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An Empirical Study on New Energy Vehicles' Purchase Intention Based on Perceived Risk Theory: A Survey of Chinese Consumers

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Abstract

Based on the background of the perceived risk theory, the purpose of this research is to explore the consumers' intention to purchase new energy vehicles in China, this paper analyzes the influence of the personal characteristics of consumers in China on the purchase intention of new energy vehicles. This paper uses questionnaire surveys to obtain data and conducts research through regression analysis. The results of this research show that the more substantial the perceived risks which are divided into physical risk, social psychological risk, time risk, financial risk, and functional risk, the lower consumers' intention to buy new energy vehicles, and personal characteristics variables, such as gender, age, education level, and income, have a moderating effect on consumers' intention to buy new energy vehicles. Although previous studies have related to many theories of perceived risk and new energy vehicles, this research is helpful to scholars and CEOs from new energy vehicle firms to research consumers' purchase intention in China. Especially now, the development trend of new energy vehicles in China is very clear. This article can help new energy vehicle companies better carry out technological innovation and marketing innovation.

Keywords

Perceived Risk, New Energy Vehicles, Purchase Intention, Demographic Characteristics, China

1. Introduction

In 2022, the China Association of Automobile Manufacturers released the Automobile Industry Blue Book: China's Commercial Automobile Industry Devel-

opment Report (2022). In 2021, China's new energy vehicle market has developed rapidly, with annual sales of more than 3.5 million vehicles, an increase of 157.8% over 2020. However, the sales of new energy commercial vehicles were only 168,000[1]. Despite the government's financial policy support, the sales of new energy vehicles have grown rapidly, but most of them are used for business vehicles, such as Didi Travel and Taxis Firms, etc. From the development data of new energy vehicles in recent years, China's new energy vehicle market has a great prospect, but we still need to soberly analyze the development trend of new energy vehicles. From 2018 to 2021, the average sales volume of new energy vehicles only accounts for 6.85% of the total sales volume (these data are calculated based on the sales volume of Chinese cars and new energy vehicles in the past four years). According to government data, by the end of 2021, China has 301.51 million cars and 7.84 million new energy vehicles, accounting for only 2.6%.

This represents that the sales market for new energy vehicles has not yet been fully opened. The purpose of this paper is to study the impact of consumer perceived risk on the purchase intention of new energy vehicles from different dimensions of consumer perceived risk, as well as the impact of different demographic characteristics on the relationship between consumer perceived risk and purchase intention of new energy vehicles, so as to provide reference and suggestions for enterprises to promote the development of new energy vehicle industry.

This article is composed of five parts. The first part mainly introduces the research background, purpose and main content of this paper. The second part is to sort out the relevant literature and review the theory of perceived risk. The third part explains the research model and hypothesis. The forth part is an empirical analysis based on the survey data, and verifies the proposed hypothesis. The fifth part is the conclusion and deficiency.

2. Literature Review

2.1. Perceived Risk

Perceived risk is a concept in the field of psychology. It was first proposed by Bauer (1960) of Harvard University. Bauer thinks that consumers can not predict or confirm whether their purchase decisions are correct or not when they make purchase decisions, and whether they will produce unpleasant results. The initial concept of perceived risk comes from this uncertainty. Perceived risk is reflected in the uncertainty of the results of the purchase decision, and if the decision is wrong, whether the consequences are serious. On the basis of Bauer's research, the concept of perceived risk is specifically explained by Cox (1967a). Cox believes that the basic assumption of perceived risk research is that consumers' purchase behavior is goal oriented, and consumers will have expected purchase goals when they make purchase decisions. Consumers will make choices among the factors of product, style, performance, brand and color. When con-

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[1]Data sources: https://baijiahao.baidu.com/s?id=1738832568922393521&wfr=spider&for=pc.

