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RESEARCH ON THE DEVELOPMENT OF SCIENCE AND TECHNOLOGY NETWORK INDUSTRY BASED ON STRUCTURAL EQUATION MODELING

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ABSTRACT

As the key developing industries in China, e-commerce and online shopping are increasingly attract the attention of scholars and practitioners. Generally speaking, most consumers are inclined to think twice about the risks and values of online shopping before consumption. Based on this phenomenon, a structural equation model is developed in this study to test causal effects among research constructs and explore the moderating effects of gender on partial relationships among perceived risk, perceived value and repurchase intention.

The empirical results show that (1) Among the three kinds of perceived risks in the research constructs, perceived financial risk and perceived time risk have significant negative effects on perceived utilitarian value and perceived hedonic value for consumer, but the perceived product risk is the exception. (2) Perceived utilitarian value and perceived hedonic value have significant positive effects on repurchase intention for customers. (3) As for the moderating effect of gender of consumer on the relationship among perceived utilitarian value, perceived hedonic value and repurchase intention, only the relationship between perceived hedonic value and repurchase intention is interfered by the gender factor, and only male gender has positive impacts on the relationship. Based on the results of this study, the author intends to provide some managerial implications and useful suggestion for online shopping operator.

KEYWORDS

Online shopping; Perceived risk; Perceived value; Repurchase intention; Gender.

1. INTRODUCTION

Energy With the advent of the information age and the continuous development of Internet technology, the advantages of e-commerce and online shopping have been reflected, which has replaced in-store shopping as the main choice of shopping platform for consumers. In 2016, China's online shopping market has reached 470 million RMB, which is 23.9% higher than that of 2015, and it officially broke the RMB 5 trillion mark in 2017. In addition, according to the statistical report on China's Internet development, which has been announced by the China Internet Network Information Center (CNNIC), by June 2017, the number of online shopping users in China has reached 514 million, and the online shopping population has accounted for 37.25%. Based on the study, it is clear that online shopping has reached a fairly advanced level and has penetrated into all aspects of people's life [1]. Moreover, China has reached 751 million people often surf the Internet, but the online shopping user scale is only 514 million people. There is a gap of about 237 million to overcome; that is to say, these people could be important potential users for the online shopping industry. If done properly, these potential users can instantly become the high-speed growth of online shopping.

There is no doubt that shopping through the Internet can save customers much time and money. Consumers choose online shopping because it provides more choices for no traffic expense, no pressure from the sales staff and no longer wait in line, and so on [2]. However, the customer value which provided by Internet and provided by traditional channels is quite different. Compared with the physical storefronts of traditional channels, the value of network creation is to emphasize the needs of the lower level of customers, including providing core products, good processing flow and technical performance [3]. According to literature review studies, the majority of consumers globally is looking to online media to get information but buy in entity shops because of the risk in online shopping,

such as financial risk, product performance, and so on [4]. Therefore, as we can see, in recent years, the scale of online shopping has been in constant development and expansion and consumers get used to and accept this kind of consumption method. However, compared with the traditional entity retail convenience, consumers still perceive a higher level of risks of online shopping. Therefore, the important topic of online shopping is how to reduce the consumer perceived risk when buying online, which in turn promoted the perceived value of online shopping to stimulate the intention of online shopping again.

A group of scholars argue that before making the purchase decision, consumers would make a comprehensive evaluation of the transaction based on their perceived benefits, costs and risks [5]. In previous research, the perceived risk of online shopping has been clearly defined as the negative influence factor of customer online shopping [6]. However, from the consumer's point of view, consumers have more interests in the effectiveness, interests, and further value of online shopping. The value of online shopping represents a give-and-take relationship which consumers can measure the value in the whole process of online shopping. Assessing the perceived sacrifice and benefit, if consumers think that the benefits of online shopping are greater than the sacrifice, then that shopping is treated as a valuable network shopping experience [7-9].

In addition, gender is one of the important factors that influence the development and attitude of consumers. A scholar points out that the gender difference of consumers seriously affects consumers' personal shopping behavior [10]. Based on research findings from past studies, it is also known that there is a significant difference between male and female online shopping behavior [11,12]. Compared with women, men more trust in Internet shopping. Male consumers think that online shopping is much more convenient than the women in the outlet shopping mall [13]. Therefore, compared with women, men pay more attention to the

perceived value of online shopping [14].

To sum up, in this study, we believe that consumers' perceived risks could affect the perceived value which provided by network shopping and next the perceived value will affect consumers' willingness to further network shopping. In addition, due to the gender difference of consumers, there will be significant differences in the behavior of online shopping. Therefore, this study also verifies the adjustment effects of gender differences in consumers to understand the influence of gender differences in the online shopping behavior. In conclusion, the purposes of this study are the following: 1. To understand the effect of perceptual risk on perceived value of consumer network shopping. 2. To understand the influence of perceived value on the repurchase intention of consumer network shopping. 3. To understand whether the relationship between perceived value and repurchase intention of consumer network shopping is affected by the gender difference of consumers.

