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A Survey of Tourism Service Satisfaction Based on Fuzzy Comprehensive Evaluation—Take Tangshan Banquet as an Example

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Abstract

With the increasing trend of domestic tourism, tourists have higher requirements for tourism services. To better meet the needs of tourists in tourist attractions, this article conducted a satisfaction questionnaire survey of 1898 tourists on tourist attraction services, which combines online and offline and obtained relevant data. By processing the data and conducting multiple regression analyses, six indicators that have a significant impact on tourist satisfaction were identified. The Delphi method was used to determine the weights of six influencing factors, and a fuzzy comprehensive evaluation model with satisfaction as the objective function was established and solved. The survey and research found that tourists have good satisfaction with the services of the scenic area, and proposed suggestions to improve the service of the scenic area, increase tourists' satisfaction with the tourism experience of the scenic area, and help the tourism industry develop better.

Keywords

Tourism service, satisfaction, multiple regression analysis, Delphi method, fuzzy comprehensive evaluation

China pays more and more attention to the development of tourism. The 13th Five-Year Plan for Tourism Development points out that we should seize the opportunity to meet the new era of mass tourism, and has issued some policies to support it, such as Guiding Opinions on Promoting the Development of Global Tourism and the 14th Five-Year Plan for Culture and Tourism Development [1]. After the reform and opening up in China, with the rapid development of the social economy, people's living standards have also been greatly improved. Urban and rural residents generally began to pay attention to and attach importance to their quality of life, so the demand for vacation, leisure, and other tourism increased sharply, and the development of tourism in China was like fire.

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In the measurement of tourism service quality in China, domestic scholars mostly modify the mature foreign service quality scale and then apply it to the measurement of tourism service quality. Based on the SERVQUAL evaluation model, Yan Jinjuan and others, after reading a lot of domestic and foreign scholars' achievements and visiting famous tourist attractions in China, constructed a service quality evaluation index system that integrated five dimensions of tourism services: tangibility, assurance, responsiveness, reliability, and experience [2]. Shen Qian and others studied the improvement of Xianyang tourism service quality as the core and thought that there were some problems in the current tourism service, such as incomplete facilities and equipment, insufficient brand promotion, low comprehensive quality

of employees, and insufficient cultural infiltration [3].

However, the domestic research is on a large scale. To make the scenic spot service better meet the needs of tourists, we conduct targeted research and collect opinions on the specific scenic spot service of Tangshan Banquet, and study the scenic spot service by establishing a fuzzy comprehensive evaluation model, which makes the scenic spot more meet the needs of tourists and provides further reference for the service satisfaction survey of other specific scenic spots.

1. Selection and Treatment of Tourism Service Satisfaction Index

1.1 Investigation and Selection of Satisfaction Index

The research selects the Tangshan Banquet Scenic Spot in Tangshan City, Hebei Province as the research object, and designs the questionnaire content according to the related services of the scenic spot. The content of the questionnaire contains 33 questions, which specifically relate to the basic information of the respondents, the environment and sanitation of the scenic spot, the reception service of ticket sales, the reception service of sightseeing, the catering service, the safety situation, etc. [4]. This questionnaire was conducted online and offline. A total of 2,000 questionnaires were distributed, and 1,898 valid questionnaires were recovered, with an effective rate of 94.9%. The results of the questionnaire were tested by spss, and the results of the questionnaire reliability and validity test: Cronbach. a coefficient is equal to 0.982. KMO value is equal to 0.854. With 95% confidence level, Bartlett's spherical test proves that there is a certain correlation between the questions in the questionnaire, and the investigation is meaningful [5].

1.2 The Basic Situation of The Tourists Surveyed

According to the survey results, girls account for 61.54% and boys account for 38.46%. In terms of age, the majority of the respondents are 18-25 years old, accounting for 60.4%, and 26-45 years old accounts for 20.56%. In terms of academic qualifications, undergraduate education accounts for 73.08%, graduate students and above account for 11.54%, and high school or technical secondary school accounts for 7.69%. From the current industry, students account for 53.85%, and other staff account for 46.15%. In terms of living areas, towns account for 76.92% and rural areas account for 23.08%. According to the survey results, teenagers have become an important part of tourists, and we should fully absorb the advanced ideas of contemporary teenagers. In today's society, both urban and rural respondents have certain tourism experience, which can provide more accurate satisfaction with scenic spot services.