sumers are unable to determine which combination can meet their goals, they will have perceived risk. Or, after the consumer completes the purchase behavior, it is found that the result does not achieve the expected goal, and may produce unexpected adverse consequences, which will also produce perceived risk. Therefore, perceived risk is usually defined as the uncertainty of consumers' purchase behavior or the uncertainty of the severity of loss in the process of using products and services. However, when Bauer proposed the concept of perceived risk, he did not classify and analyze the perceived risk from the perspective of dimension. Cox (1967b) proposed the concept of perceived risk, which he thinks that the perceived risk is related to financial risk and social psychological risk. Roselius (1971) thinks that consumers' perceived risk includes time loss, self loss, dangerous loss and money loss. Jacoby & Kaplan (1972) proposed that there are five dimensions of perceived risk, namely financial risk, functional risk, psychological risk, physical risk and social risk. Based on the statistical analysis of these five perceived risk dimensions, taking 12 products as the research object, it is concluded that the overall explanatory ability of these five perceived risk dimensions to perceived risk reaches 73%. Peter & Tarpey (1975) further studied the perceived risk of consumers of different brands of automobiles, and added the dimension of time risk. Through study, Stone & Gronhuag (1993) concluded that the six dimensions of perceived risk, namely financial risk, functional risk, psychological risk, physical risk, social risk and time risk, accounted for 88.8% of the total perceived risk. Generally speaking, although there are differences in the research on the perceived risk dimension, the types and names of the dimensions are different, but the essence is consistent. In the academic research after Stone & Gronhuag, most of the studies have taken these six mature perceived risk dimensions as measurement factors. In this article, we summarize social risks and psychological risks as the risk of social psychological perception, and collect data through five dimensions: financial risks, functional risks, physical risk, time risk, social psychological risk.

The first is financial risk. Compared with ordinary vehicles, the price of new energy vehicles is higher. If consumers encounter quality problems after purchasing, they will lose a lot of money. Therefore, the financial risk that consumers concerned is whether the higher pricing of new energy vehicles is reasonable. The second is functional risk. The purpose of consumers to buy new energy vehicles is not only to travel, but also to consider the energy consumption reduction brought by new energy vehicles and the satisfaction and pride brought by the use of new high-tech products. If consumers can not feel the value after purchase, they will have losses. Such risks are brought by the functions of new energy vehicles, called functional risks. The third is physical risk. Product quality is of course the focus of consumers. In the process of using new energy vehicles, if there are any problems, it may cause harm to the health of consumers. The risk that may bring harm to consumers' health is called physical risk. The fourth is time risk. After the purchase of new energy vehicles, if the products can not be

used or there are problems in the use process, consumers still need to spend energy and time to repair and replace. Therefore, this part of the risk may be a time risk. The fifth is social psychological risk. Consumers must be in a variety of social networks, and in the process of purchasing, they will often get the attention of their relatives and friends around them. This kind of attention may be reflected in that if the product does not meet the initial expectations, or the reality is greatly different, then this kind of attention will turn into pressure. This paper defines this risk as social psychological risk.

2.2. New Energy Vehicle Purchase Behavior

At present, scholars have many achievements in the study of new energy vehicle purchase intention, mainly focusing on four aspects: consumer psychological factors, product perception quality, demographic characteristics, policy environment.

First, consumer psychological factors. Heffner et al. (2005) interviewed 25 families in Southern California who had purchased hybrid electric vehicles. He found that the important factors influencing these consumers to purchase hybrid electric vehicles were image value and ecological value. He believed that consumers purchase new energy vehicles to convey the information of "responsible for society", "caring about nature and caring for the environment". McManus et al. (2006) thinks that consumers buy new energy vehicles because of their green consumption concept. In Kurani et al. (2008) study, consumers pay more attention to the environmental protection performance of new energy vehicles, and purchase of new energy vehicles can reduce pollution and protect the environment. Therefore, consumers' purchase behavior of new energy vehicles is to transmit the concept of environmental protection. He et al. (2012) believes that consumers buy new energy vehicles because of their better perception. Consumers believe that the purchase of new energy vehicles can reduce environmental pollution, and has a good advocacy and positive role in environmental protection. Molin et al. (2007) conducted a study on consumers in Ireland and found that when purchasing new energy vehicles, they would be greatly influenced by friends and family members, even more than professionals and sales personnel of new energy vehicles. Consumers would be forced by social pressure and follow social norms to buy new energy vehicles.