2. LITERATURE REVIEW

The related topics of e-commerce are risk of perception, perception of financial risks, perceived product risk, perception of time risk, perceived value.

On the side of risk of perception, the process of shopping throw online contains various uncertainties, which are often amplified by the network environment. Therefore, even if consumers think that shopping online bring them a lot of benefits, they are still afraid of online shopping. Perceived risk is the perception that consumers have uncertainty about the product or service they buy [15]. It is also an important variable affecting the perceived value of customers [16]. Find that consumers' online shopping perceived risk will affect their willingness to online shopping. They also aim at application in online shopping concept to define the perception of risk which is based on consumers' online shopping behavior that consumers consider in a particular their subjective cognizance expected losses.

Therefore, at the stage the purchasing decision-making process, consumers will make comprehensive evaluation on the transaction according to their perceived benefit, cost and risk. In many perceived risk categories, product risk and financial risk are two of the most commonly discussed risks in online shopping. In addition, in online environment, studies found that consumers are most vulnerable to identity product risks, financial risks and time risks in online information search and shopping activities. Therefore, this study explores the risk factors of the internet search and shopping through product risk, financial risk and time risk, besides to explain the perceived risk of consumers in online shopping. Based on a study, financial risk refers to the net financial loss of consumers, including the use of products that may not be purchased, or accidentally buying something you don't really want, or even misappropriating your financial affairs data and personal data [17]. In addition, the survey finds that many consumers believe that using credit cards on the Internet could easily lead to problems such as a stolen brush [18]. However, these financial risks have gradually become the main obstacle for consumers to conduct online shopping behavior [19].

On the side of perceived product risk, product risk is the set of things that the performance of a brand or product is less than expected. Since consumers cannot accurately assess product image quality for online shopping, it also makes the consumer online shopping give more attention to product risk [20]. At online shopping, consumers cannot check physical products or trial products or touch physical products as they do in physical stores. The quality of purchased product may size discrepancy or not in line with expectations, thus consumers who purchase products through web may question about the risk of product.

On the side of perception of time risk, time risk refers to the loss of time for consumers during online shopping, the inconvenience caused by searching and browsing the web, and even delaying the receipt of a product. The cause of these time risks may be the online shopping order process or the poor design of the web site which makes it difficult for consumers to find the product information which they need, or maybe the problems of slow download speed which delayed customers to wait long time for product information.

On the side of perceived value, a scholar points out that the value of customer perceptions is based on the basic concept of Equity theory [21]. When the ratio of outcome to input is higher than that of the supplier, customers naturally feel excellent in quality and at a reasonable price, and it provides a higher value. From the customer's point of view, the customer perceived value is the evaluation of the customer's giving and receiving of the product in the process of consumption. The customer perceived value

is always a trade-off relationship of effort and gain. By measuring the difference between customer pay and gain, namely, the overall assessment of customer perception sacrifice and benefit, a product is more valuable to the customer when the customer gets more the benefit than the sacrifice. The feeling of shopping value during the process of consumer shopping experience can be divided into utilitarian and hedonic motivations for online shopping [22]. Also, the utility and hedonic value of commodities affect the decision and brand selection of shopping in the future. Moreover, believe that consumers will influence the purchase decision because of the different degree of utilitarian and hedonic motivations and will also influence the view of product function according to the past purchase experience [23]. In short, utilitarian value and hedonic value have an effect on consumers' purchasing behaviors, and different values will affect their purchasing decisions.

3. HYPOTHESIS

The related topics of hypothesis in this paper are perceived utility value, perceived hedonic value, repurchase intention, gender.

On the side of perceived utility value, a scholar defines utilitarian value as the overall evaluation (judgement) of functional benefit and sacrifice. They think that the utility value has a special relevance to the task of online shopping, such as careful consideration of product content, service and price before purchasing products, and so on. A researcher suggests that utilitarian value is a kind of efficient experience which comes from the conscious pursuit of a goal. The result, with emphasis on the task-oriented, rational, and the product obtained is thoughtful, and shopping goods are considered as basically a task or a job. Other researcher also shows that the utilitarian consciousness belongs to a rational level [24]. It refers to the process of consumption is a kind of job guidance; when individual purpose is satisfied, then the utilitarian consciousness is obtained. That is to say, when the task-oriented demand is met, namely there is a high utility value for consumers.

Based on the above literature on perceived risk and perceived utility value, consumers in online shopping usually comprehensively consider its perceived benefits, cost and risk of overall online transactions before deciding whether to buy. However, the evaluation of online shopping perception risk is related to the risks of finance, product and time. Financial risk refers to the financial loss and sacrifice of consumers, such as real money, financial data, cargo risks, and so on. Product risk is that the product performance does not meet customers' expectation and make consumers sacrifice on product performance. Time risk refers to the time loss and sacrifice caused by online shopping.

