
Qingzhe He

Guangxi University of Finance and Economics, Nanning, Guangxi, 530003, China
2235692517@qq.com

Abstract: Consumers' purchase intention is affected by many factors, among which perceived value is one of the main factors affecting consumers' purchase intention. Compared with traditional fuel vehicles, new energy vehicles are new products. The existing research on new energy vehicles focuses on the research of consumers' purchase behavior from the perspective of risk, ignoring consumers' value perception of new energy vehicles. Based on the research object of new energy vehicle purchase behavior, combined with the specific characteristics of the new energy vehicle industry, from the perspective of consumers' perceived value, this paper puts forward hypotheses and constructs a conceptual model of the relationship between multi-dimensional perceived value and purchase intention of new energy vehicles, and tests the hypotheses by SPSS software. The study found that functional value, emotional value and environmental value had a significant impact on consumers' purchase intention, while social value had no significant impact on consumers' purchase of new energy vehicles. Finally, this paper puts forward relevant measures for the market promotion of new energy vehicles.

Keywords: New Energy Vehicles; Perceived Value; Purchase Intention

1. Introduction

In September 2020, the Chinese government proposed that China's carbon dioxide emissions should reach a peak by 2030 and achieve carbon neutrality by 2060. The proposal of the "double carbon" goal triggered extensive discussions on balancing economic growth and environmental protection. With its advantages of environmental protection, low carbon and low cost, new energy vehicles have become an effective way to solve the problem of environmental pollution in the field of transportation. The Chinese government has regarded the new energy vehicle industry as an emerging industry and pillar industry for national key development, and promoted the promotion of new energy vehicles as a national strategy. Especially after the implementation of relevant preferential policies such as vehicle purchase tax exemption and subsidies for new energy vehicles, it has played an effective role in stimulating consumers' purchase of new energy vehicles.

By combing the relevant literature of new energy vehicles, it is found that most scholars' research focuses on the relevant preferential policies, technological innovation, marketing management and other aspects, and less on the consumers themselves[1]. At the same time, new energy vehicles are innovative products. In the existing research, scholars focus on the study of consumers' cognition of new energy vehicles from the perspective of risk, but less on consumers' purchase behavior of new energy vehicles from the perspective of value. Consumers are the main body of purchase intention. In the process of marketization of new energy vehicles, it is necessary to study the impact of perceived value on consumer behavior from the perspective of consumer psychology. Based on the above discussion, whether consumers' perceived value will have an impact on consumers' purchase intention of new energy vehicles and its mechanism need to be explored. The problems to be solved in this paper are: first, the composition and measurement of consumer perceived value in the new energy vehicle market; Second, what is the impact of the constituent dimensions of consumer perceived value on purchase intention in the new energy vehicle market, and what is its mechanism of action; Third, how can the managers of new energy vehicle enterprises carry out product innovation and management, and accelerate the marketization process of new energy vehicles.
2. Related Literature Review and Research Hypothesis

Consumer perceived value is the value brought by the products or services that consumers pay attention to in the transaction process, that is, the value that consumers expect to obtain by purchasing and using products to meet their own needs. Scholars have conducted a lot of research on the driving factors of consumer purchase behavior, and the factors affecting consumer purchase behavior are multifactorial, including product value, quality, brand, consumer preference, etc. Consumer perceived value is considered to be one of the important factors affecting consumer purchase decision [2]. There is a positive correlation between the value consumers feel in the process of purchasing products or services and consumers' purchase intention, that is, in the process of trading, consumers' perceived product value will affect their purchase behavior. When consumers perceive the high value of the product, the probability of purchase is high; If you perceive that the product value is low, the probability of purchase is low. At present, for the measurement of perceived value, scholars divide the perceived value into single dimension perceived value and multi-dimensional perceived value according to the perspective of measurement dimension [3-10].

