Comprehensive Evaluation on Service Quality of High-speed Rail Express

Zhaojun Dong[1*], Wenge Liu[1], Jing Yang[1], Jingwei Ren[2]

[*]dr190131@foxmail.com

[1]School of Economics and Management, Dalian Jiaotong University
[2]Faculty of Education, Shandong Normal University

Abstract.—China 's railway and logistics industry has developed rapidly in recent years. Under this background, high-speed rail express projects have emerged and developed rapidly. It is necessary to carry out targeted service quality evaluation. Combined with this background and the development needs of high-speed rail express, on the original five dimensions of the SERVQUAL model, two dimensions of economy and informativeness are added to construct a high-speed rail express service quality evaluation system including multiple dimensions and indexes. Combined with the expert scoring method, the analytic hierarchy process is used to calculate the weight and conduct a consistency check to quantitatively analyze the importance of each index in each dimension. Based on the SERVQUAL model, a questionnaire was issued to Chinese high-speed rail express users to conduct an empirical analysis of their service quality. Based on the research results, users are satisfied with the high-speed rail express as a whole, but they are dissatisfied with the economy, empathy, informativeness and tangibility. This paper analyzes the causes of the problems and gives corresponding suggestions.

Keywords: High-speed rail express; service quality; SERVQUAL; analytic hierarchy process

1. Introduction

Since the 1980 s, China 's railway industry has developed rapidly.High-speed railway will be the main field of global railway development in the future[1][2]. Compared with other modes of transportation, railway transportation has the characteristics of large volume, fast speed and low cost, which supports the rapid development of regional economy[3]. According to statistics, the length of China 's railway transportation lines has been 146,300 kilometers, high-speed railway accounts for 25.9 % of the total operating mileage, operating mileage reached 379.29 million kilometers, accounting for about 70 % of the total mileage of the global high-speed rail, the population of more than one million city coverage has exceeded 95 %[4]. At the same time, with the rapid rise of e-commerce, the logistics industry has also developed rapidly[5][6]. In five years, China 's express delivery business volume has increased from 31.3 billion to 83.4 billion, and the total revenue of express delivery business has increased from 397.4 billion to 879.5 billion[7]. The market scale of express delivery business is expanding, and the demand for transportation industry is also in a stable stage of improvement[7]. Therefore, enterprises and individuals have higher and higher requirements

MSEA 2023, May 26-28, Nanjing, People's Republic of China

DOI 10.4108/eai.26-5-2023.2334478

for the corresponding business. Service quality will directly affect the overall development of high-speed rail express. The establishment of a targeted evaluation system and method is helpful to objectively evaluate the service quality, propose optimization schemes, and improve the service quality, which is conducive to the further development of high-speed rail express[8].

A Parasuraman et al. (1988) designed the SERVQUAL service quality evaluation model based on the existing TQM theory (total quality management theory)[9][10]. Parasuraman et al.divided service quality into tangibles, reliability, responsiveness, security, and empathy, and used this as an evaluation method for service quality related research[11]. L Eboli (2012) used the multi-level fuzzy evaluation model to establish a three-level evaluation index system for service quality, which can clarify the weight of each factor affecting user satisfaction[12]. J Yang (2006) conducted an earlier study on the evaluation system of railway freight service quality in China. In addition to the five factors commonly used in the PZB model, customer marketing and customer quality expenditure were added as new dimensions[13].G Gu et al. also believe that the service quality evaluation dimension of railway freight transportation should include more than five aspects and add additional dimensions[14].

Although these scholars have studied the evaluation methods of service quality or the evaluation of railway freight service quality, they have not studied the related research of high-speed rail express, and lack more comprehensive evaluation indicators. Based on the service content and customer perception of high-speed rail express, this paper improves the SERVQUAL model, adds two dimensions and determines more comprehensive evaluation indexes. The weight of the index is calculated by combining the expert scoring method and the AHP analytic hierarchy process. Finally, using the established system and evaluation method, 100 survey papers were issued and data were processed to comprehensively evaluate the service quality of China 's high-speed rail express, analyze the defects and causes, and make suggestions for improving the service quality of high-speed rail express.

