# Customer Satisfaction with Rural Online Shopping Terminal Delivery Service Quality in Fujian Province

**Shurong Huang[1], Liping Lin[2, 3, 4], Genping Yu[3, 4, 5], Zhongyan Lin[3, 4, 5,*]**

[1]Major of Logistics Engineering, Department of Economic and Management of Minjiang University, Fuzhou, Fujian, China

[2]Straits Institute of Minjiang University, Fuzhou 350108, China

[3]E-Commerce Branch of Fujian Collaborative Innovation Institute, Fuzhou 350108, China

[4]Internet Innovation Research Center of Minjiang University, Fuzhou, Fujian, China

[5]International Digital Economy College of Minjiang University, Fuzhou 350108, China

**Keywords:** rural online shopping terminal, customer satisfaction, delivery service quality

**Abstract:** The problem of "last mile" delivery difficulties in rural express logistics has attracted attention. To help improve rural express delivery and customer satisfaction, this study designed an evaluation indicator system for rural express delivery service quality based on the "quality of service" model. Principal component analysis was used to calculate the index weight, and the service perception quality quadrant was used to analyze the importance of the index. The results indicated that factors such as a backward distribution infrastructure, scattered customers, and a lack of professional logistics talent in rural areas have hindered the improvement of rural online shopping terminal distribution services. Logistics enterprises should therefore improve the quality of rural online shopping terminal distribution services and customer satisfaction by enhancing the professionalism of service personnel, optimizing logistics distribution paths, and accelerating infrastructure construction.

## 1. Introduction

With the increasing number of online shoppers in rural areas, rural express delivery service has become a hot issue. In recent years, China's government has issued various policies to encourage the development of rural e-commerce logistics. In March 2020, the National Development and Reform Commission, together with 28 departments and units, jointly issued the "2020 Action Plan for Consumption Poverty Alleviation and Poverty Alleviation." This policy proposed that the construction of e-commerce and express logistics outlets should be accelerated in poverty-stricken areas, and projects such as "express delivery into villages" should be undertaken. The policy has helped accelerate the development of rural express delivery in China, presenting new opportunities for development in this area.

With the ongoing development of e-commerce in China, supporting facilities have gradually emerged, and the logistics and express delivery industry has rapidly developed. However, in rural areas with relatively backward infrastructure, the development of rural e-commerce is constrained by the problem of rural terminal distribution. Currently, there are three main problems in rural online shopping terminal distribution services. First, the rural express delivery infrastructure is backward, and logistics information platforms are lacking. The high costs and low profits associated with establishing warehousing centers in rural areas have resulted in low investment enthusiasm, insufficient infrastructure and logistics information platforms, and low distribution efficiency. Second, the distribution of rural customers is relatively scattered, and distribution is difficult, resulting in high costs for rural express delivery. Third, the rural express delivery system is imperfect. On the one hand, the distribution range is unreasonable, and network coverage will be repeated; on the other hand, there is a shortage of rural express delivery talent and generally low-quality employees, resulting in poor delivery service quality.

Existing service evaluation systems include the SERVQUAL (service quality), LSQ (logistics service quality), and Parasuraman models, as well as Juran's five-element theory of service quality. The SERVQUAL scale was developed by Parasuraman, Zeithaml, and Berry in 1985 based on the theory of total quality management, proposed for the service industry. The scale has five dimensions and 22 indicators, and the service quality score is obtained through questionnaire surveys, customer scoring, and comprehensive calculation.

Some studies have used the SERVQUAL scale to investigate the quality of rural express delivery services. Using the American Customer Satisfaction Index and SERVQUAL to study the quality of rural express delivery services in Sichuan Province, Zhang Jie proposed measures such as strengthening infrastructure construction in rural areas, establishing multiple delivery methods, improving the professionalism of employees, and improving network construction standards and service standards [1]. Hao Lujie evaluated the service quality of "last mile" rural express service by constructing a rural rookie post express service quality evaluation system [2]. Referring to the four-dimensional model of service contact, SERVQUAL, and LSQ, among others, Zhu Wanxiu formed a new service system based on the four dimensions of "personnel contact, goods contact, technology contact, and enterprise contact." On that basis, that study explored the importance of different factors in the quality of express delivery services [3]. Using management statistics methods, Fang Junru compared the rural and urban express delivery services and identified the main factors affecting the service quality of rural express delivery [4].

