

Unpacking Customer Satisfaction in Chengdu's Booming Food Delivery Scene: What Drives Success in the App Economy?

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Received: October 09, 2024. Revised: January 31, 2025. Accepted: February 18, 2025

Abstract

Purpose: This study aims to explore the key factors that significantly impact user satisfaction with Meituan's food delivery platform in Chengdu, China. **Research design, data, and methodology:** By integrating relevant theories and literature, a conceptual framework of variables such as information quality, price/value, safety, food quality, service quality, customer satisfaction, and customer loyalty was constructed to reveal the causal relationship between them. A quantitative method (n=500) was used to conduct a questionnaire survey on Meituan users in five districts of Chengdu. The sample was selected using a multi-stage sampling method, including judgment, stratified random, and convenience sampling. The data were analyzed by structural equation modeling (SEM) and confirmatory factor analysis (CFA), including model fitting, reliability, and validity tests. **Results:** The results showed that information quality significantly impacted price value, safety on customer satisfaction, food quality on customer satisfaction, service quality on customer satisfaction, and customer satisfaction on customer loyalty. **Conclusions:** The findings revealed that information quality significantly enhances price value, while safety, food quality, and service quality positively affect customer satisfaction. Furthermore, customer satisfaction has a significant positive effect on customer loyalty. However, the effects of price value and information quality on customer satisfaction were found to be insignificant.

Keywords: Information Quality, Food Quality, Service Quality, Customer Satisfaction, Customer Loyalty

JEL Classification Code: E44, F31, F37, G15

1. Introduction

In today's society, with the rapid development of technology and the accelerated pace of people's lives, online food ordering has become a common consumption method (Shroff et al., 2022). China's food delivery industry is developing rapidly, and Chengdu, an important city, has a booming takeaway market. However, the intensification of market competition makes it crucial to understand the factors that affect user satisfaction (Zhao & Bacao, 2020).

Modern organizations are committed to seeking new technologies and innovations to meet customer needs better or improve responsiveness. Food delivery means providing high-quality food, excellent service, reasonable prices, and a safe and reliable trading environment. Most companies expect to stand out by developing differentiation and improving efficiency. Innovation enables companies to expand their scale and improve competitiveness in a highly

competitive environment (Chai & Yat, 2019).

Many studies have explored the relevant factors in the food delivery industry to improve user experience and enhance customer satisfaction and loyalty. Factors such as information quality, price/value, safety, food quality, and service quality are considered to be closely related to user satisfaction (Lee et al., 2017).

Chengdu plays an important role in China's food delivery market. Chengdu's five major urban areas have many merchants and consumers with huge market potential. However, it also faces challenges like food safety, delivery timeliness, and merchant service quality (Suhartanto et al., 2019).

Therefore, this study focuses on the food delivery application in Chengdu, Meituan Waimai Platform, and aims to deeply explore the key factors that affect user satisfaction, including information quality, price/value, safety, food quality, service quality, customer satisfaction, and customer

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loyalty. By studying these factors, suggestions for improvement can be provided for food delivery platforms to improve user satisfaction and promote the healthy development of the entire industry.

2. Literature Review

2.1 Information quality

Information quality is a complex and multi-dimensional concept. Common dimensions include accuracy, completeness, consistency, and timeliness (Chang et al., 2022). Since information quality contributes to differentiating organizations regarding the accuracy, consistency, timeliness, and completeness necessary to affect customers' purchasing decisions, it is regarded as a motivating factor (Pringle et al., 2002). Information quality is often difficult to measure objectively; it is a perception issue that users should judge. The quality of information itself is a social construct. Although researchers frequently study information quality, they rarely study users' views on information quality in online environments. This provides an opportunity for better results in contemporary information quality (Hair et al., 1998). How to design information systems to improve the subjective experience of information quality is a problem emphasized in information research (Mattsson, 2002). Information quality has a significant impact on the attitudes and behaviors of customers. This profound and far-reaching influence shapes their perceptions, decisions, and subsequent actions. Therefore, it becomes imperative that we diligently and effectively address the various website design issues that are directly related to information. These issues could encompass aspects such as the clarity and accuracy of presented information, the ease of navigation to access relevant data, the visual appeal and readability of the content, and the timeliness and currency of the information provided. For instance, ensuring that product descriptions are detailed and precise, that search functions are intuitive and efficient, and that updated customer reviews and ratings are readily available can enhance the overall information quality and user experience (Closs et al., 1997).