2. Service quality evaluation system

2.1. Construction of evaluation system

The SERVQUAL method is the abbreviation of ' Service Quality '. It is a service quality evaluation model designed by A Parasuraman et al.at the end of the last century based on the existing TQM theory (total quality management theory). SERVQUAL can evaluate service quality comprehensively and easily[15].This method divides service quality into five different levels, namely : tangibility, reliability, responsiveness, security and empathy. Further indicators are selected according to these five dimensions. So far, the SERVQUAL method has become a more classic service quality evaluation model, and has been applied to the service quality evaluation of many industries, so this method is selected as the main evaluation method of this paper.

Because the operation of high-speed rail express is closer to the logistics field, economy and informativeness are also the focus of judging the quality of service. Therefore, based on the SERVQUAL model, combined with the characteristics of the logistics field,the two additional dimensions are added.

Economy : In the logistics industry, economy is the key consideration object for customers to use and evaluate services. It refers to the cost consumed and paid by customers in the whole process, involving price structure, transportation cost, claim amount and other issues.

Informativeness : Informativeness is a further extension of responsiveness and is amplified in the logistics process. In the high-speed rail express, it refers to the informativeness of transportation, the acceptance of transportation information and the query of related information.

Based on the seven dimensions of timeliness, reliability, responsiveness, economy, empathy, informativeness and tangibility, the model is established as shown in Figure 1 :

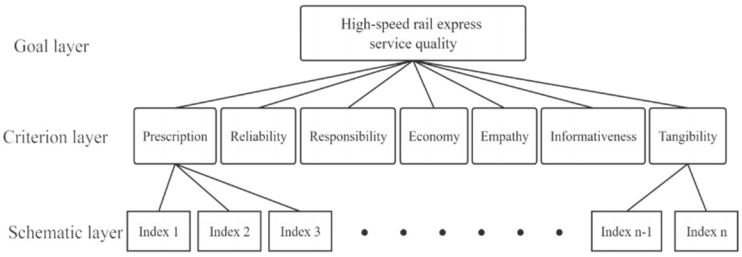

Figure 1. Service quality evaluation system model diagram.

2.2. Selection of evaluation indicators

In order to accurately find out the relevant indicators that affect the service quality of high-speed rail express, this paper first uses the literature collection method, that is, the academic database, to sort out the research on the service quality of the express field and the logistics industry, and through the group discussion, the evaluation indicators in the relevant literature are discussed and analyzed, and the collected evaluation indicators are screened and supplemented to form a preliminary high-speed rail express service quality evaluation index.

The preliminary evaluation indicators obtained by consulting data and group discussions still lack certain professionalism and practicality, and further screening is needed. Therefore, through interviews with experts engaged in logistics research and relevant leaders of enterprises with express experience, the indicators were further screened.

After preliminary selection and secondary screening, the final indicators and corresponding dimensions are as follows in Table 1.

Table 1. Selected dimensions and index table.

Dimension	Number	Index
A_1. Prescription	B1	Can be delivered in a short time
	B2	Business process is convenient and time-saving
	B3	After appointment, pick up and issue in time
	B4	Update order information timely
A_2. Reliability	B5	Can complete the agreed service within the promised time
	B6	Ensure the safety of transport goods, low loss
	B7	Strict confidentiality of customer and express information