1.3 Tourists' Satisfaction with Each Evaluation Index

According to a large number of surveys, the evaluation factors of satisfaction with tourism services are as follows: environment and sanitation, ticketing reception service, sightseeing reception service, service information indication, public places, parking lots, catering service, and shopping service.

The satisfaction degree under the relevant evaluation factors is obtained by counting the questionnaire data (for example, as follows).

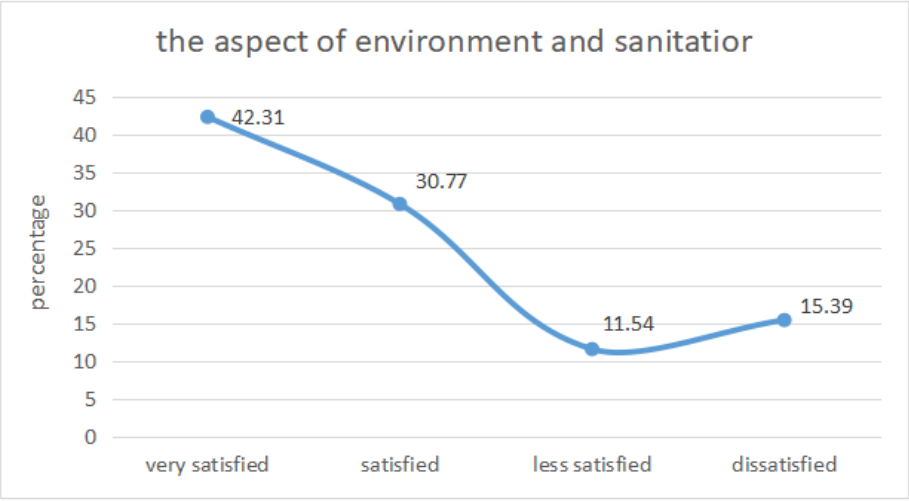

Figure 1. The Aspect of Environment and Sanitatior.

From the aspect of environment and sanitation, 42.31% of the respondents were very satisfied with the environment and sanitation of the scenic spot, 30.77% were satisfied, 11.54% were not satisfied, and 15.39% were not satisfied, which reflected that the environment and sanitation quality of the scenic spot was good, but there were still a few parts that were not in place and needed to be improved.

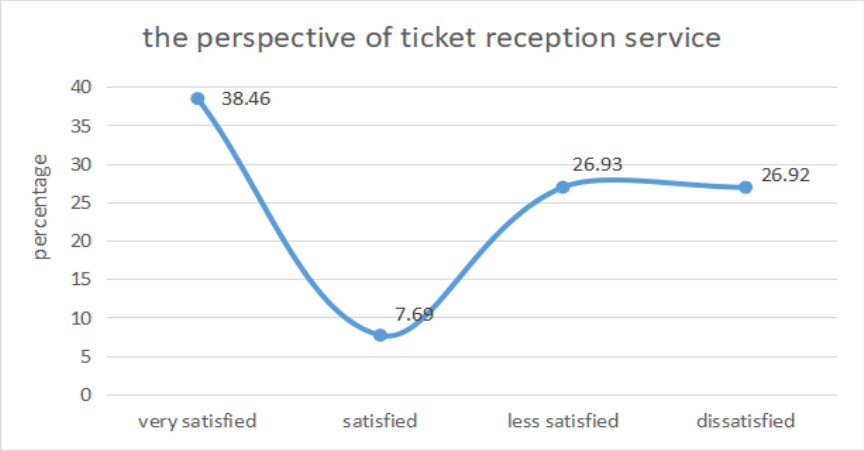

Figure 2. The Perspective of Ticket Reception Service.

From the perspective of ticket reception service, 38.46% of the respondents were very satisfied with the ticket reception service, 7.69% were satisfied, 26.93% were less satisfied and 26.92% were dissatisfied.

