ISSN 2616-5775 Vol. 6, Issue 10: 138-142, DOI: 10.25236/AJCIS.2023.061020

Optimization Analysis of Service Quality of Cainiao Station

Chi-Hsiang Ting[1,a,*], Chin-Lien Chang[2,b], Wenjia Xi[1,c], Chen Li[1,d], Zhenyu Tang[1,e], Jianfeng Luo[1,f]

[1]Faculty of Management Engineering, Huaiyin Institute of Technology, Huai'an, Jiangsu, China
[2]Student Affairs Office, Huaiyin Institute of Technology, Huai'an, Jiangsu, China
[a]djs1966@foxmail.com, [b]2016185135@qq.com, [c]37066443@qq.com, [d]623461330@qq.com, [e]1351730824@qq.com, [f]1018592881@qq.com
**Corresponding author*

Abstract: *The rapid development of e-commerce platforms has provided consumers with diverse shopping choices. This study focuses on the service quality of Taobao, the largest e-commerce brand in China, and Cainiao Station, its service logistics system. Through actual investigation, it was found that customer expectations can affect the business performance of e-commerce. There is a correlation between service performance and satisfaction, as well as customer complaints. Customer complaints can even affect customer loyalty and repurchase rate.*

Keywords: *Logistics engineering, e-commerce, Cainiao Station, service quality, customer satisfaction*

1. Introduction

1.1. The rapid rise of e-commerce in China

The rapid development of e-commerce platforms has given people diverse shopping choices. With the gradual emergence of online shopping as one of the mainstream ways for people to shop, the logistics industry has also emerged. The express delivery industry, as a link connecting production, distribution, circulation, and consumption, is closely related to the primary, secondary, and tertiary industries. According to data from China Post, the express delivery business volume reached 108.3 billion pieces in 2021, a year-on-year increase of 29.9%. Meanwhile, nationwide, the total business revenue of express delivery service enterprises has also reached an astonishing 1033.23 billion yuan, a year-on-year increase of 17.5% [1]。

1.2. The End of the Express Delivery Industry System - Cainiao Station

Taobao, as the largest brand in China that first engaged in e-commerce operations. After launching the B2C platform based e-commerce model. The third-party express delivery industry completes the delivery of goods to the end merchant stores on the platform, and the merchants in charge of profit and loss make their own decisions. In a sales system as large as Taobao, Cainiao Network is Alibaba's solution to e-commerce problems when it comes to building a supporting system for its scale.

2. Literature Review

Scholar Ting [2] studied the impact of COVID-19 on online shopping consumer behavior. Discovering that consumers' expected needs align with planned behavior theory.This survey found that people's willingness to shift their shopping behavior from physical store shopping to online shopping has increased. Therefore, when operating online shopping, enterprises need to reduce consumer concerns and improve their reputation, which is an effective way to improve operational performance.In addition, researcher Huang [3] found in the analysis of customer logistics behavior at Cainiao Station that the development of express delivery performance at Cainiao Station under the premise of customer perceived value can guide express delivery companies to improve service quality in a targeted manner.After analysis, it can be seen that the logistics image of the site is very important in the minds of customers and is an advantageous resource for developing Cainiao Post Station. Therefore, it is necessary to

ISSN 2616-5775 Vol. 6, Issue 10: 138-142, DOI: 10.25236/AJCIS.2023.061020

strengthen investment in the site, and express delivery companies should also improve service quality and level.

To improve the service quality of Cainiao Station, researchers Chen, Wang, Wang, and Lu [4] used Analytic Hierarchy Process (AHP) and SERVQUAL model to construct first level indicators based on tangible facilities, reliability, responsiveness, guarantee, and emotional investment. A service quality evaluation system is constructed based on 15 secondary indicators, including standardization of post station facilities and equipment, delivery completeness, and logistics information update speed.