	B8	To express the charge standard and strictly enforce it
	B9	The coverage of transportation interval is large
	B10	A wide variety of goods are carried
A_3. Responsibility	B11	Can handle customer complaints in a timely manner
	B12	Perfect accident compensation mechanism
	B13	Convenient cargo transfer
	B14	Complaint channels and feedback mechanism perfect
	B15	Handle and query business timely
A_4. Economy	B16	Price transparency, reasonable fees
	B17	The transportation cost is low
	B18	Insurance claims price justice
	B19	Value-added services required low fees
A_5. Empathy	B20	Staff service attitude enthusiasm
	B21	Provide personalized service
	B22	Be able to understand customer needs.
	B23	Focus on customer interests
	B24	Various payment methods
A_6. Informativeness	B25	Query order location and status at any time
	B26	The information platform is reasonable in design and convenient in use.
	B27	Transportation information and data are perfect and updated in real time
	B28	Convenient freight line query
	B29	High degree of electronic document credentials
A_7. Tangibility	B30	Office park facilities, clean and comfortable
	B31	Transportation packaging is unified and safe
	B32	Staff dressed decent, dignified mental outlook
	B33	Goods station layout is reasonable, storage safety
	B34	Advanced transport trains, handling facilities

3. Index weight and its importance analysis

Through the Delphi method, scores can be assigned to each indicator as the basis for quantitative analysis. Through expert scoring, the required scale in the analytic hierarchy process proposed by T Satty can be determined. Combined with AHP method, qualitative problems can be quantitatively analyzed. By transforming complex problems into multi-level models and quantitatively describing them, the weight of SERVQUAL model is calculated in this paper.

3.1. Index importance score based on Delphi method

By processing the selected dimensions and the indicators involved, the importance score questionnaire was designed, and experts and relevant practitioners in the field were selected for distribution. The questionnaires were distributed to 15 experts and 13 were collected. The effective recovery rate is 80 % : The importance scores of each index obtained from the expert scoring results are shown in Table 2 :

Table 2. The importance score table of each index.

Number	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Score	57	52	44	45	52	54	49	53	58	54	55	57	43	51	43

B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30	B31	B32	B33	B34
55	57	43	51	43	58	54	53	49	54	52	45	44	52	54	57	44	45	52

3.2. Dimension weight calculation based on analytic hierarchy process

- Organize the collected data statistics.

According to the obtained data, the importance scores of each index are shown in Table 3 :

Table 3. Each dimension score table.

Dimension	A1	A2	A3	A4	A5	A6	A7
Score	49.5	53.33	49.8	47.75	44	50.4	45.8

Combining the importance scores of each dimension, consulting some of the experts surveyed, and comparing their importance in pairs, the dimension importance is given a scale of 1-9, and a 7-order judgment matrix is constructed. The results are shown in Table 4 :

Table 4. Judgment matrix table of dimensions.

	A1	A2	A3	A4	A5	A6	A7
A1	1	0.2	0.5	2	5	0.333	4
A2	5	1	4	6	9	3	8
A3	2	0.25	1	3	6	0.5	5
A4	0.5	0.167	0.333	1	4	0.25	3
A5	0.2	0.111	0.25	0.25	1	0.143	0.5
A6	3	0.333	2	4	7	1	6
A7	0.25	0.125	0.2	0.333	2	0.167	1

- According to the analytic hierarchy process, the weight of each dimension is calculated.

Using the square root method to calculate the weight of each dimension.

$$\overline{w_i} = \sqrt[m]{\prod_{j=1}^{m} a_{ij}} \tag{1}$$

$$w_i = \frac{\overline{w_i}}{\sum_{j=1}^{n} \overline{w_j}} \tag{2}$$

The computation is shown in Table 5.

Table 5. The Eigenvector of each dimension.

Dimension	A1	A2	A3	A4	A5	A6	A7
Eigenvector	1.042	4.271	1.56	0.701	0.253	2.296	0.354

Normalize the feature vector，calculate the weight.The computation is shown in Table 6.

Table 6. The Weight of each dimension.

Dimension	A1	A2	A3	A4	A5	A6	A7
Weight(%)	9.946	40.766	14.892	6.693	2.414	21.912	3.377

- Consistency check

The maximum eigenvalue is obtained according to the weight matrix.λ_{max} =7.309.

$$C.I. = \frac{\lambda_{max} - n}{n-1} = 0.0515 \quad (3)$$

The average random consistency index of 1000 times was calculated according to the order of 1 to 15 as shown in Table 7[16].

