the period of accelerating industrialization, modernization and the Fourth Industrial Revolution. In the current new context, Vietnam's industrialization and modernization strategy needs to:

First, carry out industrialization and modernization. If Vietnam wants to build an economic model according to the standards of developed countries, the State needs to follow the rules of the market economy. Accordingly, the State must ensure equal competition conditions, liberalize economic activities and prices, abolish the planned distribution of national resources in order to gradually reduce the State's intervention in the economy. economic. The role of the State is to select priority industries and occupations, develop planning and implementation plans to promulgate a system of mechanisms and policies to mobilize all resources to implement the planning, especially the linkage between The State and enterprises in the direction of openness and transparency. When Vietnam implements a socialist-oriented market economy, the State is still the representative owner of many large enterprises and important national resources. Therefore, when implementing the "chasing economic model", the State's direct or indirect participation is inevitable.

Second, about the business development model. From the experience of the G7 countries and NICs recently, some comments can be drawn in the "chase economic model", the level of concentrated industrialization of the economy is quite high, large corporations and enterprises have decisive role in success. However, this model also has its downside, such as: 1- When forming an industrial-financial enterprise model, there will be a link between a part of state officials and employees with enterprises, invalidate the positive side of the market mechanism, leading to the distribution of national resources deviating from

the original target; 2- The formation of industrial-financial enterprises has the potential to form a "crony capitalism" that manipulates the market and restricts equal competition; 3- Industry-financial corporations create a new group of millionaires from the inequality in using the country's resources. Looking at the development process of emerging economies, we understand the concerns of society about these limitations. For Vietnam, besides the above limitations, the industrial-financial group model has also formed and has an impact on macro policy making in determining the order of investment priorities. the use of state capital to invest in projects, increasing tax pressure as well as being sued by countries against the Organization for Economic Cooperation and Development. World Trade (WTO) due to violations of commitments on product subsidies.

Corporations, also known as raising the size of enterprises, expanding the scope of activities of enterprises is an inevitable way to improve production efficiency and the efficiency of the economy in the process of industrialization. In the period of the Fourth Industrial Revolution, due to the specificity of scientific and technological progress, which plays a huge role, capable of better meeting the diverse needs of society, the small business model and have an advantage over large-scale enterprises. In the next 20-30 years, Vietnam must harmonize the relationship between the development of large-scale enterprises and small and medium-sized enterprises. At that time, state-owned enterprises should be proactive and responsible in signing and implementing association agreements with small and medium-sized enterprises.

Vietnam's "chasing" model of industrialization and modernization needs to take advantage of the role of industrial-financial corporations regardless of ownership form to concentrate capital and resources, reduce transaction costs. The State now has the role of orienting the inspection (rather than acting) in the relationship between large enterprises and small enterprises and with preferential policies in a certain time frame. Thus, reducing the economic burden of the State, helping the national finance operate more stably and effectively.

Third, the economic model to ensure fast and sustainable growth. This is an issue that has been pointed out by the Party's Platform for National Construction in the Transitional Period to Socialism (supplemented and developed in 2011) and given a general concept of shifting from broad-based development to develop in depth. However, many years have passed, the model of in-depth development is still slowly being formed. It is necessary to develop the economy - protect the environment - ensure social security and welfare, consider this as a growth triangle as a basis for evaluating and building an industrialization development model in such development conditions. storm of science - technology on the digital platform. With the axis of social security and welfare, in the current context of our country, it is necessary to consider the implementation of many social policies that exceed the balance of the budget, push up public debt, and threaten development investment development and the ability to ensure social security and welfare of the next generation. The problem is to publicize the maximum we can do to create social consensus in the issue of social welfare - social welfare. Breaking the organic relationship of the development triangle is a manifestation of unsustainable development.

Fourth, it is necessary to restructure the economy. Restructuring the economy on the basis of the Fourth Industrial Revolution, national full employment, ensuring social security

and welfare. In particular, national full employment is the central goal to suggest a plan to restructure the economy to ensure social stability, rich people, and strong country.

First, we need to agree that innovation of the growth model is always associated with economic restructuring and this is a process of constant renewal of the economy. The 13th Party Congress has specified three key tasks and three breakthroughs for economic development. Many scientists have provided explanations for the concept of economic restructuring as restructuring resources in the direction of flowing to a better place to use capital. After a period of extensive innovation with important results, each region and region has changed, creating its own advantages of the region and the industry. Therefore, restructuring the economy is to bring into full play the comparative advantages of each industry and locality to create products with competitive advantages and create Vietnamese brands in the global value chain. Here, the comparative advantage of the country has been multiplied by taking advantage of advantages within each industry and field of the country. Clarifying this will help us implement the socio-economic development plan from a different perspective. The central government will no longer assign targets for each locality to achieve high growth rates, but will assign development requirements in accordance with local realities.

Second, rationally allocate national resources. Law on Public Investment and Law on Investment (amended). The Platform (added and developed in 2011) and the 2013 Constitution both affirm that in our country's multi-sector economy, the state economy plays a leading role. Therefore, effective use of public investment to attract investment of other economic sectors into economic development is the most important issue of the State. Improving the efficiency of capital use in state-owned enterprises (SOEs) in order to have more resources to invest in key industries and fields with many initial risks is a vital requirement to create additional resources in regulation. The country's resources are limited.

Third, it is necessary to choose a breakthrough point in the implementation of the socio-economic development plan 2021 - 2025 based on the spillover effects of dynamic regions in the economy. In the past period, the restructuring of the economy, specifically the three focus areas, has not been linked with each other and with the regional economy. We have not seen a close relationship between the handling of bad debts by credit institutions and the health of not only SOEs in particular but also the business system of Vietnam in general. Along with dealing with the above problems, it is necessary to make a fundamental change in the investment and development mindset to focus enough on creating economic locomotives capable of bringing Vietnam's economic ship. quickly to the goal of rich people, strong country, democracy, justice and civilization.

From the above general and basic identifications and the aspiration to develop the country "on par with the great powers, on the five continents" on the basis of making the best use of the results of the fourth industrial revolution, so Therefore, the target orientation for Vietnam's economic development model is as follows²:

² Communist Party of Vietnam: Resolution of the 13th National Congress of the Communist Party of Vietnam, Documents of the XIII National Congress, National Truth Publishing House, H 2021, pp. 326-327.

General objective: By the middle of the twenty-first century, our country will become a developed, socialist-oriented country.

Specific objectives:

- By 2025: To be a developing country with modern industry, surpassing the low-middle income level.

- By 2030: To be a developing country with modern industry and high average income.

- By 2045: To become a developed, high-income country.

The above explanations have partly shown the scientific bases for the target orientation of Vietnam's economic development model in the context of the fourth industrial revolution. However, in order to realize the above-mentioned orientations and goals, it is necessary to have consensus, determination, high and synchronous efforts of all economic and social actors.

4. Discussion and Conclusion

The above analysis shows that, for Vietnam today, the choice of the "chase" economic growth model is inevitable and objective. Because, it will overcome the limitations of East Asian development model or export-based model and attract foreign investment. The "chase" economic growth model will also create the basis for solving the problem of social security well. Thus, promoting social development management.

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THE KEY DRIVERS AND BARRIERS FOR VIETNAMESE COMPANIES IMPLEMENTING REVERSE LOGISTICS

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Abstract

Due to global population growth, urbanization, and economic expansion, garbage generation rates are increasing nowadays. In order to handle municipal garbage sustainably, reverse logistics is used in the collection, recycling, and reuse procedures as well as in the reduction of consumables and environmental compatibility. Reverse logistics (RL) is the most crucial aspect of supply chain management in industrialized countries, but it is still in its infancy in developing nations. This study intends to pinpoint the major impediments and incentives for businesses utilizing reverse logistics in developing nations, particularly Vietnam. The results show that there are two barriers and four drivers for RL practice. This study has shown several management and practice implications.

Keywords: *Corporate social responsibility, drivers and barriers, reverse logistics, sustainability*

1. Introduction

With the increase in global population, there is a greater demand for things like food, housing, clothing, healthcare, and other necessities. Due to the rising use of raw materials during large-scale production, landfills are becoming more fully occupied (Wassenhove and Besiou, 2013). The World Health Organization (WHO) reported that over 4.2 million people die each year as a result of breathing toxic air (An et al., 2021; Landrigan, 2017). Developing countries are also burdened by environmental governance. Nations currently employ a number of strategic methods to reduce the negative environmental consequences of economic activity, including the development of renewable energy, the use of waste management techniques, and the use of products and technologies that reduce air and water pollution.

Reverse logistics (RL) is becoming more significant as a strategic differentiator for organizations and corporate entities striving to create a sustainable environment, value creation, and a circular economy (CE). Researchers have also identified a number of benefits that may be reached via RL, such as efficient resource usage and environmental protection (Abdulrahman et al., 2014; Gunasekaran and Spalanzani, 2012; Fernandez et al., 2010). Reverse logistics is becoming into a crucial part of the supply chain in industrialized countries due to legal issues, but it is still in its infancy in emerging economies like Vietnam (Bouzon et al., 2018). The results of the study will aid in understanding the factors affecting RL acceptance and serve as the foundation for suggestions on how to promote its usage, particularly in poor countries where pollution levels are typically high.

2. Literature Review and Hypothesis Development

2.1. Literature Review

2.1.1. Reverse logistics

In an ever-growing corpus of research on reverse logistics, authors have created a number of definitions of RL (Rachih et al., 2019). All of these definitions are based on the Council of Logistics Management's (CLM) most popular definition, which goes as follows: "The process of planning, implementing, and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods, and related information from the point of consumption to the point of origin to recapture value or proper disposal" (Roger & Tibben-Lembke, 1999).

According to Agrawal et al. (2015) and de Campos et al. (2017), reverse logistics (RL) is an effective corrective technique for handling waste problems in a range of industries. According to Nunes et al. (2009), RL refers to actions and procedures for reintroducing goods into the production cycle after they have been bought and consumed. Due to societal or environmental pressures, or as a result of its inherent economic or competitive advantages, many firms may have begun utilizing RL (Agrawal et al., 2015). As a result, more companies are using RL as a tactical tool to increase their bottom line and uphold their commitment to corporate social responsibility (Govindan et al., 2012). They also recognize that efficient RL and a better understanding of product returns may provide them a competitive advantage (Stock and Mulki, 2009). RL networks, for instance, have been developed by businesses like IBM and Dell, and their recovery techniques make it easier for clients to update their computers or buy new parts.

2.1.2. Reverse logistics and sustainable performance

The integration of environmental, economic, and social goals that results in a balance between the three factors is what is meant by sustainability from a triple-bottom-line perspective (Carter and Rogers, 2008; Elkington, 1998). RL, an organizational approach that helps the company financially and may also prevent or slow down environmental deterioration (Eltayeb & Zailani, 2011; Masudin et al., 2021), satisfies the three pillars of sustainability (Table 1).

