THE ROLE OF CONSUMER TRUST AND PERCEIVED RISK IN PURCHASING INTENTION IN E-COMMERCE MARKET - THE CASE OF COSMETIC PRODUCTS

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Abstract

Consumers'perceived risk and consumers' trust are important in consumers' purchasing intention, especially in the market for credence good - the good of which qualitycannot be observed or assessed by consumers. This article empirically studies the role of trust and risk in consumers' intention of purchasing cosmetics online. Cosmetics are selected as the product is a typical credence good, which inhibits information asymmetry between the sellers and the buyers, that is the sellers know about the good quality but the buyers do not.. And the online- market may make the asymmetry even more serious. We apply K-means algorithm to segment customers and thenOrdered Logit regression models to evaluate the impact of consumer's trust in the signals, level of perceived risk , and behaviorsome other factors. The results show that all customer groups will increase consumption when the trust in the signals is high and the level of risk, aversion is low; Besides, we also find a positive impact of website convenience on customers' shopping behaviorintention. Another interesting result is that consumers who buy ordinary products have higher level of perceived risk than consumers who buy more pricey products..

Keywords: *Credence goods, E-commerce, K-means, Ordered Logit model*

1. Introduction and Literature Review

The rapid development of e-commerce recently results from the technological progress of the industrial revolution 4.0 and the spread of the covid 19 pandemics. However, this is a new market and contains high information asymmetry when suppliers and consumers do not directly trade with each other as in traditional markets. This asymmetry

has created opportunities for some suppliers to launch fake signals and inferior quality products. On the consumer side, it is difficult for them to recognize the accuracy of the signal and the quality of the product before deciding to make a purchase. The asymmetric information is even more significant for credence items such as cosmetics, which used customers still cannot determine the quality of products. Therefore, the e-commerce market in Vietnam has not worked optimally when some parts of customers are afraid of the risks of this market but remain loyal to the traditional method of buying.

The "Theory of Reasoned Action - TRA" (1967) is one of the most well-known models in consumer behavior identification, revised since the early 1970s by Ajen and Fishbein (1980). Developed from TRA theory, TPB intended behavior theory was born to overcome the disadvantages of TRA by adding perceived behavioral control (PBC). In 1986, the TAM model proposed by Fed Davis was one of TRA's most optimal models, replacing many elements of TRA's attitudes with two elements that accept technology: Perceived Usefulness (PU) and Perceived Ease Of Use PEOU.

Based on these foundational theories, later studies have gone more profound in studying customer purchasing behavior. Including Shirin / Clara's research (2015) on customers' intention to shop for cosmetics online, using the TRA Reasonable Action Theory model and related research works, thereby giving research models and explaining the relationship between Trust, Risk Awareness, Shopping Interest, Website Design Quality to The Intention to Buy Cosmetics Online. The study results have explained that: variables including Trust, Risk Awareness, Shopping Pleasure, Website Design all affect the intention to buy online. In particular, three factors are Trust, Shopping Interest and Website Design that positively influence the intention to make an online purchase. Independent variable risk perception factors do not affect the intention to buy cosmetics online.

Another study by Abdullah Osman, Yi Jin Lim, Shahrul Nizam Salahuddin, Abdul Rahim Romle / Safizal Abdullah (2016) study of factors in impacting online shopping behavior - the intermediary role of shopping intention that gives a relationship between standards including Subjective Norm, Perceived Usefulness, Online Shopping Behavior, and intermediaries. This study uses the TPB model by Ajzen (1991), which has been modified to increase the likelihood of explanation, suitability and provide more details that form online shopping behavior. The study adds a Perceived Usefulness variable to the TPB model. The study results show that Subjective Standards and Useful Perceptions have a positive impact on Purchase Intention. However, Subjective Standards and Useful Perceptions have an inseparable effect (without negative trends) on shopping behavior. At the same time, shopping intention has a positive effect on online shopping behaviorbehavior.

Research by Nuno Fortes & Paulo Rita (September–December 2016) analyzes how internet privacy concerns affect consumers' online shopping. The research model developed

shows that this impact occurs through its relationship with theories of trust and risk, TPB, TAM, TRA models. Previous studies have shown that concerns about the security of personal information in online purchases have a positive effect on risk Perceptions and a negative effect on trust in the intention and behavior of visual purchases online (Liu, Marchewka, Lu, & Yu, 2005; Eastlick et al., 2006; Van Dyke, Midha, & Nemati, 2007, Van Slyke, Shim, Johnson, & Jiang, 2006). The most potent direct impact on privacy concerns is the perception of behavioral control. Online shopping intention is positively influenced by useful awareness, awareness of behavioral control and online shopping attitudes. Confirm the results obtained in Lwin and Williams's (2003) and Pavlou (2003). The most potent factor in the intention to shop online is the attitude of online shopping.

