

# Research on the Evaluation of Chinese Express Service Quality in e-Commerce

Chunhui Yuan and Jie Liu

*School of Economics and Management, Beijing University of Posts and Telecommunication,  
Xitucheng Street, Beijing, China  
yuanchunhui@139.com, liujie4869@126.com*

**Keywords:** Express Service Quality, Factor Analysis, Regression Analysis.

**Abstract:** This paper investigated the determinants that influence the quality of express service in China. Based on the SERVQUAL model, a 22-item service quality evaluation system for Chinese express service was developed. By factor analysis, we found that the express service quality evaluation comprises six determinants named tangibility, economy, empathy, security, timeliness and convenience. Moreover, we used regression analysis to explore the effects of those determinants on customer satisfaction and loyalty, found that the effects of empathy, economy and timeliness are significant, and empathy is the most significant one. The findings showed that due to the differing importance of the six determinants, Chinese express company should take customized strategy to enhance their service quality, neglect of any determinant will lead to a drop of their service quality.

## 1 INTRODUCTION

As basic public service, express delivery has become one of the most essential parts of people's daily life and consumption. Under the circumstances of E-commerce, China's express industry has entered in a high speed growth stage. According to the statistical bulletin of the State Post Bureau, China's express delivery handled over 1.4 billion packages in 2014, up 51.9% from a year earlier, and it is the first time that the volume of express delivery in China surpass the USA. A recent study by China e-Business Research Center has shown that 80% of the express business comes from the business-to-consumer (B2C) and consumer-to-consumer (C2C) transactions, definitely making e-commerce an essential driver of express delivery. As the scale of express industry increased more and more rapidly, a large number of domestic private express companies mushroomed in China, causing competition to turn white-hot (Zhuo et al., 2013), and exposed many serious problems in service quality, especially in E-commerce logistics.

Service quality is extremely important in the express industry as it affects customer satisfaction and loyalty (Kim et al., 2002). More and more companies realized the important of service quality

and its impact on the competition. Service quality has been widely investigated in many kinds of industry, among the methods used to measure service quality, the most widely used is the SERVQUAL. Parasuraman et al., (1985) suggested that service quality is the evaluation made by customer when they compared the expectations and performance of the received service, it was appropriate to calculate service quality by subtracting expected service from perceived service, and developed a 22-item SERVQUAL instrument (Parasuraman et al., 1988).

In Chinese express industry, existing research about service quality is mostly depended on SERVQUAL, based on the PZB evaluation scale, used factor analysis to get the determinants of express service quality. ZHU and MIAO (2011) applied the SERVQUAL instrument to express delivery, and made some improvements that adapted to the Chinese express industry. After the factor analysis, most researches focused on the measure of overall service quality by establishing a comprehensive evaluation model using the Analytic Hierarchy Process (AHP) and the fuzzy comprehensive evaluation (Ye et al., 2010; Sun et al., 2010; Li et al., 2011). But little research has explored the determinants separately and their impacts on customer satisfaction and loyalty, and it is essential to develop an effective method for exploring the impact of each dimension to customer

satisfaction and loyalty. The purpose of this study is to investigate service quality determinants in China and the effects of those determinants on customer satisfaction and loyalty.

## 2 METHODOLOGY

### 2.1 Questionnaire

The questionnaire was designed based on the evaluation scale of PZB, and made some improvements based on the characteristics of express industry. The questionnaire contains two parts, the basic information of the respondents and the evaluation scale of express delivery service quality.

The evaluation scale consists of 22 items, all items were worded in positive statements. In this questionnaire, the construct of each question was based on a 1-5 Likert scale with anchors ranging from "very agree" to "very disagree" with "agree", "neutral" and "disagree" in between. Moreover, those items in the questionnaire were discussed with experts and professors, and made some improvement on the narration.