In addition, Yang, Xu, Lin [5] found that sales volume and a large number of negative comments are the most important factors affecting consumer decision-making. The number of comments and comments with images are relatively secondary influencing factors. The video display of store types and products has the least impact on sales volume. The optimal sales allocation simulated through experiments is very close to the actual situation, verifying the applicability of the introduced network evolution technology and demonstrating the importance of service quality.

3. Research methods

3.1. Service Quality Model

The service quality model, commonly known as the gap model, was developed by a group of American authors Parasuraman, Zeithaml, and Berry in a systematic research project conducted between 1983 and 1988 [6]. This model determines the main dimensions (or components) of service quality; A Service Quality Measurement Scale (SERVQUAL) has been proposed and potential causes of service quality issues have been identified. The model consists of five elements: (1) reliability: the ability to reliably and accurately execute promised services. (2) Guarantee: Employees' knowledge and politeness, as well as their ability to convey trust and confidence. (3) Tangible: The appearance of tangible facilities, equipment, personnel, and communication materials. (4) Empathy: Providing care and personalized attention to customers. (5) Responsiveness: Willing to help customers and provide timely service. Therefore, the consumer of residents in Huai'an City was chosen as the research object. Consumers who are e-commerce platforms are the subject of the survey.

3.2. Reliability analysis

Reliability analysis is the process of evaluating the stability and accuracy of measurement tools, usually used for questionnaire surveys and scale measurement data in research. The purpose is to ensure that measurement tools can stably and accurately measure the required variables, and can maintain relatively stable results between different scenarios and participants. This study used a questionnaire survey method. Detect the Cronbach's of the model by testing the collected valid data α. The coefficient value is 0.947, and the result is greater than 0.6, indicating that the reliability of the questionnaire is reliable. This questionnaire is measured using the Likert scale, with indicators items mean value of 3.54 to 3.90, and a standard deviation of 1.14 to 2.16 in Table 1.

Table 1 Indicator description statistics

Indicators items	mean value	standard deviation
Factor 1The content of the service experience (F1)		
Ability to handle homework errors	3.5422	1.22082
Information security	3.7644	1.24017
Delivery efficiency	3.5644	1.17130
Factor 2 The content of customer expectation questions (F2)		
Delivery quality	3.7911	2.16628
Information feedback power	3.4933	1.15774
service technology	3.5511	1.16432
Factor 3 The content of customer performance questions (F3)		
Pickup Route Selection	3.6489	1.15198
Transport disinfection operation	3.5644	1.17130
Factor 4The content of the customer satisfaction question (F4)		
No defects in the product	3.9022	1.14924
Service Commitment	3.8222	1.13957
On time delivery capability	3.8222	1.15899

ISSN 2616-5775 Vol. 6, Issue 10: 138-142, DOI: 10.25236/AJCIS.2023.061020

Factor 5 The customer complaint items (F5)		
Delivery Price	3.6711	1.18333
Attitude towards customer service	3.6489	1.12453
business hours	3.5956	1.14602
Factor 6 The content of the customer loyalty question is (F6)		
Diversified services	3.4356	1.25235
Timely tracking of information	3.7022	1.15930
Convenience of Service Sites	3.7378	1.19808

4. Data Analysis

4.1. Descriptive Statistical Analysis

A total of 225 samples were collected from the survey of consumers in Huai'an City. Among the sample analysis, male accounted for 56.9% and female accounted for 43.1%. Among the age groups: 43% are aged 18-24, 18.2% are aged 31-40, and 24.9% are aged 41-50. In the professional level, students account for 38.3%, company employees account for 36.4%, freelancers account for 10.2%, and self-entrepreneurs account for 8.4%. In terms of educational level: 19.6% are high school students or below, 18.7% are college students, and 55.6% are undergraduate students. Consumers usually choose products to purchase on online shopping platforms: food and beverages account for 27%, clothing and footwear account for 26.2%, and home necessities account for 36.4%.The total amount of monthly consumption on online shopping platforms is 48% for those below 500 yuan, 34.2% for those between 500 and 1000 yuan, and 9.8% for those between 1000 and 2000 yuan. The total amount of monthly consumption by consumers on online shopping platforms is 48% for those below 500 yuan, 34.2% for those between 500 and 1000 yuan, and 9.8% for those between 1000 and 2000 yuan. When Cainiao Logistics delivered your package, did the package make any mistakes (such as receiving a package that was not purchased by oneself)? Consumer response: 30.2% of the mistakes were made, while 69.8% were not made.