The first view is the perceived value of a single dimension. The earliest research on perceived value mainly focused on a single dimension. Zeithaml, V. A (1988) defined perceived value from the perspective of cost-benefit trade-off, and believed that perceived value was the trade-off between the benefits and costs of products or services perceived by consumers [11]. Consumers used perceived benefits and perceived costs to measure personal utility, that is, the ratio of perceived benefits and perceived costs. When the perceived benefit is greater than the perceived cost, the consumer utility is high; On the contrary, when perceived revenue is less than perceived cost, consumer utility is low. Therefore, consumers will choose products with high perceived utility to purchase in the transaction process. A single dimension of perceived value can effectively measure the psychological perception of consumer behavior, but the psychological activities of consumers are affected by many factors. When measuring the perceived value of consumers, a single dimension does not fully consider the characteristics of products or services, showing some limitations.

The second view is multi-dimensional perceived value. Multidimensional perceived value is developed on the basis of a single dimension of perceived value. Due to the characteristics of products or services, multidimensional perceived value measurement shows adaptability, scientificity, reliability and other characteristics in application. The research results show that the measurement of multidimensional perceived value is more robust than the measurement of one-dimensional perceived value to a certain extent. At present, multi-dimensional perceived value is widely used in business and academia. Different scholars have classified the multidimensional perceived value according to the characteristics of different industries, including price value, function value, green value, safety value, health value, emotional value, social value, novelty value, etc. For example, Hao Junfeng et al. (2011) divided perceived value into emotional value, functional value, monetary value and social value to study the impact of consumers' perceived value on consumers' purchase intention in China's self-use cosmetics market [12]. Lu Hongliang et al (2017) studied the impact of perceived value on the purchase intention of B2B component brands from the dimensions of functional value and emotional value [13]. Sun Binfeng (2019) conducted a field survey by interviewing potential consumers and found that most consumers pay attention to the perceived value of five dimensions, including the quality value and price value of new energy vehicles, and built a five dimensional model of the impact of consumers' perceived value on purchase intention [14]. Zhang Guozheng et al. (2020) conducted a questionnaire survey and empirical research on domestic offline physical industries. They found that environmental value, safety value, health value and social value all positively affect consumers' attitude towards organic agricultural products, and consumers' attitude towards organic agricultural products affects their purchase intention [15]. Shu Shujin et al (2021) took the cultural and creative products of the Forbidden City as the research object and measured the perceived value of consumers from six dimensions: quality value, social value, price value, innovation value, education value and experience value [16].

The study of multi-dimensional perceived value has become a hot topic in the study of perceived value. Scholars have studied consumer behavior in different industries from the perspective of perceived value. The effects of different dimensions of perceived value in different industries on consumer purchase intention are different. For example, in the agricultural products industry, consumers will worry about pesticide residues and are more concerned about food safety. The safety value has a significant positive impact on consumers' purchase intention. But in the field of home appliances, because the technology of home appliances is mature, the safety performance is not the focus of consumers' attention, and the significance of the impact of safety value on consumers'
purchase intention will be weakened. By combing the existing literature, the research on multi-dimensional perceived value has pointed out that functional value and emotional value are two indispensable dimensions for measuring consumers’ perceived value[17]. With the development of economy and society and the improvement of the environmental protection ceremony of the government and the public, green consumption has gradually become a hot spot in the research of consumption behavior. New energy vehicles provide power by using clean energy to effectively solve the environmental pollution problem caused by vehicle exhaust. Therefore, it is considered to introduce environmental value into the perceived value of new energy vehicles. In addition, consumer behavior is affected by social and environmental factors, and social value is also an important factor affecting consumers’ purchase of new energy vehicles. This paper introduces social value into the multidimensional perceived value of new energy vehicles, and explores its impact on consumers’ purchase behavior. Based on the above discussion, combined with the characteristics of new energy vehicles, from the perspective of multi-dimensional perceived value, this paper will explore the impact of perceived value of new energy vehicles on consumers’ purchase intention from four dimensions: functional value, emotional value, social value and environmental value.

