

Research on the Influence of Perceived Quality of Automobile Products on Customer Satisfaction

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Keywords: Perceived quality; Customer satisfaction; Automobile

Abstract: As we all know, measuring the value of the car brand in the minds of consumers can not simply rely on sales target, it aims to studies the influence of the perceived quality of automobile products on customer satisfaction. This paper start from the consumer's perception evaluation, and use the automobile brand as the independent variable, and then look at the change of the dependent variable. This paper chooses the same grade automobile brand as the standard sample of the research object, through combing the relevant research literature, combined with the influencing factors of the consumer perceived quality, and drawing on the interview results of the experts in the automobile industry in China. On the basis of literature review and empirical analysis, using correlation analysis of data analysis software SPSS, we get a positive correlation between car perceived quality and customer satisfaction. In addition, this article conducted a consumer survey, through the comparative study of different automobile brand analysis, we can draw a conclusion that the consumer is inclined to the international brand, this shows that the product quality and influence of foreign brands, domestic brands ahead. So, how to improve product quality, improve customer satisfaction will be an important issue which China's auto brand is facing.

1. Introduction

In recent years, the production and marketing of China's automobile industry has increased dramatically, ranking first in the world for several years in a row. China has become the sales center of most automobile manufacturers in the world. However, as a big country of automobile production, China is well known that it is far less than the advanced level of the world in terms of technology patents. After the 21st century, with the acceleration of the process of technology development and the improvement of people's consumption level, the Chinese market is becoming more and more mature, and all kinds of automobile brands of the same grade emerge one after another, which leads to the tendency of customer emotion. In the development of the whole vehicle, in order to correctly locate and meet the needs of customers as much as possible, several major cars Companies have introduced the concept of "perceived quality" one after another. Perceived quality refers to the general, non-objective and one-sided evaluation of the product made by the user with targeted purpose, integrating all the materials they know and making a general, non-objective and one-sided evaluation of the product. For automobile development, perceptual quality is mainly reflected in the direct area of the product seen by the naked eye, such as color, design and so on. Perceived quality not only determines the first cognition of consumers, but also improves customer satisfaction and purchases. Buying desire and promoting sales are also very effective. Improving customer perceived quality is tantamount to increasing the value of the product in the customer's mind, so the customer is willing to pay a higher matching price. Therefore, how to improve the perceived quality of automobile is an important task for automobile R & D manufacturers to determine the development of the company.

According to the present situation of the market, this paper will study the customer quality

perception at the same time, measure its satisfaction, and finally verify the significance of improving the product perceived quality. At the same time, according to the investigation and empirical analysis of the automobile market in China, this paper finds out the factors that limit the development of the automobile industry, and then puts forward some relevant countermeasures and suggestions, hoping to provide effective value for the development of the industry. In this paper, Volkswagen, DongFeng, Toyota and other representative automobile brand products are selected as the research object. Through empirical and quantitative analysis, we get the difference of customer perception quality and satisfaction with different brands of automobile products, so as to see that the local brands are declining compared with foreign brands. What is the position in the heart of those who spend money? In addition, through data analysis, this paper obtains the influence weight of each index, which provides reference and suggestions for the development of local automobile brands in China.

2. A Review of Related Research Literature

2.1 Summary of Research on Product Perceived Quality Concept.

"Perceived Quality" was first introduced by Olson and Jacoby[1] in the 1970s, and their view was that product perceived quality was the evaluation and discrimination of product quality. There are many angles to study the perceived quality of products. For the enterprise, according to the internal and external characteristics of the product, including the design, durability and safety of the product, Riesz[2] makes a very objective evaluation and judgment of the product. Lehtinen[3] also talked from the perspective of the company. He felt that consumers and enterprises are mutually aware, and the perceived quality is the result. He mainly compares the expectations of the service with the actual ones. Under these conditions, Steenkamp[4] conducted a deeper study on the perceived quality of products. He gave a more abstract definition. He felt that product perceived quality is a suggestive expression, It is the enterprise that understands the needs of consumers, and then specifically reflects its relevant attributes, and is analyzed by relevant experts to finally form a product that is compatible with the market. For another example, the next study is from a consumer perspective: Gronroos[5] feels that for consumers, product perceived quality is the contrast between ideal and reality, assuming that consumers have high psychological expectations for the product, the result is actually Feeling is very disappointing, in which case the perceived quality of the product is relatively low, and vice versa. Bruck's[6] point of view is more agreeable with me. He pointed out that the improvement of product quality should be based on customers, not enterprises. In fact, the fundamental of market competition lies in consumers, and enterprises alone cannot do it.

