

Research on Improving Service Quality of Logistics Enterprises Based on KANO Model

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Abstract. Based on KANO model and relevant theory, employing interview method and questionnaire survey method, this paper analyzed and classified the influencing factors of service quality of logistics enterprises, and ranked the importance of each influencing factor by calculating the better coefficient of each influencing factor. It was found that customers believe that door-to-door pick-up, online self-service, goods delivery timeliness, cargo safety and convenient payment mode are the Must-be Quality of logistics services. Good service attitude, professionalism of staff and humanized complaint procedure complaint procedures are the One-dimensional Quality. Personalized service and comprehensive after-sales are provided as Attractive Quality. Good office environment and uniform dress of employees are the Indifferent Quality. To improve the service quality of logistics enterprises, it is necessary for enterprises to realize the One-dimensional Quality and develop the Attractive Quality on the basis of improving the basic attributes. It is necessary to focus on customer needs and to develop personalized and intelligent.

1. Introduction

With the rapid development of e-commerce, logistics industry has become a new type of modern service industry, which helps to optimize and upgrade industrial structure, improve transaction efficiency and promote employment. It plays an important role in economic development. However, the formulation of industry-related personnel quality, service system, relevant laws and regulations and normative systems did not keep up with the rapid development of the logistics industry, so the quality of service in the logistics industry has been criticized. The service quality of the logistics industry will not only affect the development of its own industry, but also affect the e-commerce industry by affecting customer satisfaction. Therefore, it is very helpful for logistics industry to explore the influencing factors of service quality of logistics enterprises and their influence on customer satisfaction to optimize and improve service quality.

2. Questionnaire design and survey

2.1 Questionnaire design

In order to improve the validity and practical significance of the questionnaire, brief and open interviews were conducted with relevant personnel in the logistics industry before designing the questionnaire. The interviewees included 10 staff members who have worked in the logistics industry for more than five years, 5 e-commerce practitioners and 15 customers. The interview content mainly involved the important service items of logistics industry, the service contents that need to be improved and the types of services that are expected to increase. According to the frequency of the interviews, the evaluation indicators of service quality were determined, and the factors that appear more than 10 times in the interviews were retained. Finally, 12 influencing factors were obtained.

Based on the theory of Kano model and the influencing factors of service quality obtained in interviews, a questionnaire of 24 questions was obtained by doing positive and negative questions for each influencing factor. Questionnaire options are divided into five levels, in order to understand the positive and negative attitudes of customers towards each influencing factor of service quality.

2.2 Questionnaire survey

The questionnaire was randomly distributed through the questionnaire star. A total of 274 questionnaires were collected, and the questionnaires with incomplete and obvious errors were excluded. 245 copies were retained, and the effective rate was 89.42%. In this survey sample, 46.28% were males and 53.72% were females. The ages were between 21-30 years old, but other age groups were also distributed. The respondents were both representative and comprehensive.

3. Confirm the attributes of the service

3.1 Definition of theoretical attributes

According to KANO model, the characteristics of product quality and service that affect customer satisfaction can be divided into five categories: Must-be Quality (M), One-dimensional Quality (O), Attractive Quality (A), Indifferent Quality and Reverse Quality (R).

According to the theory of the KANO model, the respondents' responses were defined as the attributes shown in Table 1. Among them, Q represents the questionable, self-contradictory answer. The answers to both positive and negative questions derived from each service quality factor in each questionnaire can be defined an attribute in six dimensions (Must-be Quality, One-dimensional Quality, Attractive Quality, Indifferent Quality, Reverse Quality, Questionable result).

Table1. Classification of Service Quality Attributes

question		negative question(Reaction when this service is not provided)				
		satisfaction	reasonable	indifferent	tolerable	unsatisfactory
Positive question (Reaction when providing this service)	satisfaction	Q	A	A	A	O
	reasonable	R	I	I	I	M
	indifferent	R	I	I	I	M
	tolerable	R	I	I	I	M
	unsatisfactory	R	R	R	R	Q

3.2 Statistics and analysis

The SPSS22.0 data analysis software was used to cross-analyze the respondents' positive and negative answers of each factor. Then the data of 12 influencing factors of service quality are analyzed by attribute statistics. The statistical results are shown in Table 2.

Table2. Summary of statistical results

Code	Service	ttribute statistics					
		A	O	I	M	R	Q
X1	door-to-door pick-up	55	46	32	112	0	0
X2	online self-service	57	49	37	102	0	0
X3	goods delivery timeliness	54	61	42	88	0	0
X4	cargo safety	58	55	36	96	0	0
X5	Personalized service	95	64	49	37	0	0
X6	convenient payment mode	54	51	48	92	0	0
X7	good service attitude	47	89	53	56	0	0
X8	professionalism of staff	49	93	45	58	0	0
X9	humanized Complaint Procedure	46	86	48	65	0	0
X10	good office environment	51	47	90	56	1	0
X11	uniform dress	50	44	93	55	3	0
X12	comprehensive after-sales	106	53	39	47	0	0

According to the statistical results in Table 2, it can be determined that the dimension with the largest number of statistics is the final attribute attribution of this factor. So there are five Must-be Quality, three One-dimensional Quality, two Attractive Quality and two Indifferent Quality. There are no Reverse Quality and no problem answers. The results are shown in Table 3.