2.1 Functional value and purchase intention

In the research of multi-dimensional perceived value, the functional value of products has been unanimously agreed by scholars. Sheth et al (1991) defined the functional value as follows: the specific product attributes that can meet the needs of consumers, such as the practicality and specificity of the product[18]. Functional value represents the ability of a product or service to meet the utility of consumers, which is usually based on the special physical properties of the product. Functional value is the most basic value attribute of a product, which can meet the needs of consumers for the usability of the product. Some scholars divide product value into functional value and non functional value. When comparing the functional value and non functional value of products, functional value plays an important role and is the basis of non functional value. Sweeney et al (1999) subdivided the functional value into price value and quality value[19]. Price value mainly refers to the monetary cost that consumers pay for products, while quality value refers to consumers' cognition of the formation of product quality and function in the use process after purchasing products. In the transaction process, consumers pay the monetary cost first to buy products or services, and the quality value can only be formed in the use process. Therefore, in time order, the price value is earlier than the quality value. For new energy vehicles, consumers' use of new energy vehicles can bring convenience to travel and meet the most basic functional needs of consumers. At present, the penetration rate of new energy vehicles in the market needs to be further improved. When the functional attributes of new energy vehicles show the characteristics of mature technology, good vehicle performance and low energy consumption, consumers' purchase intention will be improved. Many studies have pointed out that the functional value of products can positively affect consumers' behavioral willingness. Based on the above discussion, the following assumptions are put forward:

H1: consumers' perceived functional value has a significant positive impact on purchase intention.

2.2 Emotional value and purchase intention

When consumers buy goods, they can realize the functional benefits. At the same time, other factors will also affect whether consumers make purchase decisions. While considering the functional value, consumers often also consider personal consumption preferences, product brand image, brand value, etc. For example, in the purchase decision of new energy vehicles, some consumers may have a preference for foreign brands, think that the value of foreign brand products is higher, and choose Tesla, etc; Some consumers are more concerned about the feelings of home and Country contained in the brand. In order to support the development of domestic automobile enterprises, they choose new energy vehicles of BYD, Geely and other brands. Consumers' purchase decisions will also be affected by their own emotional factors, such as happiness, comfort, worry and other factors will affect consumers' behavior. On the one hand, emotional value depends on the credibility of consumers' products or services, especially for old customers who repeatedly purchase enterprise products. Good emotional value can reduce consumers' concerns about purchase risks and promote consumers' pleasant feelings[13]. On the other hand, consumers always pursue the maximization of interests in the process of purchasing products. Even though consumers have been rational in the process of purchasing decisions, it is impossible to be completely rational, and they will have personal feelings. For example, for products with similar cost performance, consumers will give priority to the products they often
purchase, because the emotion of the product affects consumers' purchase decision. When consumers show disgust for a product, the probability of consumers' buying will be very low. Based on the above discussion, the following assumptions are put forward:

H2: consumers' perceived emotional value has a significant positive impact on purchase intention.

2.3 Social value and purchase intention

Social value represents that products or services can have an impact on public consumption behavior. For example, when carrying out product promotion, brand makers will choose stars to endorse products to stimulate consumers to buy products. As for the impact of social value on consumption, Sheth et al. (1991) believed that human behavior would be affected by environmental, social and other factors, and perceived social value would affect consumers' decision-making[18]. When making decisions, consumers will consider their own preferences, economic conditions, values, etc., as well as the impact of the decisions made on the social level. The policy guidance made by the government in solving environmental pollution problems will affect the behavior of consumers. At the same time, the degree of environmental concern and environmental protection behavior of people around consumers will affect the values of consumers. Therefore, when making decisions, consumers' behavior should conform to the trend of the times and the public's cognition. Zhang et al. (2020) studied consumers' behavior of purchasing energy-saving products, pointed out that social perceived value will affect consumers' attitude towards energy-saving products, and affect consumers' purchase intention through the intermediary variable of consumers' attitude[20]. that is, the higher consumers' perceived social value of energy-saving products, the more obvious positive attitude towards energy-saving products, which is more conducive to promoting consumers' purchase behavior. Based on the above discussion, the following assumptions are put forward:

H3: consumers' perceived social value has a significant positive impact on purchase intention.