Through the questionnaire, we know that most tourists are dissatisfied with different services as follows:

Table 1. Unsatisfactory Aspect

service	Unsatisfactory aspect
Environment and health services	The distribution of garbage bins is unreasonable, the quantity is insufficient, there is obvious noise in the scenic area, and the cleaning work is not in place.
Ticket reception service	No price, business hours, luggage storage facilities, etc.
Tourist reception service	No panoramic indication map of scenic spots, unreasonable location of the tourist center, incomplete service facilities such as inquiry telephone, etc.
Food and Beverages	Poor dining environment and poor restaurant service attitude.

2. Fuzzy Comprehensive Evaluation of Tourists' Satisfaction

The fuzzy comprehensive evaluation method transforms qualitative evaluation into quantitative evaluation according to the membership degree theory of fuzzy mathematics, and makes an overall evaluation of the affairs or objects restricted by many factors by using fuzzy mathematics, which can solve complex problems that cannot be quantified due to the subjective factors of managers in tourist attractions, and has the characteristics of simplicity, understandability and strong systematicness [6]. The construction steps of the fuzzy comprehensive evaluation method are as follows:

2.1 Establish Satisfaction Factor Set of Comprehensive Evaluation

After consulting the relevant literature, 15 indicators affecting tourists' satisfaction were set to conduct a questionnaire survey. According to the tourists' satisfaction with the 15 indicators and the overall satisfaction data in the questionnaire, six indicators that have the greatest influence on tourists' satisfaction were determined by using multiple regression analysis [7], including environment and sanitation, ticketing reception service, sightseeing reception service, service information prompt, catering service, and shopping service. That is to say, determine the evaluation factor set U={u1,u2,u3,u4,u5,u6}, where u1 represents the environmental and sanitary situation, u2 represents the ticketing reception service, u3 represents the sightseeing reception service, u4 represents the service information prompt, u5 represents the catering service and u6 represents the shopping service.

2.2 Establish A Set of Comprehensive Evaluation Comments

Tourists' satisfaction with each index is reflected in the form of scores in the questionnaire. Different satisfaction degrees are quantified and divided into four grades [8], which are very satisfied (1), satisfied (0.75), less satisfied (0.5) and dissatisfied (0.25) respectively. That is to say, the evaluation grade set is determined as E={e1,e2,e3,e4}.

2.3 Determine the Weight of Each Satisfaction Influencing Factor

The following weights are obtained by Delphi method:

Table 2. Weight of Different Factors

factor	Environment and health services	Ticket reception service	Tourist reception service	Service information prompt	Food and Beverages	Shopping service
weight	0.26	0.15	0.12	0.14	0.19	0.14

That is, the weight set w = {w1, w2, w3, w4, w5, w6} = {0.26, 0.15, 0.12, 0.14, 0.19, 0.14}, w1 represents the weight of environment and sanitation, w2 represents the weight of ticketing reception service, w3 represents the weight of sight-seeing reception service, w4 represents the weight of information service prompt, and w5 represents catering service.

2.4 Determine the Fuzzy Relation Matrix

Remember that the membership degree of the I-th factor in factor set U to the J-th element of evaluation grade set is rij, and the single-factor evaluation result of the I-th factor is expressed as Ri={ri1,ri2,ri3,ri4} by fuzzy sets, and the six single-factor evaluation sets R1, R2, R3, R4, R5 and R6 are rows to form a fuzzy comprehensive evaluation matrix R6*4. Statistical analysis of the data obtained from the questionnaire survey obtained the membership of the factor set corresponding to the evaluation set [9]:

Table 3. The Membership of the Factor Set Corresponding to the Evaluation

E	U					
	u_1	u_2	u_3	u_4	u_5	u_6
e_1(very satisfied)	42.31	38.46	42.30	42.32	46.15	38.46
e_2(satisfied)	30.77	7.69	26.92	23.14	15.38	30.77
e_3(less satisfied)	11.54	26.93	0	11.54	0	15.38
e_4(dissatisfied)	15.39	26.92	30.78	23.0	38.47	15.39

To further obtain the fuzzy comprehensive evaluation matrix,

$$R_{6*4}=\begin{bmatrix} 42.31 & 30.77 & 11.54 & 15.39 \\ 38.46 & 7.69 & 26.93 & 26.92 \\ 42.30 & 26.92 & 0 & 30.78 \\ 42.32 & 23.14 & 11.54 & 23.00 \\ 46.15 & 15.38 & 0 & 38.47 \\ 38.46 & 30.77 & 15.38 & 15.39 \end{bmatrix}$$