Table 7. Random consistency index.

Order	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
R.I	0	0	0.52	0.89	1.12	1.26	1.36	1.41	1.46	1.49	1.52	1.54	1.56	1.58	1.59

In this paper, the dimension matrix is seven order, and R.I = 1.36 is selected to substitute the formula : $C.R. = C.I./R.I. = 0.0515/1.36$ =0.03787<0.1, so the consistency test passed.

3.3. Index weight calculation based on analytic hierarchy process

Through the return visit with some questionnaire experts, combined with the index importance score, the importance of each two is compared, and the index importance score is given a scale. According to the results, the scale judgment matrix is generated and the calculation and consistency test are carried out. The calculation method and rules are the same as those in the previous part.

- Prescription

The matrix is shown in Table 8.

Table 8. The matrix of Prescription.

A1	B1	B2	B3	B4	*w*(%)
B1	1	3	7	6	57.36
B2	0.333	1	5	4	27.51
B3	0.143	0.2	1	0.5	5.92
B4	0.167	0.25	2	1	9.2

λ_{max} =4.099，$C.R.$ =0.037<0.1

- Reliability

The matrix is shown in Table 9.

Table 9. The matrix of Reliability.

A2	B5	B6	B7	B8	B9	B10	*w*(%)
B5	1	0.333	4	0.5	0.2	0.5	8.08
B6	3	1	5	2	0.333	1	18.63
B7	0.25	0.2	1	0.25	0.143	0.25	3.51
B8	2	0.5	4	1	0.25	0.5	11.31
B9	5	3	7	4	1	3	41.72
B10	2	1	4	2	0.333	1	16.77

λ_{max} =6.193，$C.R.$ =0.031<0.1

- Responsibility

The matrix is shown in Table 10.

Table 10. The matrix of Responsibility.

A3	B11	B12	B13	B14	B15	*w*(%)
B11	1	0.5	6	3	6	30.146
B12	2	1	7	4	7	44.814
B13	0.167	0.143	1	0.2	1	4.659
B14	0.333	0.25	5	1	5	15.722
B15	0.167	0.143	1	0.2	1	4.659

λ_{max} =5.188，C. R. =0.047<0.1

- Economy

The matrix is shown in Table 11.

Table 11. The matrix of Economy.

A4	B16	B17	B18	B19	*w*(%)
B16	1	4	0.5	6	32.149
B17	0.25	1	0.2	4	11.551
B18	2	5	1	8	51.659
B19	0.167	0.25	0.125	1	4.64

λ_{max} =4.139，C. R. =0.046<0.1

- Empathy

The matrix is shown in Table 12.

Table 12. The matrix of Empathy.

A5	B20	B21	B22	B23	B24	*w*(%)
B20	1	5	0.5	0.2	2	14.517
B21	0.2	1	0.2	0.167	0.333	4.278
B22	2	5	1	0.25	3	21.722
B23	5	6	4	1	4	49.904
B24	0.5	3	0.333	0.25	1	9.578

λ_{max} =5.295，C. R. =0.074<0.1

- Informativeness

The matrix is shown in Table 13.

Table 13. The matrix of Informativeness.

A6	B25	B26	B27	B28	B29	*w*(%)
B25	1	1	0.5	5	4	23.564
B26	1	1	0.5	5	4	23.564
B27	2	2	1	6	7	41.429
B28	0.2	0.2	0.167	1	3	6.799
B29	0.25	0.25	0.143	0.333	1	4.645

λ_{max} =5.207，C. R. =0.052<0.1

- Tangibility

The matrix is shown in Table 14.

Table 14. The matrix of Tangibility.