The questionnaire issued through both online and offline. 540 questionnaires were sent and recovered 432 questionnaires. Table 1 shows demographic characteristics of the respondents. The age distribution of the respondents range from 18 to 40, it reflects that this age distribution is the target consumer group of express service. It should be noted that above 50% of them is university students. On one hand, it reflects the limitation of sampling, on the other hand, it means the university students is becoming the main customer group of express delivery service.

Table 1: Demographics of respondents.

|                       |                     |       |
|-----------------------|---------------------|-------|
| Gender                | Male                | 50.2% |
|                       | Female              | 49.8% |
| Age                   | 18-40 years old     | 84.7% |
|                       | >40 years old       | 12.6% |
| Education             | High school         | 19.3% |
|                       | Junior college      | 14.7% |
| Industry distribution | University or above | 65.9% |
|                       | Student             | 42.2% |
|                       | Other industry      | 51.4% |

### 2.2 Factor Analysis

This study used exploratory factor analysis to determine the express delivery service quality determinants. Firstly, to test the reliability of the data, the Coefficient Alpha is 0.942, greater than the cutoff value of 0.70; hence the questionnaire has good internal consistency and reliability. Then, to test the validity of the data, the Kaiser-Meyer-Olkin is 0.876, greater than the cutoff value of 0.70; and the p-value of Bartlett's Test of Sphericity is 0.000. Therefore, the questionnaire has good validity, and the data is suitable for factor analysis. To find the final express delivery service quality determinants, varimax rotation was used as it is a simple and efficient method commonly used. The results showed that after 7 times of iteration, it gives 6 factors, the variance contribution rate of each factor is 21.6%, 20.9%, 15.3%, 10.9%, 6.7%, 6.2%. Table 2 presents the rotated factor pattern of the six factors, with each factor with loadings higher than 0.500 in bold.

According to the result of the factor analysis, those 22 items was summarized to six factors, named of tangibility, economy, empathy, timeliness, security and convenience. 1) Tangibility refers to the display of physical evidences of express service, such as the corporate logo, the physical facilities and equipment. 2) Economy refers to the customer's perception to the price, such as whether the express fee is reasonable. 3) Empathy refers to the care and attention to individual customers that an express service company could provide. 4) Timeliness refers to the degree of ability to provide the service accurately and efficiently, time and responsiveness are the most important item for the express service company to enhance their service quality. 5) Security refers to the degree of ability to ensure the physical safety of customer and the packages, and the ability to convey trust and confidence by providing express service. 6) Convenience refers to the degree of convenience provided by the express service company, such as whether the company's distribution range or the service network is widely enough. Compared to the original SERVQUAL (Parasuraman et al., 1988), economy is an additional determinants of express delivery service quality in China, due to the white-hot price competition in China's express companies.

Table 2: Express delivery service quality factor structure (rotated factor pattern).