The quality evaluations of rural online shopping consumer groups have become important for management innovation in logistics enterprises. Although many studies have investigated the quality of express delivery services, relatively few have focused specifically on rural e-commerce express delivery services. Therefore, this study drawed on the previous research results and methods to establish an indicator system of customer satisfaction in rural express delivery in Fujian Province, and designed a corresponding questionnaire to explore the importance of each indicator in the minds of customers. The article used SERVQUAL and principal component analysis (PCA) to aid the research. The research showed that customers were highly concerned about and satisfied with the integrity and punctuality of delivered goods, the real-time nature of logistics information, the reliability and timely response of courier companies, and the professionalism and service attitude of couriers.

## 2. Questionnaire Design and Methods

We referred to the evaluation dimensions and core indicators of the SERVQUAL questionnaire. Then, based on interviews with rural express delivery network operators, employees, and rural residents, we reduced the SERVQUAL questionnaire from 22 questions to 19 to better understand rural online consumers' perceptions of express delivery and the quality of service.

The research objects of the questionnaire were residents who had lived in rural areas for a long time and had online shopping experience in Fujian Province. The questionnaire consisted of two parts. The first gathered basic personal information, including gender, age, and monthly online shopping frequency. The second part was based on the initial model and used five-point Likert scales to measure items we derived from the literature and the SERVQUAL scale (Table 1).

Table 1 Perceptions of the quality of rural express delivery services

| Index system name | Definition | Variable | item | The specific content of the item |
|---|---|---|---|---|
| Rural express delivery quality perception | Quality perception refers to the actual feelings customers have after receiving the delivery service. | X1 | Q5 | In practice, the basic service facilities of the express pickup point are complete. |
| | | X2 | Q6 | Couriers have neat attire and appearance. |
| | | X3 | Q7 | Your place of residence is convenient for pickup. |
| | | X4 | Q8 | The distance between the pickup points of different courier companies is very close. |
| | | X5 | Q9 | The coverage area of express delivery is very complete. |

| Index system name | Definition | Variable | item | The specific content of the item |
|---|---|---|---|---|
| | Combined with the SERVQUAL scale, it can be measured in five aspects. | X6 | Q10 | The item delivered by the courier company is correct. |
| | | X7 | Q11 | The goods delivered by the courier company are not missing items. |
| | | X8 | Q12 | The delivery address of the courier company is correct. |
| | | X9 | Q13 | The goods delivered by the courier company are guaranteed to be in good condition. |
| | | X10 | Q14 | The goods delivered by the courier company are well packaged. |
| | | X11 | Q15 | The company responsible for express delivery is reliable. |
| | | X12 | Q16 | The courier company can deliver the goods within the specified time. |
| | | X13 | Q17 | Courier companies can provide real-time order information. |
| | | X14 | Q18 | You expect the courier to respond to your appeal in a timely manner. |
| | | X15 | Q19 | The courier will not be too busy to provide immediate service to meet your needs. |
| | | X16 | Q20 | Couriers have good business process proficiency. |
| | | X17 | Q21 | Your personal information remains confidential during the delivery process by the courier company. |
| | | X18 | Q22 | The courier company's delivery staff has a good attitude |
| | | X19 | Q23 | The courier company communicates in a timely manner about the status of goods during the delivery process. |

PCA (Principal component analysis) is a statistical method for recombining multiple original indicators (M) with specific correlations into a new set of independent comprehensive indicators. The original indicators are linearly combined, and the one with the highest cumulative variance contribution rate is selected as the first principal component. If the first principal component is not enough to reflect the original index information, the second principal component is selected.

## 3. Results

### 3.1. Basic Situation

A total of 541 questionnaires were distributed, and 460 valid ones were recovered. Table 2 shows the social characteristics of the research subjects.