2.2 A Survey of Perceived Quality Dimensions and Models.

For the perceived quality of tangible products, Garvin[7] has proposed eight dimensions, namely product performance, characteristics, reliability, consistency, durability, service, and aesthetics. Stone-Romero and Stone[8] argue that flawlessness, durability, appearance and uniqueness constitute the perceived quality of the product. Based on previous studies, for the consumer durables, Brucks proposed six dimensions of product perceived quality: ease of use, versatility, durability, serviceability, performance, reputation. For the time being, the most widely recognized theory is Brucks's theory, because his theory is very applicable to the cultural background of China.

Domestic scholars also have some research. As far as products are concerned, J.L. Li[9] divides product perceived quality into three dimensions when researching energy-saving and new energy vehicles, namely product intrinsic quality, external quality and after-sales service quality. Based on the subjective nature of perceived quality itself, the lack of an objective quantitative tool helps to understand the importance of the problem, so it is not easy to accurately measure the perceived quality. When J. Yun[10] studied the perceived quality of car brands and the impact on customer loyalty, 22 PZB SURVQUAL scales were used. In the 12th issue of the "Automotive Engineer" journal in 2016, S.N. Lin[11] published an article that introduces the concept and analysis method of the Kano model in customer research, based on the customer's voice, and studies various

perceptions through sensitivity analysis. The degree of attention and value of the typical quality problem itself has set a scientific and objective judgment standard for the team to help the team effectively measure the value of the problem during the project development process and provide quantitative customer support.

2.3 A Literature Review of the Relationship between Vehicle Perceived Quality and Customer Satisfaction.

Perceived quality and customer satisfaction are based on the difference between the consumer's psychological valuation and the actual comparison, so the two are closely related. Oliver[12] argues that perceived quality is a perception of the product as a whole, while satisfaction is accompanied by consumption. Bolton and Drew[13] argue that customer satisfaction determines perceived quality because he feels that customer satisfaction accumulated over successful trades ultimately leads to a good overall perceived quality of the customer and thus builds a model. In view of the fact that domestic consumption is basically after the actual transaction, the score evaluation can be carried out. Therefore, this paper directly selects the theory that perceived quality affects customer satisfaction.

In view of the high subjectivity of customer perceived quality, coupled with various factors, the academic community usually selects the actual object and abstracts it into concrete to explore the relationship between perceived quality and customer satisfaction. J. Qiao[14] compares the different brands of cars to obtain a positive impact of perceived quality on customer loyalty, while customer satisfaction promotes customer loyalty. This paper will decompose the perceived quality of automotive products and then conduct consumer assessment studies on its four dimensions.

3. Model Construction and Research Hypothesis

3.1 Automotive Product Perceived Quality Decomposition.

For the automotive industry, tangibility refers to the quality, appearance, design details of automotive products that are visible or accessible, and of course the surrounding environment. To study the impact of automotive products on customer satisfaction, we will focus on parts that are specific to products such as interior and exterior. In this paper, we only study the perceived quality of automotive products, that is, the impact of tangibility on customer satisfaction. For the customer, it is obvious that whether the color attracts the eye, whether the material is good or not, whether the design is beautiful, whether the details are handled properly, etc. are all their concerns. This article will refer to the four areas that the car itself presents to the customer, plus dynamic and static division, which can be divided into the following six items: Interior visual quality, exterior visual quality, interior operation quality, exterior operation quality, overall perceived quality of the engine compartment, overall perceived quality of the trunk.

3.2 Research Hypothesis.

The purpose of this paper is to explore the impact of product perceived quality on customer satisfaction, so the focus of the research is on the customer's perception of the product, whether it is willing to buy, whether the price is acceptable, the acceptable range, and whether it is willing to buy back. Based on the summary of domestic and foreign literatures, as well as personal understanding of automotive product perceived quality and customer satisfaction and related experience, this paper assumes that automotive product perceived quality has a significant positive impact on customer satisfaction.

