

Research on the Influencing Factors of Consumer Perceived Value on the Purchase Intention of New Energy Vehicles

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Abstract. In recent years, new energy vehicles have been widely loved by Chinese audiences and have formed an increasingly fierce development trend. The study of the sales factors of new energy vehicles is conducive to the development of the industry and the new energy industry. Based on SOR theory, this paper analyzes the factors influencing the audience's purchase intention. In this study, the questionnaire survey method and data analysis were used to set the independent variables as perceived functional value, perceived emotional value, and perceived social value, and the dependent variable was the audience's purchase intention. Analysis shows that three perceived values will affect their purchase intention and exhibit a positive correlation. The concept of environmental protection also plays a positive regulatory role. Therefore, new energy vehicle manufacturers should focus on improving the functional quality of vehicles, promoting technology research and development, providing customers with a better driving emotional experience, and cooperating with the government to improve the visibility of new energy vehicles.

Keywords: Purchase intention; new energy vehicles; functional quality.

1. Introduction

The continuous development of industrial technology has also made environmental pollution increasingly serious, and the economic development of various countries has been slow. Sustainable development has become an important development goal for all countries. Therefore, in the automotive industry, the emergence of new energy vehicles has put the concept of sustainable development into practice [1]. The policy of new energy vehicles can also promote the consumption demand and industrial growth of new energy vehicles [1]. Against the backdrop of China's "dual carbon" policy promoting sustainable development, promoting environmentally friendly new energy vehicles has become a norm [2]. New energy vehicles have begun to attract attention in China. China has implemented various policies, such as fiscal subsidies summarized by Zhao Huayu and others, tax reductions for car purchases, and relaxation of transportation restrictions, which have all played a positive role in consumers' willingness to purchase new energy vehicles [3]. Sun Huiqian and others also discussed the positive impact of gasoline price increases caused by conflicts of interest on consumers' purchases of new energy vehicles [4].

Based on the perspective of consumers, this paper explores the influencing factors of consumers' purchase of new energy vehicles. Based on SOR theory, this paper constructs a research scale to analyze the impact of consumers' perceived value on purchase intention, aiming to enrich the theoretical structure of the research and promote the sustainable development of new energy vehicles.

2. Theoretical Model and Research Design

2.1. SOR Theoretical Model

The SOR theory originated from social psychology and explains the reactions and emotions of the ontology when exposed to external stimuli. Among them, S (stimulus) represents the external stimulus received by the entity. O (organization) represents various changes in the body when exposed to external stimuli. R (response) represents the behavior of the subject after being stimulated and changed. Based on the SOR model and literature from other researchers, this article analyzes

various perceived value variables that consumers feel when considering purchasing new energy vehicles, as shown in Fig. 1. Empirical research is conducted through a survey questionnaire method.

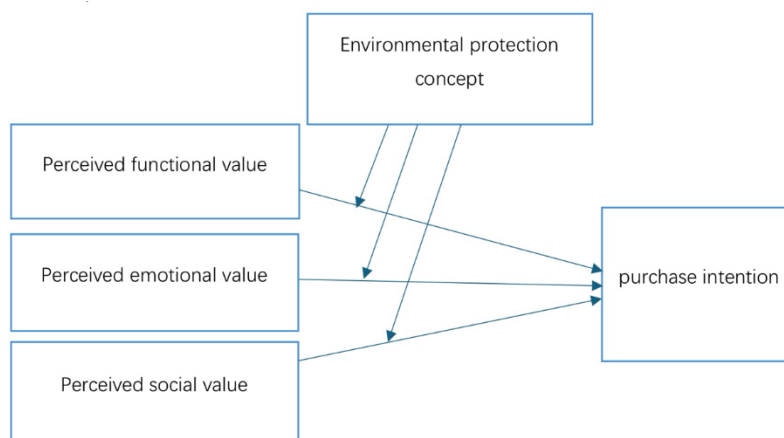


Fig 1. Consumer perceived value on new energy vehicle purchase intention model (Photo/Picture credit: Original).

2.2. Questionnaire Dimension Design

2.2.1. Perceived value and purchase intention

Consumers' perceived value is consumers' first feeling and evaluation of products and services, which plays an important role and has an impact on consumers' consumption behavior [5]. When consumers purchase new energy vehicles, if they cannot perceive the value of the goods, they may reduce their purchases of the goods. Chen and Chang's research found a positive relationship between perceived value and behavioral intention. Perceived value can enhance consumers' purchasing confidence, and provide decision-making for purchasing goods, and the level of confidence in purchasing goods will affect consumers' future purchasing intentions [6]. Sheth et al. elaborated on five consumption value factors that affect consumer behavior: functionality, sociality, emotionality, cognition, and conditioning [7]. Pu Liu's research suggests that perceived value can be divided into three types based on customers' consumption experience, namely functional value, emotional value, and social value [8]. Based on these, this study divides perceived value into perceived functional value (PFV), perceived emotional value (PEV), and perceived social value (PSV) for research, namely the S part of the SOR model, which refers to external stimuli.

