

Study on the Service Quality of Express Logistics Based on the Satisfaction of International Students

A Sample of Chinese Students Studying in South Korea

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Abstract—With the continuous deepening of international education exchange and cooperation, the number of Chinese students studying in South Korea is increasing. How to improve the satisfaction of overseas students is the hot spot that South Korean express logistics companies must pay attention to, and the perception of corporate image, reliability of customer expectations, and service responsiveness, value perception and security perception are the key factors to improve customer satisfaction. Based on the theory of customer satisfaction and service quality theory, this paper presents an evaluation index of express service quality based on the customer satisfaction of international students through interviews and questionnaire design. This article uses the principal component analysis method to obtain the evaluation index weights and evaluation matrix scores, and takes the example of campus express service quality for the Chinese students in South Korea to analyze the evaluation results and existing problems of the express delivery service.

Keywords—international students in South Korean; customer satisfaction; express service quality; principal component analysis

I. INTRODUCTION

According to statistics from the Ministry of Education and Human Resources of South Korea, only 321 international students studied in Korea in 1970 and 3963 in 2000. However, after 2000, the number of international students in South Korea accelerated at an average rate of around 40% per year. It reached 32.5 thousand in 2006, 80.985 thousand in 2009, and 87.48 thousand in 2010, and increased to 88.468 thousand in 2011. Since then, it declined slightly to 84.711 thousand in 2012, but it rebounded again in 2013. Up to 2017, there were 136,234 international students in South Korea. Among these students, 70.353 thousand are Chinese students, accounting for 51.77% of international students in South Korea. Therefore, the number of Chinese students studying South Korea ranks first among international students in South Korea. The number of Chinese students is huge, so its market cannot be ignored. The author takes Chinese students in South Korea as an example, and visits various express delivery outlets in and out of campus. Questionnaire survey is made on the satisfaction for delivery of Chinese students in South Korea through questionnaires to find out the crux of the problem

and the actual method to improve the delivery service according to the situation, allowing international students in Korea to enjoy better express services.

With the advent of e-commerce, South Korea's express delivery and logistics have continued to grow and develop with unstoppable momentum and have maintained rapid growth. Taking the Korean Post Office as an example, the number of express delivery services completed in 2016 was 218,446, an increase of 15.2% year-on-year, and the express delivery service revenue was 639.8 billion won. Among them, 9,386 Chinese international express mails were sent and 2,244 Chinese international express mails were received. At the same time, on June 1, 2015, the high-profile China-Korea Free Trade Agreement was formally signed. The scope of the agreement covered a total of 17 areas including goods trade, service trade, investment, and regulations. According to the agreement, China's express delivery companies will gain a lot of convenience in South Korea, including that Chinese express delivery companies can carry out various international courier services including air and sea freight in South Korea without setting up an office in South Korea and can carry out all domestic express delivery services except those business retained by Korea postal department according to the law, which provides great convenience for both Chinese students and overseas purchasing agents.

However, with the increasing number of international students in South Korea, more diverse express delivery needs, less efficiency of international express delivery, high costs, and special product delivery service demand issues, etc., it has caused many dissatisfaction and complaints from customers, hindering its better development to a large extent. To improve the ability and level of international student logistics services, and strengthen the management of logistics service quality, the correctly evaluation of the logistics service level of express delivery companies is the basis. This article intends to empirically analyze the service quality of express logistics companies and find the most significant key factors affecting customer satisfaction in the service of express companies, so that enterprises can rationally improve their service quality and capabilities on the basis of considering their current development status and take a good competitive position in the market.

II. CUSTOMER SATISFACTION AND SERVICE QUALITY

The concept of service quality was first proposed by the famous European scholar Gronroos. According to the basic theory of cognitive psychology, he proposed the concept of customer perceived service quality. He believed that the essence of service quality is a perception, which is decided by the comparison between the expectations for service quality of customer and actual service experience. American Scholar PZB (A. Parasuraman, Leonard L. Berry, and Valarie A. Zeithaml) defined service quality as a comparison between actual service performance perception and service expectation. He also pointed out that the level of service quality depends on the degree of difference between the customer's perception of service and the expectation of service in the service process and indicated that the customer evaluates the service quality mainly based on five types of service attributes such as tangibility, reliability, responsiveness, guarantee, and empathy. Based on the connotation of these five types of attributes, they designed the ancestor of the quantitative study of service quality—the SERVQUAL service quality measurement scale. However, with the deepening of research on the service quality by scholars, the drawbacks of the scale have slowly become prominent. Therefore, scholars began to question the reliability of the scale. When scholars use the SERVQUAL scale to conduct quantitative research on the service quality, they will modify the scale according to the characteristics of industry and the company, so that the study will be more meaningful.