Table 2 Distribution of social characteristics of rural survey respondents

| Attributes | Features | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 184 | 40.0 |
| | Female | 276 | 60.0 |
| Age | Under 20 | 247 | 53.7 |
| | 20–29 years old | 169 | 36.7 |
| | 30–39 years old | 18 | 3.9 |
| | 40–49 years old | 20 | 4.3 |
| | 50 years and older | 6 | 1.3 |
| Number of express deliveries per month | 1 or less | 51 | 11.1 |
| | 1–2 pieces | 148 | 32.2 |
| | 3–5 pieces | 141 | 30.7 |
| | 5 or more | 120 | 26.1 |
| Total | | 460 | 100.0 |

### 3.2. Principal Component Analysis

Factor analysis in SPSS was used to conduct PCA of the quality perception indicators of rural express delivery.

Table 3 showed that there is a strong correlation between the original variables, so common factors can be extracted from them. Table 4 showed that the *p*-value was less than 0.05, and the KMO value was 0.969, indicating that the original variables were suitable for PCA.

There are generally two extraction principles for the number of principal components. One is that the eigenvalue corresponding to the principal component is greater than 1; the other is that the first *p* principal components have a cumulative variance contribution rate of 80%–85%.

Columns 5–7 in Table 5 show the situation of the factor solutions. The two extracted factors explained 72.8% of the total variance of the original variable. In general, the information of the original variables was less lost, and the effect of factor analysis was ideal. Columns 8–10 show the final factor solution. We can see that after factor rotation, the cumulative variance contribution rate did not change; that is, it did not affect the common degree of the original variables but redistributed each factor to explain the variance of the original variable, changed the variance contribution of each factor, and made the factor easier explain.

In Figure 1, the abscissa is the factor number, and the ordinate is the eigenvalue. We can see that the eigenvalue (variance contribution) of the first factor was very high, and the contribution to explaining the original variable was the largest, becoming the negligible "gravel at the foot of the mountain." Thus, we extracted two principal components—namely, $p = 2$.

Table 6 showed the factor loading matrix (i.e., the core calculation results of factor analysis). The index had a high load on the first principal component, indicating that the first principal component basically covered all information of the index. As shown in Table 5, the cumulative variance contribution rate of the first two principal components was 72.842%—approximately 80%—indicating that the two factors explained 72.842% of the total variance of the original variables. In general, the extraction of two principal components roughly reflected the information of all indicators, the loss of information of the original variables was less, and the factor analysis results were ideal. Thus, we decided to use two principal components to replace the original 19 variables, which greatly simplified the original problem.

We divided the variable values corresponding to the two principal components in Table 6 by the square root of the characteristic root corresponding to the principal components in Table 5 to obtain the coefficients corresponding to each index in the two principal components. The two principal components obtained were as follows:

$$F_1 = 0.189X_1 + 0.186X_2 + 0.196X_3 + 0.199X_4 + 0.217X_5 + 0.228X_6 + 0.232X_7 + 0.23X_8 + 0.243X_9 + 0.237X_{10} + 0.252X_{11} + 0.249X_{12} + 0.237X_{13} + 0.245X_{14} + 0.235X_{15} + 0.244X_{16} + 0.241X_{17} + 0.240X_{18} + 0.242X_{19};$$

$$F_2 = 0.361X_1 + 0.327X_2 + 0.48X_3 + 0.448X_4 + 0.363X_5 - 0.091X_6 - 0.157X_7 - 0.131X_8 - 0.128X_9 - 0.132X_{10} - 0.151X_{11} - 0.099X_{12} - 0.092X_{13} - 0.133X_{14} - 0.142X_{15} - 0.111X_{16} - 0.103X_{17} - 0.097X_{18} - 0.066X_{19}.$$

We multiplied the coefficient before each indicator in the first principal component $F_1$ by the variance contribution rate corresponding to the first principal component $F_1$ and divided it by the cumulative variance contribution rate of the extracted second principal component. We then added the second principal component. We multiplied the coefficient before each index in component $F_2$ by the variance contribution rate corresponding to the second principal component $F_2$ and divided by the cumulative variance contribution rate of the extracted second principal component. Thus, the comprehensive scoring model was obtained as follows:

$$Y = 0.203X_1 + 0.197X_2 + 0.22X_3 + 0.219X_4 + 0.229X_5 + 0.202X_6 + 0.2X_7 + 0.2X_8 + 0.213X_9 + 0.207X_{10} + 0.219X_{11} + 0.22X_{12} + 0.21X_{13} + 0.214X_{14} + 0.204X_{15} + 0.215X_{16} + 0.213X_{17} + 0.212X_{18} + 0.217X_{19}.$$

The coefficient corresponding to each indicator in the comprehensive scoring model is the weight of each indicator.