H1: Information quality has a significant impact on price value.

H6: Information quality has a significant impact on customer satisfaction.

2.2 Price Value

The constructs of price/value are closely intertwined. The former is a gauge of the monetary sacrifice consumers need to make to obtain a service, while the latter signifies a judgment about what they acquire from the received service.

However, while the price paid for a service can be determined relatively easily, value has a personal and distinctive component that differs from person to person (Zeithaml, 1988). When consumers perceive the word "value," they may have various meanings. For example, they may associate value with low prices, as Bishop noted in 1984. Alternatively, they may associate value with the quality of a product, as Dodds and Monroe noted in 1973. In addition, they may associate value with what they get versus what they pay for, as Sawyer and Dickson noted in 1984. Zeithaml combined these different price/value perspectives into the concept of perceived value in 1988. This perceived value is a comprehensive assessment of "what you give in exchange for what you get," as described on page 14. It represents the balance or trade-off between the price paid and the value received, thus reflecting the give and take of a transaction. This means that perceived value considers both the monetary sacrifices that consumers make and the benefits or outcomes they expect from a product or service. In essence, it provides a more comprehensive view of how consumers perceive the value of a transaction, considering not only the financial aspects but also the quality, utility, and satisfaction they receive from it. Many studies have examined the causal relationship between information quality and price/value and proposed the hypothesis that information quality significantly impacts price/value. Therefore, we propose the following:

H2: Price value has a significant impact on customer satisfaction.

2.3 Security

This study defines security as safeguarding customer data during the app's usage. Many studies have disclosed the close connection between personal information security and customer satisfaction (Kim et al., 2009). For example, research by Andrew et al. (2019) shows that customer satisfaction increases significantly when companies can provide customers with strong personal information security protection measures. The loss of consumer personal data due to technology shortages and the loss of credit card data are all important factors leading to a decline in consumer satisfaction (Cheng et al., 2021). Security and privacy protection are key factors affecting customer purchase intention and satisfaction (Valdez et al., 2021). As scholars have pointed out, there is a significant correlation between personal information security and customer satisfaction (Wang et al., 2019). For example, research by Chopdar et al. (2018) shows that when customers are confident that their personal information is adequately protected, their satisfaction with the business will increase significantly. These investigations lead to the following hypothetical conclusions:

H3: Security has a significant impact on customer satisfaction.

2.4 Food quality

Combining the intrinsic attributes of food with the extrinsic attributes of food refers to food quality (Parasuraman et al., 2005). Many studies have revealed a strong connection between food quality and customer satisfaction (Andaleeb & Conway, 2006). For example, research by Parasuraman et al. (1994) shows that high-quality food often significantly improves customer satisfaction. Regarding the relationship between food quality and customer satisfaction, many research results have found that quality factors such as food freshness, taste, and nutritional value have an important impact on customer satisfaction (Johns & Howard, 1998). Many scholars have confirmed the key role of food quality in customer satisfaction. The research emphasizes that the quality of food directly determines the level of customer satisfaction (Kivela et al., 1999). Regarding the relationship between food quality and customer satisfaction, high-quality food is one of the key factors to improve customer satisfaction, and any defects in food quality may lead to a decrease in customer satisfaction (Law et al., 2004). Therefore, based on the literature review presented, the following hypothesis is formulated:

H4: Food quality has a significant impact on customer satisfaction.