Another study was conducted by Kai H. Lim (2014) while investigating how different trust-building strategies affect purchasing behavior in an online shopping environment, especially for first-time visitors to a nameless online store. The study is based on the Partial Least Squares Regression method, which hypothesized that both the link to well-known websites and customer satisfaction confirmation positively influenced customer trust, thereby increasing the level of willingness to make purchases and purchasing decisions for that store. Kai H. Lim and his partner have proven that customer satisfaction will increase consumer confidence in the store.

In Vietnam, there have also been some studies on consumer behavior such as Pham Ngoc Thai's master's thesis (2015) on factors in impacting customers' intention to use online services, this study was conducted with subjects between the ages of 22 and 50 living in Ho Chi Minh City. The study using Taylor and Todd's C-TAM-TPB combination model (1955). The results show that two factors: Subjectance (personal needs and customer attitude) and objective (price, product quality and trust in the website), all affect the intention to use online shopping services. In addition, the research by Author Re Thanh Xuan (2015) also gives factors affecting the intention of shopping through Facebook social network in Ho Chi Minh City, through TPB, TAM model and trust theory to build an online retail model through social networks. The results of the study point to 5 factors such as reliability, subjective standards, useful awareness, ease of use awareness and behavior control perception that have a substantial impact on the intention to make an online purchase through Facebook.

In summary, previous research has shown that factors such as trust, risk apprehensiveness, and the convenience of the site to customers' online shopping behavior are present mainly in the research articles. However, most of these studies are based on various methods, so the reliability of the results has not been high. In this study, the authors used both quantitation and quantities simultaneously to develop and develop a model to assess the impact of factors on online cosmetic shopping behavior in the event of information asymmetry present in both the item and the market. The selection of cosmetic items for research is based on two main reasons: Firstly, cosmetics are typical items for the group of

goods, the new objective of the study is to take into account the asymmetry in the market and the breed of the item - a combination that almost no research has mentioned; Secondly, cosmetics are a potential item and are increasingly popular with young people today.

2. Method

Ordered Logit (OL) regression model.

Customers' intention to shop for cosmetics online is determined based on many different factors such as financial capacity, advantages of shopping online, age, gender, hometown,... and especially the factors of trust (and risk) of customers about online cosmetic consumption. Trust has a great impact on the intention to continue buying cosmetics online because cosmetics are used directly on the skin and by mouth, consumers only know cosmetics' quality after a long time when they are used, so they can face the beauty risks and health if they use poor quality products. Cosmetics shopping online also add to consumers' fear, when this form of shopping has many disadvantages. So does trust and risk really affect customers' cosmetic buying behavior?

In the survey questionnaire, the dependent variable: "Intent to buy cosmetics online in the next 6 months" is hierarchical, so in this article, an Ordered-Logit regression model is used to assess the impact of these factors, especially trust and risk on the intention to buy cosmetics in the next 6 months. The Ordered-Logit regression model has the form such as:

$$P(y = j) = \frac{\exp\,(X^T\beta - \mu_j)}{1+\exp\,(X^T\beta - \mu_j)} - \frac{\exp(X^T\beta - \mu_{j-1})}{1+\exp(X^T\beta - \mu_{j-1})} \text{ với j } = 1,2,\dots \text{ N} - 1 \qquad (1)$$

Where: $X^T{}_I$ là factors affecting consumers' intention to buy cosmetics online, u_j là sai số ngẫu nhiên, β the numbers to estimate..

Data

Research items are cosmetics – favorite items of young people. Therefore, the study carried out a randomized investigation from students of the National Economics University. The data collection is done as follows: The author's group goes to several random classes, gives questionnaires and funding to all students in the class, and collects questionnaires soon after. The questions are based on previous studies and after examining samples on 20 consumers and eliminating inappropriate factors. The result received a questionnaire of 15 questions/group of questions. The questionnaire was then investigated for the second time by 30 other random consumers to ensure the words used in the questionnaire were easy to understand and clear. The survey received 305 responses, of which 42 responses that had never used cosmetics were removed from the list, the set of data used for calculation and analysis in the remaining study of 263 responses.