Table 1. The performances of RL

Performance	Indicator	Authors
1. Economic performance	Cost saving	Azevedo et al. (2011); Diabat et al. (2013); Eltayeb et al. (2010; 2011); Hashemi (2021); Hazen et al. (2015); Laosirihongthong et al. (2013); Padmanabh and Jeevananda (2019); Shaik and Abdul-Kader (2018); Wu et al. (2015); Younis et al. (2016)
	Profitability	Eltayeb et al. (2010; 2011); Geng et al. (2017); Govindan et al. (2015); Laosirihongthong et al. (2013);
	Delivery improvement	Diabat et al. (2013); Eltayeb et al. (2010); Geng et al. (2017); Hazen et al. (2015); Younis et al. (2016); Wu et al. (2015)
	Sale growth	Eltayeb et al. (2010; 2011); Geng et al. (2017); Shaik and Abdul-Kader (2018); Wilson and Goffnett (2022)
	Return on investment	Younis et al. (2016)
	Productivity improvement	Eltayeb et al. (2010; 2011); Govindan et al. (2015)
	Market share growth	Eltayeb et al. (2010); Geng et al. (2017); Govindan et al. (2015); Wilson and Goffnett (2022); Younis et al. (2016)
	Efficiency	Azevedo et al. (2011); Eltayeb et al. (2010); Sarkis et al. (2010)
	Quality improvement	Azevedo et al. (2011); Diabat et al. (2013); Eltayeb et al. (2010); Geng et al. (2017); Wu et al. (2015); Younis et al. (2016)
	Technology innovation capability	Shaik and Abdul-Kader (2018)
	Inventory reduction	Diabat et al. (2013); Geng et al. (2017)
2. Environmental performance	Saving energy and resource	Eltayeb et al. (2011); Geng et al. (2017); Govindan et al. (2015); Laosirihongthong et al. (2013); Shaik and Abdul-Kader (2018); Wu et al. (2015); Younis et al. (2016)
	Reducing waste	Azevedo et al. (2011); Diabat et al. (2013); Geng et al. (2017); Govindan et al. (2015); Wu et al. (2015); Younis et al. (2016)

Performance	Indicator	Authors
	Reducing pollution	Diabat et al. (2013); Eltayeb et al. (2010; 2011); Geng et al. (2017); Govindan et al. (2015); Hashemi (2021); Laosirihongthong et al. (2013); Sarkis et al. (2010); Wilson and Goffnett (2022); Wu et al. (2015); Younis et al. (2016)
	Reducing hazardous and toxic materials	Diabat et al. (2013); Eltayeb et al. (2011); Laosirihongthong et al. (2013); Sarkis et al. (2010); Younis et al. (2016)
	Complying with environmental regulation	Eltayeb et al. (2010; 2011); Laosirihongthong et al. (2013); Sarkis et al. (2010); Shaik and Abdul-Kader (2018)
	Decreasing environmental accidents	Diabat et al. (2013); Shaik and Abdul-Kader (2018); Younis et al. (2016)
	Enhancing firms' environmental image	Diabat et al. (2013); Younis et al. (2016)
3. Social performance	Customer satisfaction	Azevedo et al. (2011); Laosirihongthong et al. (2013); Geng et al. (2017); Shaik and Abdul-Kader (2018); Wilson and Goffnett (2022); Wu et al. (2015)
	Firm's corporate image	Diabat et al. (2013); Eltayeb et al. (2010; 2011); Geng et al. (2017); Laosirihongthong et al. (2013); Shaik and Abdul-Kader (2018); Younis et al. (2016)
	Stakeholders' satisfaction	Diabat et al. (2013); Sarkis et al. (2010); Shaik and Abdul-Kader (2018)
	Customer loyalty	Geng et al. (2017); Laosirihongthong et al. (2013); Wilson and Goffnett (2022)
	Product image	Geng et al. (2017); Laosirihongthong et al. (2013)
	Health and safety of the employee	Geng et al. (2017); Sarkis et al. (2010); Shaik and Abdul-Kader (2018); Younis et al. (2016)
	Social commitment	Younis et al. (2016)
	Employee job satisfaction	Sarkis et al. (2010); Shaik and Abdul-Kader (2018); Younis et al. (2016)
	Preserve environment	Younis et al. (2016)

Product value recapture, cost control, decreased inventory investment, enhanced profitability, and worker productivity are a few metrics that may be used to gauge the economic impacts of RL, according to Daugherty et al. (2005). Although an organization's ability to minimize solid waste, air and water pollution, consumption of hazardous, toxic, and dangerous goods, and frequency of environmental mishaps are all recognized as indices of its environmental performance (Zhu et al., 2008), these factors are not the only ones that should be considered. Aside from that, Maxwell and Van der Vorst (2003) pointed out that a number of indicators, including decreased energy and material consumption, decreased air and water pollution, decreased or eliminated waste production, and the use of toxic and hazardous materials, may be used to assess an organization's environmental performance. Finally, RL has a good influence on a variety of societal problems. The public display of a company's commitment to social responsibility is known as its social performance. Management standards, health and safety regulations, pay and benefits, equal opportunity laws, training and education, child labor, forced labor, freedom of association, and human rights and services are a few examples of such concerns (Dixon et al., 2005).

2.1.3. Vietnam reverse logistics context

Southeast Asia's fastest-growing economy is in Vietnam, a developing nation. Vietnam does, however, face significant environmental issues. Climate change has a particularly negative impact on the area of Vietnam around the Mekong River Delta (Trinh et al., 2021). By the year 2100, 90% of the territory of Vietnam would be under water, and by the year 2030, saline-sodic soil will cover around 45% of it, predicts OXFAM (Oxford Committee for Famine Relief) (Nguyen et al., 2022).

25 million tons of solid waste is created annually, with a 10% annual growth rate, according to estimates. While collection rates range from 83 to 85% in urban areas to 40 to 50% in rural areas, recycling and reuse rates are only about 10 to 12% (News 1, 2021). Vietnam's institutional waste management and disposal systems are noted for their lack of an effective circular economy-based strategy to treating garbage. The only two disposal alternatives in this system are landfills and incinerators, and post-consumer waste is delivered directly to these two locations rather than being recycled from secondary materials used in the collection. Or, to put it another way, the recycling aim is largely supported by the private and gray market before being handled by the formal program because the official treatment plan does not contain a material recycling step (Tong et al., 2021). Despite the fact that solid waste is one of the main causes of environmental deterioration, RL is not mandated by law for businesses in Vietnam (Xu and Yang, 2022). In terms of waste reduction, environmental preservation, and sustainable economic growth, Vietnam will gain by implementing RL practices.

2.2. Hypothesis Development

2.2.1. Regulation drivers

Regulation is any area of law that calls for a company to return or collect its items (Brito and Dekker, 2002; 2003). Companies are no longer excused from responsibility for a product's whole life cycle. Businesses are accountable for bringing back or returning their

items due to the severe environmental legislation reflecting the higher producer obligation. Laws mandating manufacturers to cover the expenses of handling the destruction, collection, and reuse of end-of-life equipment are being implemented in an increasing number of nations (Alumur et al., 2012). The prevention of waste and the promotion of waste recovery are mandated by stringent legislation in the European Union, including the End-of-Life Vehicles Directive (ELV), Waste Electrical and Electronic Equipment Directive (WEEE), Restriction of Use of Certain Hazardous Substances Directive (RoHS), and Packaging and Packaging Waste Directive. Since 2009, Turkey's electronic sector has been governed primarily by the Waste Electrical and Electronic Equipment Directive. Producers are in command of everything, according to the rule, including the development of new goods, the procedures employed in their manufacture, and the manner waste is disposed of.

The results of research showed that regulation is the driving element for RL activities for businesses in order to avoid penalty (Atasu and Subramanian, 2012; Kannan et al., 2012; Schamne and Nagalli, 2016). Thus, we anticipate that:

H1: Reverse logistics implementation is correlated with regulation drivers, with the regulation drivers having a positive impact on reverse logistics adoption.

2.2.2. Outsourcing drivers

According to Agrawal et al. (2016) and Vazifehdan and Darestani (2019), reverse logistics outsourcing is a form of planned external preparation that entails hiring other businesses to handle all or portion of an organization's logistical duties, such as collection, inspection, sorting, and disposal (Ferguson and Toktay, 2006; Martin et al., 2010; Meade and Sarkis, 2002). Manufacturers have the choice of creating their own RL system or outsourcing to a third-party logistics service. Daugherty and Dröge (1997) state that a range of qualitative as well as quantitative factors, including the organizational structure, affect the choice to fully or partially outsource the RL services. Arnold (2000) distinguishes four types of activities: core, core-close, core-distinct, and disposable. Core activities contribute the most to competitiveness, whilst disposable activities contribute at the lowest level. How the outsourcing strategy is carried out depends on the amount of contribution to competitiveness.

In businesses with substantial return variability and short product life cycles, keeping a firm's own RL is no longer financially beneficial, claim Serrato et al. (2007). According to Ko and Evans (2007), the main driving reasons for outsourcing are the necessity for customized infrastructure, which calls for specific equipment for processing returns and nonstandard production procedures as well as distinct information systems for tracking and storing data. According to Grabara and Kot (2010), the following are some of the primary causes of RL outsourcing: the costs of logistics activities are easier to track, which makes them more transparent. Cost reduction is also possible by choosing the most competitive offer available, which allows for more flexible use of owned resources, and by removing internal problems that hinder task performance.

These studies (Boyson et al., 1999; Grabara and Kot, 2010) demonstrate that outsourcing operations not only enable organizations to concentrate on their core skills and

decrease the number of complicated jobs, but also have a favorable effect on their costs and profitability. Therefore, we think that the availability of the market to providers of outsourced services will benefit the adoption of RL. We hypothesize that:

H2: Reverse logistics implementation is correlated with outsourcing drivers, with the outsourcing drivers having a positive impact on reverse logistics adoption.

2.2.3. Economic drivers

Businesses formerly depended on an open-loop supply chain with a primary focus on the forward flow of goods and services. However, integrating RL techniques into a closed-loop supply chain may offer chances for current businesses to generate additional income and save money (Das and Dutta, 2013; Oliveira et al., 2021; Zhou et al., 2011). Using RL techniques to save costs is a crucial tactic in a highly commoditized sector because price affects repurchase behavior (Marchi et al., 2013). The cost savings from RL practices may be seen in the lower costs of materials and energy as well as the lower spending on environmental issues, according to Diabat et al. (2013). Additionally, companies may boost their profits by recycling and reusing returned goods to recover their value (Govindan et al., 2015; Nikolaou et al., 2013). As a result, the economic performance of the organization may be significantly improved by RL's influence on cost savings and increased revenue from sales of recovered and remanufactured items (Jack et al., 2010; Mollenkopf and Closs, 2005). Based on the financial benefits obtained from implementing RL, we predict that businesses will be motivated to expand their RL practice. Therefore, we speculate that:

H3: Reverse logistics implementation is correlated with economic drivers, with the economic drivers having a positive impact on reverse logistics adoption.

2.2.4. Competitive drivers

According to Porter (1985), competitive advantage is "the fundamental basis for superior long-term performance" and is solely based on how customers perceive greater value, which can be attained through either lower costs with equivalent benefits or better features at prices that are comparable to those of the rest of the market. According to Sigalas and Pekka Economou (2013), a corporation has a competitive advantage when it "creates more economic value than its less efficient competitor".

RL practice is a strategic approach that may help a company in a variety of ways. In a highly commoditized sector, adopting recycled materials may first help businesses reduce product costs, retain market competitiveness, and please customers with cheaper pricing (Chan et al., 2012; Mafakheri and Nasiri, 2013). Customer satisfaction has a direct and positive impact on the customer's desire to buy and their tendency for repeat business (Tsiotsou, 2006), which is crucial for fostering client loyalty (Oliver, 1999). Reuse, remanufacturing, and recycling are the three main RL operations that help businesses promote an image of environmental sustainability to their target consumers (Chan et al., 2012; Zhang et al., 2013). According to Wang et al. (2010), buyers may choose a company that uses environmentally friendly methods over rivals that don't. Finally, RL was created to

stop competitors from obtaining the company's technology or infiltrating the market. For instance, IBM values RL initiatives highly. To handle the flow of returned goods and stop rivals from exploiting their outdated products, they created a subsidiary named GARS (Global Asset Recovery Services) (Fleischmann, 2001). With the help of the above facts, we contend that competitiveness-related performance will positively influence the implementation of RL in the organization.

H4: Reverse logistics implementation is correlated with competitive drivers, with the competitive drivers having a positive impact on reverse logistics adoption.

2.2.5. Financial barriers

Reverse logistics is the planning, execution, and efficient management of the transportation of products from consumption sites to origin points. The information systems that track and trace product returns and recoveries are essential to the success of RL operations, but they are expensive to develop and maintain (Bernon et al., 2011; Ho et al., 2012). It is also challenging to manage RL practices since staff training is required for a successful RL operation yet costs money, which the organization may not have or may not want to spend on RL (Meyer et al., 2017; Sarkis et al., 2010). The more highly trained people that are accessible, the more efficiently the RL firm performs (Meyer et al., 2017; Sharma et al., 2011), since education and training are essential elements of organizational success. Additionally, prior studies have revealed that the biggest hindrance to the use of RL in the plastics sector is a lack of internal facilities (storage, handling, and vehicles) (Abdulrahman et al., 2014).