2.5 Service quality

Numerous studies have confirmed a significant positive relationship between service quality and customer satisfaction. High-quality service often increases customer satisfaction (Cronin et al., 2000). Research shows that all service quality dimensions are closely linked to customer satisfaction (Wong & Sohal, 2006). Research has found that service quality is an important antecedent of customer satisfaction (Cai, 2009). Many scholars have emphasized the key role of service quality in shaping customer satisfaction and pointed out that high-quality service quality can significantly enhance customer satisfaction and loyalty. However, the order of perceived service quality and service satisfaction remains unresolved and has sparked heated debate in the marketing literature. Some studies based on the European and American Customer Satisfaction Index argue that service quality is one of the antecedents of consumer satisfaction. However, another group of research-based models contradicts this view and questions the claim that service quality results from customer satisfaction. González et al. (2007) examined the relationship between the two and concluded that satisfaction depends on perceived service quality. Consistent with previous research. From these

supported studies, we derive the following hypothesis:

H5: Service quality has a significant impact on customer satisfaction.

2.6 Customer satisfaction

Previous literature has clarified that satisfaction signifies the pleased disposition of consumers toward a company's ability to fulfill not only product quantity, product quality, and product prices but also various other elements that consumers appreciate (Campanella et al., 2023). The overall judgment made by customers regarding the service performance of a product and its desired degree of matching is customer satisfaction (Chen, 2013). The cognitive state of consumers regarding the suitability of the services they experience and the rewards they receive during shopping is defined as customer satisfaction (Pedraja & Yagüe, 2002). Customer satisfaction is defined in such a way that it represents the cognitive state of the buyer with respect to the suitability or unsuitability of the reward received in exchange for the service that has been experienced (Howard & Seth, 1969). Among the possible rewards that customers obtain and are notable when ascertaining their satisfaction levels, their perceptions about the quality received occupy a crucial position (Zeithaml, 1988). Customer satisfaction comes from the purchased goods' service quality and product quality. Excellent quality and better service quality will positively impact customers' willingness to purchase again (Fornell, 1992). Customer satisfaction is generated from customers' feelings towards the goods and services provided. When the goods are of high quality and the services are superior, it leads to higher customer satisfaction. As shown in the studies by Lee (2000), Szymanski and Menard (2001), and Lee and Kim (2008), customer satisfaction has a positive influence on the intention to repurchase. Moreover, according to Baek and Han (2007), it also positively impacts the intention to spread positive word-of-mouth.

H7: Customer satisfaction has a significant impact on customer loyalty.

2.7 Customer Loyalty

Customer loyalty can be defined as the customer's reliance on and attachment to a company's products or services. This concept is well known for several marketing benefits, such as good word-of-mouth response, purchase intention, support intention, and customer satisfaction (Fornell, 1992). Customer satisfaction and loyalty are becoming increasingly important to companies, and the economic benefits of improving both outcomes are well documented (Hill & Alexander, 2017). Many research results reveal the close connection between customer satisfaction and customer loyalty. The improvement in customer

satisfaction is often accompanied by increased customer loyalty (Akbar & Parvez, 2009). Satisfaction is a known antecedent of loyalty in most types of businesses. In addition, research on satisfaction and other antecedents of loyalty, such as customer engagement, has recently gained interest as loyalty plays a key role in the competitive retail industry (Monferrer et al., 2019).

Furthermore, general retail industry research still needs to include identifying key drivers of customer satisfaction and loyalty, even though dissatisfied customers may negatively impact a company's bottom line (Hult et al., 2019). Customer satisfaction is one of the key drivers of customer loyalty, and an increase in customer satisfaction is often accompanied by an increase in customer loyalty (Bodet, 2008). The above studies can lead to the following hypothesis:

3. Research Methods and Materials

3.1 Research Framework

This study integrated four core theories, namely, the theory of planned behavior (TPB), expectancy confirmation theory (ECT), customer satisfaction index model, and service quality model (SERVQUAL), as well as related previous studies. The theoretical framework of this study was developed through the theoretical framework proposed by Qin et al. (2009), Koay et al. (2022), and Bao and Zhu (2022). The conceptual framework of this study is proposed in Figure 1.

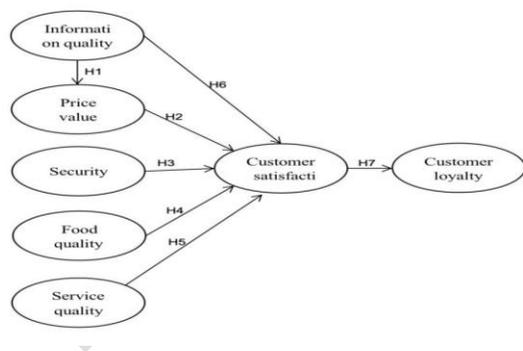


Figure 1: Conceptual Framework

H1: Information quality has a significant impact on price value.