2.4 Environmental value and purchase intention

Zhang et al. (2020) defined environmental value as the utility generated by the environmental protection characteristics of energy-saving products[20]. The most significant advantage of new energy vehicles is to solve the problem of environmental pollution, so environmental value is an important value perception in consumer behavior decision-making. With the improvement of public awareness of environmental protection, the public pay more and more attention to the impact of their products on the environment. For consumers with high awareness of environmental protection, they will choose environmentally friendly products as much as possible. The environmental protection properties of new energy vehicles will attract the attention of environmentalists, and the environmental value can meet the consumers' pursuit of ecological value. Therefore, when consumers perceive higher environmental value, they will make their own choices for environmental protection with a stronger sense of responsibility. Based on the above discussion, the following assumptions are put forward:

H4: consumers' perceived environmental value has a significant positive impact on purchase intention.

![Figure 1: Research Conceptual Model](image-url)
Based on this, from the perspective of multi-dimensional perceived value, this paper will explore the impact of different value dimensions on consumers' purchase intention from four value dimensions. The conceptual model of the impact of multidimensional perceived value on consumers' purchase intention is shown in Figure 1.

3. Empirical Research

3.1 Sample collection

In this paper, from October to December 2023, with the help of the questionnaire star network platform, the questionnaire data collection work was carried out by issuing the network questionnaire. A total of 316 questionnaires were collected in this data collection, excluding invalid questionnaires such as too short a time to fill in the questionnaire (less than 2 minutes), all the answers are the same or all the answers are neutral, and 285 valid questionnaires remained, with a questionnaire recovery rate of 90.2%.

3.2 Sample descriptive analysis

285 samples were collected in this survey, of which 51.93% were male and 48.07% were female; In terms of age, the proportion between 20 and 30 years old was 54.03%; In terms of income, the income of 3001-5000 yuan is 33.68%, and that of 5001-8000 yuan is 25.96%; 26.32% for 8001-10000 yuan; From the perspective of education level, it is mainly concentrated in Bachelor degree or above, reaching 65.96%; From the perspective of occupation, the number of employees in the company is 23.16%; 20.00% were self-employed and 15.44% were self-employed. Through the analysis, it is found that the respondents to the questionnaire are young and have high income. The demographic characteristics of the research sample are basically in line with the distribution and trend of consumers in China's automobile market, and are representative.

3.3 Reliability and validity of scale

The reliability of the scale was analyzed by SPSS, and the results are shown in Table 1. The Cronbach α coefficient of the total questionnaire was 0.774, the Cronbach α coefficients of the five factor scales were above 0.7, and the CTTC was also greater than 0.5. Therefore, the scale has good internal consistency and high reliability.

Table 1: Reliability analysis of measurement model

<table>
<thead>
<tr>
<th>name</th>
<th>Total correlation of correction items (CITC)</th>
<th>α coefficient of deleted item</th>
<th>Cronbach α coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional value</td>
<td>0.550</td>
<td>0.732</td>
<td></td>
</tr>
<tr>
<td>Emotional value</td>
<td>0.583</td>
<td>0.720</td>
<td></td>
</tr>
<tr>
<td>Social value</td>
<td>0.541</td>
<td>0.734</td>
<td></td>
</tr>
<tr>
<td>Environmental value</td>
<td>0.555</td>
<td>0.730</td>
<td></td>
</tr>
<tr>
<td>Purchase intention</td>
<td>0.504</td>
<td>0.748</td>
<td></td>
</tr>
</tbody>
</table>

Based on the reliability analysis of the scale, the validity of the scale was further analyzed. Through validity analysis, we can determine whether the data is suitable for factor analysis. From Table 2, we can see that KMO value is 0.872, greater than 0.6, Bartlett sphericity test (p<0.05), indicating that the research data is suitable for factor analysis.