Table 4 Bartlett's sphericity test and KMO test

| KMO and Bartlett's test | | |
|---|---|---|
| Kaiser–Meyer–Olkin metric of sampling adequacy | | 0.969 |
| Bartlett's sphericity test | Approximate chi-square | 10,766.941 |
| | DF | 171 |
| | Sig. | 0.000 |

Table 5 Variance decomposition of principal component extraction

| Total variance explained | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Item | Initial eigenvalues | | | Extracted sum of squares and load | | | Rotated square and load | | |
| | Total | % of variance | Accumulation % | Total | % of variance | Accumulation % | Total | % of variance | Accumulation % |
| 1 | 12.712 | 66.906 | 66.906 | 12.712 | 66.906 | 66.906 | 9.169 | 48.256 | 48.256 |
| 2 | 1.128 | 5.936 | 72.842 | 1.128 | 5.936 | 72.842 | 4.671 | 24.586 | 72.842 |
| 3 | 0.794 | 4.181 | 77.023 | | | | | | |
| 4 | 0.746 | 3.927 | 80.950 | | | | | | |
| 5 | 0.420 | 2.210 | 83.160 | | | | | | |
| 6 | 0.367 | 1.933 | 85.093 | | | | | | |
| 7 | 0.340 | 1.787 | 86.880 | | | | | | |
| 8 | 0.313 | 1.650 | 88.529 | | | | | | |
| 9 | 0.287 | 1.511 | 90.040 | | | | | | |
| 10 | 0.279 | 1.470 | 91.510 | | | | | | |
| 11 | 0.250 | 1.317 | 92.826 | | | | | | |
| 12 | 0.212 | 1.114 | 93.941 | | | | | | |
| 13 | 0.202 | 1.065 | 95.006 | | | | | | |
| 14 | 0.189 | 0.994 | 96.000 | | | | | | |
| 15 | 0.176 | 0.926 | 96.926 | | | | | | |
| 16 | 0.170 | 0.894 | 97.820 | | | | | | |
| 17 | 0.159 | 0.839 | 98.658 | | | | | | |
| 18 | 0.137 | 0.721 | 99.379 | | | | | | |
| 19 | 0.118 | 0.621 | 100.000 | | | | | | |
| Extraction method: principal component analysis. | | | | | | | | | |

Table 6 Factor loading matrix

| Ingredient matrix[a] | | |
|---|---|---|
| Variable | Ingredients | |
| | 1 | 2 |
| X1 | 0.673 | 0.384 |
| X2 | 0.663 | 0.347 |
| X3 | 0.700 | 0.510 |
| X4 | 0.709 | 0.476 |
| X5 | 0.775 | 0.386 |
| X6 | 0.815 | −0.096 |
| X7 | 0.827 | −0.166 |
| X8 | 0.819 | −0.139 |
| X9 | 0.868 | −0.136 |
| X10 | 0.843 | −0.140 |
| X11 | 0.897 | −0.160 |
| X12 | 0.887 | −0.105 |
| X13 | 0.845 | −0.098 |
| X14 | 0.874 | −0.142 |
| X15 | 0.837 | −0.151 |
| X16 | 0.871 | −0.118 |
| X17 | 0.860 | −0.109 |
| X18 | 0.854 | −0.103 |
| X19 | 0.863 | −0.070 |

Extraction method: main ingredient.

a. Two components have been extracted.