H2: Price value has a significant impact on customer satisfaction.

H3: Security has a significant impact on customer satisfaction.

H4: Food quality has a significant impact on customer satisfaction.

H5: Service quality has a significant impact on customer satisfaction.

H6: Information quality has a significant impact on customer satisfaction.

H7: Customer satisfaction has a significant impact on customer loyalty.

3.2 Research Methodology

The researchers combined empirical and quantitative analysis to collect sample data through questionnaire surveys to deeply explore the factors affecting customer satisfaction and loyalty to the Chengdu food delivery APP. The online questionnaire-making platform "Wenjuxing" was used to design the questionnaire; the questionnaire consists of three parts, including screening questions, factors related to behavioral intention, and demographic information of respondents. Screening questions are used to identify suitable respondents; the factors related to behavioral intention part uses a 5-point Likert scale to design questions to determine customers' intention to use the Meituan APP to order food online and the data required for statistical analysis; the demographic information part is used to understand the basic information of the respondents. Moreover, the reliability of each structure was verified through Item objective consistency (IOC) and pilot testing.

The validity and reliability of Cronbach's Alpha were tested. After the reliability test, the questionnaire was distributed to the target respondents, resulting in 500 valid responses. The sample data were analyzed using SPSS and AMOS statistical tools, and confirmatory factor analysis (CFA) and structural equation modeling (SEM) were used to test the constructed conceptual framework empirically and the hypothesized relationships between variables.

3.3 Population and Sample Size

This study selected Meituan APP users in Chengdu's five main urban districts (Jinjiang District, Qingyang District, Jinniu District, Wuhou District, and Chenghua District) as the research subjects. These regions have a large market scale, fast-growing demand for takeout, numerous merchants, high delivery efficiency, fierce competition, a wide range of consumer groups, rich and diverse dishes, and a high degree of digitization, and are greatly affected by the epidemic. They attach great importance to quality and safety and continue to innovate. A total of 500 questionnaires were used in this study.

3.4 Sampling Technique

This study adopted a multi-stage sampling approach, including three steps: judgmental or purposive, stratified random, and convenience. First, people with online ordering experience were selected through judgmental sampling. Then, stratified random sampling was conducted to stratify the population by region and allocate 500 samples to each stratum in proportion. Finally, convenience sampling was used to select the final respondents, as shown in Table 1.

Table 1: Sample Units and Sample Size

Area	Population Size	Proportional Sample Size
Jinjiang District	919,400	71
Qingyang District	973,000	75
Jinniu District	1,288,300	99
Wuhou District	1,910,000	147
Chenghua District	1,412,100	108
Total	6,502,800	500

Source: Constructed by author

4. Results and Discussion

4.1 Demographic Information

Table 2 shows the demographic information for 500 participants. Male respondents accounted for 50.2%, and female respondents accounted for 49.8%. In terms of age groups, the largest group in this study was 30-49 years old,

accounting for 41.3% of the respondents, followed by 50-59 years old at 28.1%, 18-29 years old at 23.0%, and more than 50 years old 60 years old at 7.6%.

Table 2: Demographic Profile

Demographic and General Data (N=500)		Frequency	Percentage
Gender	Male	251	50.2%
	Female	249	49.8%
Age	18-29	115	23.0%
	30-49	206	41.3%
	50-59	141	28.1%
	More than 50 years old	38	7.6%

4.2 Confirmatory Factor Analysis (CFA)

In this study, Confirmatory Factor Analysis (CFA) was carried out. All the items in each variable are significant and represent the factor loading to test the discriminant validity. The significance of the factor loading of each item and the acceptable values indicate the goodness of fit (Hair et al., 2006). The factor loadings are greater than 0.30, and the p-value is lower than 0.05. The construct reliability is greater than the cut-off points of 0.7, and the average variance extracted is greater than the cut-off point of 0.5 (Fornell & Larcker, 1981), as shown in Table 3. All the estimates are significant.

