

An Analysis of Tourist Satisfaction of Revolution Scenic Spots Based on Fuzzy Comprehensive Evaluation

Weiwei Guo

Economics and Management College, Longdong University, Qingyang 745000, China.

Abstract: There are some basic steps of the fuzzy comprehensive evaluation method of constructing the satisfaction index system, establishing the weight set, determining the evaluation set, establishing the evaluation matrix, The paper comprehensively evaluates the tourists satisfaction in red scenic spots.

Keywords: Tourist Satisfaction; Fuzzy Comprehensive Evaluation; Revolution Scenic Spot

Introduction

The Central Committee of the Communist Party of China (CPC) and the State Council has been attaching great importance to the all-round revitalization and development of the old revolutionary base areas, has formulated special plans for the revitalization of the old revolutionary base areas in Dabie Mountains, Shaanxi-Gansu-Ningxia, Hubei-Henan-Anhui, Zuoyoujiang and Jinggang Mountains, many provinces have also formulated a series of plans based on their own resources of red culture. In summary, all kinds of plans focused on the comprehensive revitalization and high-quality development of old revolutionary areas, and attached great importance to the protection and restoration of revolutionary venues and facilities, historic sites and memorial facilities for Heroes and martyrs, as well as the protection and restoration of revolutionary cultural relics, historical and cultural education, construction of Revolutionary Memorial Hall, Cultural Park, patriotic education demonstration base and Red Tourism Integration Development Demonstration Zone, supported all types of media at the central and local levels to promote red tourism through news reports, public service advertisements. During the 13th five-year plan period, red tourism in various places developed rapidly, with remarkable improvements in the quality of venues and facilities in scenic spots, obvious improvements in the internal and external environments, rich and diverse content and products, continuous improvement in service quality, and a significant increase in tourist satisfaction, red Tourism for high-quality development has laid a solid foundation.

The Fuzzy comprehensive evaluation method is a method based on fuzzy mathematics, which is developed on the basis of fuzzy set theory put forward by Professor Richard, an automatic control expert in the United States. The method converts qualitative evaluation into quantitative evaluation, which solves the dilemma that all kinds of factors that affect the evaluation object are vague and difficult to quantify. Since its introduction, the method has been widely used in customer satisfaction, performance appraisal, transportation, environmental quality, construction and real estate, medical diagnosis, voice recognition, image processing, market prediction, etc.. The CNKI shows that more than 200 papers of tourists satisfaction are analyzed by fuzzy mathematics analysis method. The research objects were concentrated in scenic spots, parks, leisure tourism, etc., and the research fields focused on some well-known scenic spots such as scenic southern cities, southwest areas and ancient capitals.

Higher tourist satisfaction is a long-lasting topic in tourist attractions. It is difficult to quantify tourist satisfaction for the subjective perception of tourism factors. Based on the questionnaire survey of tourists in some red scenic spots, this paper adopts the method of five-level quantitative evaluation and fuzzy comprehensive analysis to evaluate the tourist satisfaction objectively, finally improve the total factor productivity of red scenic spots and continuously improve the satisfaction of tourists.

Construct the index system of satisfaction

The selection of satisfaction index mainly refers to the previous research literature, combined with the actual situation of tourists scenic spots in the old revolutionary area of Shaanxi-Gansu-Ningxia, and synthesizes the three-level satisfaction evaluation system (Fig. 1). The first level is the target layer, that is, the overall satisfaction of tourists; the second level is the criterion layer, which consists of food, housing, travel, tour, purchase, entertainment and supporting facilities, and the third level is the factor layer, which is composed of 23 specific evaluation factors. In the study, the first level index is defined as $U = \{U_1, U_2, U_3, U_4, U_5, U_6, U_7\}$, and the second level index is defined as $U_i = \{u_{i1}, u_{i2}, u_{i3}, u_{i4}, u_{i5}\} = (\text{very satisfactory, general, unsatisfactory, very unsatisfactory})$.