Table 1. Basis statistics for demographic variables

Variable		In template (Person)	Percent (%)
Gender	south	120	39.47
	female	184	60.53
Age	2000	92	30.26
	2001	137	45.07
	2002	59	19.41
	1999	16	5.27
Area	rural	124	40.79
	urban	180	59.21

According to Table 1, It can be seen that the responders are mostly female (60.66%) and come from urban areas (59.02%). For the age, the majority of responders were born in 2001 (44.92%) and 2000 (30.16%).

As a result of the survey, 86.18% of respondents used to buy cosmetics online, of which 74% believed that buying cosmetics from above-average to high-end brands, and 89% of respondents believed that the products received after buying online were of the right quality as advertised. Thereby, we see that most young people now have a certain trust in online shopping. In addition, of those surveyed, 96% of them rated the products received when buying directly at a traditional store of the same quality as advertised. This shows that the majority of consumers still trust the products they buy directly at the store rather than when buying online. This is quite close to reality because when consuming products online, they always face many risks, especially cosmetic items - high asymmetry.

After studying the properties and effects of cosmetics. As well as gaps in online cosmetic consumption from previous research articles such as Kim [8]. Since then, the topic has carried out a review of the level of apprehensive of customers on a scale of liker 5 from very unbelievable (1) to very confident (5) about the risks that can be encountered as follows:

Health risks when using cosmetics online: Suffering from dangerous diseases such as lead poisoning, skin cancer,...; Premature skin aging; Allergenic when used; Causes end noisy disorders.

Service risks when buying cosmetics online: Addresses and phone numbers provided on the web are misused; Account number took advantage of; The store does not give returns as committed; Cannot contact the store when the product has a problem; Do not receive goods after paying online via app.

Below is a brief description of customers' risk aversion when using online cosmetics through the author's survey.

Level of fear of risks of customers when consuming cosmetics in the e-commerce market

Table 2. Level of risk apprehensive of customers (unit: % by line)

Risk	Very unbelievable	Unbelievable	Medium news	Pretty trusting	Very trusting
Dangerous diseases	3.42	14.83	33.46	27.76	20.53
Aging skin	3.42	23.57	31.94	23.95	17.11
Allergy	3.42	23.95	30.04	27.38	15.21
End noisy disorders	4.56	23.95	30.80	28.14	12.55
Address, phone number misused	3.04	20.53	39.92	28.90	7.60
Don't give back	6.08	28.14	31.56	29.66	4.56
No contact	7.98	25.86	34.98	26.62	4.56
Account number being taken advantage of	5.32	29.66	36.50	24.33	4.18
Do not receive goods after payment	15.59	31.94	36.12	15.21	1.14

The majority of questioners were more concerned about health risks than service risks; the risk of dangerous diseases was the one that consumers were most concerned about (20.53%), followed by skin-related problems with 17.11% and endocrine disorders with 15.21%. In the survey, people were less interested in whether the account number was taken advantage of or did not receive the goods after paying online.

The e-commerce market in Vietnam is a new market with pretty a few loopholes in operation, which is why customers have a fairly high level of risk when trading in this market, especially with credit items such as cosmetics. Therefore, businesses need to send signals to attract and build trust with consumers.

Through previous research on consumer confidence such as Mavlanova [5], Morais [9], and through sample surveys about the signals that Vietnamese cosmetic consumers are interested in when buying cosmetics online. The authors' team has synthesized some of the following signals:

Signals to increase customer confidence in product quality: The store is a genuine agent; The store is a shop on Shopee Mall; Products reviewed by famous Beauty Bloggers; Stores regularly receive good customer feedback

Signals that show that the enterprise has a system that operates in a system and reliably: The store is a genuine dealer; The store is a store on Shopee Mall; Products are reviewed by famous Beauty Bloggers; The store often receives good feedback from customers

The following signals indicate that the enterprise has a system that operates systematically and responsibly: The store has a specific address; The store displays the contact method; The store responds to customers quickly; Stores allow consumers to track order; The store commits to return and exchange when detecting inferior quality products

So, do the signals given by businesses promote the effect of attracting and building trust with customers? This is a question that is always interested by brands because each signal requires certain costs.

Customer confidence in the signals issued by the business.

In the questionnaire, the answer will evaluate the above nine signals on a liker five scale from very unbelievable (1) to very confident (5).