Table 3: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variables	Source of Questionnaire (Measurement Indicator)	No. of Item	Cronbach's Alpha	Factors Loading	CR	AVE
Information Quality (IQ)	Wang et al. (2019)	4	0.842	0.732-0.775	0.843	0.573
Price Value (PV)	Kapoor and Vij (2018)	3	0.793	0.722-0.766	0.794	0.536
Security (SE)	Kim et al. (2009)	3	0.827	0.742-0.809	0.827	0.614
Food Quality (FQ)	Fargnoli et al. (2021)	3	0.817	0.768-0.781	0.817	0.599
Service Quality (SQ)	Grönroos (1984)	4	0.849	0.737-0.817	0.850	0.586
Customer Satisfaction (CS)	Howard and Seth (1969)	3	0.792	0.736-0.753	0.792	0.559
Customer Loyalty (CL)	Smith et al. (2019)	3	0.806	0.742-0.799	0.807	0.582

It is determined that the square root of the average variance extracted is such that all the correlations are greater than the corresponding correlation values for that variable, as shown in Table 4. Additionally, GFI, AGFI, NFI, CFI, TLI, and RMSEA are employed as indicators for model fit in CFA testing.

Table 4: Goodness of Fit for Measurement Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	< 5.00 (Al-Mamary & Shamsuddin, 2015; Awang, 2012)	290.828/209 or 1.392
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.952
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.936
NFI	≥ 0.80 (Wu & Wang, 2006)	0.944

Fit Index	Acceptable Criteria	Statistical Values
CFI	≥ 0.80 (Bentler, 1990)	0.983
TLI	≥ 0.80 (Sharma et al., 2005)	0.980
RMSEA	< 0.08 (Pedroso et al., 2016)	0.028
Model Summary		Acceptable Model Fit

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index and RMSEA = root mean square error of approximation

The convergent and discriminant validity were verified, as the values shown in Table 5. of this study are greater than the acceptable values. Therefore, convergent validity and discriminant validity are ensured. Moreover, these model measurement results confirmed the discriminant validity and

provided a validation for measuring the validity of the subsequent structural model estimation.

Table 5: Discriminant Validity

	IQ	PV	SE	FQ	SQ	CS	CL
IQ	0.757						
PV	0.394	0.750					
SE	0.289	0.327	0.784				
FQ	0.357	0.418	0.487	0.773			
SQ	0.283	0.220	0.382	0.334	0.766		
CS	0.326	0.302	0.410	0.431	0.428	0.748	
CL	0.356	0.362	0.434	0.446	0.359	0.414	0.763

Note: The diagonally listed value is the AVE square roots of the variables

Source: Created by the author.

4.3 Structural Equation Model (SEM)

According to Hair et al. (2010), Structural Equation Modeling (SEM) validates the causal relationship among variables in a proposed model. It considers the measurement inaccuracy in the structure coefficient. The goodness of fit indices for the Structural Equation Model (SEM) are measured as shown in Table 6. Greenspoon and Saklofske (1998) recommended that the Chi-square/degrees-of-freedom (CMIN/DF) ratio in the model fit measurement should not exceed 3, and GFI and CFI should be higher than 0.8. By conducting the calculation in SEMs and adjusting the model using SPSS AMOS version 26, the results of the fit index showed a good fit, with CMIN/DF = 3.339, GFI = 0.870, AGFI = 0.839, NFI = 0.857, CFI = 0.894, TLI = 0.880, and RMSEA = 0.068, which are in line with the acceptable values mentioned in Table 6.

Table 6: Goodness of Fit for Structural Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	< 5.00 (Al-Mamary & Shamsuddin, 2015; Awang, 2012)	744.579 or 3.339
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.870
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.839
NFI	≥ 0.80 (Wu & Wang, 2006)	0.857
CFI	≥ 0.80 (Bentler, 1990)	0.894
TLI	≥ 0.80 (Sharma et al., 2005)	0.880
RMSEA	< 0.08 (Pedroso et al., 2016)	0.068
Model Summary		Acceptable Model Fit

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index and RMSEA = root mean square error of approximation

4.4 Research Hypothesis Testing Result

The extent of correlation between the independent and dependent variables in the hypothesis is gauged by

regression coefficients or standardized path coefficients. As presented in Table 7, Five of the seven hypotheses proposed were supported.