Moreover, the effect of perceived value is based on the overall assessment between the sacrifice and the benefit of customers' perception. When customers gain more than the sacrifice, the customer perceived value is higher. The evaluation of online shopping utility value is based on the overall function of customers' benefit and sacrifice. Consequently, the risk of shopping online is actually the concern of consumers' loss and sacrifice of their resources in online shopping. The perceived utilitarian value of online shopping is to focus on the customers' interests in the shopping process. When the concern about the loss and sacrifice of customers' own resources, such as finance, time and product get higher, the interests of consumers online shopping will get lower. To sum up, this study puts forward hypothesis H1 to H3 as follows:

H1: Perceived financial risk significantly affects the perceived utility value of shopping.

H2: Perceived product risk significantly affects the perceived utilitarian value of shopping.

H3: Perceived time risk significantly negatively affects the perceived utility value of shopping.

On the side of perceived hedonic value, a scholar defines hedonic value as the overall evaluation (judgement) of benefit and sacrifice (i.e., entertainment and escapism) experience. In their view, consumers enhance and evaluate the purchase experience through the previous shopping experience, rather than just perform a simple shopping task. According to literature review studies, hedonic value of socialism is inclined to personal feelings. During the process of consumption, individuals feel comfortable, motivative, and a sense of accomplishment, and so on. Also, based on gender, race, culture, and social class, the process of consumption is quite different as well. It belongs to an irrational decision making. That is to say, hedonic value depends on the feeling or pleasure of the product, rather than the ability to solve it, relative to utilitarian value [25].

Moreover, previous scholars argue that utilitarian value cannot be fully reflected in all individuals [26]. In its place, hedonic shopping value has its meaning for consumers. In other words, consumers should have the values of perceived utilitarian and perceived hedonic at the same time as they shop online. According to a study, hedonic value is gained through the pursuit of emotion (such as feelings, fantasies and fun) oriented consumption viewpoint in the process of shopping [27].

A scholar argue that hedonic value is based on the psychological feelings that consumers feel when they are doing shopping. For example, a safe online shopping brings joy, fun, enjoyment, excitement and even escaping from reality. Consumers can achieve hedonic value from the five paths of inspiration, participation, realization, freedom and escape. Moreover, previous scholar also think that hedonistic value is the overall evaluation of consumers benefit and sacrifice. Therefore, in the whole shopping process, consumers not only buy the goods they need, but also experience the whole shopping process. Based on the above, there are various risks associated with any shopping process. The financial, product and time risks of shopping have a threat to the hedonic value of shopping, when online shopping efficiency lower and potential benefits are sacrificed, consumers hedonic value will be gradually reduced. To sum up, this study suggests that H4 to H6 is as follows:

H4: Perceived financial risk significantly negatively affects the perceived hedonic value of shopping.

H5: Perceived product risk significantly negatively affects the perceived hedonic value of shopping.

H6: Perceived time risk significantly negatively affects the perceived hedonic value of shopping.

On the side of repurchase intention, a researcher argue that Repurchase intention refers to the possibility for consumers to buy the product or service again, when consumers actual cognitive value is in line with expectations, or higher than expected, customer satisfaction will be produced, and then the act of repurchasing or the behavior of word-of-mouth recommendation produced [28]. Other researcher also points out that when consumers are satisfied with the products or services they consumed, repeated purchases could occur [29]. Based on a study, consumers' Repurchase intention could be studied from cost view [30]. For example, the cost of acquiring a new customer is FIVE times as much as keeping an existing customer. Therefore, compared with the development of new customers, enterprises should pay more attention to the existing customers who will buy the products and services of the company again [31].

However, consumers' desire and willingness to buy products or services often starts with consumers' demand or the demand arises. After consumption, whether the purchase intention will be produced again

depends on whether the first consumption process and result meet consumers' demand. The more consumers receive positive evaluations in the first consumption process, the more they are willing to consume again. According to research, the repurchase intention of consumers has a causal relationship with the product or service provided by the enterprise [32]. If the product or service supplied by the enterprise makes the customer satisfied and feels valuable, the customer will produce the intention and behavior of repurchase because of the previous satisfaction. Consequently, repurchase is a causal relationship. In other words, consumers have a certain expectation for the product or service they buy, which will affect the subsequent behavior intention once the actual performance and value are not as expected. Based on the above reasoning, this study proposes the hypothesis H7 and H8:

H7: the perceived utilitarian value of network shopping has a significant positive influence on consumers repurchase intention.

H8: the perceived hedonic value of network shopping has significantly positive influence on consumers repurchase intention.

On the side of gender, gender is one of the important factors that influence the development and attitude of consumers. According to previous studies, gender has a serious impact on consumers' personal shopping behavior. Also, there is a significant difference between male and female network shopping behavior. A researcher points out that compared with female consumers, male consumers spend more on shopping, and men also tend to pursue more utilitarian consumption behaviors [33]. The effect of hedonic value in online shopping is significantly higher than that of men.