Table 2: Validity Analysis of Measurement Model

<table>
<thead>
<tr>
<th>KMO value</th>
<th>0.872</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bartlett sphericity test</td>
<td>Approximate chi square 4162.917</td>
</tr>
<tr>
<td>df</td>
<td>171</td>
</tr>
<tr>
<td>p-value</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Through exploratory factor analysis, the factors and the amount of information extracted by the
factors are analyzed. The results are shown in Table 3. Exploratory factor analysis extracted a total of five factors, and the characteristic root values were greater than 1. The variance interpretation rates of the five factors after rotation were 16.924%, 16.771%, 16.751%, 15.914%, 13.257% respectively. The cumulative variance interpretation rate after rotation was 79.617%, which was higher than the 60% cumulative variance interpretation requirement, indicating that the extracted factors were effective and had good explanatory power.

Table 3: Variance Interpretation Rate of Measurement Model

<table>
<thead>
<tr>
<th>Factor number</th>
<th>Characteristic root</th>
<th>Interpretation rate of variance before rotation</th>
<th>Variance interpretation rate after rotation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Characteristic root</td>
<td>Variance interpretation rate%</td>
<td>Cumulative%</td>
</tr>
<tr>
<td>1</td>
<td>8.044</td>
<td>42.336</td>
<td>42.336</td>
</tr>
<tr>
<td>2</td>
<td>2.029</td>
<td>10.678</td>
<td>53.014</td>
</tr>
<tr>
<td>4</td>
<td>1.708</td>
<td>8.989</td>
<td>71.776</td>
</tr>
<tr>
<td>5</td>
<td>1.490</td>
<td>7.841</td>
<td>79.617</td>
</tr>
</tbody>
</table>

3.4 Hypothesis testing

It can be seen from table 4 that the value of standardized path coefficient is 0.162>0, 0.203>0 and 0.252>0, respectively, for the influence of functional value, emotional value and environmental value of new energy vehicles on purchase intention; The \( p \) values were \( p=0.007<0.01, p=0.001<0.01, p=0.000<0.01 \). The path is significant, indicating that functional value, emotional value and environmental value have a significant positive impact on purchase intention. Hypothesis H1, H2 and H4 are verified. The path of \( p=0.379>0.05 \) did not show a significant effect on the impact of the social value of new energy vehicles on purchase intention, which shows that social value does not have an impact on purchase intention. Suppose H3 does not hold. This also shows that among the multi-dimensional perceived values that affect consumers' purchase intention, functional value, emotional value and environmental value are the main factors that affect consumers' purchase intention, while social value has no obvious impact on consumers' purchase intention.

Table 4: Model Regression Coefficient

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
<th>Non standardized path coefficient</th>
<th>SE</th>
<th>( z ) (CR value)</th>
<th>( p )</th>
<th>Standardized path coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social value → Purchase intention</td>
<td>0.056</td>
<td>0.063</td>
<td>0.880</td>
<td>0.379</td>
<td>0.054</td>
<td></td>
</tr>
<tr>
<td>Emotional value → Purchase intention</td>
<td>0.212</td>
<td>0.064</td>
<td>3.290</td>
<td>0.001</td>
<td>0.203</td>
<td></td>
</tr>
<tr>
<td>Functional value → Purchase intention</td>
<td>0.178</td>
<td>0.066</td>
<td>2.704</td>
<td>0.007</td>
<td>0.162</td>
<td></td>
</tr>
<tr>
<td>Environmental value → Purchase intention</td>
<td>0.271</td>
<td>0.064</td>
<td>4.260</td>
<td>0.000</td>
<td>0.252</td>
<td></td>
</tr>
</tbody>
</table>

4. Research Conclusions and Strategy Suggestions

4.1 Research conclusion

From the perspective of multiple dimensions of perceived value, this chapter subdivides the perceived value of new energy vehicles into four dimensions: functional value, emotional value, social value and environmental value. Data were collected through a questionnaire survey, and SPSS software was used to analyze the impact of four dimensions of perceived value on consumers' purchase intention.