Table 3. Consumer confidence in signals when shopping online (unit: % by column)

Trust level / signal	Very unbelievable	Unbelievable	Medium news	Pretty trusting	Very trusting
The store is a shop on Shopee Mall	0	2	29	40	30
The store is a genuine agent	0	1	25	47	27
Products reviewed by Beauty Blogger	1	10	40	36	14
Store with a specific address	0	6	47	40	6
Store receives good customer feedback	1	10	36	46	7
Store return commitments	1	13	36	41	9
Have communication methods displayed	0	14	52	30	4
Allow consumers to track orders	0	17	52	28	3
Store responds to customers quickly	3	19	57	20	2

In the above signals, considering the total percentage of customers who evaluate pretty confident, we find that the first 3 signals receive the most trust from customers with the percentage of trust: 70%; 74%; 50%. Realize that these 3 signals are official signals – certified and guaranteed information security help consumers have a basis for trusting the products they consume and the services they receive.

The signal group that receives a pretty high trust from customers is the 4th signal; 5; 6 according to table 3 with the percentage of customers trusting are 46%; 53%; 50%. Signals 5 and 6 have a fairly reliable and very trusting customer volume higher than signal 3. However, on the other hand, the number of customers is only half that of signal 3, so signal 3 is still more important. Considering that this signal group is intended to assert itself

about the quality of its products, however, this information is difficult to verify, and no agency guarantees their accuracy.

The group that received the least customer trust was the last 3 signals with the corresponding percentage: 34%; 31%; 22%. These are signals about the service of the store and less correlation with the quality of the product.

In addition to factors that frequently appear in previous studies such as trust and risk aversion, the study also considers several factors such as the convenience of online shopping, a brand of cosmetics ... also has a significant impact on the purchase intention of customers. The following are some descriptive statistics of other variables that the research team performed presented in Table 4:

Table 4: Descriptive statistics for some other variables

		Mean	Median	Mode	Std.dv
Believe in products purchased online		3.27	3.00	3.00	0.75
Believe in offline purchases		3.67	4.00	4.00	0.66
Convenience of buying online	Attract more than buy ofline	3.27	3.00	3.00	0.95
	Save time	3.94	4.00	4.00	0.81
	Easy to choose	3.65	4.00	4.00	1.02
	Cheaper than buying offline	3.87	4.00	4.00	0.88
	Feel comfortable buying online	3.37	3.00	3.00	0.92
Use a lot of cosmetics		3.03	3.00	3.00	0.90
Buy only famous cosmetics		2.67	3.00	3.00	0.57
Determine quality through appearance		2.55	3.00	2.00	0.77
Determine the quality as soon as you use it		3.30	3.00	4.00	0.80
Will buy online in the next 6 months		3.57	4.00	3.00	0.89
Will introduce relatives to buy online		3.41	3.00	3.00	0.84

The variables in table 2 are measured using a likert5 scale. On average, survey respondents are quite confident in products purchased online and offline (3.2~3.7), the frequency of cosmetic use as well as the intention to continue buying cosmetics online are quite high (3~ 3.6). And the answer also appreciated the convenience of buying cosmetics online (3.2~4).

3. Results

In fact, depending on the audience of customers, they have different product and service requirements, the audience of the item they are interested in, as well as the frequency of their purchase, is not the same, especially with high-level items such as cosmetics. Therefore, we have implemented customer clustering to understand the behavior in each customer group. The study conducted the customer segment based on the variables collected

and some transformations such as the percentage of cosmetic purchases per total spend or the percentage of online cosmetic purchases on the total amount of cosmetic purchases and the average price of a cosmetic item using the K-mean algorithm.

Using the K-means algorithm to segment customers

After running clustering on the data set, the results result in 3 customer segments with characteristics that are performed through the following table:

Table 5: Some typical factors among the 3 customer segments

Variables / Clusters	Number of observations	FRED	AMOUNT	REXP	RONE	APRICE (VND)	GROW
1	175	2.98	11.71	0.32	0.59	600,366.5	6.71
2	26	4.46	30.00	0.29	0.73	644,348.8	6.23
3	62	2.56	6.23	0.26	0.397	472,043.1	18.95

From the characteristic elements obtained from table 5, we get the characteristics of each segment as follows:

Table 6. Clustering characteristics of each customer group

Cluster	Characteristics
1	Middle customers, high frequency of use and purchases
2	High-end customers, high frequency of use and purchases
3	Low-end customers, high frequency of use and purchases

After implementing the customer segment, the team carried out a recall of the intention to buy cosmetics online in the next 6 months according to the independent variables in the post.

So is the purchasing intention of each customer segment different and what factors affect the intention to buy cosmetics online on each customer group? Previous studies have all pointed to the impact of trust and the level of fear of the risk of customer procurement behavior. Whether to find the impact of these two factors on the intention to buy cosmetics online of young Vietnamese consumers. The team has revoked customers' intention to buy cosmetics online in the next 6 months according to variables found using the Ordered-Logit Revo recovery model.