This shows that compared with the utilitarian tendency of males, females tend to prefer the hedonic orientation in online shopping. Men are more likely to trust shopping on the Internet and think that shopping is much more convenient than shopping in outlet-shopping. It can be seen that compared with women, the utilitarian value brought by the network shopping is significantly more that of women. However, overall, women's network shopping is still more. Based on the above, this study assumes that consumers' gender on the relationship between the repurchase intention, perceived utilitarian value and hedonic value has significant influence, so H9 is as follow:

H9: the relationship between perceived utilitarian value and (b) hedonic value and consumer repurchase intention is significantly different.

4. RESEARCH METHOD

Based on hypothesis inference, the following research framework is proposed in this study. The independent variable is perceived risk (financial risk, time risk and product risk). The dependent variables are perceived value (perceived utilitarian value and perceived hedonic value) and Repurchase intention. The moderator variable is the consumer gender. See figure 1 for details.

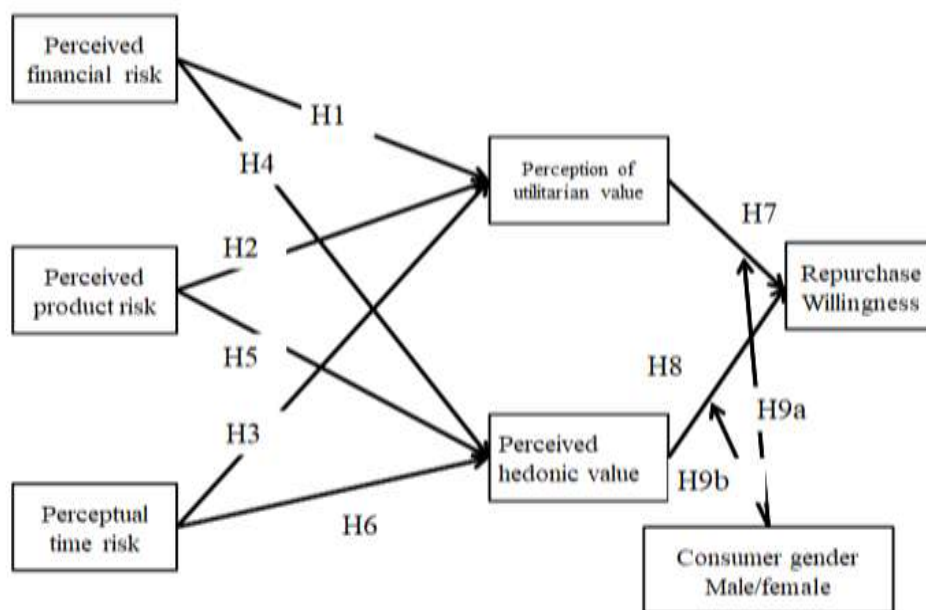


Figure 1: Research architecture diagram.

This study is based on the operational definition and measurement

recommended by scholars and is adapted into this questionnaire to measure the potential variables in the research architecture. There are five

sections in the questionnaire, of which the first part reviewing the subjects, the second to the fourth part measuring the potential variables in the study of architecture, and the fifth part is the basic data subjects. Based on the network shopping, financial risk, product risk and time risk to assess the consumer perceived risk. Financial risk is that consumers perceive the potential financial loss and concern that the unsafety of Internet credit card consumption. Product risk is caused by the inability to

accurately measure the quality of production in the network environment, resulting in less than expected performance of the brand or product. The time risk is the inconvenience caused by the network shopping, resulting in the difficulty of the purchase and order submission and the delay of the receiving time. In this study, we use the measurement method of modify and make it more suitable for research needs. Relevant perceptual risk measurement topics are shown in table 1 below.

Table 1: Measurement of perceived risk.

The variable	The measurement topic	Reference	
Perceived risk	I cannot trust this website	Forsythe et al (2006)	
	I may not be able to get my purchase goods		
	Financial risk		I might accidentally buy something I didn't want
	My personal data may flow out		
	My credit card number is likely to go out		
	Commodity risk		I cannot check the physical goods
			Products bought on website shopping may be of a different size
			I cannot try on the goods
	Time risk		I cannot touch and feel the goods
			The shopping site's order process is too complicated to place an order
It's difficult for me to find the web pages for the products I want on this shopping website			
	The shopping website's merchandise information and pictures take a long time to appear		

Perceived value includes perceived utilitarian value and perceived hedonic value. The utilitarian value of perception is an experience of efficiency, which comes from the conscious pursuit of a goal. It emphasizes that task-oriented and rational, product acquisition which is considered. Shopping is considered as a task or work; however, the hedonic value

emphasizes the pleasure, fun, and even escaping from the pleasures in the process of shopping. This study also adopts a previous research to make it more suitable for our research needs. Relevant perceptual value measurement topics are shown in table 2 below.

Table 2: Measurement of perceived value.