Second, product factors. The study of Canadian consumers' purchase intention of new energy vehicles conducted by Chéron and Zins (1997) of Canadian scholars found that the length of charging time is a very important factor for consumers to consider when buying new energy vehicles. Beggs et al. (1981) think that consumers pay more attention to the price, driving speed, after-sales service, energy cost, driving distance and other attributes when purchasing new energy vehicles. Calfee's (1985) research shows that the price of new energy vehicles, driving distance, number of seats, maximum speed, cost and other factors significantly affect consumers' intention to buy. Brownstone et al.

(2000) believe that consumers are more concerned about product factors such as charging time and cost, location and number of charging piles, maximum speed, acceleration performance, vehicle size, luggage space and other product factors when purchasing new energy vehicles. Gao, Kitirattagarn (2008) believes that the vehicle purchase cost and maintenance cost of the new energy vehicle will affect the consumer's intention to buy the new energy vehicle. Zhang et al. (2011) found that consumers' intention to buy is affected by the cost of engine modification of new energy vehicles, energy prices, energy suppliers, energy availability, environmental performance, maintenance costs and other product factors.

Third, demographic characteristics, including age, sex, marital status, education, income, occupation and so on. Ong & Hasselhoff (2005) suggests older and higher-income consumers are more likely to buy new energy vehicles in a survey of U.S. residents. Heffner et al. (2006) conducted a survey on consumers' income and gender, and found that these factors had no significant difference on consumers' purchase intention.

Fourth, policy environment. Coad et al. (2009) studied the residents' acceptance of new energy vehicle policy through the survey of Swiss residents. The formulation of new energy vehicle policy should pay attention to the fairness of internal and external factors. For example, when the subsidy amount is reduced, it will cause the sales volume to decline. Chandra et al. (2010) studied the tax reduction policy of the Canadian government for new energy vehicles, and finally concluded that the tax reduction policy can significantly stimulate the sales of new energy vehicles. Yang Jie (2012) mentioned that government subsidies and supporting facilities construction will significantly affect consumers' purchase intention. Yu & Fang (2010) elaborated and evaluated China's current automobile tax policies based on the analysis of automobile tax systems in developed countries, and then put forward suggestions for the optimization of tax policies for new energy vehicles. Sun Xiaohui et al. (2011) compared and analyzed the existing subsidy policies and implementation methods of electric vehicles in China and abroad, explored the methods to improve the implementation effect of the policies, and gave relevant policy suggestions.

3. Research Design and Hypothesis

This article mainly discusses the impact of perception risks on the willingness of new energy vehicles to purchase, and at the same time analyzes whether the statistical characteristics of the population have some role in the purchase process. Therefore, we need to define the willingness to purchase and the statistical characteristics of the population. The intention to buy refers to the probability that consumers are willing to buy new energy vehicles. The main content of this paper is the influencing factors of purchase intention. The technology and promotion of new energy vehicles are not fully mature. Although some products are already on sale, most consumers have not fully accepted them. Therefore, this

paper expects to have a deeper analysis and understanding of the influencing factors of purchase intention. This paper defines purchase intention as the possibility of consumers buying products by analyzing and weighing a series of purchase factors. This paper divides demographic variables into age, sex, income and education level. In the process of regression analysis, the average value of all kinds of risks is measured. Age variable, education level variable, income variable and gender variable are all virtual variables. The mark of age over 50 is 1, and the other mark is 0. Education level is undergraduate (including college) and above mark 1, other mark 0. Revenue greater than 5000 mark 1, other mark 0. Male marker 1, female marker 0. In addition, the interaction terms are the product of two variables, such as age risk is the product of age virtual variable and risk variable.