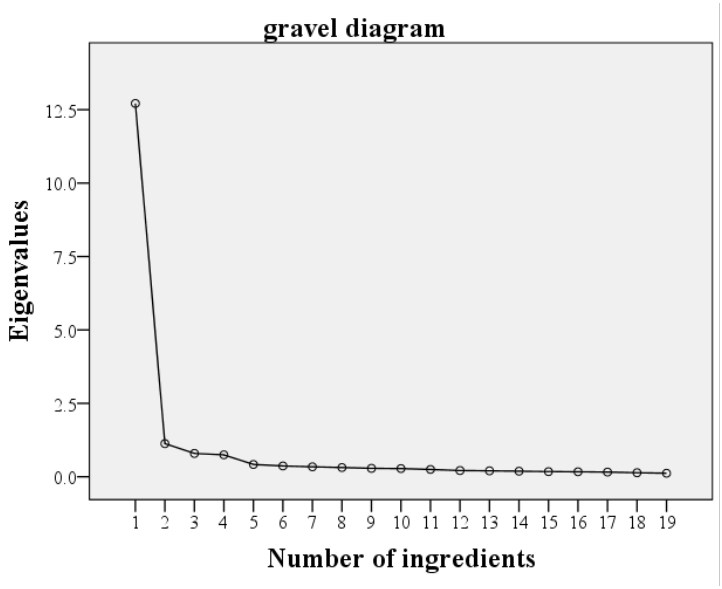


Figure 1 Gravel diagram

## 4. Comprehensive Ratings and Recommendations for Statistical Analysis Results

The importance of each corresponding indicator can be obtained from the above indicator weights. In addition, the average satisfaction score of each index was calculated from the original data. The calculation results are shown in Table 7.

The satisfaction of each indicator was averagely divided into the horizontal axis, and the weight (importance degree) of each indicator was used as the vertical axis to draw a quadrant diagram (Figure 2).

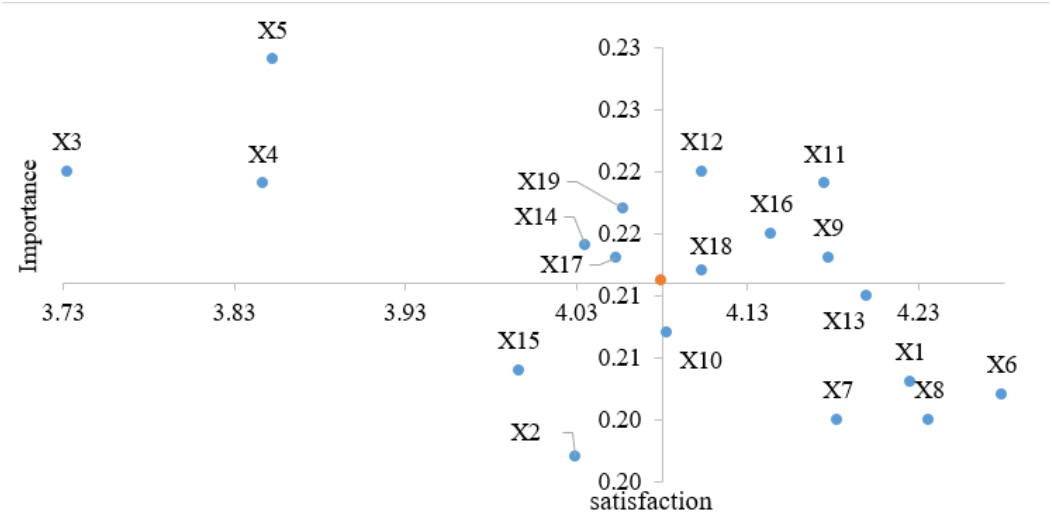


Figure 2 Quadrant diagram

Based on the quadrant diagram, we can see the advantages and disadvantages of rural express services, which can guide the focus of quality management in rural express services in the future. The quadrant diagram reveals the following:

Quadrant 1 belongs to the high-concern area—namely, high importance and high satisfaction. The quadrant contains the following five indicators: $X_9$ ("The goods delivered by the express company are guaranteed to be in good condition"), $X_{11}$ ("The company responsible for express delivery is reliable"), $X_{12}$ ("The courier company can deliver the goods within the specified time"), $X_{16}$ ("Couriers have good business process proficiency"), and $X_{18}$ ("The courier company's delivery staff has a good attitude"). Satisfaction with these indicators was proportional to their importance. This showed that customers were highly concerned about and satisfied with the integrity and punctuality

of delivered goods, the real-time nature of logistics information, the reliability and timely response of courier companies, and the professionalism and service attitude of couriers. Therefore, enterprises should maintain and provide strong support for these indicators.