The variable	The measurement topic	Reference	
Perceived value	On this shopping website, I can buy good quality goods at reasonable prices.	Voss et al. (2003) Overby & Lee (2006)	
	On this shopping website, I can save time.		
	Utilitarian value		On this shopping website, I can get a good deal.
	This shopping website offers affordable products.		
	This shopping website makes me more efficient at getting the goods I want to buy.		
	This shopping website is practical for me.		
	This shopping website not only sells things to me, but also brings me a happy shopping feeling.		
	This shopping website not only sells things to me, but also gives me the fun of shopping.		
	Hedonic value		Shopping on this website, it's fun.
			This shopping website not only sells things to me, but also gives me a feeling of shopping.
This shopping website not only sells things to me, but also gives me the excitement of shopping.			
	Shopping on this website makes me feel isolated.		
	Shopping on this website, I have a feeling of escaping from the reality.		

Repurchase intention is the possibility for consumers to purchase the product or service again. When a consumer's actual cognitive value is as expected or higher than expected, the customer satisfaction will be generated, which will lead to the repurchase intention or the behavior of

introducing or recommending to others. In this study, the measurement method of a previous researcher that is used to modify the measurement and to make it more suitable for our research needs. The related repurchase intention measures the subject, as shown in table 3 below.

Table 3: The measurement of repurchase intention.

The variable	The measurement topic	Reference
Repurchase intention	I would like to come back to shopping again.	Holloway et al. (2005)
	I want to come back to shopping again.	
	I would like to increase shopping times on this shopping website.	

In this study, the operational definition and measurement of each potential variable are identified through literature review studies, so that

we can design the questionnaire. The online questionnaire is used to obtain the research samples, and the data analysis is conducted after the questionnaire is collected, so as to clarify the relationship between the potential variables in the research architecture and the hypothesis verification. In terms of data analysis methods, this study is carried out by Structural Equation Modeling (SEM). Firstly, we use the measurement model and confirmatory factor analysis (CFA) to confirm the questionnaire and validity. Secondly, we adapt structural model to confirm the relationship between adaptation degree and potential variables. In addition, this study also explores the neutral regulation of the research

architecture by multiple group analysis.

The measurement of the potential variables of this questionnaire is based on relevant literature reviews. Moreover, the measurement of each potential variable is also pre-tested by the online questionnaire survey. According to the pre-test reliability analysis, Cronbach's alpha is greater than 0.7 before the relevant potential variables, which is consistent with the recommendation of a previous researcher [34]. Therefore, the questionnaire of this study is preliminarily acceptable. Cronbach's alpha of each potential variable, as shown in table 4.

Table 4: Pre-test reliability of each potential variable.

The Variable	The number of measurement questions	Cronbach's alpha
Perceived financial risk	4	0.724
Perceived product risk	3	0.857
Perceptual time risk	3	0.720
Utilitarian value	5	0.900
Hedonic value	5	0.911
Repurchase intention	3	0.886

In this study, Smart PLS 2.0 software is used to test the relationship between the potential variables and the hypothesis. Firstly, the reliability and validity of the questionnaire are obtained through confirmatory factor analysis. Secondly, structural model analysis is further adopted to analyze the hypothesis that whether H1 to H8 is supported by experimental data in this research framework. Finally, we use multi-group analysis to find out whether there is a significantly adjusted repurchase intention effect on the gender difference of perceived utilitarian and perceived hedonic value.

5. THE RESULTS OF THE ANALYSIS

In this study, statistical analysis software is used to analyze the structural equation pattern, which is mainly divided into the following analysis. Firstly, the reliability and validity of each potential variable are confirmed by the verification factor analysis based on the measurement model. Secondly, the structural equation model is used to verify the suitability of the overall structure model and the research hypothesis. Finally, the moderating effect is confirmed by multi-group analysis verification. The participants in this study are consumers with experience of shopping network. A total of 400 questionnaires are collected through a monthly payback period. The invalid questionnaire is checked by the condition of

the interviewees in the questionnaire. After deducting the invalid questionnaire, 325 valid questionnaires are obtained, and the effective rate is 81.25%. Previous scholars suggest that the sample size should be at least five times the estimated parameter, which would be more suitable if the estimated parameter was 10 times [35]. Other scholars also argues that a single structural equation model should have at least 100 sample sizes [36]. If it could reach 200 samples, it is more suitable for structural equation model analysis. Based on the above, the effective sample size of this study is 325, which is in line with the suggestions made by the scholars.

According to the narrative statistics, 152 men (48.8%) and 173 (53.2%) are males in this study. Among them, the ages are ranged from 21 to 30 years old (65.2%) and 90 (27.7%) under the age of 20 (27.7%). The number of students is 227 (69.8%) and 45 (13.8%) in the service sector. The monthly income of the subjects is 191 (58.8%), with an income of less than 4,000 yuan. In addition, 125 (38.5%) of the respondents are online shopping 1 to 3 times in the past six months, while 88 (27.1%) of the respondents are also surveyed for 4 to 6 times. Online shopping costs are up to 154 people (47.4%) for less than 6,000 yuan (47.4%) and 132 people (40.6%) for 6,000 to 8,000 yuan. Details are shown in table 5 below.

Table 5: Table of Sample Basic Data.