This paper mainly collects relevant data through questionnaire, the design content of the questionnaire is mainly for the 18 - 60 years old in Zhaoqing City, China. We hope to support the hypothetical views of this article by obtaining their perception risks before they plan to purchase new energy vehicles. According to the five perception risks mentioned in the previous article, this study The indicator set the questionnaire content. After the preliminary design of the questionnaire, a pre-test was conducted. 50 questionnaires were distributed, among which 47 are valid. After data entry and analysis, the main problem is that the individual sentences of the questionnaire are not clear and easy to cause ambiguity. After the data of the pre-test questionnaire were input, the reliability and validity were analyzed, and the final questionnaire of this paper was finally formed, which mainly included three parts: perceived risk, demographic characteristics and purchase intention. The scale was measured using the Likert five-point scale, 1 - 5 indicating "very disagree" to "very agree".

As a new product, new energy vehicles are more likely to feel the risk, which will also affect consumers' purchase intention and final purchase decision. Currently, China's new energy vehicle technology standards and purchase support policies are not perfect, facing various promotion problems. Consumers are skeptical about the purchase of new energy vehicles. Although the Chinese government has formulated many preferential policies to encourage the manufacture and purchase of new energy vehicles, the market share of new energy vehicles is still small. Therefore, this paper believes that perceived risk will significantly reduce the purchase intention of new energy vehicles. To sum up, this paper studies the relationship between perceived risk and purchase intention of new energy vehicles, and puts forward the following assumptions:

H1: consumers' perceived risk for new energy vehicles will significantly reduce their purchase intention. Perceived risk can be divided into several dimensions, and the hypotheses are as follows:

H11: the higher the perceived financial risk of consumers, the lower the purchase intention of new energy vehicles.

H12: the higher the perceived physical risk of consumers, the lower the purchase intention of new energy vehicles.

H13: the higher the perceived function risk of consumers, the lower the purchase intention of new energy vehicles.

H14: the higher the perceived time risk of consumers, the lower the purchase intention of new energy vehicles.

H15: the higher the perceived social psychological risk of consumers, the lower the purchase intention of new energy vehicles.

Perceived risk is an important factor affecting consumers' purchase intention, but consumers' own characteristics such as gender, age, education level and income also have an impact on purchase intention. Many studies have pointed out that these consumer heterogeneity has a significant impact on purchase intention. Consumers of different genders have different purchase decision-making process for different types of products, and their purchase intention will also be significantly different. For automobile products, men tend to be more interested than women, and men tend to take the initiative to understand the relevant knowledge of high-tech products. Moreover, the risk tolerance of men is higher than that of women, and they are more sensitive to risks. Age affects consumers' ability to accept and learn new products, and age affects different dimensions of risk perception. The elderly tend to have a strong perception of physical risk and a low risk tolerance. Young consumers are more receptive to new products and are willing to try new products. Education level determines a person's values. The decision-making process of consumers with different education levels is different. Consumers with higher education level have a faster understanding of new products and have a clear understanding of the future development direction of the industry. Income level mainly affects risk tolerance, or risk sensitivity. Consumers with lower income level are more likely to feel financial risk, and their financial risk tolerance is poor. This paper studies the difference between the basic characteristics of population and the perceived risk of consumers, the hypothesis is following:

H2: demographic variables have moderating effect on the relationship between consumers' perceived risk and consumers' intention to purchase new energy vehicles.

4. Empirical Analysis

After the questionnaire is distributed and collected, the questionnaire data are inputted and analyzed by SPSS18.0:

4.1. Validity and Reliability

Constructive validity mainly refers to the extent that the problem can reflect the variables to be measured. The subsequent factor results show that the total variation ratio of each scale is more than 70%, indicating that the construction validity is good. Constructive validity is divided into aggregation validity and differentiation validity. The following tests on perceived risk and purchase intention show that these two validity are very high. After sorting and inputting

the data of the pre-questionnaire, exploratory factor analysis was conducted on the measurement results of perceived risk. The results are shown in the table below:

Before factor analysis, Bartlett and KMO tests should be done first. The test results show that KMO value is 0.834, while Bartlett's test value is 107.39, and the corresponding P value is 0.000, indicating that the data correlation is very high. The questionnaire has structural validity and can do factor analysis. It can be seen from Table 1 that the total explanatory variance of the first five factors is 78%, which accounts for most of the total variance. From the result of factor load, we can see that most of the removed factor loads are far less than 0.5, which mainly from five factors, which are consistent with the content of the scale in this paper. The first factor is mainly three measures of physical risk, the second factor is mainly five measures of social psychological risk, the third factor is mainly three measures of time risk, the fourth factor is mainly three measures of financial risk, and the last factor is three measures of functional risk.