A7	B30	B31	B32	B33	B34	*w*(%)
B30	1	0.125	0.5	0.143	0.25	3.979
B31	8	1	7	2	4	45.741
B32	2	0.143	1	0.167	0.333	5.891
B33	7	0.5	6	1	3	30.897
B34	4	0.25	3	0.333	1	13.491

$\lambda_{max}=5.111$，C.R.=0.028<0.1

3.4. Analysis of the importance of each dimension index

The weight of the indicators under each dimension is sorted out, and the indicators whose weight ratio exceeds the average value are defined as more important indicators, and vice versa. In the order of dimension importance, the index weights in the dimension are sorted to generate the Table 15 and Table 16.

Table 15. More important indexes.

Dimension	A2		A6			A3		A1		A4		A7		A5	
Index	B9	B6	B10	B27	B25	B26	B12	B11	B1	B2	B18	B16	B31	B33	B23	B22
p	41.7	18.6	16.7	41.4	23.5	23.5	44.8	30.1	57.3	27.5	51.6	32.1	45.7	30.8	49.9	21.7
v	17.0	7.59	6.84	9.08	5.16	5.16	6.67	4.49	5.71	2.74	3.46	2.15	1.54	1.04	1.2	0.52

Table 16. Less important indexes.

Dimension	A2		A6			A3			A1	
Index	B8	B5	B7	B28	B29	B14	B13	B15	B4	B3
p	11.31	8.08	3.51	6.79	4.64	15.72	4.65	4.65	9.2	5.92
v	4.61	3.29	1.43	1.49	1.02	2.34	0.69	0.69	0.92	0.59

Dimension	A4		A7			A5		
Index	B17	B19	B34	B32	B30	B20	B24	B21
p	11.55	4.64	13.49	5.89	3.97	14.51	9.57	4.27
v	0.77	0.31	0.46	0.20	0.13	0.35	0.23	0.10

p：The weight of the index in the dimension.

v：The weight of the index in the whole.

According to the data analysis, whether in the dimension or the whole, the indicators with greater weight are : large transportation interval, perfect transportation information, perfect compensation mechanism, short delivery time, and fair insurance price. These are the contents that high-speed rail express needs to pay great attention to. Compared with most indicators, indicators such as ensuring safety and low loss, carrying a wide range of goods, and querying the location of orders at any time also have relatively high weights, which also need to be paid attention to. However, the weight of indicators such as appropriate clothing, clean and comfortable office parks, and diverse payment methods is low in both dimensions and overall, and users pay less attention to this.

4. China high-speed rail express service quality evaluation

4.1. Evaluation method

According to the SERVQUAL model and the survey, the customer 's service quality perception value P and service quality expectation value E of B_i are obtained. The corresponding service quality score samples are $B_{i1}...B_{in}$.

- The calculation formula is

$$B_{ij} = P_{ij} - E_{ij} \tag{4}$$

- The index service quality score formula :

$$R_i = \overline{B_i} = \frac{1}{n}\sum_{j=1}^{n} B_{ij} \tag{5}$$

- For the dimensions, the corresponding service quality score calculation formula :

$$\mathrm{F_i} = \sum_{\mathrm{j=1}}^{\mathrm{m}} \mathrm{R_{ij}} \mathrm{w_{ij}} \tag{6}$$

- Total service quality score calculation formula :

$$\mathrm{SQ} = \sum_{i=1}^{\mathrm{N}} \mathrm{F}_i v_i \tag{7}$$

m : the total number of indicators in this dimension ;

w : index weight ; v : Dimension weight ; N : Total dimensions

If the score of each service quality is positive, the customer's perception of this indicator is greater than the expected level, and they are relatively satisfied with it. On the contrary, customers' perception of this indicator is less than expected, and they are dissatisfied with it.

4.2. Data collecting and dealing

From December 2022 to February 2023, through home visits to high-speed rail express users, China Railway Express operation and transportation outlets, network research and other channels, the users who have used high-speed rail express at least once were surveyed and distributed. The perception and expectation of all indicators were scored by 1-10 points. The result of the questionnaire is shown as the Table 17.Then，process and integrate the collected data for next analysis.