Quadrant two belongs to the priority improvement area—namely, high importance but low satisfaction. These six indicators fall within this quadrant: $X_3$ ("Your place of residence is convenient for courier pickup"), $X_4$ ("The distance between the pickup points of different courier companies is very close"), $X_5$ ("The coverage area of courier delivery is very complete"), $X_{14}$ ("The courier can respond to your complaints and claims in a timely manner"), $X_{17}$ ("The confidentiality of your personal information is maintained during the delivery process by the courier company"), and $X_{19}$ ("The courier company communicates the status of the goods in a timely manner during the delivery process"). Thus, satisfaction with the indicators in this quadrant was low relative to their importance. This indicates that customers attached importance to the convenience of the pickup location, the timely response of couriers to their requirements, and the confidentiality of their information by courier companies, but the companies had not met their needs. Therefore, enterprises should make improvements in these areas to improve service quality and enhance their competitive advantage.

Quadrant 3 belongs to the unimportant zone—namely, low importance and low satisfaction. Two indicators fall into this quadrant: $X_2$ ("Couriers have neat attire and appearance"), and $X_{15}$ ("The courier will not be too busy to provide immediate service to meet your needs"). This means that satisfaction was proportional to importance. Customers did not pay attention to the appearance of couriers or the outer packaging of goods. Therefore, the indicators in this quadrant can be considered secondary reference indicators in terms of how much companies focus on them.

Quadrant 4 belongs to the maintenance advantage zone—namely, low importance and high satisfaction. These six indicators fall into this quadrant: $X_1$ ("In practice, the basic service facilities of the express pickup point are complete"), $X_6$ ("The item delivered by the courier company is correct"), $X_7$ ("The goods delivered by the courier company are not missing items"), and $X_8$ ("The delivery address of the courier company is correct"), $X_{10}$ ("The goods delivered by the courier company are well packaged),$X_{13}$ ("Courier companies can provide real-time order information"). Satisfaction with these indicators was high relative to their importance. This suggests that companies have spent excessively on improving the basic service facilities of express delivery points and ensuring the correctness of delivered goods. Businesses should therefore maintain the status quo regarding these aspects, not devote excessive attention to them, and instead allocate resources to more important areas.

In summary, the quadrant map intuitively reflects the aspects that enterprises should pay attention to: investing resources more accurately, obtaining more effective feedback, and improving service quality.

## 5. Suggestions for Improving Customer Satisfaction with Rural Online Shopping Terminal Delivery

### 5.1. Improve the Training and Professionalism of Personnel

First, China's government should focus on introducing outstanding e-commerce logistics professionals in rural areas, accelerating the improvement of the talent introduction system, and providing superior working conditions. Second, regarding rural express delivery personnel, we should provide professional training, strengthen their vocational skills, establish entry thresholds, and unify industry norms and related mechanisms. Third, college students and migrant workers can be encouraged to return to their hometowns and invest in rural express delivery construction, with a focus on innovation and entrepreneurship.

### 5.2. Enterprises should Develop Various Distribution Modes and Enhance Supervision and Management

First, enterprises can develop diversified distribution modes and improve rural service systems. For example, in the case of shuttle transportation, companies can use fixed shuttle buses from the cities for express delivery from urban to rural outlets. A cooperative model could also be established

in which different express logistics companies form an alliance to jointly participate in distribution, thereby sharing transportation and distribution costs.

Second, when strengthening distribution services, attention should be paid to strengthening supervision and management, and timely feedback should be given regarding damaged cargo and customer complaints. Firms should improve logistics information platforms, update logistics information in real time, and improve service details so customers can know the actual situation of transported goods in real time.

### 5.3. Government Departments should Give Corresponding Support

First, the government must do a good job with overall planning and policy support, offer certain policy preferences, and provide legal protection for the "last mile" of express delivery. Second, it should improve the construction of distribution infrastructure, rationally plan the construction and maintenance of rural roads, strengthen the informatization infrastructure construction of rural express delivery, strengthen investment in capital and technology, ensure hardware facilities and transportation facilities, and improve distribution efficiency [5].

## 6. Conclusions

Through this research, we can see that rural logistics enterprises should pay attention to the real needs of rural customers, promote infrastructure construction, do a good job with customer information security, further improve and optimize logistics distribution paths, thoroughly train service personnel, and enhance the professionalism of personnel. The difficulties faced by rural logistics enterprises themselves are even greater, so they need to make greater efforts to meet the punctuality, professionalism, package integrity and other indicators that customers consider important, so as to gradually improve the quality of online shopping terminal distribution services and customer satisfaction.