Since the questionnaire needs to measure the purchase intention, it is necessary to conduct factor analysis on purchase intention. The Bartlett test value is

Table 1. Perceived risk factor analysis results.

Issues	Factor load					Factor explanatory variance
	1	2	3	4	5	
Physical risk 1	0.846					
Physical risk 2	0.733					0.182
Physical risk 3	0.685					
social psychological risk 1		0.896				
social psychological risk 2		0.799				
social psychological risk 3		0.687				0.173
social psychological risk 4		0.619				
social psychological risk 5		0.623				
Time risk 1			0.831			
Time risk 2			0.813			0.161
Time risk 3			0.724			
Financial risk 1				0.886		
Financial risk 2				0.868		0.145
Financial risk 3				0.738		
Functional risk 1					0.858	
Functional risk 2					0.742	0.119
Functional risk 3					0.683	

97.35, the corresponding P value is 0.000, and the KMO value is 0.819, indicating that factor analysis can be carried out.

As can be seen from Table 2, the factor analysis of purchase intention shows that one factor is formed, and the sum of the explained variance of this factor is 86.4%. The two measurement problems of purchase intention occupy a great influence in this factor.

We used Crobach's α value to test the reliability of the questionnaire data. The reliability analysis results of perceived risk scale and purchase intention scale are as follows:

It can be seen from Table 3 that the reliability of perceived risk, purchase intention and overall questionnaire is more than 0.6, and the maximum is more than 0.8, which indicates that the reliability of questionnaire data is high.

4.2. Empirical Analysis

After the questionnaire survey, a total of 616 questionnaires were distributed and 616 were recovered. After screening, 616 questionnaire were 479, and the effective rate was 77.76%. The results are as follows:

As can be seen from Table 4, the majority of the respondents were male, accounting for 67.85% and female 32.15%, 11.69% were 18 - 25 years old, 21.71% were 26 - 30 years old, 59.08% of the respondents were 31 - 50 years old, and 7.52% were 51 - 60 years old. In terms of education level, 8.14% of the respondents are below junior college, 64.72% are undergraduates (including junior college), and 27.14% are masters or above. From the perspective of monthly income, there are 204 respondents with 3000 - 5000 yuan, 187 people with monthly income of

Table 2. Results of purchase intention factor analysis.

Issues	Factor load	Factor explanatory variance
Purchase intention 1	0.876	0.864
Purchase intention 2	0.804	

Table 3. Results of questionnaire reliability analysis.

Variable	Dimensions	Number of questions	Crobach's α value
Perceived risk	Physical risk	3	0.814
	Social psychological risk	5	0.789
	Time risk	3	0.788
	Financial risks	3	0.757
	Functional risk	3	0.793
	Total	17	0.796
Purchase Intention	intention to purchase	2	0.711
Overall questionnaire	-	25	0.746

Table 4. Statistical results of sample characteristics.

Demographic characteristics	Category	Number of samples	Percentage share
Gender	Male	325	67.85%
	Female	154	32.15%
Age	18 - 25	56	11.69%
	26 - 30	104	21.71%
	31 - 50	283	59.08%
	51 - 60	36	7.52%
Level of education	High school, middle school and below	39	8.14%
	Undergraduate (including specialist)	310	64.72%
	Master and above	130	27.14%
Monthly income	Less than 3000	49	10.23%
	3000 - 5000	204	42.59%
	5001 - 10,000	187	39.04%
	Above 10,000	39	8.14%

5001 - 10,000 yuan, and only 39 people with monthly income of more than 10,000 yuan. The results of sample statistics show that men generally accept cars and high-tech products more than women, so men may be more interested in new energy vehicles. Most of them are 31 - 50 years old, and their career is in the stage of rapid development, and their purchasing ability and intention are stronger than those of other ages. In the education level, the majority of undergraduates (including junior college students) have received higher education, have strong analytical ability and have a strong understanding of high-tech products. Monthly income statistics show that the monthly income of 3000 - 10,000 yuan accounts for 89.77% of the total, and these consumers are the main consumption force in the current new energy vehicle market.