Lack of initial capital as well as funding for returns monitoring systems, storage, and in-house processing of returns is a key barrier to RL operations (Abdulrahman et al., 2014; Sharma et al., 2011). Conducting RL practices is a dangerous undertaking for management since they contain financial concerns that might impact an organization's long-term success (Meyer et al., 2017). Previous studies have revealed that the biggest financial barrier to RL adoption in the automotive, steel/construction, electronic/computer, and plastics industries is a lack of early funding while a lack of money for training is the main financial issue facing the textile and paper/paper-based goods industry (Abdulrahman et al., 2014). Thus, we anticipate that:

H5: Reverse logistics implementation is correlated with financial barriers, with the financial barriers having a negative impact on reverse logistics adoption.

2.2.6. Infrastructure barriers

To complete the process of recovering, recycling, and reusing the product from the consumer, reverse logistics' infrastructure consists of a site for product collection and sorting, a mode of transportation, and recycling equipment (Forkan, Rizvi, & Chowdhury, 2022). According to earlier research (Abdulrahman et al., 2014; Lau & Wang, 2009; Rahman & Subramanian, 2012), the biggest barrier to RL adoption would be a lack of infrastructure in several industrial industries. For instance, Abdulrahman et al. (2014) identified the main

obstacles to RL implementation in the Chinese manufacturing sectors. These barriers included the reported absence of internal facilities like storage, handling equipment, and vehicles as well as the general paucity of systems (hardware/software) to monitor returns. Steel and textile industries specifically cited the lack of mechanisms (hardware and software) to track returns as the biggest infrastructure challenge, whereas the biggest challenge in the plastics industry is reportedly a lack of internal resources (storage, handling, and vehicles). These findings supported various previous study findings that suggested a technologically sound infrastructure would make it easier to adopt RL (Moktadir et al., 2020). According to Waqas et al. (2018), while items are reused and recycled in developed nations, they frequently wind up in landfills in developing nations owing to a lack of logistical infrastructure and technology. This has a significant negative impact on the environment. Therefore, we hypothesize that:

H6: Reverse logistics implementation is correlated with infrastructure barriers, with the infrastructure barriers having a negative impact on reverse logistics adoption.

3. Discussion and Conclusion

Problems of climate change and extensive environmental challenges have caused corporate enterprises to act. In response, businesses have been attempting to reduce their impact on environment. Up to now, there are just a few examples of how RL can help businesses operate more sustainably. RL can help businesses save costs (Jack et al., 2010); increase sales of recovered or remanufactured products (Mollenkopf and Closs, 2005); or enhance customer satisfaction thanks to operate business in an ethical and sustainable manner (Li and Olorunniwo, 2008). Furthermore, RL can help to increase customer loyalty by handling defective products (Aitken and Harrison, 2013) and play an important role in dealing with climate change and global warming by recycling items and reducing carbon footprint (Carter and Rogers, 2008).

The main purpose of this study is to identify drivers and barriers for businesses applying RL activities in developing countries, particularly Vietnam. The results show that there are two barriers and four drivers for RL practice. Two barriers include financial barriers and infrastructure barriers. Financial barriers are closely followed by a lack of funding for internal facility purchases, vehicle purchases, or a lack of funding for recycling technology investments and personnel training. Since high setup and operation costs of reverse logistics systems and infrastructure prevent their broad deployment since these expenses increase the entire cost of production (Wu and Cheng, 2006; Lau and Wang, 2009). Besides, Vietnam is a developing country and its infrastructure system has not been well – developed yet, thus, infrastructure obstacles can be the barriers for RL adoption in Vietnam. On the other hand, there are four incentives that encourage businesses to adopt RL activities including regulation drivers, outsourcing drivers, economic drivers and competitive drivers.

Managerial implications

In developing nations with rapid economic growth, like Vietnam, managers have a great opportunity to innovate and improve the efficiency of RL operations. Businesses'

owners should invest money and labor on operating RL in order to save costs and boost revenue which in return can help businesses maintain market price competitiveness. Damaged and returned products will constantly occur, therefore, it's imperative to enhance RL process's efficiency.

Businesses' owners should be aware that RL activities can significantly increase company's competitive advantage. If a company doesn't have a competitive advantage, it will undoubtedly be quite difficult for them to draw in and maintain customers. Managers are encouraged to comprehend that RL operations increase client pleasure with the business, hence boosting the number of devoted customers who contribute significantly to the company's revenue.

Outsourcing has gained popularity among businesses and academics in the industrialized business world. Businesses are putting more focus on enhancing their core competencies and outsourcing non-essential activities. It was highlighted that as RL is frequently not a core business activity for many firms, it might be an area for outsourcing. In order to reduce the investment in infrastructure technologies and human resources needed to set up RL operations, managers might employ partners to outsource RL. Businesses that outsource RL increase stakeholder satisfaction, ensure product recall, and also free up their attention from having to concentrate significantly on RL.

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IMPLEMENTING THE COP26 GOAL AND JUST ENERGY TRANSITION PARTNERSHIP IN VIETNAM

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Abstract

In the 26th Conference of Parties (COP26) to the UN Framework Convention on Climate Change (UNFCCC) in 2021, about 100 countries made pledges to reach “net-zero” emissions by mid-century, as Viet Nam did, and more countries followed later. In the Green Growth Strategy of each country, especially developing countries like Vietnam, besides the efforts of the Government, businesses in the private sector, receiving the support from international cooperation is the key to achieving the goals that set out earlier and Just Energy Transition Partnership is one of the agreements entered into for that purpose. The research aims to analyse and draw the lessons learned from the preparation, development, and implementation of JETP in South Africa and Indonesia for the establishment and development of the JETP Secretariat and JETP Resource Mobilisation Plan (RMP) in Vietnam in order to achieve the goal of NetZero Emission in 2050 that Vietnam has committed at COP26. From there, point out challenges and recommend solutions to support Government agencies, relevant organizations as well as policy makers take timely measures to promote growth and development. increase investment attraction for green growth.

Keywords: *Climate Change, COP26, JETP*

1. Introduction

November 2021, the 26th United Nations Climate Change Conference (COP26) took place in Glasgow to evaluate the implementation of the goals of the Paris Agreement (adopted at COP21 in 2015) to limit global warming. The final COP26 agreement emphasized urgency in scaling up clean power, phasing down coal and phasing out fossil fuel subsidies. A group of 46 countries - including the U.K., Canada, Poland and Vietnam - committed to phase out unabated domestic coal, while an additional 39 countries committed to end new overseas finance of fossil fuels by the end of 2022 and redirect this investment to clean energy. Overall, countries are putting many efforts in order to achieve the commitment that they have set out earlier: Australia bumped its pledge into credible territory after its woefully inadequate 2015 target to slash emissions 26-28% below 2005 levels by 2030. The country now aims to cut emissions by 43% by 2030. Vanuatu submitted a

particularly inspiring plan that aims to phase out fossil fuels, invest in electric vehicles, and undertake a number of detailed measures to address loss and damage. Ahead of COP26, the United Kingdom put forward an ambitious target to cut emissions 68% below 2010 levels by 2030. The U.K.'s latest revision offers greater clarity on the policies to get there, such as investing in clean energy and ending the sale of petrol and diesel vehicles by 2030. Indonesia slightly improved its top-line goal to cut emissions from 29%- to 31.89% by 2030 compared to business as usual. The nation will increase this target to 43.2% on the condition it receives enough financial assistance. India's plan includes a target to reduce the emissions intensity of its GDP by 45% and achieve 50% renewable energy capacity by 2030; it also reiterated the country's pledge to reach net-zero emissions by 2070.

Since COP26, the South African government has worked to define priority interventions for its Just Energy Transition Partnership (JETP) and engage with relevant domestic stakeholders and donor countries. South African government officials are currently developing an investment plan to support workers that will be most impacted in the clean energy transition ahead, with a specific focus on the power, electric vehicles and green hydrogen sectors. South Africa is the first country to agree on a JETP with the International Partners Group (IPG).

Just Energy Transition Partnership (JETP) is a new financing cooperation mechanism between developed and developing countries to help coal-dependent emerging economies make a just energy transition. The goal is to support self-defined pathways as recipient countries move away from fossil fuel production and consumption in the electricity sector in a way that addresses the social consequences involved, such as by ensuring training and alternative job creation for affected workers and new economic opportunities for affected communities.

The vision and objectives of the JETP are articulated in a Political Declaration, which aims to establish an ambitious long-term partnership to support South Africa's pathway to low emissions and climate resilient development, to accelerate the just transition and the decarbonisation of the electricity system, and to develop new economic opportunities such as green hydrogen and electric vehicles amongst other interventions to support South Africa's shift towards a low carbon future.

Following South Africa, Indonesia became the second country to launch a JETP with IPG in November 2022. The Indonesia JETP will mobilize USD 10 billion each from public and private sources, the latter from financial institutions that are members of the Glasgow Financial Alliance for Net Zero (GFANZ), over the next three to five year.

At COP26, Vietnam pledged to bring Vietnam's net emissions to zero by 2050 to join hands with the international community to respond to climate change and change the economic structure to help Vietnam overcome the income trap, becoming a high-income developed country by 2045. In order to accomplish the commitment at the COP26, the challenge now is funding this transition and the JETP agreement is a crucial first step. On 14 December 2022, Vietnam became the third country to sign a JETP with IPG "to support

Viet Nam's low-emission and climate resilient development, as well as to support Viet Nam to accelerate the just transition and decarbonisation of the electricity system and develop new economic opportunities to support Viet Nam's transition towards net zero future”.

The research will analyse challenges and opportunities for Vietnam to invest in sustainable field to achieve net zero emissions by 2050, lessons from countries around the world, collectable statistics and survey results through the combined use of research methods such as interpretative method, meta-analytical method, comparative analysis method, etc. From there, it points out barriers for Vietnam and recommend solutions to help Government agencies, relevant organizations as well as policy makers take timely measures to promote green growth and development, enhance investment attraction from the private sector for climate change response and green growth implementation.

2. International Experiences

Table 1. Emissions reduction targets of selected countries

Country/Group	2030 CO ₂ e target (NDC) ² (unconditional/conditional)	CO ₂ e peaking year	Net zero year
China	Lower CO ₂ emissions per unit of GDP by 60-65% from the 2005 level	2030	2060
EU-27	55% below 1990		2050
Germany NDC = EU- 27	Germany: 65% below 1990		2045; negative greenhouse gas emissions after 2050
Indonesia	29/41% below BAU		2060
South Africa	350-420 Mt CO ₂ e (30%-16% reduction compared to 2015 of 500 Mt CO ₂ e)	2020-2025	2050
Thailand	30/40% below BAU		carbon neutrality by 2050, net-zero 2065
Vietnam	15.8/43.5% below BAU		2050

Source: Our World in Data

2.1. South Africa

South Africa faces serious climate risks: physical impacts of climate change, the carbon intensive nature of our economy, and the risks of not managing a low carbon transition in an orderly way that supports affected workers, communities, and industries. South Africa’s economy and its energy system are strongly coal dependent. In the 2018 total

primary energy supply, coal accounted for 65%, crude oil (imported) 18%, gas 3%, nuclear 2%, geothermal 1%, and renewables 11%, according to an official report in 2022¹. According to the “Integrated Resource Plan” of 2019 (South Africa’s latest Electricity Plan)², the power mix would include over 50% renewables by 2050 in its most ambitious scenario, which would be mainly wind and solar power, but observers believe that this could be even more.³

South Africa is in the early stages of a move from a high-carbon economy to a net zero economy by 2050. In an effort to support the energy transition in emerging economies, the US, UK, France, Germany and the European Union (EU) have signed an Energy Transition Partnership with the Government of South Africa (JETP) worth \$8.5 billion. The IPG US\$8.5bn offer comprises grants, concessional and commercial loans, and guarantee instruments, contributing to approximately 12% of South Africa’s JET IP funding needs for the period.