Functional value is the key reason why people form their attitudes, cognition, and behavior based on the economic/or practical benefits that consumption can obtain during the consumption process [9]. People tend to choose high-end brands and cars with more functions when purchasing new energy vehicles. Among them, low-priced and high-performance cars are more favored by people.

Therefore, this article proposes hypothesis H1: there is a positive correlation between consumers' PFV and their willingness to purchase new energy vehicles.

Emotional value refers to the feelings and emotional states of consumers in the process of consuming or enjoying consumer services [9]. Li Hongfei proposed that after consumers are satisfied with the use of the product, they will increase the stickiness of the product and brand, thereby enhancing the emotional value [10].

Therefore, this article proposes hypothesis H2: There is a positive correlation between consumers' PEV and their willingness to purchase new energy vehicles.

Social value refers to the utility of a product or service in motivating consumers to participate in specific social groups [9]. Li Hongfei explained that when consumers perceive that green products can have a beneficial impact on environmental protection, it will increase their ecological experience, which will stimulate consumer consumption [10].

Therefore, this article proposes hypothesis H3: there is a positive correlation between consumers' PSV and their willingness to purchase new energy vehicles.

2.2.2. Purchase intention

Purchase intention (PI) is an individual's conscious effort to purchase a certain brand, which reflects the consumer's purchasing plan [11]. That is to say, the actual purchasing behavior of consumers is influenced by their PI, and studying consumer purchase intention is of great significance for the sales of new energy vehicles. PI is the R in the model of this article, which is a behavior influenced by perceived value and regulatory effects.

2.2.3. The regulatory role of environmental protection concepts

Chang Xiao et al. proposed that consumers with high environmental awareness believe that they have an obligation and responsibility to protect the environment, thus encouraging environmental behavior [12]. Shehawy proposed that self-awareness can influence purchasing habits, purchase decisions, and Google behavior [13]. Therefore, this article believes that people with environmental protection concepts (EPC) are more likely to engage in green consumption, and those with strong environmental protection concepts may have a positive effect on perceived value and PI. Therefore, this study takes EPC as a moderating variable, as the O in the SOR model, and proposes the hypothesis that:

H4: As a moderating variable, a strong environmental concept plays a positive role in the relationship between perceived value and PI.

2.2.4. Questionnaire design

The survey questionnaire of this study mainly includes two aspects: a basic survey and a variable survey, with a total of five variables. The variable survey was conducted using the Likert five-point scale for statistical analysis, where 1 to 5 represent the range from strongly disagree to strongly agree, respectively.

In this paper, the research questions of this scale are set up based on referring to the existing scales. Among them, the functional value convenience was investigated from the convenience of consumers' perception of the rationality of automobile prices and manufacturing standards [12]. Emotional convenience surveyed consumers' impressions of new energy vehicles, including their perception of quality and word-of-mouth. In terms of social value, consumers' feelings about the social function and social image of new energy vehicles were investigated [14]. As a moderating variable, the concept of environmental protection is only necessary to investigate consumers' environmental awareness and related behaviors. The purchase intention asked consumers about their willingness to buy and recommend new energy vehicles.

3. Data analysis

3.1. Reliability Analysis

Reliability analysis tests whether the data collected from the questionnaire is reliable. This study used SPSS 27 software to obtain data using the Alpha model. The Cronbach's Alpha values for PFV, PEV, PSV, EPC, and PI were 0.85, 0.785, 0.857, 0.827, and 0.841, respectively. All variables were greater than 0.7, indicating good consistency between the items corresponding to each variable, good reliability of the scale, and reliable data collection.

3.2. Factor Analysis

Factor analysis is used to verify whether the measurement items designed for variables conform to the variables. The factor analysis results of this study showed that the KMO sampling suitability scale was 0.923, indicating that the data is suitable for factor analysis. The Bartlett sphericity test has a significance of 0.000 less than 0.001, indicating good data significance. By rotating the component matrix, the load coefficients for the four measurement items of functional value can be obtained as 0.734, 0.753, 0.735, and 0.691. The four load coefficients of emotional value are 0.733, 0.700, 0.741, and 0.797. The four load coefficients of social value are 0.682, 0.728, 0.785, and 0.772. The four load

factors of environmental protection concept are 0.736, 0.744, 0.744, and 0.764. The four load factors for purchase intention are 0.741, 0.754, 0.753, and 0.800. From the data, it can be seen that the load factors of all variables are greater than 0.6, which proves that the scale is effective, and the design of the measurement items for each variable effectively measures the variables.