According to the analysis in Table 5 and Table 6, 23.59% of the respondents plan to buy a car within half a year, and 50.73% of the respondents plan to buy a car within six months to one year. In terms of their understanding of new energy vehicles, 15.03% of the respondents have not heard of new energy vehicles, 50.94% of the respondents have only heard of new energy vehicles, and only 20.04% of respondents have in-depth knowledge of new energy vehicles.

The data in Table 7 reflect descriptive statistics of the measurement results of the perceived risk scale and the purchase intention scale.

From the regression results in Table 8, we can see that the hypotheses H1 has been verified. The coefficient of financial risk is −1.74, and the adjoint probability is 0.05, which is less than 0 at the significance level of 10%, which indicates that the higher the financial risk, the lower the consumer's purchase intention, which is consistent with the hypothesis of this paper. The regression results of

Table 5. Planned purchase time.

Planned purchase time	Number of samples	Percentage share
Purchased	65	13.57%
Within six months	113	23.59%
Six months to one year	243	50.73%
More than one year	58	12.11%
Total	479	100.00%

Table 6. New energy vehicle awareness.

Level of understanding	Number of samples	Percentage share
Not heard	72	15.03%
Heard	244	50.94%
Better understanding	67	13.99%
In-depth understanding	96	20.04%
Total	479	100.00%

Table 7. Descriptive statistics of perceived risk and intention to buy measurements.

Variable	Dimensions	Title	Mean	Standard deviation	Sample size
Perceived risk	Physical risk	7 - 9	2.33	0.95	
	Social psychological risk	10 - 14	2.75	1.14	
	Time risk	1 - 3	2.45	0.86	479
	Financial risks	4 - 6	2.43	0.95	
	Functional risk	15 - 17	2.18	1.03	
intention to purchase		18 - 19	2.82	1.29	

Table 8. Regression of perceived risk to intention to buy.

Variable	Coefficient	Accompanying probability
Physical risk	−0.14*	0.06
Social psychological risk	−0.08***	0.02
Time risk	−1.10*	0.08
Financial risks	−1.74*	0.05
Functional risk	−0.93*	0.07
intercept	0.06	0.70
Adjustment R party	0.21	
F value	27.62***	

*, ** and *** indicate significant levels at 10%, 5% and 1%, respectively.

functional risk are also less than 0 at 10% significance level, with a coefficient of −0.93, which indicates that the higher the functional risk is, the lower the purchase intention is. The regression coefficients of physical risk, time risk and social psychological risk are significantly less than 0 at different significance levels.

The hypothesis that H2 believe that consumers' personal characteristics have a moderating effect on the relationship between perceived risk and purchase intention. People with different gender, age, education level and income have different risk assessment and sensitivity to risk, and the purchase intention of new energy vehicles is affected by perceived risk. Therefore, it is necessary to test this regulatory effect. As shown in Table 9.

We adopt a gradual return method to test the regulatory role of consumers' population statistical characteristics between perception risks and the willingness to buy. From Table 9, you can obtain some related information. The interaction coefficient of gender and perception risks is 0.92, the interactive item coefficient of age and perception risk is −0.72, the interaction coefficient of education level and perception risk is 1.25, income and perception risks The interaction coefficient is 0.38, and these interactive data are at a significant level. Therefore, the population statistical characteristic variable has a regulatory effect in the process of perception risks to the willingness of the purchase, and H2 has been verified.

5. Conclusion and Prospects

Perceived risk has a negative impact on consumers' purchase intention of new energy vehicles. This paper divides perceived risk into five dimensions: physical risk, social psychological risk, time risk, financial risk and functional risk. First,

Table 9. Examination of the effects of demographic variables.