Table 2. Sources and financing instruments of the IPG offer⁴

US\$ millions	Grants / TA	Concessional Loans	Commercial Loans	Guarantees	Total
CIF/ACT (\$500m to leverage an additional \$2.1bn)	50	2555	0	0	2 605
European Union – EIB	35	1000	0	0	1035
France	2.5	1000	0	0	1002.5
Germany	198	770	0	0	968
United Kingdom	24	0	500	1300	1824
United States	20.15	0	1000	0	1020.15
Total (instrument)	329.7	5325	1500	1300	8455

JET IP Implementation currently includes the following:

- Incorporation of Stakeholders’ feedback from recent Presidential Climate Commission (PCC) consultations.
- With National Treasury, addressing the implications of Eskom debt relief arrangements and developing new models for financial
- Flows for the JET IP capital investments in Transmission, Distribution, and the Decommissioning, Repowering and

¹ <https://www.energy.gov.za/files/media/explained/2021-South-African-Energy-Sector-Report.pdf>

² <https://www.energy.gov.za/IRP/2019/IRP-2019.pdf>

³ <https://theconversation.com/south-africa-could-produce-a-lot-more-renewable-energy-heres-what-it-needs-185897>

⁴ South Africa’s Just Energy Transition Investment Plan for the initial period 2023-2027

- Repurposing of retiring coal power stations.
- With a potential delay in the planned decommissioning of power plants, assessing possible adjustments to timelines for investments
- In Decommissioning, Repowering and Repurposing.
- Working on the Just Transition Portfolio with the Mpumalanga Premier’s Office, government departments, civil society, private
 - Sector investors, and JET IP funders.
 - Developing a JET IP Financing Register matched to JET IP project priorities to include: IPG grant funding, IPG concessional
 - Loans, public financing budgeted for JET IP, financing from local DFIs (IDC and DBSA), private sector financing, philanthropic financing.
 - Clarification of government policy on Electric Vehicles to target JET IP investment opportunities.
- Design of the JET IP Monitoring & Evaluation Framework and Risk Management Framework, along with data systems
 - Alignment with government and funding partners.
 - Identification of new JET IP financing sources beyond the initial IPG commitments.

2.2. Indonesia

Indonesia is the world’s largest coal exporter. It has invested in numerous coal power plants, leading to overcapacity in some parts of the country. It also has a history of direct subsidies on fossil fuel consumption, notably on petrol for vehicles, so consumers have low energy cost expectations.

Indonesia has various climate change policies, including a “Long-Term Strategy for Low Carbon and Climate Resilience 2050”, and the “National Energy Grand Plan”. In addition to the GHG emissions reduction targets in Indonesia’s “enhanced NDC” of 2022. Indonesia plans to increase the share of renewable energy in its primary energy mix to at least 23% by 2025 and 31% by 2050; oil should be less than 25% in 2025 and less than 20% in 2050; coal should be minimum 30% in 2025 and minimum 25% in 2050; gas should be minimum 22% in 2025 and minimum 24% in 2050. Indonesia is producing green fuels from bio-resources, aiming e.g. for 40% biofuel blending in diesel by 2030. Indonesia will be developing various sources of renewable energy such as geothermal, hydro, solar, wind, biomass, and biofuels. It also plans to improve energy efficiency and conservation in industry, transport, buildings, and households. The Government will facilitate green financing and investment, it will strengthen the monitoring, reporting and verification (MRV) system, and generally it will strengthen the regulatory framework. The Just Energy Transition Partnership (JETP) in Indonesia aims to support policy reforms. In September

2022, Indonesia's president signed regulation no. 112/2022 on the early retirement of coal power plants and a moratorium for new coal power plants after 2030. This also mandates cross-ministerial cooperation and it provides for improved renewable energy tariffs. This regulation would speed up Indonesia's energy transition along with the JETP finance mobilisation.

The Indonesia's Just Energy Transition Partnership is co-led by the US and Japan and supported by the UK, Germany, France, EU, Canada, Italy, Norway and Denmark. Of JETP's initial \$20 billion in funding, \$10 billion will come from public sector commitments and \$10 billion will be raised from a consortium of private sector. In addition to government funding, loans from international organizations such as the World Bank will account for a portion of public finance. Private sector funding will be coordinated by the Glasgow Financial Alliance for Net Zero, which includes Bank of America, Citi, Deutsche Bank, HSBC, Macquarie, MUFG and Standard Chartered.

The Indonesian Government has also proposed five investment focus areas have been identified to accelerate the energy transition:

I. Transmission lines and grid deployment

Development & enhancement of transmission grid (interconnection within and across power systems)

- Expansion of transmission lines within and between power systems;
- Advanced control center (ACC) to accommodate Variable Renewable Energy (VRE);
- Development and implementation of Smart Grid.

II. Early coal-fired power plant retirement

Phasing down of the coal-fired power plants to meet CO₂ emission target

- Early coal-fired power plant (CFPP) retirement by 2030

III. Baseload renewable energy deployment acceleration

Foundational renewable infrastructure and will be prioritized for the short term.

- Development projects of hydroelectric power plants;
- Development project of geothermal power plants;
- Development projects of other baseload energy power plants.

IV. Variable renewable energy deployment acceleration

Acceleration of variable renewables development considering the readiness of grid infrastructure

- Development projects of solar power plants;
- Development projects of wind power plants;
- Development projects of other sources of VRE.

V. Renewable Value

Enabling infrastructure and operations related to the transition

- Local manufacturing capability development;
- General capability and capacity building.

3. Vietnam Situation

An increase in carbon output is often part and parcel with economic development and Vietnam is not an exception. In 2009, Vietnam produced 1.5 metric tons of carbon per capita. Ten years later, that number had more than doubled to 3.5 metric tons, according to World Bank data. While Vietnam's carbon emissions are on a distinctly upward trajectory, curtailing economic development is well and truly off the table. The result is that a transition to green energy production will be key to bringing down the volume of greenhouse gases the country produces. To that end, Vietnam has already committed to becoming carbon-neutral by 2050. It has also put in place a number of key policies designed to get it there. The challenge now is funding this transition. In addition to the Government's efforts, the role of businesses in the private sector as well as international support is extremely important.

Vietnam Just Energy Transition Partnership (JETP) was adopted on 14 December 2022 in Brussel between the Government of Viet Nam and the European Union, the United Kingdom, France, Germany, the United States, Italy, Canada, Japan, Norway and Denmark (together the International Partners Group, or IPG). JETP is considered as a longterm, ambitious partnership to support Viet Nam's low-emission and climate resilient development, as well as to support Viet Nam to accelerate the just transition and decarbonisation of the electricity system and develop new economic opportunities to support Viet Nam's transition towards net-zero future. In 2023, in the plant of implementing JETP, Vietnam aims to:

- Establish a JETP Secretariat;
- Complete resource mobilization plan (RMP);
- Implement/identify pilot transition project(s)

JETP RMP will support Vietnam to:

- Develop an ambitious and reliable long-term legal framework for the green transition;
- Accelerate the decarbonisation of its electricity system;
- Reduce Viet Nam's project pipeline for coal-fired generation, ambitious emission reduction pathway to phasing out unabated coal-fired power generation;
- Create an enabling environment for businesses such as de-risking credit, facilitating equity and bank finance, auctioning of permits, speeding up licensing, enhancing competition;
- Create opportunities for technological innovation and private investment, design mechanisms to assist ensuring affordable electricity for low-income groups

JETPs bring together country-led energy transition ambition and planning, with catalytic donor capital, and private financing including from net zero committed financial institutions.

Viet Nam JETP sets very high ambition for peak emissions, net zero GHG emissions, renewables deployment, and addressing coal. In order to achieve these goals, the participation from private sector is very important and require new ways of deploying public/private capital across the system and in innovative financing structures for key country priorities. Private sector will support problem solving for innovative projects and financing structures, to support flow of transition finance on scale needed.

Besides, the green transition as well as implementing JETP also bring up new opportunities for private sector such as:

- Opportunity to participate in the Carbon credit market;
- Attracting many sources of FDI investment and opportunities to participate in global supply chains;
- The Government is also making significant efforts by completing the legal framework, developing strategies and supporting policies such as tax incentives, land providing preferential credit packages, develop human resource training, research and technology transfer. The Government also focuses on promoting and developing renewable energy through the introduction of electricity support tariffs, attractive policies for investors under the green growth model, funding packages from the state budget and international organizations are also deployed to support businesses in developing green, environmentally friendly projects.

Besides the opportunities mentioned above, the process of attracting private investment for the green economy also faces many challenges.

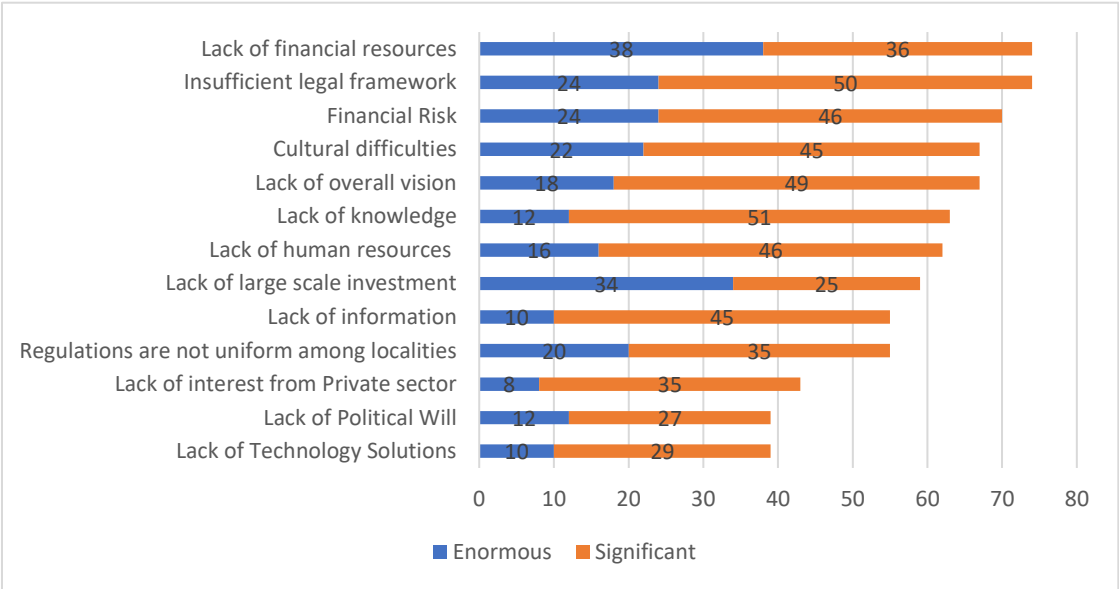


Figure 1. Difficulties to circular business development according to enterprises' assessment

Source: Central Institute for Economic Management (CIEM)

Firstly, according to a survey conducted by the Central Institute for Economic Management (CIEM), businesses are facing difficulties such as incomplete legal framework, lack of synchronization among agencies and sectors. Many national programs, although mentioning the participation of enterprises, lack the financial mechanism and the attractiveness of profit when investing, such as: the price of electricity is not attractive, so investment is not encouraged, there is no preferential policies on capital resources.

Secondly, the survey results of CIEM also show that enterprises also face a lack of large-scale investments, lack of financial resources and face many financial risks. To invest in climate change and green growth, businesses need large capital sources while the budget is limited. The current credit and loan packages do not have clear distinctions between traditional businesses and green businesses and make green businesses face many difficulties, because many businesses have to invest 3-5 years, even 7-10 years to start making profits.

Thirdly, the process of transforming production models is often accompanied by the application of new technologies in the production process, but many enterprises are not ready for the transformation process due to the lack of knowledge and capacity to operate the green business model. In Vietnam today, private sector does not have enough resources to implement training programs and courses to help their employees raise awareness about the impacts of climate change and improve their skills and abilities to be suitable with green production scale. The Government has not yet taken specific measures, introduced policies to develop training models and new industries at the scale of universities, colleges, and vocational training centers to attract more human resources for green growth.