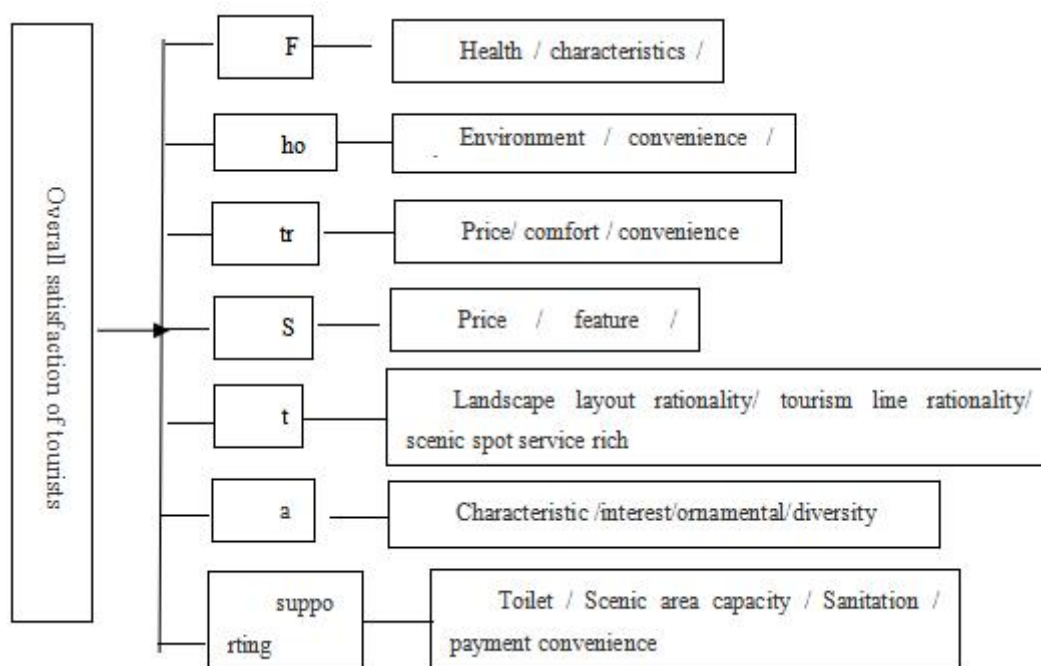


Fig. 1 Evaluation index system of tourist satisfaction

Create a weight set

Because the importance of each index in the satisfaction index system is different, the first index and the second index should be given the corresponding weight number respectively. In the study, the weight set of the first grade index U is defined as $W = \{W_1, W_2, W_3, W_4, W_5\}$, and the weight set of the secondary index U_i is defined as $W_i = \{W_{i1}, W_{i2}, W_{i3}, W_{i4}, W_{i5}\}$. In the survey, each visitor was asked to select the seven secondary indicators that he or she considered to be the most important, and it was equally important to set each indicator in the study. The final weight set is composed of the total number of times each index is selected as a proportion of the total number of samples. The satisfaction evaluation results of each factor counted by excel are shown in Table 1.

Table 1. Values of tourist satisfaction weight coefficient

First index	weight	Second index	weight
food	0.168	Health	0.369
		characteristics	0.448
		price	0.183
housing	0.100	Environment	0.516
		convenience	0.241
		price	0.244
travel	0.057	Price	0.547
		comfort	0.196
		convenience	0.257
tour	0.174	Landscape layout rationality	0.422

		tourism line rationality	0.221
		scenic spot service rich	0.358
shop	0.166	Price	0.265
		feature	0.552
		variety	0.183
amuse	0.220	Characteristic	0.177
		interest	0.183
		ornamental	0.501
		diversity	0.138
supporting facilities	0.114	Toilet	0.197
		Scenic area capacity	0.442
		payment convenience	0.094
		Sanitation	0.267

Table 1 shows that tourists pay more attention to entertainment, swimming and food. The weighting coefficients of the three groups are 22%, 17.4% and 16.8% respectively, while for housing, the overall value of the row is less important, and the weight coefficient is lower (10% and 5.7%, respectively). The importance of purchasing and supporting facilities was 16.6% and 11.4%, respectively.