Table 17. The specific situation of paper recycling

Total	Recovery	Recovery rate	Effective	Effective rate
100	93	93%	87	87%

4.3. Statistics the results

- Index service quality score

The service quality score of the corresponding index is calculated. ' + ' indicates that the customer is satisfied with the index as a whole, and ' - ' indicates that the customer is not satisfied with the index as a whole. The results are summarized as the Table 18.

Table 18. The results of Data collecting and dealing

Index	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17
Score	-0.07	0.46	-0.03	0.1	0.13	0.22	-0.07	0.14	-0.06	0.18	0.19	0.03	0.18	0.05	0.04	0.04	-0.27
State	-	+	-	+	+	+	-	+	-	+	+	+	+	+	+	+	-

Index	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30	B31	B32	B33	B34
Score	0.04	-0.07	-0.18	-0.1	-0.34	-0.17	1.03	-0.16	-0.46	-0.3	-0.04	0.95	0.5	-0.24	-0.14	0.07	-0.05
State	+	-	-	-	-	-	+	-	-	-	-	+	+	-	-	+	-

- Dimension service quality score

According to the calculation formula of dimension service quality score, for dimension *Ai*, the corresponding service quality score is calculated. ' + ' indicates that the overall customer is satisfied with the index, ' - ' indicates that the overall customer is not satisfied with the index. The results are summarized as the Table 19.

Table 19. The results of Data collecting and dealing

Dimension	A1	A2	A3	A4	A5	A6	A7
Score	0.93	2.85	1.32	-0.01	-0.21	-5.11	-0.27
State	+	+	+	-	-	-	-

- Overall service quality score

$$\mathrm{SQ} = \sum_{i=1}^{\mathrm{N}} \mathrm{F}_i v_i = 0.3163 \tag{8}$$

SQ > 0, so the high-speed rail express users are satisfied with their their service quality.

4.4. Analysis of experiment result

Based on the research content of this paper, according to the SERVQUAL method, the users of high-speed rail express are satisfied with the overall service quality.

However, according to the analysis of dimension service quality score, customers are satisfied with prescription, reliability and responsibility. However, customers still feel insufficient in terms of economy, empathy, informativeness, and tangibility.

- Aiming at economy :

At present, the main aspects of customer dissatisfaction are transportation cost and value-added service cost. The reason may be that there are express delivery companies with lower cost in the current market. High-speed rail express can be improved by actively

adjusting prices within the affordable range and adopting order reward mechanism for some users.

- For empathy :

Customers ' dissatisfaction with empathy is mainly about whether they can understand customer needs, whether their service attitude is enthusiastic and whether they attach importance to customer interests. The problem may appear in the lack of empathy training for employees, and the management of employees is not detailed enough. Strengthening employee training and standardizing employee system can improve customer satisfaction.

- Aiming at informativeness :

The lack of informativeness is mainly reflected in the design of information platform and the update of transportation information. The possible reason is that the use of the platform is not detailed enough, the promotion of platform-related information is not enough, and the frequency of transportation information update is insufficient. The way to improve the quality of informativeness service can be to increase the promotion of information platform, increase the distribution of information processing personnel and so on.

- For tangibility :

The degree of dissatisfaction with tangibility is relatively low, mainly about the unification of transportation packaging and the standard of employee dress. The reason is likely to be the objective factors in the logistics industry. The number of employees in the express market is large, and the task is heavy, resulting in insufficient attention to the problems of personal clothing and transportation packaging. Dealing with tangible problems can also be achieved by strengthening management and standardizing employee regulations.

5. Conclusions

The research results of this paper mainly have two aspects :

First, through the improved SERVQUAL model, combined with the analytic hierarchy process to calculate the weight of each dimension index. According to the weight calculation results, the importance of each dimension is obtained : reliability and informativeness are the most important, responsibility, prescription and economy are the more important dimensions, and tangibility and empathy are the least valued. By sorting the weights of the indicators under each dimension, the more important and less important indicators are sorted out.