## Acknowledgements

Supported by the headmaster Fund of MinJiang University in 2021( Project name "Customer Satisfaction With Rural Online Shopping Terminal Delivery Service Quality In Fujian Province" )(103952021007) & 2021 School-level New Liberal Arts Research and Reform Practice Project of Minjiang University (Construction and practice of the third-level certification system for the major of E-commerce oriented to the construction of New Liberal Arts).

## References

[1] Zhang Jie. An Empirical Study on the Quality Evaluation of Sichuan Rural Express Service Based on SERVQUAL. Modern Business, 2019(08): 14-16. DOI: 10.14097/j. cnki .5392/2019.08.006.

[2] Hao Lujie. Analysis of service quality evaluation of rural rookie inn based on ANP-fuzzy comprehensive evaluation. Modern Agricultural Research, 2019(12): 131-132. DOI: 10.19704/j. cnki. xdnyyj .2019.12. 058.

[3] Zhu Wanxiu. Design and verification of service quality evaluation indicators of rural express delivery industry from the perspective of service contact. Inner Mongolia Science and Technology and Economy, 2021(01):33-37.

[4] Fang Junru, Zhao Fangfang, Jiang Runyang, Han Qing, Zhang Pengfei. Investigation and comparative research on the service quality of rural express delivery and urban express delivery based on management statistics. Tianjin Science and Technology, 2017, 44(08): 13-15. DOI:10.14099/j.cnki.tjkj .2017.08.005.

[5] Zheng Xin. "Research on the Mode of Rural Logistics Distribution in the E-commerce Environment." Land Bridge Vision. 07(2021): 61-62.