Lastly, in the context that Vietnam is striving to be able to join the global value chain, the requirements of foreign investors become more and more stringent with environmental requirements being put on top, businesses are also aware of the importance of transitioning to a green development model. The scale and production technology of many enterprises in Vietnam are still outdated, and businesses need support from foreign experts during the transfer process.

4. Recommendation

Firstly, the government needs to establish strategic directions for the formation of green industries and sustainable growth. It is necessary to build an apparatus (in fact, there is no apparatus, but only a system, process, procedures and legal system) for a highly efficient and synchronous management plan. Having a centralised, high-level body which coordinates and manages the just transition is key to the success of developing the RMP. Full engagement by the highest level of government is critical. Maintaining high political agreement and consensus with the line ministries, local authorities and impacted groups is essential in the development and implementation of the RMP.

Secondly, develop a multi-stakeholder governance structure with the participation of key stakeholders from the government, civil society organizations, labour unions, and the private sector, working together to support a just and equitable transition to a low-carbon economy in Vietnam. Follow by that, we need to understand JETP is a new term and new initiative form of partnership. International finance comes from a broad mix of multilateral

development banks, bilateral, philanthropies, private sector... The challenge is to ensure that all these partners deliver, over a period of several years. This needs to be enshrined in robust agreements which cannot be “evaded” once the novelty of the JTP fades. Relabelling of existing finance sources needs to be avoided and an adequate portion of grants or soft financing needs to be negotiated in the RMP. Carbon markets need to be brought in.

JETP in Vietnam is currently designed as a high-level political commitment. The “just” term is not well researched and reflected in evidence-based strategies. Develop reliable data and evidence-based strategies for a just transition is essential for developing an effective roadmap and strategy for a just transition, measuring progress, and evaluating the effectiveness of transition policies and programmes. Commission more in-depth research, and scoping studies to provide evidence base and strategies with wide participation of experts in different fields (academia, business, labour, and associations) to support RMP development and implementation.

Lastly, there is a need for a formal platform to allow various stakeholders (and particularly society organisations) to be engaged, consulted, and share and receive information. This formal process is necessary for continuity throughout the actual implementation of RMP. Sharing experiences and strengthening the collaboration with South Africa and Indonesia should be made as early as possible to learn about the set up of the Secretariat, the governance systems and the draft of RMP. It can be done via organising workshops and conducting site visits of technical experts and high-level ranking officials...). In the longer run, the establishment of a platform for collaboration and frequent exchange of information among recipient countries may lead to combine actions and strengthen the voices and negotiation powers.

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SOCIAL WORK ON ACCESS TO BASIC SOCIAL SERVICES FOR FEMALE MIGRANT WORKERS

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Abstract

Migration is an important factor and a driving force for economic and social development, contributing to population redistribution, labor market restructuring, job creation, and poverty alleviation. Therefore, migrant labor is considered a component of the sustainable economic and social development strategies of governments worldwide. The social work activities supporting female migrant workers indicate that a significant proportion of them have accessed basic social services, primarily in the context of working in factories and industrial zones. The evaluation of support services for female migrant workers indicates that they perceive the highest effectiveness in terms of providing information on education opportunities for their children, healthcare insurance coverage, and housing services. However, their evaluation of the effectiveness of accessing employment-related information is relatively lower. Furthermore, the research findings demonstrate a positive correlation ($r = 0.04$) between the evaluation of accessing basic social services and the educational attainment of female migrant workers.

Keywords: *social work, social work support for female migrant workers, basic social services*

1. Introduction

The rapid economic development, urbanization, industrialization, and structural transformation of the national economy have led to a surge in both internal and international migration. However, studies have recently emphasized the harsh living conditions faced by migrant workers in urban areas. These conditions include challenges in securing employment, unfair working conditions, inadequate healthcare coverage, and limited access to essential social services. Migrant workers often encounter substandard housing, restricted educational opportunities for their children, and discrimination from urban residents (Park & Wang, 2007; Solinger, 1999; Wong, Chang, & He, 2007). A notable consequence of this increasing social exclusion is a sharp rise in migrant worker unemployment rates, accompanied by a lack of access to unemployment benefits.

Accessing social services by migrant workers, including healthcare services, education and training services, information-sports-science services, employment services, community services, and social assistance, is generally not prohibited. However, certain barriers still exist, with employment services being a particularly crucial concern for migrant workers as it is their primary focus. Moreover, migrant

workers, especially the younger ones with lower levels of technical and vocational education, often do not meet the demands of the labor market. Therefore, the creation of employment opportunities for this group of migrant workers requires special attention. This article, titled "Social Work on Access to Basic Social Services for Female Migrant Workers," aims to explore the aforementioned issues.

2. Literature review

Basic social services play a vital role within the framework of social protection systems. Supporting activities aimed at facilitating the access of female migrant workers to these essential services not only improve their living conditions but also ensure the overall quality of labor within society. Nevertheless, multiple studies have highlighted the persistent challenges faced by migrant workers in attaining their fundamental rights, including social protection measures such as social insurance, healthcare, social assistance, and basic social services. These rights involve various aspects such as employment, the right to work, livelihood and income security, residence and housing, freedom of movement, education, entrepreneurial opportunities, access to information, and cultural participation. This article will specifically focus on the accessibility of fundamental social services, encompassing key areas such as employment information, housing, clean drinking water, environmental sanitation, education, and healthcare.

It can be observed that the activities of social work in supporting migrant workers in accessing basic social services involve enabling them to access and utilize fundamental social services such as housing, employment, clean water, education, and healthcare, among others, to integrate into the community and adapt well to the surrounding environment. One of the most important basic social services that migrant workers are particularly concerned about is employment. Finding a job, starting a new job, or following family relocation are the main reasons for migration. Currently, 43.0% of migrants are living in borrowed rental houses, nearly eight times higher than the proportion among non-migrants. Localities with many industrial zones attracting a large number of non-skilled workers have the highest rates of migrant workers living in rented or borrowed houses, such as Bac Ninh, Binh Duong, Dong Nai, and Can Tho. Among them, Binh Duong has the highest rate of migrant workers living in rented or borrowed houses in the country (74.5%). Furthermore, several other localities also have relatively high rates (40-50%), including Thai Nguyen, Hung Yen, Tay Ninh, Ba Ria - Vung Tau, Ho Chi Minh City, and Long An. (Population Census, 2019).

Moreover, some studies have addressed the housing services for female migrant workers. The research found no significant difference in living conditions between migrant and non-migrant populations regarding types of housing, household water sources, lighting fuel, cooking fuel, and toilet types. However, migrant workers face distinct disparities in terms of housing ownership rights and access to household amenities, presenting notable challenges. When comparing migrant workers to non-migrants, the proportions of

households owned by migrant workers that possess televisions (72.6%), washing machines (37.7%), refrigerators (58.5%), and motorcycles (88.4%) are noticeably lower. In contrast, non-migrant households exhibit higher proportions of these amenities, with corresponding figures of 97.2%, 61.1%, 82.3%, and 96.1%, respectively.

Until now, numerous studies have shown that migrant workers tend to live in crowded and unsanitary collective housing provided by employers or shared with others (Shen & Huang, 2003). Therefore, social work activities aimed at assisting migrant workers in accessing basic social services such as environmental sanitation services are essential. On the other hand, ensuring a livable environment is also a concern for migrant workers. Sèn Thị Hiền's (2013) study found that the majority of migrant workers, mainly engaged in informal occupations, such as street vending at wholesale markets like Dịch Vọng and Mỹ Đình bus station, selling balloons at Cầu Giấy intersection, or selling small items like CDs and cotton swabs. They only spend the night in these places, each person having their own mat. The next morning, they carry all their personal belongings to work. Such types of accommodations are often not provided with adequate security or living conditions. Particularly, the living spaces are heavily polluted, and the use of well water does not guarantee hygiene. However, many poor migrant workers choose this type of lodging because of its low cost and all-inclusive nature, without additional expenses for electricity or water (Sèn Thị Hiền, 2013).

In addition, Tan's (2000) study emphasizes that migrant workers often face excessive workloads, such as being required to work 10-12 hours a day. Moreover, migrant workers have to work seven days a week, which affects their health and does not allow sufficient rest for labor recovery. Furthermore, Tan's (2000) research also reveals that over half of the surveyed factories indicate that migrant workers are not provided with social insurance benefits as required by the government for immigrant workers; even some small factories refuse to reimburse medical expenses for workers. In particular, the study shows that over 80% of factories do not grant maternity leave to female workers. Additionally, some foreign-invested enterprises have no protective policies for workers in general and migrant workers in particular, neglecting their health. These businesses also require migrant workers to work in hazardous environments with dust, toxic substances, noise, and poor ventilation (Tan, 2000). Several studies in Vietnam also highlight the issue of migrant workers' health, particularly for female migrants who face more disadvantages due to the current rapid economic growth. Despite participating in the labor force (both formally and informally), many migrant workers do not enjoy the benefits provided by government social welfare policies, such as labor rights, employment, poverty reduction, social insurance, social welfare, and basic social services such as healthcare, education, housing, clean water, and access to information (Ministry of Labor, Invalids and Social Affairs, 2019).

Other studies also emphasize the financial difficulties and job challenges faced by female migrant workers (Nicassio, Solomon & McCullough, 1986; Thompson et al., 2002), language and cultural barriers (Vedder & Virta, 2005), poor living conditions (Papadopoulos

et al., 2004; Wong et al., 2004), and other issues such as poor mental health due to stress and pressure in life. Another study found that migrant workers experience losses in social networks, employment, social status, and living environment (Oropeza, Fitzgibbon & Baron, 1991), and these losses are related to the mental health of migrant workers, leading to frequent feelings of depression (Bhugra, 2004).

In addition to the aforementioned basic social services, education is also a crucial factor in migration decisions, thereby promoting the pursuit of a better life. De Brauw et al. (2013) found that educational attainment and age are particularly important determining factors for internal migration. Education influences the attitudes, aspirations, and beliefs of migrants, as well as their level of integration into the receiving community. Furthermore, children's education is also a significant concern and consideration in migration decisions. Many studies highlight the difficulties in accessing educational information for children, leading to challenges in their learning. This is primarily related to the cost of education. Similar to low-income families in urban areas, some migrant families have to withdraw one or more children from school to work and support other children's education (Nguyen Huu Minh & colleagues, 2005).

Through an overview of domestic and international research related to the basic social services of migrant workers in general and female migrants in particular, it is evident that they encounter difficulties and shortcomings in accessing basic social services. The Vietnam Family Development Strategy for 2020 and Vision 2030 emphasizes various indicators of Vietnam's family development to ensure warmth, progress, happiness, and to ensure that households have minimum access to basic social services such as education, healthcare, housing, clean water, and information. However, in reality, female migrant workers still face numerous challenges in accessing information services for employment, housing, clean water, environmental sanitation, education, and healthcare. Therefore, the Vietnam Family Development Strategy, especially for female migrant workers, requires specific targets, objectives, and supportive solutions to ensure the quality of life and the potential labor resources of this population.

2. Method

The article utilizes data from a survey on social work activities concerning female migrant workers titled "Social Work Activities for Female Migrant Workers in Binh Tan District, Ho Chi Minh City," conducted between April and August 2022. The effectiveness of accessing basic social services was assessed using the Likert 5-point scale (1=Ineffective, 5=Highly Effective). The evaluation of the effectiveness of supporting migrant workers in accessing basic social services includes (1) information access services (employment, legal procedures for female migrant workers, etc.); housing services; clean water; environmental sanitation information; education; and healthcare (insurance). Furthermore, the study simultaneously investigates the demographic characteristics of female migrant workers, as depicted in Table 2.1 below:

Table 2.1. General characteristics of the study sample

		Percentage %	Quantity
Age	Under 30 year old	17.3	51
	31 – 40 year old	48.0	141
	41 – 50 year old	24.5	72
	Above 51 year old	10.2	20
Education level	Elementary school	15.3	45
	Middle school	31.6	93
	High school	33.3	98
	Vocational school, college	10.5	31
	Graduate school and above	9.2	27
Marriage status	Married	69.0	203
	Divorced	14.6	43
	Single	16.3	48
Occupation	Restaurant employee	7	2,4
	Street vendor	26	8,8
	Taxi driver	9	3,1
	Laborer	144	49,0
	Scrap seller	7	2,4
	Freelance worker	58	19,7
	Unemployed	6	2,0
	Homemaker	11	3,7
	Other	26	8,8
N=294			

3. Results

3.1. Current conditions of access to basic social services for female migrant workers

Migrant workers currently account for approximately 70% of the labor force in cities and large industrial zones. These migrant workers are typically individuals from rural areas with low education levels and limited vocational skills. They often lack formal training in their respective fields and have limited knowledge of industrial practices and legal regulations. Moreover, their employment tends to be unstable and short-term. The

study also reveals that a majority of female migrant workers settle for an extended period of time. Specifically, 14.6% of them reside for one to three years, 13.3% for three to five years, and 4.3% for over five years. Only 7.8% stay for less than one year. These findings suggest that female migrant workers aspire to migrate for an extended period in order to escape the hardships in their hometowns, improve their income, or seek better employment opportunities.