2.5 Perform Fuzzy Comprehensive Evaluation Operation

According to the evaluation matrix R6*4 and the weight set W1*6, the fuzzy vector W on U is changed into the fuzzy vector A on V through fuzzy change, that is:

A=W1*6*R6*4=(a1,a2,a3,a4)

The membership degree and comprehensive evaluation value of each evaluation index are calculated by Matlab software, and the following results are obtained:

A=W*R=(a1,a2,a3,a4)=(0.419,0.229,0.108,0.224)

The distribution map of membership degree is as follows:

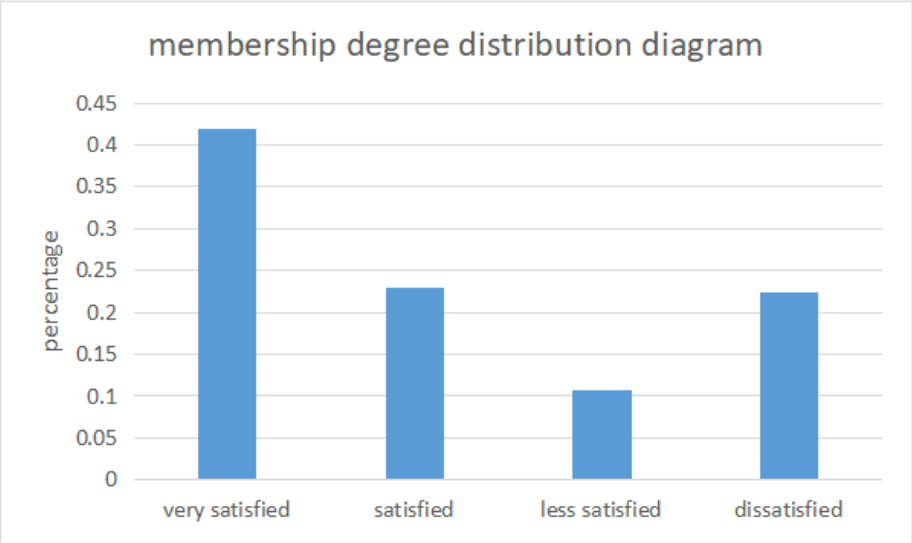

Figure 3. Membership degree distribution diagram.

Through calculation, it is found that the highest degree of satisfaction of tourists with the scenic spot service is 41.9%, the satisfactory degree is 22.9%, the unsatisfactory degree is 10.8%, and the unsatisfactory degree is 22.4%. The comprehensive score of tourists' satisfaction with Tangshan Banquet service is 70.60, which is a good overall score.

3. Research Conclusions and Suggestions

3.1 Conclusions

1) According to the data of tourists' satisfaction with 15 indicators and overall satisfaction in the questionnaire, six indicators that have the greatest influence on tourists' satisfaction are determined by using multiple regression scores: environment and sanitation, ticketing reception service, sightseeing reception service, service information prompt, catering service, and shopping service.

2) The fuzzy comprehensive evaluation and Matlab are used to calculate the index membership and synthesis [10]. The results show that the highest degree of satisfaction of tourists with the scenic spot service is 41.9%, the satisfactory degree is 22.9%, the unsatisfactory degree is 10.8%, the unsatisfactory degree is 22.4%, and the comprehensive score of tourists' satisfaction with the Tangshan banquet service is 70%.

3.2 Suggestions

Respondents gave feedback on the service, and put forward the following suggestions for feedback:

Scenic area managers can put trash cans in a proper amount and place them evenly; Standardize the relevant management system and put an end to the phenomenon of littering; Strengthen the cleaning work of cleaners, and urge cleaners to clean up the corresponding work scope in time; Put up business hours signs, and evacuate people at the entrance and internal security in time to avoid congestion and prevent stampede [11]; Storage facilities for luggage shall be arranged at the entrance, panoramic directions of the scenic spot shall be arranged at the entrance and obvious positions of the scenic spot, and broadcasting services shall be installed in the scenic spot. Improve relevant equipment and facilities, install guiding signboards at major intersections, and install eye-catching safety signs in dangerous areas; Arrange more dining areas and strengthen the regional management of merchants.

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