Customer satisfaction is the difference between customer expectations and perceived effects. If perceived effects are lower than expectations, customers will be dissatisfied, whereas customers are satisfied. Customer satisfaction is an important criterion for evaluating the quality of products and services. Therefore, evaluation indicators for evaluating customer satisfaction have emerged. The Customer Satisfaction Index (CSI) is a quality indicator that reflects the general characteristics of social and economic output and performance based on the consumption of products and services and its process. At present, the evaluation of customer satisfaction index in major countries or regions includes the US customer satisfaction index ACSI model (including customer expectations, customer perception of quality, customer perception of value, customer satisfaction, customer complaints, customer loyalty), Swedish customer satisfaction index SWICS Model (including customer expectations, customer perception, customer needs, customer value, customer satisfaction, customer complaints, and customer loyalty). Based on the above analysis, it can be seen that the SERVQUAL scale is analyzed from five aspects: tangibility, reliability, responsiveness, safety, and empathy. However, practical research shows that SERVQUAL is not a panacea. Combining with the specific analysis of different industries, this article intends to build a service quality study based on customer satisfaction combining with SERVQUAL scale from the influencing factors of customer satisfaction.

III. INFLUENCING FACTORS OF EXPRESS SERVICE QUALITY BASED ON CUSTOMER SATISFACTION

According to the Ministry of Land and Resources of South Korea, from 2016 onwards, South Korea conducts an all-round evaluation of the service levels of domestic logistics and express delivery companies, and the evaluation results will be publicized nationwide. The content of service evaluation includes the company's credit, affinity, satisfaction, and corporate environment. This also makes up for the blank of law and regulations in Korean for evaluation of logistics and courier services. Today, it will evaluate the service standardization of enterprises at the government level and legal level. This article plans to analyze the factors affecting the express service quality from several aspects based on customer satisfaction.

A. Corporate Image

The corporate image is the abstract reaction in the customer's mind when dealing with the express delivery personnel. It is the customer's subjective impression of the company and the decision of whether the customer determines to consume the service of the company. The tangible indicators in SERVQUAL reflect the corporate image. Whether the service facilities are advanced (such as advanced facilities, support for credit cards, mobile phones, Internet payment orders, etc.), whether the service facilities have clear corporate logos, whether employees have costumes with the organization logos, and whether employees' attitudes are good have important influence on corporate image.

B. Reliability for Customer Expectation

The customer's service expectation refers to the customer's psychological expectation for the quality of delivery service that they will obtain. The customer's expectations are complex, which can accurately reflect the current quality. If the customer's expectations for this service are low, it is difficult for the customer to obtain a greater degree of satisfaction. That is to say, the customer expectation for the product or service is always accompanied by satisfaction. Customer service quality is the result of comparison between actual service performance perception and service expectation. Therefore, achieving customer expectation value has an important impact on customer satisfaction. Customer expectations can be measured in the following aspects: correct recording of related services, timely provision of required services, and timely completion of commitments by companies and timely assistance when customers encounter difficulties.

C. The Perception of Service Responsiveness

The perception of service responsiveness refers to the customer's perception of whether the service provided by the enterprise is prompt and timely. The service responsiveness requires the service provider to quickly and professionally handle the customer's questions, consultation and service. Making the customer wait too long, especially unreasonable wait will have a negative impact on customer service perception. With the development of economy and

advancement of information, customers have higher and higher requirements for service delivery of express delivery companies. At the same time, there are also some special service requirements in terms of time, such as time-definite express delivery, and urgent delivery service, etc. The individual needs of customers can strengthen customer satisfaction. The perception of service response can be evaluated by the following aspects: rapid processing of orders, handling of errors and customer complaints, timely response to customer questions, timely delivery of logistics information, timely delivery of goods, and customer home service.

D. Value Perception

Price is one of the key factors of enterprise service marketing mix. Consumers always want the lower the price. If the price is too low to guarantee the customer's expected quality of service, customer satisfaction is not high. In considering the price, first we should consider the cost performance of providing delivery services, namely the cost performance between the quality of express delivery services and the fees paid. Customers are willing to pay a higher fee for enjoying quality services. The second is whether the price is reasonable when the quality of service is not different from that of the other companies in the industry. The following indicators can be used to measure the perceived value of the quality of express service: whether the price is reasonable compared with that of the other companies in the industry, whether the quality of service is worth the cost, whether the payment is invoiced, and whether the price is transparent and fair.

E. Safety Perception

Security has two meanings. First, goods can be delivered to customers in a safe manner. Another aspect is that employees' behavior can enhance the customer's confidence in the company, and customers can feel that the company's services are safe. Safety perception can be evaluated by the following indicators: the reasonable encapsulation of goods playing a protective role, no damage or loss of the goods in transit, reasonable and prompt compensation for the loss and damage of goods, and the company never disclosing personal information and so on.