Variable	Coefficient	Accompanying probability
Risk	−0.06**	0.03
Gender	1.88*	0.10
Age	−0.67*	0.08
Level of education	0.72**	0.03
Income	0.97*	0.06
Gender * Perceived risk	0.92*	0.06
Age * Perceived risk	−0.72**	0.04
Level of education * perceived risk	1.25*	0.05
Income * Perceived risk	0.38*	0.10
intercept	0.59**	0.02
Adjustment R party	0.23	
F value	30.92***	

*, ** and *** indicate significant levels at 10%, 5% and 1%, respectively.

physical risk, whether the product quality of new energy vehicles is up to the standard, and whether the products will cause harm to the personal health of consumers are issues that consumers pay great attention to. According to the analysis of this paper, the stronger the perception of physical risk, the lower the intention of consumers to purchase new energy vehicles. Second, social psychological risk: Consumers live in a certain social relationship, and their purchase behavior will be concerned by the surrounding people. If the purchase of new energy vehicles can not bring certain social concern to consumers, or the attention does not meet the psychological expectations, the perception of this risk will affect their purchase intention. The results show that the higher the perceived social psychological risk, the lower the purchase intention of consumers. Thirdly, in the study of time risk in this paper, it is also found that consumers are worried that the infrastructure supporting the use of new energy vehicles (such as charging piles) is not perfect, or there are various problems in the use process, which wastes time and cost. The results show that the higher the perceived time risk, the lower the purchase intention of new energy vehicles. Fourth, financial risk is the most common risk when consumers make purchase decisions. Financial risk will have a negative impact on consumers' purchase intention of new energy vehicles. The higher the financial perceived risk of consumers, the lower the purchase intention of new energy vehicles. Fifth, functional risk: The function of new energy vehicles is not only for transportation, but also for the protection of ecological environment due to its additional low energy consumption. Therefore, before purchasing new energy vehicles, consumers will doubt the function of new energy vehicles and generate functional risks. According to the analysis of this paper, the higher the perceived function risk of consumers, the lower the purchase intention of new energy vehicles.

Population statistics characteristics, such as gender, age, education level and income, have a moderating effect on consumers' intention to buy new energy vehicles, and this conclusion has also been validated in relevant research literature (Deng & Nam, 2022). In terms of gender, male consumers and female consumers have different bribery decisions for different types of products. For emerging new energy vehicles, male consumers will obviously show greater interest. At the same time, male consumers have higher knowledge storage and collection ability than female consumers. Therefore, gender plays a moderating role in the relationship between consumers' perceived risk and purchase intention of new energy vehicles. In terms of age, this paper takes 50 years old as the cut-off point. Consumers over 50 years old have a slightly weaker ability to bear risks compared with those under 50 years old, and their acceptance of new energy vehicles and their ability to collect information are weaker than those of younger consumers. It is found that age has a moderating effect on the relationship between consumers' perceived risk and purchase intention of new energy vehicles. In terms of education level, as the highly educated consumers are more rational when shopping, their ability to collect information about new energy

vehicles is more comprehensive, and they have a higher sense of social responsibility. With these characteristics, they will also have a certain impact on their risk perception. Therefore, education level has a moderating effect on the relationship between consumers' perceived risk and purchase intention of new energy vehicles. In terms of income level. Income can have a great impact on consumers' purchase decisions. Consumers with low income are more likely to feel financial risks, and their financial risk tolerance is poor. In addition to material enjoyment, high-income consumers also pay attention to the additional functions and values of products. Therefore, income level has a moderating effect on the relationship between consumers' perceived risk and purchase intention of new energy vehicles.

Although the purpose of this paper has been basically completed, there are still some deficiencies. First, the literature research is not comprehensive enough. Only five mature perceived risk dimensions are selected according to the existing academic achievements. Second, in the selection of field survey sites, only for China's ZhaoQing city for research, if time permitting, more survey sites can be selected. Third, the number of samples is not enough, this study only sent 616 electronic questionnaires and the effective rate was 77.76%, for empirical research, the sample size and the effective are a little small. In the future research, we can find out some new perceived risk dimensions and select more sample data to do research, so that the conclusion is more perfect and persuasive.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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