(1) The perceived value of new energy vehicle consumers is multiple. This paper explores the impact of perceived value on consumers' purchase intention from the four dimensions of functional value, emotional value, social value and environmental value of perceived value of new energy vehicles. The results show that functional value, emotional value and environmental value have a significant positive impact on consumers' purchase intention, while social value has no significant impact on consumers' purchase intention. The results show that, as an independent variable, the dimensions of perceived value are not antagonistic, and the value of each dimension affects the dependent variable, that is, functional value, emotional value and environmental value jointly affect
consumers' purchase intention. Increasing or decreasing the value of one dimension may have some impact on the value of other dimensions. For example, as the whole of perceived value, improving the functional value of new energy vehicles is likely to reduce its emotional value or environmental value.

(2) There are differences in the impact of different dimensions of perceived value on consumers' purchase intention. Combined with this paper, the impact of different dimensions of perceived value is reflected in that environmental value has the strongest impact on consumers' purchase intention of new energy vehicles, followed by emotional value, while functional value has the weakest impact. This study proves that functional value and emotional value are still applicable to consumer behavior in the field of new energy vehicles. Environmental value has the most significant impact on consumers' purchase intention. As a means of transportation, the public buys cars to meet the needs of daily life such as travel needs. However, as the government pays more and more attention to environmental protection and the public's awareness of environmental protection continues to increase, consumers are not only concerned about the functional value of products, but also will consider the factors of environmental protection. Therefore, the environmental value of new energy vehicles has an important impact on consumers, which reflects that the public will consider the impact of products on the environment in the process of product selection.

4.2 Strategy suggestions

According to the research results, the three dimensions of perceived value are the main factors affecting consumers' purchase intention. In the process of marketization of new energy vehicles, improving consumers' perception of the three values can stimulate consumers' purchase intention and further improve the market penetration of new energy vehicles. Based on this, this study puts forward the following suggestions to new energy vehicle enterprises:

(1) Focus on the basis of functional value. As the most basic value of products, functional value is reflected in the impact of new energy vehicles on consumers' purchase intention. With the increasing market penetration of new energy vehicles, the competition with traditional fuel vehicles is becoming increasingly fierce. As an innovative product of new energy vehicles, enterprises fully understand the functional needs of consumers for new energy vehicles. While focusing on improving the technological innovation of new energy vehicle products, they realize the organic integration of consumers' functional needs and technological innovation, and improve consumers' functional value perception. For example, new energy vehicle enterprises actively respond to consumers' demand for intelligent and digital products, and fully apply intelligent voice, VR, driverless and other technologies to the field of new energy vehicles to improve consumers' value perception of new energy vehicles.

(2) Meet the emotional needs of consumers. With the development of the times, the public's consumption concept has changed. The demand for new energy vehicles is not limited to the solution of travel problems. Consumers also pay attention to the expression of their own needs. Enterprises take customers as the center, understand customers' demands, and enhance the emotional maintenance between enterprises and consumers through customer relationship management, so as to effectively stimulate consumers' purchase intention. For example, with the growing influence of China's new energy vehicles in the world, more and more consumers choose to buy domestic brand new energy vehicles. For enterprises, strengthening automobile brand construction and establishing a good corporate image can enhance consumers' emotional dependence on domestic brands, which is more conducive to the promotion of new energy vehicles in the market.

(3) Give full play to the advantages of environmental value. New energy vehicles use clean energy instead of fossil fuel, which effectively solves the environmental pollution problem caused by vehicle exhaust. Therefore, environmental value is a significant feature of new energy vehicles different from traditional fuel vehicles. New energy vehicle enterprises should make use of online and offline channels, increase the publicity of environmental advantages through news media, product launches, driving experience, etc., highlight the advantages of new energy vehicles in environmental protection, and further promote the diffusion of new energy vehicles in the market.

Acknowledgement

2024 Guangxi University Young and middle-aged teachers' scientific research basic ability improvement project.
References