Based on field surveys, the majority of female migrant workers rate their accommodation as average (62.9%), with some reporting satisfactory conditions (32.3%), while a small portion faces unsatisfactory conditions (4.8%). Some migrant families share a single room, while others rent rooms with two or three individuals from the same hometown or occupation. To save on rental costs, some families rent a single room together. Those who cannot afford proper accommodation often end up living in temporary or dilapidated houses, with cramped spaces measuring around 8 x 10m², equipped with only one bed, a shelf, and a kitchenette. Such living conditions fail to guarantee hygiene, and the surrounding environment is often unsatisfactory, with issues like flooding and a high presence of mosquitoes.

Notably, the difficulties faced by female migrant workers partially reflect the unsatisfied basic needs outlined in Maslow's hierarchy of needs. During their lives in Binh Tan District, female migrant workers encounter common challenges, including low income (61.9%) and inadequate living conditions and daily provisions (58.8%). These represent the most fundamental requirements for their daily lives. Additionally, they often experience fatigue, stress, and pressure (53.4%), lack access to counseling and support services (31.3%), face health problems and difficulties related to housing and employment (33.0% and 29.9%, respectively). Moreover, a small percentage of female migrant workers struggle to access basic social services, endure labor-intensive and exploitative work, face difficulties integrating into the local community, encounter challenges when dealing with local authorities, and have limited access to information, education for their children, healthcare services, and health insurance registration.

Apart from female migrant workers employed in industrial zones, the majority of other female workers experience unstable employment, leading to unemployment and financial difficulties while still needing to cover living expenses and monthly rent. This situation is partially reflected in the research findings for female migrant workers in Binh Tan District, where the predominant support received pertains to environmental sanitation services (waste disposal), accounting for 76.7% of the responses. Furthermore, 62.9% of workers in industrial zones receive assistance with healthcare insurance during hospital visits, 62.6% receive support for clean water access, and 58.5% receive information support regarding schools and education. However, the percentages for housing support and information services related to employment are significantly lower, at 43.5% and 39.1%, respectively.

Table 3.1. Activities to support female migrant workers to access basic social services for female migrant workers

Activities to support female migrant workers to access basic social services for female migrant workers	Percentage %
Healthcare services (insurance for hospital visits)	62.9
Education services (support for information on children's education)	58.5
Clean water services	62.6
Housing services:	43.5
Information services (jobs, etc.)	39.1
Environmental sanitation services (waste disposal, etc.)	67.7

It can be observed that despite constituting a large number, female migrant workers in general, and especially those in the informal sector, have not fully accessed basic social services. Therefore, providing support and access to social services for this group is crucial to improving their quality of life and ensuring equality, humanity, and a decent life for female migrant workers.

3.2. The effectiveness of social work on supporting female migrant workers to access basic social services

Supporting female migrant workers' access to basic social services is highly necessary. For instance, when declaring temporary residence, it is a mandatory requirement for all citizens when moving to a new place. Individuals are responsible for reporting to the local police station to ensure good local management. Typically, local police officers, in coordination with landlords, visit each household to guide and assist newly arrived workers in completing the temporary residence registration, including relevant documents such as household registration forms, change of household registration notice, identity cards, photographs, and proof of legal residence. As for providing advice and support for female migrant workers to access healthcare, education, housing services, etc., it is usually done by insurance sales officers at the Ward Women's Union (in charge of women's affairs) and cultural and justice officers. Migrant workers who need voluntary health insurance or want to enroll their children in schools seek guidance from these officers to complete the necessary procedures.

Migrant workers require initial support in terms of basic living conditions such as housing, clean water, electricity, etc. A survey on the living conditions reveals that a significant proportion of migrant workers in Binh Tan District are currently living in extremely challenging conditions. The survey also shows that the "Education Services (support for information on schools, children's education)" activity is considered "very effective" by 39.8% of respondents. The activities of "Healthcare Services (insurance for hospital visits)" and "Support for clean water services" are considered "very effective" by

43.9% and 42.9% of respondents, respectively. The remaining activities, namely "Support for housing services," "Support for information services," and "Support for environmental sanitation services," are also considered effective by female migrant workers. The effectiveness of activities supporting migrant workers' access to basic social services is demonstrated in the following table:

Table 3.2. The effectiveness of access to basic services

Access to services	Min	Max	Mean	SD
Healthcare services (insurance for hospital visits)	1	5	3.33	1.32
Education services (support for information on children's education)	1	5	3.41	1.27
Clean water services	1	5	3.30	1.26
Housing services:	1	5	3.33	1.17
Information services (jobs, etc.)	1	5	3.18	1.22
Environmental sanitation services (waste disposal, etc.)	1	5	3.79	1.18

The effectiveness of social work activities in supporting female migrant workers' access to basic social services is demonstrated through the support provided in terms of information on hospital visit insurance, information on schools and classes for their children, information on clean water, housing services, and employment information. The evaluation of the effectiveness of social work activities in supporting female migrant workers' access to basic social services shows that this group rates "support for information on schools and classes for their children" as having the highest average score ($M = 3.41$, $SD = 1.27$), followed by healthcare insurance for hospital visits ($M = 3.33$, $SD = 1.32$), housing services ($M = 3.33$, $SD = 1.17$), clean water ($M = 3.30$, $SD = 1.26$), and the lowest being employment information support ($M = 3.18$, $SD = 1.22$).

Comparing the differences in the evaluation of the effectiveness of social work activities supporting female migrant workers' access to basic social services based on age, educational level, and occupation only shows statistically significant differences in educational level, age group, and high evaluation of effectiveness in this activity. Specifically, female migrant workers aged 51 to 55 ($M = 3.58$, $SD = 1.09$) rated the effectiveness of social work activities supporting female migrant workers' access to basic social services with the highest and lowest average scores in the age group of 41 to 50 years ($M = 3.54$, $SD = 0.98$). On the other hand, female migrant workers with a college degree or higher rated the effectiveness of social work activities supporting access to basic social services ($M = 3.35$, $SD = 1.09$), followed by high school ($M = 3.37$, $SD = 0.98$), junior high school ($M = 3.32$, $SD = 1.01$), and the lowest being elementary school ($M = 3.23$, $SD = 0.85$). Additionally, the analysis also indicates a positive correlation between the evaluation of the effectiveness of activities supporting access to basic social services and the educational level of female migrant workers, with a correlation coefficient of $r = 0.04^{**}$.

Thus, in the group of female workers with higher educational levels, the effectiveness of activities supporting access to basic social services is rated higher, and vice versa.

4. Discussion and Conclusion

The provision of basic social services to female migrant workers is crucial. In practice, accessing essential social services such as housing, healthcare, education, employment, community support, and social assistance for female migrant workers is generally not prohibited but still faces numerous barriers and challenges. Evaluating the effectiveness of social support activities for female migrant workers in accessing basic social services reveals that they perceive the support in terms of information on schools and education for their children, health insurance when seeking medical treatment, housing services, clean water, and, to a lesser extent, job information assistance. Research also indicates a statistically significant correlation between educational level, age groups, and the effectiveness of these activities.

Abraham et al. (2021) estimated a logistic regression model predicting that female migrants are 7 times more likely to lose their jobs during high lockdown periods compared to males. Deshpande (2022) also estimated a 9% lower likelihood of employment for women compared to men. All these findings consistently highlight that women in the informal labor market are significantly affected by lockdown measures in the context of the Covid-19 pandemic. Jadhav (2020) further observed that women predominantly occupy precarious jobs in the informal sector, including manufacturing, informal services, construction, and agriculture. Several other studies have also found that migrant workers tend to live in overcrowded and unsanitary dormitories provided by employers or share accommodations with others (Shen & Huang, 2003), engage in physically demanding work such as manual labor, factory work, and services (Roberts, 2000), and receive low wages (Tan, 2000).

On the other hand, insurance plays a significant role in improving the human security of vulnerable migrant populations, helping them overcome hardships related to illness, disability, unemployment, or old age. In particular, migrant workers often have high mobility and engage in short-term employment. However, only migrant workers in industrial zones receive support related to healthcare services such as insurance or social insurance. Informal female migrant workers still face significant challenges in accessing healthcare services, especially health insurance. It is evident that accessing social services for migrants (healthcare services, education and training services, information on sports and science, employment services, community support, and social assistance) is generally not prohibited but still presents barriers and difficulties for migrant workers, particularly regarding employment services, which are their primary concern. Therefore, female migrant workers greatly benefit from organizations and employment service offices that provide labor supply, market information, and administrative management units in cities to support their access to employment.

Migrant workers not only make important contributions to the economic and social development of the country but also demonstrate the diversification of the local labor force structure. The migration of labor is an important factor in reducing labor pressure and

employment in rural areas, generating income, and contributing to social stability. However, this movement also reveals various pressing issues such as environmental concerns, employment, unemployment, social security, healthcare, education, legal assistance, disease control, etc., which affect the lives of migrants. Assessing the effectiveness of social support activities for female migrant workers in accessing basic social services, the majority of female migrant workers evaluate the effectiveness of support in terms of information on schools and education for their children, health insurance services during hospital visits, housing services, clean water, and, to a lesser extent, employment-related information support. Therefore, strengthening the role of employers and organizations employing female migrant workers, as well as support centers that provide necessary information and assistance, is essential to ensure the effectiveness of the social support system for female migrant workers and help them overcome initial difficulties at their destinations.

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SPILLOVER VOLATILY INTER-CONNECTEDNESS WITHIN VIETNAM'S STOCK MARKET: NEW EVIDENCE FROM AN EXTENDED TVP-VAR MODEL

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Abstract

This study use an extended joint connectedness technique and the time-varying parameter vector autoregression (TVP-VAR) method to examine connections between the probability of default of three groups including Blue Chip stocks, Midcap stocks, and Risky stocks in on the Vietnamese stock market from January 3rd, 2017 to March 31st, 2023. The results demonstrate that these stocks exhibit significant default risk propagation, especially during crises such as COVID-19 and the Ukraine-Russia conflict. Specifically, the net total directional connectedness reveals a high level of default risk transmission among these stocks. For the Blue chip group, if VIC defaults, it will significantly increase the likelihood of default for the remaining stocks. In the Midcap group, if LCG defaults, it will notably increase the likelihood of default for the other stocks, particularly during crises like the Ukraine-Russia conflict. For the risky group, NVL's default risk has a strong potential for transmission to other stocks. However, during crises such as the Ukraine-Russia conflict, MCG's default would have a substantial impact on other stocks most of the time.

Keywords: *stock market volatility spillover; Vietnam; ETVP-VAR.*

1. Introduction

The linkages between financial markets have been a subject of heated debate among academics, policymakers, and investors, but some econometric and mathematical tools have recently confirmed this analysis. As a result, it gained significant significance by offering a thorough evaluation of market risk and credit risk that can be utilized to promote better decision-making (Gong et al., 2019; Kou et al., 2014). For investors, assessing and making appropriate decisions about international portfolio diversification also requires understanding the connection between financial assets, especially stocks.