Table 3 Correlation coefficient matrix

| | X1 | X2 | X3 | X4 | X5 | X6 | X7 | X8 | X9 | X10 | X11 | X12 | X13 | X14 | X15 | X16 | X17 | X18 | X19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X1 | 1.000 | 0.680 | 0.529 | 0.509 | 0.542 | 0.497 | 0.500 | 0.536 | 0.550 | 0.495 | 0.553 | 0.541 | 0.553 | 0.510 | 0.498 | 0.538 | 0.517 | 0.535 | 0.525 |
| X2 | 0.680 | 1.000 | 0.488 | 0.511 | 0.488 | 0.470 | 0.468 | 0.483 | 0.502 | 0.498 | 0.561 | 0.549 | 0.524 | 0.506 | 0.512 | 0.537 | 0.567 | 0.561 | 0.533 |
| X3 | 0.529 | 0.488 | 1.000 | 0.697 | 0.750 | 0.530 | 0.505 | 0.488 | 0.532 | 0.523 | 0.526 | 0.577 | 0.526 | 0.568 | 0.536 | 0.543 | 0.560 | 0.536 | 0.591 |
| X4 | 0.509 | 0.511 | 0.697 | 1.000 | 0.733 | 0.555 | 0.559 | 0.529 | 0.576 | 0.546 | 0.567 | 0.581 | 0.544 | 0.547 | 0.516 | 0.548 | 0.512 | 0.543 | 0.554 |
| X5 | 0.542 | 0.488 | 0.750 | 0.733 | 1.000 | 0.604 | 0.556 | 0.581 | 0.625 | 0.630 | 0.639 | 0.641 | 0.605 | 0.633 | 0.570 | 0.640 | 0.621 | 0.596 | 0.642 |
| X6 | 0.497 | 0.470 | 0.530 | 0.555 | 0.604 | 1.000 | 0.771 | 0.734 | 0.720 | 0.672 | 0.701 | 0.686 | 0.671 | 0.680 | 0.644 | 0.706 | 0.662 | 0.644 | 0.648 |
| X7 | 0.500 | 0.468 | 0.505 | 0.559 | 0.556 | 0.771 | 1.000 | 0.759 | 0.778 | 0.726 | 0.748 | 0.734 | 0.667 | 0.687 | 0.669 | 0.680 | 0.642 | 0.671 | 0.650 |
| X8 | 0.536 | 0.483 | 0.488 | 0.529 | 0.581 | 0.734 | 0.759 | 1.000 | 0.772 | 0.694 | 0.784 | 0.707 | 0.688 | 0.656 | 0.631 | 0.662 | 0.637 | 0.669 | 0.636 |
| X9 | 0.550 | 0.502 | 0.532 | 0.576 | 0.625 | 0.720 | 0.778 | 0.772 | 1.000 | 0.811 | 0.842 | 0.769 | 0.733 | 0.722 | 0.681 | 0.706 | 0.672 | 0.682 | 0.711 |
| X10 | 0.495 | 0.498 | 0.523 | 0.546 | 0.630 | 0.672 | 0.726 | 0.694 | 0.811 | 1.000 | 0.798 | 0.750 | 0.675 | 0.726 | 0.692 | 0.717 | 0.678 | 0.681 | 0.694 |
| X11 | 0.553 | 0.561 | 0.526 | 0.567 | 0.639 | 0.701 | 0.748 | 0.784 | 0.842 | 0.798 | 1.000 | 0.833 | 0.768 | 0.782 | 0.735 | 0.767 | 0.750 | 0.735 | 0.741 |
| X12 | 0.541 | 0.549 | 0.577 | 0.581 | 0.641 | 0.686 | 0.734 | 0.707 | 0.769 | 0.750 | 0.833 | 1.000 | 0.802 | 0.802 | 0.728 | 0.750 | 0.758 | 0.716 | 0.752 |
| X13 | 0.553 | 0.524 | 0.526 | 0.544 | 0.605 | 0.671 | 0.667 | 0.688 | 0.733 | 0.675 | 0.768 | 0.802 | 1.000 | 0.745 | 0.674 | 0.727 | 0.733 | 0.700 | 0.705 |
| X14 | 0.510 | 0.506 | 0.568 | 0.547 | 0.633 | 0.680 | 0.687 | 0.656 | 0.722 | 0.726 | 0.782 | 0.802 | 0.745 | 1.000 | 0.785 | 0.781 | 0.792 | 0.752 | 0.791 |
| X15 | 0.498 | 0.512 | 0.536 | 0.516 | 0.570 | 0.644 | 0.669 | 0.631 | 0.681 | 0.692 | 0.735 | 0.728 | 0.674 | 0.785 | 1.000 | 0.786 | 0.760 | 0.742 | 0.754 |
| X16 | 0.538 | 0.537 | 0.543 | 0.548 | 0.640 | 0.706 | 0.680 | 0.662 | 0.706 | 0.717 | 0.767 | 0.750 | 0.727 | 0.781 | 0.786 | 1.000 | 0.786 | 0.781 | 0.780 |
| X17 | 0.517 | 0.567 | 0.560 | 0.512 | 0.621 | 0.662 | 0.642 | 0.637 | 0.672 | 0.678 | 0.750 | 0.758 | 0.733 | 0.792 | 0.760 | 0.786 | 1.000 | 0.826 | 0.796 |
| X18 | 0.535 | 0.561 | 0.536 | 0.543 | 0.596 | 0.644 | 0.671 | 0.669 | 0.682 | 0.681 | 0.735 | 0.716 | 0.700 | 0.752 | 0.742 | 0.781 | 0.826 | 1.000 | 0.813 |
| X19 | 0.525 | 0.533 | 0.591 | 0.554 | 0.642 | 0.648 | 0.650 | 0.636 | 0.711 | 0.694 | 0.741 | 0.752 | 0.705 | 0.791 | 0.754 | 0.780 | 0.796 | 0.813 | 1.000 |

Table 7 Average score of customer satisfaction for each indicator

| index | X1 | X2 | X3 | X4 | X5 | X6 | X7 | X8 | X9 | X10 | X11 | X12 | X13 | X14 | X15 | X16 | X17 | X18 | X19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Importance | 0.203 | 0.197 | 0.220 | 0.219 | 0.229 | 0.202 | 0.200 | 0.200 | 0.213 | 0.207 | 0.219 | 0.220 | 0.210 | 0.214 | 0.204 | 0.215 | 0.213 | 0.212 | 0.217 |
| satisfaction | 4.225 | 4.030 | 3.732 | 3.847 | 3.852 | 4.279 | 4.183 | 4.236 | 4.177 | 4.083 | 4.175 | 4.103 | 4.199 | 4.035 | 3.996 | 4.144 | 4.054 | 4.103 | 4.057 |