Variable	Category	Number	Percentage
Gender	Male	152	48.8%
	Female	173	53.2%
Age	20 years old or below	90	27.7%
	At the age of 21-30	212	65.2%
	At the age of 31-40	16	4.9%
	At the age of 41-50	7	2.2%
	51 years of age or older	90	27.7%
Education	Junior high school (inclusive) below	1	0.3%
	Senior high school and secondary vocational school	18	5.5%
	college and university	274	84.3%
	Postgraduate	32	9.8%
	The Financial Sector	15	4.6%
Occupation	Army and government employees	7	2.2%
	Manufacturing	9	2.8%
	Freelance	9	2.8%
	Service	45	13.8%
	Housewife (husband)	7	2.2%
Monthly income	Student	227	69.8%
	Under 4,000 yuan	191	58.8%
	4,001 to 6,000 yuan	90	27.7%
	6,001 to 8,000 yuan	28	8.6%
	8,001 to 10,000 yuan	8	2.5%
1 to 3 times	10,001 to 12,000 yuan	3	0.9%
	More than 12,001 yuan	4	1.2%
	1 to 3 times	125	38.5%

The number of online purchases over the past six months	4 to 6 times	88	27.1%
	7 to 9 times	47	14.5%
	10 to 12 times	18	5.5%
	13 to 15 times	14	4.3%
	More than 15 times	33	10.2%
Online purchases for the past six months	Under 6,000 yuan	154	47.4%
	6,001 to 8,000 yuan	132	40.6%
	8,001 to 10,000 yuan	25	7.7%
	10,001 to 12,000 yuan	7	2.2%
	More than 12,000 yuan	7	2.2%

In this study, Cronbach's alpha and Composite Reliability (CR) are used to test the degree of internal consistency. The validity is confirmed by convergent validity and discriminant validity.

In this study, the data interval of the verification results of various aspects in the research framework is 0.838~0.923. The standard proposed by one of the researchers is between the level of creditability and high reliability, so it is known that this questionnaire has a considerable degree of internal consistency [37].

In this study, confirmatory factor analysis is used to verify the reliability values of the six constitutions, and the more the variables could be measured, the higher the consistency between the potential variables. It can be seen from Table 2 that the composite reliability data of each configuration is between 0.893 and 0.952, which is higher than 0.6 suggested values of indicating that the reliability of the study variables is within acceptable range [38].

The questionnaire of this study is based on the development of literature reviews related to distribution of modified in accordance with the framework of this study and carries on the revision through pretest

analysis. Therefore, the questionnaire of this study is content validity. Next, construct validity is tested by convergent validity and discriminant validity.

The factor loading by the coefficient of each variable measured by the confirmatory factor is from 0.631 to 0.954. It shows that the variables in the study of each variable are also equal to the number of variables that are equal to the value which is greater than 0.5 [39]. In addition, in the combination reliability of the potential variables, the reliability of each variable in this study is greater than 0.6. Therefore, the variables in this study have good convergent validity.

When the average variation of potential variable is greater than its correlation coefficient with the potential variables square value, it is clear that the potential and other potential variables have significant difference. According to the analysis of AVE-SV comparison, the average variation of each potential variable in this study is larger than the correlation coefficient square value of each potential variable. Therefore, there is a significant difference between the potential variables in this study. Relevant data are shown in Table 6.

Table 6: The Analysis of Reliability and Validity.

Construct	Item	Mean	Std. dev.	Loading	Cronbach's α	Jöreskog's rho	AVE
Perceived financial risk	FR1	2.889	1.281	0.813	0.843	0.893	0.677
	FR2	3.345	1.478	0.795			
	FR3	3.625	1.603	0.826			
	FR4	3.499	1.567	0.855			
Perceived product risk	PR1	4.406	1.711	0.933	0.878	0.914	0.780
	PR2	4.812	1.559	0.837			
	PR3	4.957	1.644	0.878			
Perceived time risk	TR1	3.314	1.464	0.878	0.838	0.902	0.755
	TR2	3.179	1.360	0.896			
	TR3	3.102	1.333	0.831			
Utilitarian value	UV1	5.175	1.107	0.775	0.893	0.921	0.700
	UV2	5.237	1.118	0.853			
	UV3	4.883	1.186	0.819			
	UV4	5.046	1.103	0.872			
	UV5	5.099	1.096	0.860			
Hedonic value	HV1	4.831	1.224	0.873	0.896	0.923	0.710
	HV2	4.794	1.273	0.857			
	HV3	4.788	1.230	0.916			
	HV4	4.646	1.336	0.904			
	HV5	3.877	1.467	0.631			
Repurchase intention	ORP1	5.062	1.172	0.948	0.923	0.952	0.868
	ORP2	5.049	1.156	0.954			
	ORP3	4.723	1.148	0.890			

Table 7: Analysis of Discriminant Validity (Fornell-Larcker Criterion).