IV. EVALUATION INDICATORS AND THE ANALYSIS

According to the above analysis, this paper establishes the evaluation index. In order to ensure the validity of the questionnaire, the questionnaire is predicted and tested in a small scope. The reliability, validity and factor rotation analysis of the questionnaire are carried out to remove some undesirable indicators and determine the final questionnaire indicators, including: enterprise image, advancement of service (equipment, payment and order form); whether the service facility have a clear corporate identity, whether the employees have costume with organizational logos; whether the service attitude of staff is good or not. Reliability of Customer Expectation: The document bills are filled in correctly and in detail; the required services are provided on time; the company can complete the promised things in a

timely manner; and they can provide timely help when customers encounter difficulties. Perception of service responsiveness: whether order processing is fast; goods are delivered on time; goods are delivered on holiday as usual; whether on-site service is provided. Price perception: whether the charge is reasonable compared with the peers; whether the service quality is worth the required cost; whether the paid fee has an invoice; and whether the price is transparent and fair. Security perception: The goods are packaged properly to protect them; the goods are not damaged or lost in transit; the compensation for the lost and damaged goods is reasonable and prompt; the company will not disclose personal information.

V. ANALYSIS OF EVALUATION RESULTS

A. Analysis of Evaluation Index Weights

This paper uses SPSS data processing software to calculate the model by using the principal component analysis method. First, the principal component analysis method is used to measure the weight of the evaluation index.

1) *Test on sample reliability:* Reliability, also known as credibility, reflects the degree of consistency in the results obtained when repeating measurements on the same thing. Cronbach's reliability coefficient is the most commonly used reliability coefficient at present. It is better that reliability coefficient of the total scale is over 0.8 and it is acceptable in 0.7-0.8. It is better that the reliability coefficient of the subscale is over 0.7 and it is acceptable in 0.6-0.7. If Cronbach's alpha coefficient is below 0.6, we should consider reorganizing the questionnaire.

2) *Validity analysis:* Validity analysis, also known as efficiency analysis, refers to the matching degree between the results obtained with a measurement scale or other relevant evaluation method and the expected goal. There are two main methods for making validity analysis: One is the Kaiser-Meyer-Olkin test. It is generally used to compare the value of the simple correlation coefficient and partial correlation coefficient between the variables. The value of KMO is generally between 0-1. The closer the value is to 1, the more suitable it is for factor analysis, and if KMO is less than 0.5, it is not suitable for factor analysis.

In this article, the KMO is greater than 0.5 and can be used to carry out factor analysis in "Table I" and "Table II".

TABLE I. RELIABILITY STATISTICS

Cronbach's Alpha	number of items
.936	25

TABLE II. KMO AND BARTLETT TEST

Sample a sufficient Kaiser-Meyer-Olkin metric.	.929
approximate chi-square	2787.968
sphericity test of Bartlett	df 190
	Sig. .000

From the above reliability and validity analysis, it can be obtained that this evaluation index is available.

3) *Processing results of the data for evaluation index importance:* The results of explained variance and the principal component score are shown in "Table III" and "Table IV":

TABLE III. EXPLAINED TOTAL VARIANCE

component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	total	% of variance	accumulated %	total	% of variance	accumulated %	total	% of variance	accumulated %
1	9.125	45.624	45.624	9.125	45.624	45.624	3.070	15.348	15.348
2	1.744	8.719	54.343	1.744	8.719	54.343	3.017	15.083	30.431
3	1.644	8.222	62.566	1.644	8.222	62.566	2.969	14.845	45.276
4	1.202	6.011	68.577	1.202	6.011	68.577	2.903	14.516	59.792
5	1.091	5.453	74.030	1.091	5.453	74.030	2.847	14.237	74.030

^a Extraction method: Principal component analysis.