| Item  | Factor |      |      |      |      |      |
|---|--------|------|------|------|------|------|
|   | 1      | 2    | 3    | 4    | 5    | 6    |
| TA1:The company has obvious corporate logo on equipment and supplies      | 0.79   |      |      |      |      |      |
| TA2:The uniform of this express company is clean and tidy                 | 0.78   |      |      |      |      |      |
| TA3:The brand logo has very high identification                           | 0.78   |      |      |      |      |      |
| TA4:The places of business are clean and tidy                             | 0.72   |      |      |      |      |      |
| TA5:The transportation equipment and devices are very advanced            | 0.62   |      |      |      |      |      |
| EC1:The additional transportation fee is reasonable                       |        | 0.78 |      |      |      |      |
| EC2:The express fee is favorable compared with other competitor           |        | 0.78 |      |      |      |      |
| EC3:The additional charges to the packing material is reasonable          |        | 0.74 |      |      |      |      |
| EC4:The express fee is reasonable compared with the distribution distance |        | 0.72 |      |      |      |      |
| EC5:The return decimal price of the valuables is reasonable               |        | 0.63 |      |      |      |      |
| EM1:The staff can have good communication with customer                   |        |      | 0.82 |      |      |      |
| EM2:The attitude of the staff is very friendly                            |        |      | 0.81 |      |      |      |
| EM3:You will recommend this company to others                             |        |      | 0.65 |      |      |      |
| EM4:The company can handle the customer complaints very well              |        |      | 0.62 |      |      |      |
| T1: The company can deliver the packages to specified address.            |        |      |      | 0.80 |      |      |
| T2: The company can finish the deliver in specified time.                 |        |      |      | 0.79 |      |      |
| S1:You feel safe using this company to transport valuables                |        |      |      |      | 0.76 |      |
| S2:Your personal information can be well protected during the transaction |        |      |      |      | 0.73 |      |
| S3:The company can properly distribute the special goods                  |        |      |      |      | 0.68 |      |
| C1:The company's distribution range is very wide                          |        |      |      |      |      | 0.85 |
| C2:The company can be door-to-door pick-up                                |        |      |      |      |      | 0.76 |
| C3:The company's branches are widely distributed                          |        |      |      |      |      | 0.81 |

### 2.3 Regression Analysis

This study use regression analysis to explore the effects of determinants of the express service quality in China on customer satisfaction and loyalty. The multivariable linear regression model contains several independent variables, usually used to explore

the linear relationship between one dependent variable and several independent variables, and to make predictions based on the linear regression. In this study, we used the six determinants as independent variables, and the customer satisfaction and customer loyalty as the dependent variable respectively, built the multivariable linear regression model of express service quality. Through the

regression model, we could explore the effect of each determinant to customer satisfaction and loyalty. Before the regression analysis, we made normal test and anova test to make sure the data of the questionnaire was suitable for regression analysis, and the two regression models are as follows. Table 3 is the regression analysis result which the customer satisfaction is as the dependent variable. As we can see in table3, the economy, empathy and timeliness were significant to customer satisfaction, there Sig were all less than 0.05. While the other three determinants were not significant. In the end, the multivariable linear regression model for customer satisfaction can be described as:

$$\text{Customer Satisfaction} = -0.053 + 0.166 \times \text{economy} + 0.397 \times \text{empathy} + 0.26 \times \text{timeliness} \quad (1)$$

Through this regression model, we can find that the effect of empathy to customer satisfaction is the most significant determinant. Table 4 is the regression analysis result which the customer loyalty is as the dependent variable. As we can see in table4, the economy, empathy and timeliness were significant to customer loyalty, there Sig were all less than 0.05. While the other three determinants were not significant. In the end, the multivariable linear regression model for customer loyalty can be described as:

$$\text{Customer Loyalty} = -0.374 + 0.175 \times \text{economy} + 0.429 \times \text{empathy} + 0.203 \times \text{timeliness} \quad (2)$$

Through this regression model, we can find that the effect of empathy to customer loyalty is the most significant determinant.

### 3 CONCLUSION

This study investigates factors affecting express service quality in China. By factor analysis, six determinants were derived. Express service providers should take these six determinants derived in the current research as a whole set for express service quality assessment. Neglect of any factor will lower the service quality; which in return will be detrimental to the overall improvement of the express service quality in China. This study provides useful insights for the Chinese express company to assess express service quality and guidance to improve express service quality. According to this study, the new set of six determinants may be necessary to

adequately measure express service quality in china, and have provided a more focused and more manageable framework for understanding service quality of Chinese express industry.