Considering Vietnam's recent developments, it is perhaps even more crucial to explore these aspects. The Vietnamese economy has grown sustainably and rapidly since 1986 (Vo & Ho, 2021). A robust economy has been able to survive various crises, such as the pandemic, because of its solid foundations. In the year following COVID-19's outbreak, Vietnam is among the few countries to achieve positive GDP growth (2.91%), while growth is expected in 2022 to rebound to 5.5%. Vietnam's stock market rose approximately 36% in 2021, even as most Asian stock markets declined (Reuters, 2021). In 2021, the country was in terms of growth among the top seven global stock markets due to its impressive growth (VnExpress, 2022). Among Asia's stock markets, Vietnam's led the way, outperforming

Taiwan and India by 29% and 23%, respectively (Vietnam News, 2022). This makes Vietnam's stock market and its role in Asia increasingly significant, so it's worth examining.

The purpose of this study is to examine the dynamic relationship between stocks and indices in the case of developing countries like Vietnam. Moreover, we evaluated whether EPU affected this connectivity before and during the COVID-19 pandemic. Diebold and Yilmaz's (2014) popular VAR model and Antonakakis and Gabauer's (2017) dynamic connectedness method were combined to calculate dynamic connectedness. ATVP-VARs are an alternative method of extracting connectedness indices to rolling-window VARs. The first advantage is that arbitrary window sizes result in erratic or flattened parameters. By estimating its time-varying parameters using the Kalman filter method, instead of rolling-window VAR, TVP-VAR models prevent the loss of valuable observations. A final advantage of this model is that it does not exhibit high sensitivity to outliers (Antonakakis and Gabauer 2017; Gabauer and Gupta 2018; Antonakakis et al. 2018; Korobilis and Yilmaz 2018). By examining the interconnected between different types of Vietnamese stock, this study adds to the body of existing material. In

Following is a breakdown of the rest of the paper. A literature review is presented in the second section. A discussion of the data and methodology is presented in the third section. Results and discussion sections appear in the following sections. Lastly, the paper concludes with a section called "Conclusions and policy implications."

2. Literature review

A study by Wang et al. (2017) examined the global financial crisis among BRICs and G7s (except Japan) using multiscale correlation. During the financial crisis around the world, stock markets' contagion depended on both recipient countries and time periods. In order to determine the effect of the recent financial crisis on six major stock markets, we used VAR modeling and Granger causality tests (the US, UK, Germany, Japan, China, and Hong Kong), as stated in Jiang et al. (2017). Global stock markets' interdependence increased following the financial crisis. A long memory in the GARCH-copula model has been shown to increase dependency between major international stock markets following the European debt crisis and the global financial crisis, according to Mokni and Mansouri (2017). In this study, a generalized vector autoregressive (VAR) model is used to examine the dynamic interconnection of Asian emerging markets with other international markets. As a result of the Asian financial crisis and the global financial crisis, the integration of the world's stock markets, and there was a rising trend of increasing stock prices. In an analysis of regional, global, and GIPSI stock markets using static and rolling-window methods, Mensi et al. (2018) reported that the crisis caused the financial contagion effect to increase, according to Diebold and Yilmaz (2012, 2014). According to Zhou et al. (2018), shocks caused by extreme and erratic events could spread between Europe, Asia, and America via the CEEMDAN wavelet model. According to Gong et al. (2019), global stock markets are more connected during crises due to the use of the transfer entropy method. Using a dynamic spillover model, Kang et al. (2019) investigated how ASEAN stock markets interact with global markets. The authors found that during financial crises, there were increased returns

and volatility spillovers for each of the markets. Based on a spectral decomposition of variance decomposition, Su (2020) investigated the G7 stock markets' volatility spillover tendencies. Across the G7 stock markets, volatility spillovers were reported to be crisis sensitive. Stock market performance has been studied extensively in the wake of the virus outbreak. Taking into account an estimate of \$3 trillion in GDP and \$2 trillion in equity market valuations, Delisle (2003) estimates the losses due to SARS in 2003 were equal to the losses caused by Asia's financial crisis. Based on the findings of Nippani and Washer (2004), SARS had a negative effect on Thailand, Vietnam, Thailand, Hong Kong, Philippines, Singapore, and Indonesia. According to them, Vietnam's and China's stock markets were the only ones adversely affected by SARS. A global economic impact assessment of SARS was conducted by Lee and McKibbin (2004). Globalization and financial integration make it easy for any economic shock to spread from one nation to another, which made the SARS pandemic have a significant impact on human society worldwide. According to the data, the market indices of these three LCR countries—aside from Brazil—did not show considerably negative returns on the day following the Zika outbreak. Macciocchi et al. (2016) examined how the Zika virus outbreak impacted the short-term economies of Brazil, Argentina, and Mexico. As a result of the geographical proximity and widespread media coverage of the 2014 Ebola outbreak, Marinc (2016) examined whether US asset prices were affected by the information disseminated by the epidemic. Chen et al.'s (2018) study looked at how the SARS pandemic affects China's long-term interactions with four Asian financial markets. Stock price indices have varying cointegration relationships over time. The SARS pandemic also harmed China's long-term partnerships with the four markets. The COVID-19 effects have frequently been contrasted with those of the world financial crisis of 2008. Numerous theories have been used in recent studies to explain how the COVID-19 epidemic affected financial markets. Salisu and Vo (2020) used information from the top 20 impacted countries to assess health news found through Google searches in order to forecast stock returns. Stock valuations that include health-related information were found to be more accurate. It also improved forecast performance when macroeconomic factors were adjusted and the "asymmetry" effect was taken into consideration. Panel tests were applied to examine COVID-19's effects on the Chinese stock market by Al-Awadhi et al. (2020). Stock returns across all companies were significantly affected by COVID-19. According to Sharif et al. (2020), economic uncertainty, geopolitical risk, the oil price, COVID-19 outbreak, and the stock market are correlated using wavelet-based Granger causality testing. Geopolitical risk was significantly affected by COVID-19 more than economic uncertainty in the US. In a study conducted during COVID-19, Corbet et al. (2020a) tested the effect of the term "corona" on stock behavior. Youssef et al. Coronavirus pandemic-related names exhibited a negative effect.

Quantile regression was applied by Azimli (2020) to investigate risk-return dependence in the US after the COVID-19 pandemic, finding that the higher the quantile, the more dependent the market portfolio was on returns. It was found that COVID-19 affected both Shanghai and Shenzhen stock exchange volatility in a significant, significant and positive way during the COVID-19 pandemic by Corbet et al. (2020b). Additionally,

they found that WTI and Chinese stock markets had a strong positive correlation. Accordingly, Ashraf (2020) assessed how COVID-19 affected stocks. Based on a daily COVID-19 verified case count, financial markets responded negatively to COVID-19 confirmed cases. The short-term effects of Coronavirus outbreaks were examined using econometric models by Khan et al. (2020) and Liu et al. (2020). Following the viral spread, stock prices dropped sharply. Their findings showed that COVID-19 confirmed cases negatively impacted abnormal returns through an efficient channel, as well as detecting investors' gloomy opinion concerned with future returns and uncertain futures. A similar analysis was conducted by Zhang et al. (2020a, b, c) where country-specific risks associated with COVID-19 were examined. Moreover, they analyzed the potential effects of policy changes, including a zero percent interest rate policy implemented by the US and an unrestricted quantitative easing program initiated by the Federal Reserve. They discovered evidence of an upsurge in global stock market volatility following the pandemic declaration. The results show that policy interventions might have increased the uncertainty in the world's financial markets.

With data from the Hong Kong stock market, So et al. (2017) investigated how the COVID-19 pandemic affected stock market connectedness. When COVID-19 was in circulation, partial correlation networks exhibited higher clustering and network density, according to a correlation analysis of stock return networks based on dynamic financial networks. This indicates that when the outbreak occurred, systemic risks substantially increased, as well as a higher network connectedness in financial networks.

It has been established through a large body of literature that stock market dynamics and relationships are highly influenced by problems, including the public's health, stress, and rising ambiguity. This study investigated how the COVID-19 pandemic affects stock market linkages in the current study. The COVID-19 period was expected to see different market relationships from the previous typical period. Additionally, I expected that the impact of EPU on the stock market would be significantly diminished as a result of this health crisis.

3. Statistical analysis and methodology

3.1. Statistical analysis

According to the Merton model (Merton, 1976), the study use data from financial statements, including liabilities of companies listed on the Vietnam stock exchange and share prices, as well as daily trading volume to estimate the probability of default for each company. There are three groups of companies, including Blue Chip stocks, Midcap stocks, and Risky stocks. Blue Chip stocks include the Joint Stock Commercial Bank For Foreign Trade Of Vietnam (VCB), Vingroup Joint Stock Company (VIC), FPT Corporation (FPT), Vietnam Dairy Products Joint Stock Company (VNM), Mobile World Investment Corporation (MWG). Midcap stocks include LDG Investment Joint Stock Company (LDG), FECON Corporation (FCN), Petro Vietnam Drilling & Well Service Corporation (PVD), Lizen Joint Stock Company (LCG), and Hoa Sen Group (HSG). Risky stocks include

Vietnam Airlines JSC (HVN), Urban Development and Construction Corporation (UDC), MCG Energy And Real Estate Joint Stock Company (MGC), and No Va Land Investment Group Corporation (NVL). The period covered by my time series runs from January 3rd, 2017, to March 31st, 2023. The unit-root statistical tests (Elliott et al., 1996) serve as the foundation for these systems. Table 1 show the properties of these series.

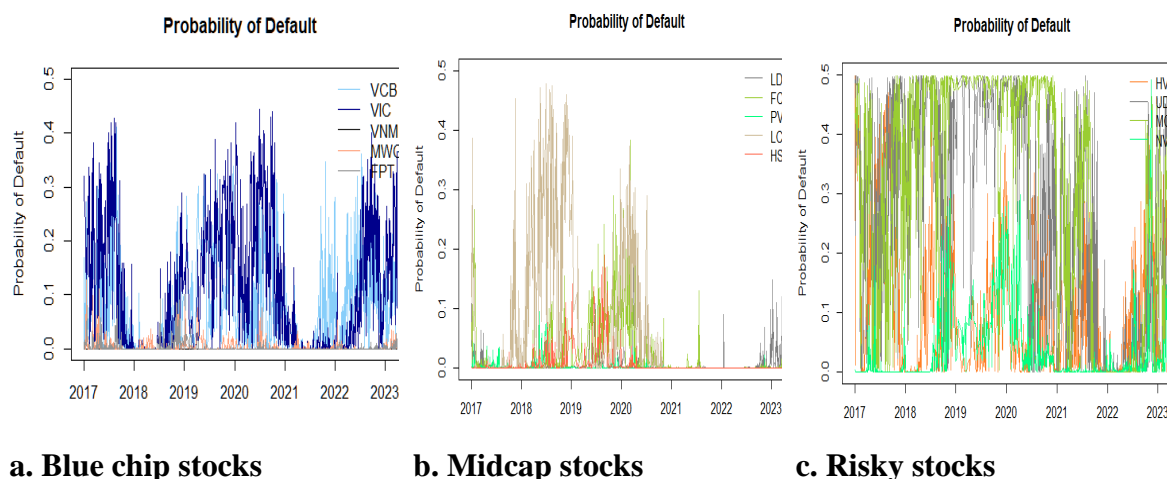


Figure 1. Probability of default

Table 1. Summary statistics

Panel A: Blue chip stocks

	VCB	VIC	VNM	MWG	FPT
Mean	0.0823	0.1065	0	0.0036	0.0027
Variance	0.0076	0.0136	0	1e-04	1e-04
Skewness	1.110***	0.853***	24.238***	5.911***	5.815***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Kurtosis	0.412***	-0.496***	716.546***	44.943***	41.459***
	(0.008)	(0.000)	(0.000)	(0.000)	(0.000)
JB	275.122***	170.398***	27852581.324***	116620.233***	100120.991***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ERS	-5.535***	-2.580***	-14.049***	-10.921***	-8.631***
	(0.000)	(0.010)	(0.000)	(0.000)	(0.000)
Q(20)	3682.594***	10005.609***	13.565	704.082***	1849.145***
	(0.000)	(0.000)	(0.852)	(0.000)	(0.000)
Q2(20)	1537.335***	3565.567***	0.017	104.248***	356.558***
	(0.000)	(0.000)	(1.000)	(0.000)	(0.000)