However, the resulting variables have a fairly high correlation that easily leads to multi-line correlation when res on a scale. Therefore, the author's team conducted a discovery factor (CFA) analysis for variables of trust in signals, level of risk apprehension, and sense of convenience before proceeding. The results obtained 5 main factors are trust in product quality signals (Trust_health), Trust in service signals (Trust_ser), Health risk

apprehensiveness (Risk_health), Fear of service risks, and security(Risk_ser), and The convenience of buying cosmetics online (Conv).

Using Ordered Logit regression model to evaluate the impact of trust, risk and other factors on customers' intention to buy cosmetics in the next 6 months.

The study carried out regression of intention to buy cosmetics online according to independent variables such as:

Variables obtained from CFA factor analysis: Risk_health (Level of health risk apprehensive); Risk_ser (Level of service risk apprehensive); Trust_health (Trust in product quality signals); Trust_ser (Trust in service signals); Conv (Feel the convenience of online shopping)

Demographic variables: Female (Female gender), Urban (Urban).

Variables on customer consumption characteristics: Amount (Quantity of cosmetics purchased/year); Grow (The percentage of purchases increases as customers believe the product is of good quality), Amount spent on buying cosmetics online (Onlexp), Amount spent on buying cosmetics directly at the store (Offexp)

Regression results of intention to buy cosmetics online according to Ordered-Logit model are shown in table 7 below:

Table 7. Ordered Logit result

	Coef.	Std. Error	P-value
Signal_health	**0.46**	0.17	**1.12e-06*** **
Signal_health:cluster1	**0.26**	0.31	**0.00467** **
Signal_ser	**-0.05**	0.15	**0.104**
Signal_ser:cluster1	**0.61**	0.31	**1.88e-07*** **
Risk_health	-0.09	0.17	0.367
Risk_health:cluster1	**-0.96**	0.47	**2.00e-08*** **
Risk_ser	0.05	0.14	0.308
Risk_ser:cluster1	0.11	0.32	0.363
Conv	**0.94**	0.16	**1.00e-26*** **
Conv:cluster1	**0.37**	0.37	**0.00042*** **
Sex1	-0.23	0.31	0.25
Ht1	0.25	0.25	0.248
Onlexp	**0.2**	0.87	**0.084 .**
Offexp	**-0.3**	0.6	**0.093 .**
Grow	**-0.005**	0.03	**0.047***
Amount	**0.06**	0.05	**0.045***
Intercepts			

μ1|2	-7.56	1.21	
μ2|3	-4.802	0.96	
μ3|4	-1.53	0.9	
μ4|5	0.615	0.99	

The estimated results show that factors such as: Trust in product quality signals (Signal_health), Trust in service signals (Signal_ser), Feel the convenience of online shopping (Conv), Amount spent on buying cosmetics online (Onlexp), Amount spent on buying cosmetics directly at the store (Offexp) have an impact on purchase intention, in which the factors of trust in product quality, convenience of the site, amount spent on buying cosmetics online has a positive impact on customers' intention to buy cosmetics online.

In the group of "premium and mid-range customers" (cluster0), Signal_health, Signal_ser and Conv have a positive impact on consumer purchase intention and these three factors have a stronger impact than the group of "customers" low-end goods" (cluster1). In addition, level of health risk apprehensive only affects the intention to buy cosmetics online of low-end customers (cluster1).

4. Discussion and Conclusion

The article is interested in the influence of trust and risk on online purchase intention, focusing on cosmetic products. The research results show some results as follows:

+ Firstly, through the Ordered Logit regression model, the model shows that the trust factors about product quality, service and convenience affect the intention to buy cosmetics online, in which the factors trust in product quality, convenience has a positive impact on customers' intention to buy cosmetics online. Therefore, in order to attract more customers, businesses should strengthen the factors that affect customers' confidence in the quality of cosmetics, and improve the features of the sales website to help customers more convenient during online shopping. In addition, the state should stand to guarantee the information given from the business, making information falsification a legal issue so that customers have a basis to believe in the signals given. If the state does not tighten management, it is easy for businesses to fake information when the cost of forging information is lower than the cost of doing business honestly.

+ Second, in the middle and high-end customer groups, the factors of trust in product quality and convenience have a positive impact on consumers' intention to buy cosmetics online. In the low-end customer group, in addition to the impact of the two factors above, a negative impact of the level of health risk apprehensive was found. From the given results, businesses when approaching these customer segments need to focus on the trust factors about cosmetic quality, synthesize information that affects customer trust and especially Especially for low-end customer groups, specific information needs to be provided to reduce customers' risk aversion to the product.

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