This study also explored the effects of each factor derived from the factor analysis on customer satisfaction and loyalty by regression analysis. As we can see from the regression analysis results, the effect of empathy, economy and timeliness on both customer satisfaction and customer loyalty are significant, and the empathy is the most significant factor. On one hand, according to this result, the care and attention to individual customers affects customer satisfaction and loyalty the most, the express service company should pay more attention to the empathy factor in order to enhance their customer satisfaction and loyalty. Moreover, the price and the timeliness are also the important factors that could affect customer satisfaction and loyalty. On the other hand, the other three factors are not significant in the regression analysis, it doesn't mean there is no need to consider those factors while enhance customer satisfaction and loyalty. Because the homogenization competition of express company, and the standardized of express service industry, the difference of customer's perception to tangibility, security, and convenience is not so obvious among express companies. Therefore, due to the differing importance of the six determinants, express company should use different service enhancement strategy. Express companies should consider both their advantages and weak points, take customized strategy to improve the overall service quality.

There were some limitations in this study. First, data was collected from questionnaires that may have some individual biases. Second, in future research, the correlativity between customer satisfaction and customer loyalty should be further investigate. Finally, another worthwhile future research area is the evaluation and contrast of express service quality both in china and other countries.

### ACKNOWLEDGEMENTS

The authors acknowledge financial support from program "Intellisense third-party express logistics cloud service platform's research and application" (Grant No.2014BAH23F07).

Table 3: The regression analysis for customer satisfaction.

| Dependent Variable    | Independent Variable | R Square | Adjusted R Square | Constant | $\beta$ | T     | Sig   |
|-----------------------|----------------------|----------|-------------------|----------|---------|-------|-------|
| Customer satisfaction | economy              | 0.580    | 0.575             | -0.053   | 0.166   | 3.646 | 0.000 |
|                       | empathy              |          |                   |          | 0.397   | 7.480 | 0.000 |
|                       | timeliness           |          |                   |          | 0.264   | 6.188 | 0.000 |

Table 4: The regression analysis for customer loyalty.

| Dependent Variable | Independent Variable | R Square | Adjusted R Square | Constant | $\beta$ | T     | Sig   |
|--------------------|----------------------|----------|-------------------|----------|---------|-------|-------|
| Customer loyalty   | economy              | 0.427    | 0.319             | -0.374   | 0.175   | 2.511 | 0.012 |
|                    | empathy              |          |                   |          | 0.429   | 5.278 | 0.000 |
|                    | timeliness           |          |                   |          | 0.203   | 3.104 | 0.000 |

## REFERENCES

- Jun Zhuo, June Wei, Lai C. An examination of the determinants of service quality in the Chinese express industry [J]. *Electron Markets*, 2013, 23:163-172.
- Kim, J., Lee, J., Han, K., & Lee, M. Businesses as buildings: metrics for the architectural quality of Internet businesses [J]. *Information Systems Research*, 2002, 13(3), 239-254.
- Parasuraman A, Zeithaml V A, Berry L L. A conceptual model of service quality and its implications for future research [J]. *Journal of marketing*, 1985, 49(9):41-50.
- Parasuraman A, Zeithaml V A, Berry L L. SERVQUAL: A multiple item scale for measuring consumer perceptions of service quality [J]. *Journal of Retailing*, 1988, 64(1):12-40.
- Zhu Meihong, Miao Shengtao, ZHUO Jun. An Empirical Study on Chinese Express Industry with SERVQUAL [J]. *Science and Technology Management Research*, 2011, 38(8):38-45 (in Chinese).
- Ye Jing-ke, Yan Li, Yang De-hua. An Improved Study on the Evaluation Model about SERVQUAL of Express Delivery Companies Based on AHP [J]. *Logistics Engineering and Management*, 2010, 32(9):78-80 (in Chinese).
- Sun Jun-hua, Su Qiang, Huo Jia-zhen. The Construction and Fuzzy Comprehensive Evaluation of the Chinese Express Service Quality System [J]. *Industrial Engineering and Management*, 2010, 15(4):112-116 (in Chinese).
- LI Ye, Zeng Di-na. Quality Assessment of Privately-run Express Services Based on Fuzzy Comprehensive Evaluation [J]. *Logistics Technology*, 2011, 30(2):72-75 (in Chinese).