TABLE IV. COMPONENT SCORE COEFFICIENT MATRIX

	component				
	1	2	3	4	5
1. Is the express company advanced in equipment, payment and ordering services? Q6	-0.20	-0.091	-0.115	-0.092	.472
2. Do express service facilities have a clear corporate identity? Q7	-0.33	-0.039	-0.076	-0.030	.354
3. The service personnel of the express company has the uniform with organization logo? Q8	.001	-0.085	-0.062	-0.035	.354
4. Is the service attitude of the express company staff good? Q9	-0.091	.021	-0.021	-0.062	.324
5. Is the delivery document filled complete, detailed and correct? Q10	-0.051	.352	-0.019	-0.059	-0.060
6. Provide the express service you need on time? Q11	-0.058	.358	.033	.022	-.193
7. The express company can complete the promised things in time? Q12	-0.020	.371	-0.070	-0.087	-0.034
8. When you encounter any difficulties, can it provide timely help? Q13	-0.026	.369	-0.051	-0.162	.032
9. Is order processed very fast? Q14	.027	-0.027	-0.055	.324	-0.091
10. Can express delivery be delivered on time? Q15	-0.025	-0.082	-0.040	.345	-0.026
11. Can it deliver goods on holidays as usual? Q16	-0.076	-0.064	-0.027	.411	-0.094
12. Can it provide on-site service? Q17	-0.051	-0.105	-0.080	.424	-0.034
13. Compared with peers, are the fees more reasonable? Q18	.322	.002	-0.098	-0.097	.053
14. Does the quality of service provided match the cost required? Q19	.345	-0.051	-0.005	-0.031	-0.094
15. The fee paid has an invoice voucher? Q20	.330	-0.089	-0.075	-0.008	.009
16. The price of express delivery is transparent and fair? Q21	.354	-0.022	-0.022	-0.053	-0.093
17. Is the cargo sealed reasonably to play the protection role? Q22	-0.059	-0.041	.324	-0.032	-0.022
18. Is the goods damaged or lost in transit? Q23	-0.064	-0.057	.354	-0.061	-0.008
19. Is the compensation for damage and lost goods reasonable and quick? Q24	-0.059	-0.028	.377	.022	-.148
20. Will the courier company disclose personal information? Q25	.006	.000	.413	-.121	-.137

^b Extraction method: principal components

Rotation method: Inclined rotation method with Varimax standardization.

Composition score

According to the factor score model, the principal component synthesis model is obtained by multiplying the corresponding coefficient of each principal component by the explained variance of the corresponding principal component and dividing by the cumulative explained variance, and then the weight corresponding to each index can be obtained. After the normalization processing, the weight sets are:

Weight sets $W=(0.016 \ 0.019 \ 0.019 \ 0.019 \ 0.029 \ 0.030 \ 0.029 \ 0.029 \ 0.031 \ 0.029 \ 0.025 \ 0.026 \ 0.164 \ 0.151 \ 0.148 \ 0.153 \ 0.021 \ 0.021 \ 0.020)$

B. Analysis of Evaluation Indicators Score

This article takes the express logistics service quality based on foreign student's satisfaction as an example to investigate and research. There are 224 valid questionnaires. The target of the investigation is Chinese students studying

in South Korea. The same as above, the principal component analysis and the evaluation index scores are also analyzed by the principal component analysis method, and the Cronbach's alpha coefficient value is 0.936, KMO=0.929. The data is valid, and the principal component analysis is performed according to the evaluation score data to obtain five principal components. The principal component evaluation matrix R is obtained based on the principal component factor score. The weighted evaluation matrix after normalization is multiplied by the evaluation grade matrix to obtain the final evaluation result of the quality of Korean express service.

VI. CONCLUSION

According to the above analysis, the overall response of the survey is that the quality of Korean express delivery service is satisfactory for students studying in Korea. The reason is that the quality of express service in economically

developed countries continues to increase as customer requirements increase. Through survey interviews we get the following points:

- Comparison of corporate image: South Korean express delivery companies pay more attention to corporate image, employee services, and logistics equipment, etc. have obvious signs. In particular, the service of express delivery staff can better meet the diverse needs of international students, with high international service level.
- The perception of customer expectation reliability and service responsiveness: This survey shows that there is no significant difference between various express delivery companies in South Korea. This shows that with the intensified market competition, all major express companies should strengthen the characteristic development and services for different groups, to better and faster meet the needs of express delivery services of foreign students in South Korea.
- Comparison of value perception: Price is a relatively sensitive factor for consumers. For international students, on the one hand, the high cost of express delivery has always been the crux of international students' hesitation in choosing international express delivery. Many international students prefer to carry them by themselves or choose cheaper shipping methods. On the other hand, international express delivery is a long-distance express delivery service and it takes a long time. Express delivery from South Korea to China generally took 4-5 days, and delivery time from China to South Korea is 6-8 days, while the price of express delivery from China to South Korea was slightly higher. Therefore, price and express delivery efficiency are still the core issues that need to be solved in the future.
- Safety perception: The survey questionnaire showed that consumers are deeply impressed by the problems that a service had in terms of safety and it will affect the choice of the express service providers behind it. Safety evaluation scores are also reflected in Korean express companies. There are many options in South Korea's express delivery industry. Ten service satisfactions do not necessarily result in customer loyalty while one dissatisfying experience will make customers move to other service providers, so the express delivery companies still need to pay attention to the negative impact of safety on customer satisfaction.

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