Construct	1	2	3	4	5	6
1. Perceived financial risk	0.677					
2. Perceived product risk	0.219	0.780				
3. Perceived time risk	0.245	0.199	0.755			
4. Perceived utilitarian value	0.061	0.005	0.086	0.700		
5. Perceived hedonic value	0.093	0.022	0.071	0.377	0.710	
6. Repurchase intention	0.084	0.004	0.094	0.406	0.276	0.868

The path relationship between each variable is estimated by the structural equation model (SEM). The path values are standardized path coefficient, which is obtained by the statistical report of Smart PLS 2.0 analysis software. The structural model path analysis coefficients of this study are perceived financial risk and perceived utilitarian value (-0.178); perceived product risk and perceived utilitarian value (0.129); perceived time risk and perceived utilitarian value (-0.262); perceived financial risk and perceived hedonic value (-0.241); perceived product risk and perceived hedonic value (0.036); perceived time risk and perceived hedonic value (-0.163); Perceived utilitarian value and repurchase intention (0.505); perceived hedonic value and repurchase intention (0.215). Based on this, this study assumes that H1 to H8 except H2 and hypothesis H5, all six hypotheses are supported. The relevant data are shown in Table 8.

perceived hedonic value (-0.241); perceived product risk and perceived hedonic value (0.036); perceived time risk and perceived hedonic value (-0.163); Perceived utilitarian value and repurchase intention (0.505); perceived hedonic value and repurchase intention (0.215). Based on this, this study assumes that H1 to H8 except H2 and hypothesis H5, all six hypotheses are supported. The relevant data are shown in Table 8.

Table 8: The Model Evaluation of Structural Equation and Hypothesis Verification.

Path	Coefficient (S.E.r)	t-value	Sig.	Cohen's f ²
Perceived financial risk: perceived utilitarian value (H1)	-0.178	-2.289	*	0.024
Perceived product risk: perceived utilitarian value (H2)	0.129	1.768	---	0.013
Perceived time risk: perceived utility value (H3)	-0.262	-3.463	***	0.054
Perceived financial risk: perceived hedonic value (H4)	-0.241	-3.353	***	0.044
Perceived product risk: perceived hedonic value (H5)	0.036	0.549	---	0.001
Perceived time risk: perceived hedonic value (H6)	-0.163	-2.190	*	0.021
Perceived utilitarian value: repurchase intention (H7)	0.505	9.834	***	0.281
Perceived hedonic value: repurchase intention (H8)	0.215	3.930	***	0.051
R ²		0.435		
Adjusted R ²		0.432		

*p < 0.05, **p < 0.01, ***p < 0.001

Furthermore, Hypothesis H9: the relationship between perceived utilitarian value (a) perceived utilitarian value and (b) hedonic value and consumer repurchase intention is significantly different. By creating a structure model to compare between the male and female consumers: (a) the relationship between perceived utilitarian value and repurchase intention can be found that it is not affected by consumers different and significant gender differences; however, (b) the relationship between perceived hedonic value and repurchase intention can be found that there

is a significant positive relationship between the perceived hedonic value of male consumers and repurchase intention. However, in the case of female consumers, this kind of relationship is not significant. Therefore, compared to women consumers, if online shopping websites can provide male consumers a better perception of utilitarian and hedonic value consciousness, then male customers have more positive effects on the repurchase intention. The relevant data is shown in Table 9.

Table 9: Multi-group Analysis of Consumer Gender Differences.

Path / Models	Male (N = 152) Coefficient (S.E.)	Sig	Female (N = 173) Coefficient (S.E.)	Sig	Difference	t-value	Sig.
Perceived utilitarian value: Repurchase intention	0.552 (0.050)	***	0.502 (0.094)	***	0.05	0.453	0.651
Perceived hedonic value: Repurchase intention	0.276 (0.060)	***	0.139 (0.097)	---	0.137	---	---
R ²	0.537		0.369		---	---	---
Adjusted R ²	0.531		0.361		---	---	---

*p < 0.05, **p < 0.01, ***p < 0.001

6. CONCLUSION

This study is based on the analysis of perceived financial risk, perceived product risk and perceived time risk, as well as the enlightenments of perceived utilitarian value and perceived hedonic value. By utilizing online questionnaire and structural equation modeling analysis, we obtain the conclusion regarding the effects of perceived risk, perceived value and consumer repurchase intention, relationship and gender on perceived value and consumer repurchase intention of regulating effect. First of all, the analysis results of perceived risk and perceived utilitarian value show that there is a significant negative influence between perceived financial risk, perceived time risk and perceived utility value. Perceived product risk does not significantly affect perceived utilitarian value. That is to say, the higher financial risks and time risks caused by online shopping, the lower customer utilitarian value. In addition, the analysis results of perceptual risk and hedonic value show that perceived financial risk and perceived time risk can also significantly affect the hedonic value of consumer perception. Perceived product risk also shows no significant

impact. It can be seen that only perceived financial risk and perceived time risk have significant negative impact on perceived value. However, perceived product risk has no significant influence on utilitarian value or hedonic value. It also reflects consumers' concerns about whether they suffer financial and time losses at shopping. As an alternative, concerns about whether the product can actually touch, check, or even try out before buying are not so important any more. This could also be due to the influence and change of shopping on the Internet.