3.3. Regression Analysis

Regression analysis is used to show whether variables are correlated. This study used linear regression to interact three variables with the moderating variable to obtain data, which were then placed into the panel of linear regression analysis for the three independent and dependent variables to obtain the model summary table and coefficient table.

3.3.1. Model summary

Table 1 shows a summary of the models for three perceived value variables and purchase intention, as well as a summary for each crossover variable. The independent variables of models 1, 2, and 3 are PFV, PEV, and PSV, respectively, and the dependent variable is purchase. The independent variables of models 4, 5, and 6 are the interaction terms between three perceived value variables and strong EPC, while the dependent variable is PI.

Table 1. Summary Table of Regression Models for Each Model.

Model	Adjusted R-square	Error in standard estimation	R-square variation	F variation	Significant F change amount
1	0.334	0.83683	0.338	77.328	<0.001
2	0.216	0.90777	0.221	42.958	<0.001
3	0.273	0.87421	0.277	58.177	<0.001
4	0.345	0.82990	0.013	6.076	<0.014
5	0.229	0.89988	0.016	6.337	<0.012
6	0.288	0.86492	0.018	7.538	<0.006

Linear regression analysis showed that the adjusted R-squared values for the three perceived value variables were 0.334, 0.216, and 0.273, respectively, indicating a relatively average explanatory power for the data. The significance F changes of the three perceived value variables are all 0.001 and below 0.05, indicating that all three models are significant as a whole. After adding the moderating effect of strong environmental protection concepts, the R-square of each model increased, and the explanatory power of the data increased. Moreover, the F-changes of all three models were less than 0.05, indicating that the models are significant.

3.3.2. Coefficient

According to the coefficient table data, the constant terms in the three perceived value models are 1.225, 1.288, and 1.536, and the t-values are 5.726, 4.527, and 7.147, respectively, with a significance of 0.001; the coefficients of the three perceived values are 0.456, 0.235, and 0.333, respectively, with t-values of 8.237, 3.484, and 6.067, and significance of 0.001. It has been proven that three perceived value variables have a positive effect on consumers' purchase intention. In the interaction terms, the significance of functional value X strong environmental protection concept is 0.014, emotional value X strong environmental protection concept is 0.012, and social value X strong environmental protection concept is 0.006. The significance of each interaction term is a positive coefficient and less than 0.05, proving the moderating effect of the strong environmental protection concept on the three perceived value variables in purchase intention.

Through the above analysis, it is concluded that PFV, PEV, and PSV are positively correlated with PI of new energy vehicles, verifying hypotheses H1, H2, and H3. The strong EPC plays a certain positive moderating role in PFV, PEV, PSV, and PI, proving hypothesis H4.

4. Suggestions

The analysis of this study shows that strong environmental concepts have a moderating effect on the effects of PFV, PEV, and PSV on consumer PI, and three perceptual variables positively affect consumers' purchase intention. Among them, PFV has the most significant impact on consumers, while PEV has a relatively small impact. This paper argues that this is because automobiles, as a means of transportation, play an important role and influence on consumers' lives, so consumers will pay more attention to their functionality and role, while the emotional value they can provide is less concerned from the perspective of consumers. When buying a car, people are more concerned about the cost-effectiveness and practicality of new energy vehicles and are more concerned about the safety and performance quality of the car. Therefore, from the perspective of consumers, this paper suggests that new energy vehicle manufacturers should focus on improving their professional and technical level, to improve the actual performance and safety, meet the life needs of consumers, and improve the driving experience of users.

Finally, the national government should provide policy support in line with the development of the times, increase support for new energy settings, and improve infrastructure construction. The government should also strengthen cooperation with various institutions to jointly promote the research and development of environmental protection technologies such as new energy vehicles.

5. Conclusion

Based on the SOR theory, this study set the independent variables as PFV, PEV, and PSV, and used a relatively new moderating variable, the concept of environmental protection, to analyze and explore its transmission mechanism, which lays a foundation for subsequent research. This study points out that three perceived value variables will affect consumers' purchase intention to a certain extent, with PFV having a greater impact and PEV having a smaller impact. The concept of environmental protection plays a positive regulatory role in it. Based on this, this paper argues that new energy vehicle manufacturers should improve the quality and functionality of vehicles from the perspective of consumers, and strengthen technological innovation. The government should also provide policy support to keep pace with the times and promote the continuous development of the industry.

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