Panel B: Midcap stocks

	LDG	FCN	PVD	LCG	HSG
Mean	0.0038	0.0138	0.0018	0.0531	0.0048
Variance	2e-04	0.0015	1e-04	0.0114	3e-04
Skewness	7.174*** (0.000)	4.216*** (0.000)	9.498*** (0.000)	2.153*** (0.000)	5.439*** (0.000)
Kurtosis	70.054*** (0.000)	21.290*** (0.000)	122.328*** (0.000)	3.645*** (0.000)	35.629*** (0.000)
JB	276123.451*** (0.000)	28316.411*** (0.000)	827552.645*** (0.000)	1718.175*** (0.000)	74941.368*** (0.000)
ERS	-2.708*** (0.007)	-4.283*** (0.000)	-8.472*** (0.000)	-2.214** (0.027)	-6.375*** (0.000)
Q(20)	1287.203*** (0.000)	5156.547*** (0.000)	2923.763*** (0.000)	11985.698*** (0.000)	5555.527*** (0.000)
Q2(20)	48.527*** (0.000)	847.146*** (0.000)	654.598*** (0.000)	4685.259*** (0.000)	1566.266*** (0.000)

Panel C: Risky stocks

	NVL	HVN	UDC	MCG
Mean	0.0336	0.1054	0.244	0.035
Variance	0.0045	0.0147	0.035	0.037
Skewness	2.925*** (0.000)	1.134*** (0.000)	-0.044 (0.000)	-4.587 (0.000)
Kurtosis	9.990*** (0.000)	0.245* (0.084)	-4.587 (0.000)	255.160*** (0.000)
JB	7237.541*** (0.000)	280.803*** (0.000)	255.160*** (0.000)	-9.458*** (0.000)
ERS	-5.299*** (0.000)	-1.305 (0.192)	-1.458 (0.313)	-0.878 (0.231)
Q(20)	6731.214*** (0.000)	8558.496*** (0.000)	7564.171*** (0.000)	8747.290*** (0.000)
Q2(20)	3395.518*** (0.000)	5431.361*** (0.000)	3320.265*** (0.000)	5463.943*** (0.000)

3.2. Extended joint connectedness approach

The study aims to assess the $qd_{ij,t}$ a method of mutual connectedness that is equivalent, called $jd_{ij,t}$, these criteria are met by an organization:

$$G_{i \leftarrow \bullet, t}^{jnt, from} = \sum_{j=1, i \neq j}^p jd_{ij,t} \quad (1)$$

$$G_{\bullet \leftarrow i, t}^{jnt, to} = \sum_{j=1, i \neq j}^p jd_{ji,t} \quad (2)$$

$$jd_{ii} = \frac{1}{z} \sum_{i=1}^p G_{i \leftarrow \bullet, t}^{jnt, from} = \frac{1}{p} \sum_{i=1}^p G_{i \rightarrow \bullet}^{jnt, to}$$

In order to achieve this, I have to adopt the approach of Lastrapes & Wiesen (2021). As a result, equation 12's recommended computation must be correct. The table must also be the same in the diagonal components of the joint connectedness since the row totals must equal 1. Therefore, scaling factors vary per row, resulting in the following formula:

$$\eta_i = \frac{G_{i \leftarrow \bullet, t}^{jnt, from}}{G_{i \leftarrow \bullet, t}^{gen, from}} \quad (3)$$

$$\eta = \frac{1}{p} \sum_{i=1}^p \eta_i \quad (4)$$

Due to the soaring elements in each row, our soaring differs from the one that results based on the joint connectedness method. As a result, the following steps must be followed:

- $jd_{ij,t} = \eta_i qd_{ij,t}$
- $jd_{ii,t} = 1 - G_{i \leftarrow \bullet, t}^{jnt, from}$
- $G_{i \rightarrow \bullet, t}^{jnt, to} = \sum_{j=1, j \neq i}^p jd_{ij,t}$

It is also possible to calculate the metrics for directional connectedness based on net totals and pairwise distances on the soaring parameter for each row:

$$G_{i,t}^{jnt, net} = G_{i \rightarrow \bullet, t}^{jnt, to} - G_{i \leftarrow \bullet, t}^{jnt, from} \quad (5)$$

$$G_{ij,t}^{jnt, net} = qd_{ji,t} - qd_{ij,t} \quad (6)$$

My approach is expected to provide more precise findings than methods employed in previous studies because there is a similar explanation for the original connectivity methods proposed by Caloia et al. (2019). In general, this approach addresses several concerns associated with previously proposed connectedness strategies, such as: (i) it is not necessary to choose a rolling size at random; (ii) utilizing the Kalman gain of multivariate Kalman filtering, the predicted results are not influenced by outliers; (iii) The VAR coefficients can fluctuate over time; and (iv) Portfolio and risk administrators should take note of this to be able to observe the volatility of the energy market over time by allowing variances and covariances to fluctuate; (v) the solution of Lastrapes & Wiesen (2021) has been implemented a normalization problem involving row sums; and (iv) is similar to the directional joint connectedness study, the connectivity of joints is enlarged in a special way,

but it enables greater flexibility and multiple directional connectedness measures to be computed. This strategy emphasizes the comparative bilateral power of the indicators, which is one of its core features.

4. Results

Table 2 shows the average outcomes for the interlinkages of various indicators inside the network using the entire set of data from January 3rd, 2017 to March 31st, 2023. The diagonal part of this table describes the change of a single indicator, which is driven by shocks of its own. When the nondiagonal elements define how the instability of this indicator influences that of other indicators (FROM) and how other indicators impact the instability of this indicator (TO). The columns display the independent effects of each type of indicator on one another, whereas Table 2 specifically displays the influence of each individual indicator on the variance of forecast error of each other. In Panel A of Table 1, for Blue Chip stocks, the TCI average value for the entire set of data is 25.01%. It is proven that changes to this network might be responsible for 25.01% of the volatility in the network of indicators under investigation. This shows that about 75% of error variation of the system is caused by idiosyncratic causes. The contribution of each indicator is displayed in the last row of Table 2. The transmission of shocks and volatility to other system indicators is significantly influenced by VIC. It is worth noting that FPT, MWG, and VCB absorb our shock network in descending order. Furthermore, VIC plays a crucial role in the Blue chip group, and when this stock defaults, it will carry risks and increase the likelihood of defaults in the remaining part of the group.

Table 2. Averaged Joint Connectedness

Panel A: Blue chip stocks						
	VCB	VIC	VNM	MWG	FPT	FROM
VCB	67.19	25.10	0.81	3.51	3.38	32.81
VIC	15.49	78.04	1.84	1.47	3.16	21.96
VNM	1.14	5.22	84.82	7.37	1.45	15.18
MWG	4.30	5.64	7.33	72.41	10.33	27.59
FPT	6.81	10.30	1.45	8.93	72.51	27.49
TO	27.74	46.25	11.43	21.28	18.32	TCI
NET	-5.07	24.30	-3.75	-6.31	-9.17	25.01

Panel B: Midcap stocks						
	LDG	FCN	PVD	LCG	HSG	FROM
LDG	80.49	5.30	1.35	10.39	2.47	19.51
FCN	4.41	72.53	1.72	16.12	5.22	27.47
PVD	1.74	2.26	73.42	15.50	7.08	26.58
LCG	2.63	5.76	3.72	80.54	7.34	19.46
HSG	2.60	8.49	2.29	15.68	70.95	29.05
TO	11.38	21.80	9.07	57.69	22.12	TCI
NET	-8.13	-5.67	-17.51	38.24	-6.93	24.41

Panel C: Risky stocks

	NVL	HVN	UDC	MCG	FROM
NVL	86.81	4.06	3.74	5.38	13.19
HVN	9.97	76.81	3.86	9.36	23.19
UDC	8.59	2.72	62.58	26.11	37.42
MCG	6.03	3.78	16.87	73.33	26.67
TO	24.59	10.56	24.48	40.84	TCI
NET	11.41	-12.64	-12.94	14.17	25.12

In Panel B of Table 2, for Midcap stocks, the TCI average value for the entire set of data is 24.41%. It is proven that changes to this network might be responsible for 24.41% of the volatility in the network of indicators under investigation. This shows that about 75% of error variation of the system is caused by idiosyncratic causes. The contribution of each indicator is displayed in the last row of Table 2. The transmission of shocks and volatility to other system indicators is significantly influenced by LCG. It is worth noting that PVD, LDG, HSG, and FCN absorb our shock network in descending order. Furthermore, LCG plays a crucial role in the Midcap group, and when this stock defaults, it will carry risks and increase the likelihood of defaults in the remaining part of the group. In Panel C of Table 2, for Risky stocks, the TCI average value for the entire set of data is 25.12%. It is proven that changes to this network might be responsible for 25.12% of the volatility in the network of indicators under investigation. This shows that about 75% of error variation of the system is caused by idiosyncratic causes. The contribution of each indicator is displayed in the last row of Table 2. The transmission of shocks and volatility to other system indicators is significantly influenced by NVL and MCG. It is worth noting that HVN and UDC, and VCB absorb our shock network. Furthermore, MCG and NVL play a crucial role in the Risky group, and when this stock defaults, it will carry risks and increase the likelihood of defaults in the remaining part of the group. Figure 2 displays the evolution of TCI over time.

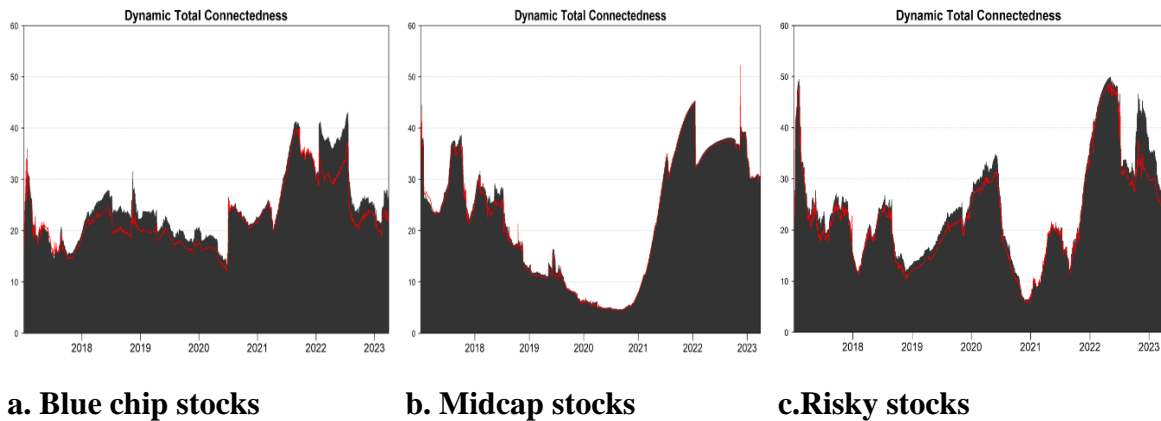


Figure 2. Dynamic total connectedness

5. Conclusions and policy implications

This study employ a TVP-VAR model to measure the contagion risk transmission between three group from January 3rd, 2017, to March 31st, 2023. These stocks exhibit significant default risk propagation, especially during crises such as COVID-19 and the Ukraine-Russia conflict. Specifically, the net total directional connectedness reveals a high level of default risk transmission among these stocks. For the Blue chip group, if VIC defaults, it will significantly increase the likelihood of default for the remaining stocks. Additionally, the default risk transmission among large companies tends to increase during the 2022-2023 period due to the impact of macroeconomic policies. The risk contagion relationships among companies in the Blue chip and Midcap groups have significant implications for policymakers and investors. By understanding the risk contagion relationships among these companies, policymakers can develop the most effective policies to minimize market risks. The high level of default risk transmission among stocks highlights the gaps in financial market management. Moreover, market shocks such as the COVID-19 outbreak and the Ukraine-Russia crisis lead to risk contagion among stocks. The study's findings also recommend measures to improve the social welfare directly affected by investor sentiment and stock market volatility./.

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