The second is to obtain the user 's expectation and actual perception, and draw the conclusion : the customer is satisfied with the prescription, reliability and responsibility as a whole, but still dissatisfied with the economy, empathy, informativeness and tangibility, and the user is satisfied with the service quality as a whole.

The innovation of this paper mainly has two aspects :

First, it supplements the relevant literature on the service quality evaluation of high-speed rail express, and comprehensively evaluates the service quality of high-speed rail express.

The second is to improve the SERVQUAL model for high-speed rail express, add two dimensions of economy and informativeness, and select multiple indicators to establish an evaluation system.

The defects of this paper :

It is still subjective to use expert scoring method as the basis of research data. The data source of this paper is through the examination paper survey, and the selected samples may have particularity.

Acknowledgments

We sincerely thank the editor and reviewers for their kind and helpful comments on this paper. This work was supported by Liaoning Provincial Department of Education Scientific Research Funding Project under Grant No.JDW2020009.

References

[1] Faccoli M,Petrogalli C,Lancini M,Ghidini A,Mazzù A.(2017)Rolling contact fatigue and wear behavior of high-performance railway wheel steels under various rolling-sliding contact conditions. J. Mater.Eng.Perform,26: p.3271-3284.

[2] Fu M,Li P,Liang XF.(2017)Numerical analysis of the slipstream development around a high-speed train in a double-track tunnel. PLoS One,12(3):e0175044.

[3] Li B, Gao S, Liang Y,et al.(2020)Estimation of Regional Economic Development Indicator from Transportation Network Analytics. Sci Rep,10(1):p.26-47.

[4] National Bureau of Statistics of China.(2021)China Statistical Yearbook.China Statistics Press,Beijing.

[5] Deng S, Yuan Y, Wang Y, Wang H, Koll C.(2020)Collaborative multicenter logistics delivery network optimization with resource sharing. PLoS One,15(11):e0242555.

[6] Sun X,Yu H,et al.(2022)The application of Industry 4.0 technologies in sustainable logistics: a systematic literature review (2012-2020) to explore future research opportunities.Environmental science and pollution research international,29(7): p.9560-9591.

[7] Kang P, Song G,et al.(2021)Low-carbon pathways for the booming express delivery sector in China. Nat Commun,12(1):p.450-457.

[8] Chuenyindee T,Ong A,et al.(2022)Public utility vehicle service quality and customer satisfaction in the Philippines during the COVID-19 pandemic.Util Policy,75:Article.101336.

[9] Lu S,Kao H,et al.(2020)Identification of quality gaps in healthcare services using the SERVQUAL instrument and importance-performance analysis in medical intensive care: a prospective study at a medical center in Taiwan.BMC Health Serv Res,20(1): p.908-919.

[10] Junior J,Hékis H,Costa J,et al.(2022)Application of the QFD-fuzzy-SERVQUAL methodology as a quality planning tool at the surgical centre of a public teaching hospital. BMC Med Inform Decis Mak,22(1):p.8-17.

[11] Parasuraman A, Zeithaml V& Berry L.(1985)A Conceptual Model of Service Quality and its Implications for Future Research.The Journal of Marketing,49: p.41-50.

[12] Laura E, Gabriella M.(2012)Procedia Structural Equation Modelling for Analysing Passengers' Perceptions about Railway Services.Social and Behavioral Sciences,54:p.96-106.

[13] Yang J.(2006)Third-party logistics service quality comprehensive evaluation and empirical research.Nanjing university of aeronautics,Nanjing.
[14] Gu G,Wu B,Wang B.(2021)Research on the evaluation of railway freight service quality based on SERVQUAL method.Railway Freight Transport,39:p.41-46.
[15] Ankit A, Gulshan K.(2016)Identify The Need for Developing a New Service Quality Model in TodaysScenario: A Review of Service Quality Models. Arabian Journal of Business and Management Review,6(2):p.1-9.
[16] Xu S.(1988)Practical decision method-the principle of analytic hierarchy process.Tianjin University Press,Tianjin.