3.3 Questionnaire.

The questionnaires in this paper include introductions, satisfaction after consumer transactions, perceived quality dimension scores, and basic personal data. At the same time, the survey questionnaires involved in the article, due to geographical limitations and time constraints, the main investigation scope is concentrated in Jiangsu and Zhejiang. Among them, academic experts and practical experts in the automotive industry give weights to the indicators. Due to research

limitations, they draw on the research results of predecessors. The questionnaire is mainly for conducting consumer survey questionnaires. This article takes the market price published on the automobile website as the measurement standard, and selects the car with the price between 100,000 and 150,000 as the research object. After a simple comparison, think carefully, and finally take Volkswagen Golf, Dongfeng Peugeot, Beijing Hyundai and Toyota Corolla as In order to ensure accuracy and rationality, this article specially visited the 4S shop and inquired about the users of these brands. According to the information obtained, the questionnaire was designed, and then distributed through the online questionnaire, and then the effective questionnaire was selected after recycling. Analyze the data and finally verify that there is a positive correlation between the two variables.

4. Weight Assignment of Perceived Quality Indexes and Empirical Analysis

4.1 Analysis of Perceived Quality Index Weighting.

Hierarchical process is a decision method that decomposes the elements that are always related to decision-making into objectives, guidelines, schemes, etc. This one was founded by Sati, a professor at the University of Pittsburgh, an American operational researcher. The steps of the Analytic Hierarchy Process are as follows: First, the problem should be defined and the hierarchical model shall be established. Then the judgment matrix is constructed and the value is assigned. Then the weight vector is calculated. Finally, the consistency test is carried out. Among them, CI is the index to judge the degree of matrix inconsistency. The smaller the CI, the greater the consistency. Hierarchical ordering random consistency index RI. is a constant. In addition, CR represents a hierarchy. Sort the proportion of random consistency, that is, the comparison between CI and RI. To pass the consistency test, $CR < 0.1$. Finally, the weight of all the indexes at a certain level to the target layer is calculated, and the hierarchical total ranking also passes the consistency test. When $CR < 0.1$, we can think that the hierarchical total ranking passes the consistency test.

In this paper, based on J. Qiao's empirical study on perceived quality of domestic Household Automobile Brand, the index weight of product perceived quality is determined scientifically and reasonably, and then each judgment matrix is given independently by constructing judgment matrix. Finally, it is found that the judgment matrix of each expert is relatively consistent, and the CR of each matrix is less than 0.1. In this paper, the data are inputted into the calculation software of analytic hierarchy process (AHP), and the related weights are obtained. As shown in Table 1:

Table 1 Automotive product perceived quality index weights

Indicator	interior	exterior	engine compartment	trunk
Weight	0.31	0.28	0.22	0.19

4.2 Sample Data Test Analysis.

The large sample survey began in January and lasted for more than a month. Based on various conditions, only online questionnaires can be used. In order to ensure the credibility of the survey results, the focus is on consumers who have driven four brands of cars such as Volkswagen. A total of 350 questionnaires were sent to the online survey, 281 were collected, and the total number of valid questionnaires was 200. Among the valid questionnaires collected, 123 were filled out by men, accounting for 61.50%, and 77 were women, accounting for 38.50%.

The skewness coefficient is mainly used to observe the symmetry of the data, and the kurtosis coefficient is used to measure whether the intermediate data is sufficiently concentrated. Relevant scholars have suggested that if the absolute value of the skewness is not greater than 2 and the absolute value of the kurtosis is not greater than 5, then we say that the data obeys a normal distribution. After analysis by SPSS software, we found that the absolute value of the skewness coefficient of each index is obviously less than 2, basically floating in a small range, and the absolute value of the kurtosis coefficient is even below 2, obviously, in line with the requirements of normal distribution, So the sample is subject to a normal distribution. As shown in Table 2:

Table 2 Descriptive statistical analysis

Factor	indicator code	skewness coefficient	kurtosis coefficient
exterior	A1	-0.425	-0.836
	A2	-0.393	-0.652
interior	B1	-0.313	-0.523
	B2	-0.488	-0.797
engine compartment	C1	-0.217	-1.019
trunk	D1	-0.267	-0.945