Moreover, this study finds out that both perceived utilitarian value and perceived hedonic value is positive and significant impact on consumer repurchase intention. It can be seen that the higher perceived utilitarian value and the higher value of perceived enjoyment the shopping website can provide, the willingness of consumers to visit the shopping website will also be enhanced significantly. If shopping website could provide consumers with reasonable price, excellent products, shopping time save and other shopping website's practical value, consumers repurchase intention will be increased. In addition, customers feel fun, and even feel

exciting and escaping from reality and isolation, then consumers repurchase intention will also be enlarged. Finally, we find that the difference in consumers' gender does not significantly affect the relationship of the perceived utilitarian value and repurchase intention. However, we find that the effect of perceived hedonic value and repurchase intention is different from the previous studies. The perceived hedonic value of male consumers significantly influences their repurchase intention, but female consumers do not have such significant positive effect. Therefore, compared with female consumers, male consumers pay more attention to the perceived value provided by shopping website and significantly influence their repurchase intention.

Firstly, in the negative impact of perceived risk and perceived value, this study finds that only perceived financial risk and perceived time risk have significant negative influence on the perceived value of consumers. That is to say, the higher the perceived financial risk and perceived time risk will significantly reduce the perceived value of online shopping. Based on the above, this study proposes the network shopping industry could reduce consumers perception of online financial risk and time risk through marketing techniques, in order to increase consumers' perceived value of online shopping. For example, in reducing the perceived financial risk, there is a more secure payment mechanism for consumers, such as a third-party payment, a website page to explain personal data protection policies and the provision of commodity insurance, in order to effectively reduce the perceived financial risk in online shopping. In addition, by providing more simple web pages and order process, faster search engines, perceived time risk could be reduced in the whole online shopping. Moreover, if consumers perceive that network shopping could provide them with good and positive value, then consumers repurchase intention will be significantly improved. Therefore, it can be found that both the enhancement of perceived utilitarian value and perceived hedonic value could effectively increase the willingness of consumers to return to shopping website for shopping. Therefore, this study suggests that to provide consumers more choices, more strict control stage of the business, with quality guarantee and good efficiency of recommendation system, in order to enhance the perceived utilitarian value of its Internet shopping. In terms of hedonic value, it can be started from beautifying website design and marketing activities. A lively and colorful website design has more visual stimulation, and consumers could gain more pleasure and fun during the network shopping. In addition, by good sales activity design, such as Double Eleven e-shopping festival, limited time discount and group purchase price, and so on, online shopping could enhance the perceived hedonic value for customers.

Finally, this study makes the following suggestions based on the adjustment effect of consumers' gender. The effect of perceived utilitarian value on repurchase intention has no significant difference in consumers' gender. Therefore, as you can see, consumers, regardless of gender, demand the same value for the perceived value of the shopping website, and they all think that shopping should give them a more practical product that will give them what they want and what it's worth and they're going to go back to shopping again in the future. In addition, the positive effect of perceived hedonic value on repurchase intention is only significant in male consumers' models. It means that it is different from the previous studies that it is easier that women are more likely to be affected by mood and emotion. According to the findings of this study, male consumers have higher requests on the value which the online shopping could provide. Online shopping, at the same time, should not only have more utilitarian value, but also have hedonic value of the shopping experience, then male customers repurchase intention will be enhanced. In spite of the establishment of research framework, inference hypothesis, design questionnaire and data analysis, this study aims to be objective and rigorous. However, there are still some limitations in this study. Firstly, due to constraints such as manpower, time and funds, more large-scale experimental design and questionnaire survey cannot be conducted. Secondly, this study adopts online questionnaire survey. We mainly expect that the participants can use laptops or personnel computers to answer the questionnaire. However, due to the convenience of the vehicle in action, many participants choose to use a smart phone or pad to the Internet. As a result, the filling process are affected by the action, e.g., font size or typesetting disorder. Thirdly, although the design of questionnaire in this study tries to streamline and accurate, and also emphasizes the questionnaire by way of bearer and only used for academic research, there are still many invalid questionnaires produced. Fourthly, limited by the research resources and scope, this study only adjusts the effects of gender differences and fails to take into account the effects of other adjustment variables. Lastly, in order to avoid the impact of shopping platform on different networks, this study only explores the consumers of Taobao, and fails to consider other platforms.

In order to break through the above research limitations and enhance the future research contribution, this study puts forward the following suggestions. Firstly, in 2017, the number of mobile Internet users in China has reached 724 million. The total number of Internet users is 751 million, and the number of mobile Internet users has reached 96.3% (CNNIC, 2017). Therefore, this study suggests that further research would be an online questionnaire survey. We expect that online questionnaire survey should be more suitable for all kinds of vehicle platform to present action, so it could provide the participants a better experience of intension. Secondly, to solve the problem of unexpected invalid questionnaire, this study suggests that a variety of incentives (such as sweepstakes or small gifts) could be added in a questionnaire to stimulate participants to complete the questionnaire. Finally, in terms of adjusting variables, this study suggests that the adjustment effects of more consumer factors (e.g., product involvement, conformity and platform differences) could be discussed.

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