Table3. Attribute results of influencing factors of service quality

Attributes	Code of Quality of Service Influencing Factors
Must-be Quality(M)	X1,X2,X3,X4,X6
One-dimensional Quality(O)	X7,X8,X9
Attractive Quality(A)	X5,X12
Indifferent Quality(I)	X10,X11
Reverse Quality(R)	0

4. Service prioritization

According to the in-depth study of the Kano model by Matzler and Hinterhuber, it is proposed that the importance order of each factor can be determined by the Better-Worse coefficient of each element.

$$\text{Better} = \frac{A+O}{M+O+A+I}, \text{ Worse} = \frac{O+M}{M+O+A+I} \quad (1)$$

The Better coefficient means the satisfaction coefficient after a certain service quality is increased. The greater the value of the Better coefficient of a certain service, the faster the customer satisfaction is improved when the service room is perfected, and the more effective the service quality improvement. The Worse coefficient means the dissatisfaction coefficient after elimination. Because all the service functions mentioned above are added or optimized, Better coefficient is used to express the importance of each service function and its contribution to improving service quality. The Better coefficients of service quality influencing factors in Table 2 are calculated and sorted to obtain the results as shown in Table 4.

From the Better coefficient of each service, logistics service enterprises should gradually optimize each service according to its priority on the basis of ensuring that the Must-be Quality attribute services are optimized. In the case of funds permitting, priority should be given to optimizing Personalized Service and Comprehensive After-sales, which belong to Attractive Quality attributes, in order to rapidly improve service quality and customer satisfaction in the short term, and thus improve customer loyalty. As for the services of Indifferent Quality attributes, such as good office environment and uniform dress, due to their relatively low contribution to service quality, they cannot be regarded as the scope of urgent optimization. If funds are not allowed, the optimization time of these two services can be moved back.

Table4. Better coefficient of service quality influencing factors

Service	KANO attribute	Better coefficient
X5 Personalized service	A	0.65
X12 comprehensive after-sales	A	0.65
X8 professionalism of staff	O	0.58
X7 good service attitude	O	0.56
X9 humanized Complaint Procedure	O	0.54
X3 goods delivery timeliness	M	0.47
X4 cargo safety	M	0.46
X2 online self-service	M	0.43
X6 convenient payment mode	M	0.43
X1 door-to-door pick-up	M	0.41
X10 good office environment	I	0.40
X11 uniform dress	I	0.39

5. Summary

The study found that the 12 major factors affecting the quality of service in the logistics industry, which are considered by practitioners and customers, belong to four different KANO attributes, and

there are differences in the contribution of each service function to improving service quality and customer satisfaction. Enterprises should optimize these service functions in sequence according to the attributes of each service and its contribution to service quality.

- Must-be Quality, such as door-to-door pick-up, online self-service, goods delivery timeliness, cargo safety and convenient payment mode, are essential services for enterprises and should be preferred to improve.
- One-dimensional Quality, such as professionalism of staff, good service attitude, humanized Complaint Procedure, belongs to the expected service. This kind of service is an invisible service attached to Must-be Quality, which is of great significance to improve the quality of service.
- Attractive Quality includes personalized service and comprehensive after-sales. If enterprises increase or upgrade such services, it will generate great attraction and quickly improve customer satisfaction.
- Indifferent Quality includes good office environment and uniform dress. This kind of service project has less customer perception and does not have to invest a lot of money to optimize, and can be improved after other services are perfected.

For these four types, the logistics companies at the beginning of the establishment should give priority to Must-be Quality, followed by One-dimensional Quality, then Attractive Quality, and finally Indifferent Quality. For developing logistics service enterprises, priority should be given to optimizing those services that contribute more to improving service quality and customer satisfaction.

From the contribution to the satisfaction of logistics services, the contribution of various services is quite different. The service belonging to the Attractive Quality has a great influence on the improvement of customer satisfaction, but the office environment of logistics enterprises and whether employees uniformly dress customers are not particularly concerned. Therefore, when improving customer satisfaction and service quality, enterprises should give priority to improving service items with higher Better coefficient on the basis of ensuring that Must-be Quality service quality has met the requirements, so as to improve service quality purposefully in a short time with minimum cost. This will conducive to the rapid and stable development of logistics service industry.

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