4.2. Model construction

The source of this sample analysis is the general public of consumers in Huai'an City, with a total of 255 questionnaires collected. According to the design of the e-commerce network service quality model of Cainiaoyi Station, conduct a questionnaire on-site survey. The questionnaire is divided into 6 aspects: 1) The content of the service experience items is (F1): whether there have been any errors in the package, real-time tracking and query of logistics information, personal security and confidentiality of users, and value-added service experience. 2) The content of customer expectation questions is (F2): error handling ability, network information security and confidentiality, delivery efficiency, and delivery quality. 3) The content of customer performance questions is (F3): information feedback power, modernization level of service technology, and selection of pick-up routes. 4) The content of the customer satisfaction question is (F4): Can the customer's expectations for service meet the requirements. 5) The customer complaint items include (F5) transportation disinfection operation, shipping price, customer service attitude, and post station opening hours. 6) The content of the customer loyalty question is (F6): Diversified service, customer satisfaction with the product, and the willingness of customers to purchase again.

4.3. Result analysis

The model was analyzed using the AMOS structural equation, and the analysis results are as follows: In terms of evaluating the overall suitability of patterns, scholars have proposed many usage indicators and judgment criteria (Blunch)[7] Common indicators such as chi square (x2) test require p-value>0.05, NCI (x2/df<3, GFI value>0.9, AGFI value>0.9, CFI value>0.9, RMR value<0.05, and RMSEA value<0.05. However, the results of various indicators in this study model are as follows: chi square value (x2) is 430.894, degree of freedom: 182, NCI 0.669)<3, p-value is 0.002, AGF1 is better than 0.950 (greater than 0.9), RMSEA value is 0.078 (<0.10), CFI value is 0.941 (>0.9), RMR value is 0.040 (<0.050). Overall, the overall structural pattern of this study is well coordinated.

We use R-Square to determine the test power of path significance and the explanatory power of the research model. The significance greater than the R-squared value is the percentage of variance that can be explained by exogenous variables over endogenous variables, representing the predictive ability of the research model. Its value ranges from 0 to 1, and the higher the value, the better the explanatory

ISSN 2616-5775 Vol. 6, Issue 10: 138-142, DOI: 10.25236/AJCIS.2023.061020

power of the model. The R2 determination coefficient represents the explanatory magnitude of the underlying variables in the structural equation. Generally, 0.75, 0.50, and 0.25 represent R2 values that can be roughly classified as significant large, medium, and small effects. (1) The R2 value for F3 customer performance is 0.785, (2) the R2 value for F4 customer satisfaction is 0.794, (3) the R2 value for F5 customer complaints is 0.946, and (4) the R2 value for F6 customer loyalty is 0.971 (as shown in Table 2).

After statistical analysis, the determination coefficient values of each factor's mutual influence were found to be higher in the path coefficient values of F3 customer performance to F4 customer satisfaction. The path coefficient values of F4 customer satisfaction and F6 customer loyalty are relatively low. The p-value of F1's path coefficient value for F3 is not significant. The hypothesis testing results of this study are shown in Figure 1 and Table 3.