This section will validate the proposed research hypothesis through correlation analysis. The absolute value of the correlation coefficient (r) is less than or equal to 1. Specifically, as long as the absolute value of r is not less than 0.8, it means that there is a high correlation between the two variables; if the absolute value of r is greater than 0.5 and less than 0.8, then it is said They are moderately related; if the absolute value of r is between 0.3 and 0.5, then their correlation is very low; if the absolute value of r is below 0.3, they can be considered to be basically irrelevant. According to the results of SPSS calculation, the correlation coefficients of interior, exterior, engine compartment, trunk and customer satisfaction in the perceived quality of automobile products are 0.836, 0.827, 0.768 and 0.632, respectively, and the associated probability value is 0.000, according to the correlation coefficient significant test table. When n is equal to 200, it is obvious that the correlation coefficient is above the critical value of 0.181, so we say that at the significant level of 0.01, there is a positive correlation between product perceived quality and customer satisfaction, that is, the perceived quality of automotive products has customer satisfaction. Significant positive impact. As shown in Table 3:

Table 3 Correlation coefficient significance test

degree of freedom (n-2)	significance level	
	0.05	0.01
150	0.159	0.208
200	0.138	0.181
300	0.113	0.148

4.3 Test Results of Study Hypothesis

From the above analysis, it is known that the assumptions made in this paper are supported by the test, that is, the impact of product perceived quality on customer satisfaction is positively correlated. The four categories of product perceived quality account for a large proportion, which greatly affect customer satisfaction. Because in terms of consumers, it is easy to see the product at first sight, and then there is a basic perception, and then gradually add points in the conversation, and finally add the actual operation to give the final judgment. This tells entrepreneurs that they can be appropriately strengthened in this regard.

5. Research Conclusions and Recommendations

The conclusions from empirical analysis: (1) Product perceived quality has a positive impact on customer satisfaction. Using the correlation analysis method, the correlation coefficient between the four indicators of product perceived quality and customer satisfaction is obtained, which indicates that these indicators positively affect customer satisfaction. (2) The weight of each indicator of product perceived quality is also different, with a certain gap. If we want to establish an indicator system for the perceived quality of automotive products, the weight of these four indicators will have a significant impact on the assessment of consumer product perception. (3) While paying attention to product quality, auto companies should also enhance the perception of consumers and enhance the taste of automobiles. According to the research, consumers are easy to form a first impression, and the current quality of the same grade of automotive products is similar, so the design of small details is often easier to impress. (4) The voice of local family car brands is not

much lower than that of international car brands. According to the scores of consumers in the questionnaire, although the Chinese pursue the trend, at the same time, our trust in domestic brands is also rising. Therefore, in the domestic market competition, local cars are still very advantageous. Therefore, auto companies should seize the opportunity to increase consumer perception of corporate brand image, improve word of mouth and promote sales. Such as paying attention to customer needs, improving performance styles; improving the evaluation system, improving service quality; strengthening industry norms, improving consumption transparency; learning from foreign experience and improving technology content.

6. Insufficient and Research Prospects

In view of the constraints of various aspects, the research in this paper still has some defects. For example, the mature theoretical results that can be referenced in this paper are very few. Therefore, the sensory indicators of this article may not be scientific enough. The survey is subject to time funds and so on. It is through online research, so the data may not be representative; empirical analysis is also subject to many factors, only selected these four brands, so the sample selected is too one-sided, the analysis is relatively simple.

In view of the fact that there may be many problems in the research process of this paper, several suggestions are proposed, which hope to help later scholars:(1) It is better to increase the scope of the sample in the future, and it should be considered more comprehensively. For example, the gap between the consumption level of different cities, the cultural customs of various places, etc. Which make the research more scientific and effective.(2) The research in this paper only selects the indicators for the product itself. It is a small area, which is too simple and idealized. Therefore, it is possible to carry out deeper research in this area, and at the same time increase the reading range, so that you can learn more and eventually hope to establish a more accurate model.(3) There are too few sample objects in this paper, so adding more different car brands on this basis can be regarded as a research direction. In addition, segmentation of consumers is also a breakthrough point.

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