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-value	Result
H1: IQ→PV	0.480	8.315*	Supported
H2: PV→CS	0.112	1.804	Not Supported
H3: SE→CS	0.269	5.024*	Supported
H4: FQ→CS	0.317	5.751*	Supported
H5: SQ→CS	0.365	6.563*	Supported
H6: IQ→CS	0.164	2.696	Not Supported
H7: CS→CL	0.554	8.252*	Supported

Note: * p<0.05

Source: Created by the author

The impact of information quality on price value is strong and significant (standardized path coefficient: 0.480, t value: 8.315*). Price value's impact on customer satisfaction is insignificant (standardized path coefficient: 0.112, t value: 1.804). Security significantly impacts customer satisfaction (standardized path coefficient: 0.269, t value: 5.024*). Food quality significantly impacts customer satisfaction (standardized path coefficient: 0.317, t value: 5.751*). Service quality strongly impacts customer satisfaction (standardized path coefficient: 0.365, t value: 6.563*). Information quality's impact on customer satisfaction is insignificant (standardized path coefficient: 0.164, t value: 2.696). Customer satisfaction strongly impacts customer loyalty (standardized path coefficient: 0.554, t value: 8.252*). The effects of price value and information quality on customer satisfaction were not supported, possibly due to complex variable relationships, measurement errors, industry characteristics, or time factors.

5. Conclusion and Recommendation

5.1 Conclusion and Discussion

This study used empirical and quantitative research methods to investigate the factors influencing user satisfaction with Chengdu's food delivery applications. The results highlighted that information quality plays a crucial role in enhancing the perceived price value of the service. Additionally, factors such as safety, food quality, and service quality were found to have a substantial positive impact on customer satisfaction, suggesting that these elements are essential to creating a satisfying user experience. Furthermore, the study demonstrated a strong positive correlation between customer satisfaction and loyalty, indicating that satisfied users are likelier to continue using the service and recommend it to others. However, it was also noted that price value and information quality did not

directly impact customer satisfaction, emphasizing that other aspects, such as safety and service quality, may carry more weight in driving user contentment.

5.2 Recommendation

Consumers are advised to clarify their specific expectations and requirements for food delivery services and make smarter choices among many food delivery platforms. Pay attention to the quality and safety of food delivery and the service quality of the platform, actively provide feedback, and promote improvements in the food delivery industry. Food delivery companies are advised to pay attention to the impact of factors such as information quality, safety, food quality, and service quality on customer satisfaction and loyalty. In response to the problems found in the study, such as the difficulty in ensuring food hygiene conditions and unstable delivery time in some merchants, strive to improve and optimize services. Strengthen the review and management of merchants to ensure food quality and safety, improve service levels, and protect customer data security. Pay attention to customer needs, continuously innovate and optimize services, and improve customer satisfaction and loyalty. Suggestions for market development: Market supervision departments should formulate more targeted and reasonable policies and regulations based on the research results, strictly regulate the operations of food delivery companies, protect the legitimate rights and interests of consumers, and create a fair, just, and orderly market environment. Promote the orderly and healthy development of the food delivery industry and promote standardization and regularization. Conduct cross-cultural or cross-regional comparative studies to understand the differences in user needs and satisfaction with food delivery services under different backgrounds. High-quality takeaway services will help further enhance Chengdu's image as a food capital and attract more people to taste Chengdu's special cuisine and experience its unique food culture.

5.3 Limitation and Further Study

The limitation of this study is that the sample only selected Meituan users in the five main urban areas of Chengdu, which is limited in scope and may only partially represent the user situation in some of the Chengdu areas. There may be factors that should have been considered in the study, which may affect the research results. The impact of price value and information quality on customer satisfaction needed to be supported, possibly due to complex variable relationships, measurement errors, industry characteristics, or time factors.

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