Table 2: model fit R 2 data

Factor item	Data
Factor3	0.785
Factor4	0.794
Factor5	0.946
Factor6	0.971

Table 3: data of model regression coefficients

Influencing factor X	Direction of influence	Influencing factor Y	Significance Level P	standardized regression coefficient	Hypothesis testing
Factor1	<---	Factor3	0.149	-0.064	H1 not support
Factor2	<---	Factor3	0.149	-0.064	H2 support
Factor3	<---	Factor4	0.149	-0.064	H3 support
Factor4	<---	Factor6	0.149	-0.064	H4 support
Factor5	<---	Factor6	0.149	-0.064	H5 support

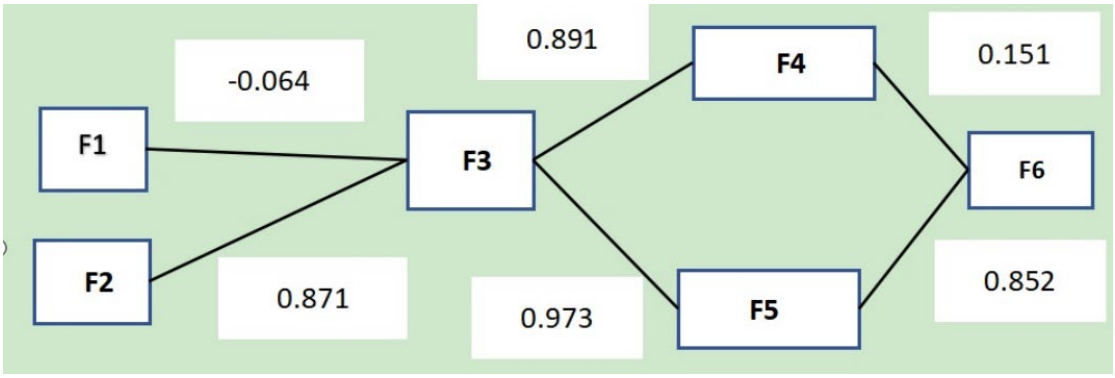

Figure 1: Summary of model regression coefficients

5. Conclusions

The model analysis of the service quality of Cainiao Station in this study found that the impact of F1 service experience on F3 customer performance was not significant. The impact of F2 customer expectations on F3 customer performance, F3 customer performance on F4 customer satisfaction, F3 customer performance on F5 customer complaints, and F5 customer complaints on F6 customer loyalty are all significant. The impact of F4 customer satisfaction on F6 customer loyalty is low. Customer expectations can affect the business performance of e-commerce. There is a correlation between service performance and satisfaction, as well as customer complaints. Customer complaints can affect customer loyalty.

Acknowledgements

We would like to express for the innovation and entrepreneurship funding subsidy by Huaiyin

ISSN 2616-5775 Vol. 6, Issue 10: 138-142, DOI: 10.25236/AJCIS.2023.061020

Institute of Technology (202311049309YJ), and Factory Engineering Research Centre, College of Management and Engineering to improve our manuscript quality. Thanking for research members to support to this study. They are Qian Yixiao, Yang Zihao, Liu Sensen, Wang Hao.

References

[1] Chen, X. Y. (2021) Research on the Improvement of Logistics Service Quality at the End of Cainiao Post Station Based on AHP Model. Logistics engineering and management. 43, 319.
[2] Ting, C. H., Chang, C. L., Shen, C., Zhang. X. (2022) Exploratory Analysis of Factors Affecting Levels of Online Shopping in the COVID-19. BDEDM2022 - The International Conference on Big Data Economy and Digital Management. 811-817
[3] Huang, Y. (2020) Investigation and Analysis on the Image Attribute of Express Delivery Point Based on Logistics Customer Perception -Taking Nanning Rookie Station as an Example. Popular Science & Technology. 22(7)
[4] Chen, N. N., Wang. Y. C., Wang, Z. H., and Lu, J. B. (2023) Research on Improving Service Volume of Vegetable Stations Based on AHP and Fuzzy Combination. Logistics Technology and Applications. 135-138
[5] Yang, L. M., Xu, M., Lin, X. (2022) Exploring the core factors of online purchase decisions by building an E-Commerce network evolution model. Journal of Retailing and Consumer Services.
[6] Parasuraman, A, Ziethaml, V. and Berry, L. L. (1985) SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality. Journal of Retailing, 62(1)12-40.
[7] Blunch, N. J. (2012) Introduction to Structural Equation Modeling Using IBM SPSS Statistics. SAGE Publications Ltd