Determine the evaluation set

The fuzzy scale set of each index is defined, that is, the evaluation set is $V = (V_1, V_2, V_3, V_4, V_5) = (\text{very satisfactory, satisfactory, general, discontent, very discontent})$.

Establish the evaluation matrix

The evaluation matrix is used to reflect the membership relationship of all levels of indicators to the evaluation level, which is defined as $R_i = (r_{i1}, r_{i2}, \dots)$. In the study, in order to reflect the objective reality more accurately, the satisfaction evaluation results of the secondary indicators are counted strictly according to the results of the questionnaire. The evaluation matrix is determined by the proportion of the total number of satisfaction evaluation of each secondary index to the total number of samples. The satisfaction evaluation results of each factor counted by excel are shown in table 2.

Table 2 .Values of satisfaction evaluation results of each factor

First index	Second index	very	satisfactory	normal	discontent	Very discontent
food	Food Health	0.293	0.351	0.289	0.067	0.000
	Food characteristics	0.100	0.367	0.269	0.173	0.091
	Food price	0.118	0.407	0.271	0.204	0.000
Housing	Stay Environment	0.224	0.571	0.193	0.011	0.000
	Stay convenience	0.307	0.424	0.200	0.062	0.007
	Stay price	0.149	0.402	0.364	0.069	0.016
travel	Traffic Price	0.416	0.280	0.216	0.064	0.024
	Traffic comfort	0.102	0.431	0.336	0.109	0.022
	Traffic convenience	0.302	0.527	0.120	0.042	0.009
tour	Landscape layout	0.182	0.320	0.447	0.038	0.013
	tourism line rationality	0.173	0.260	0.442	0.089	0.036
	scenic spot service rich	0.213	0.389	0.280	0.098	0.020
shop	Shop Price	0.087	0.331	0.480	0.060	0.042
	Shop feature	0.073	0.407	0.442	0.038	0.040
	Shop variety	0.120	0.478	0.331	0.047	0.024

amuse	Characteristic	0.273	0.520	0.176	0.018	0.013
	interest	0.202	0.436	0.211	0.073	0.078
	ornamental	0.358	0.349	0.184	0.102	0.007
	diversity	0.102	0.327	0.460	0.071	0.040
supporting facilities	Toilet	0.076	0.520	0.256	0.102	0.047
	Scenic area capacity	0.284	0.518	0.191	0.002	0.004
	payment convenience	0.404	0.536	0.051	0.007	0.002
	Sanitation	0.211	0.393	0.264	0.107	0.024

Table 2 shows that tourists have a high overall evaluation, and only individual evaluation indicators are less satisfied. 41 people are very dissatisfied with the evaluation of catering characteristics, and 10 people are very dissatisfied with the evaluation of accommodation price and convenience. 25 people were very dissatisfied with the relevant index evaluation of the line, 31 people were very dissatisfied with the relevant index evaluation of travel, 48 people were very dissatisfied with the evaluation of the relevant index of purchasing, and 62 people were very dissatisfied with the evaluation of the relevant index of entertainment. Thirty-six people were not satisfied with the evaluation of the related indicators of the supporting facilities. The satisfaction coefficient of each second-order index can be expressed as a matrix relationship similar to formula 1, which is limited to space, and the satisfaction coefficient of other second-order indicators is not repeated here.

$$R1 = \begin{matrix} 0.293 & 0.351 & 0.289 & 0.067 & 0.000 \\ 0.100 & 0.367 & 0.269 & 0.173 & 0.091 \\ 0.118 & 0.407 & 0.271 & 0.204 & 0.000 \end{matrix} \quad (1)$$

Determine the fuzzy comprehensive evaluation set

In the study, the comprehensive evaluation set is defined as $B = W \times R$. According to the research data, the fuzzy comprehensive evaluation of each criterion layer and the target layer can be carried out respectively. the product results of each evaluation factor calculated by excel table are shown in tables 3 and 4.

Table 3.Values of Fuzzy Comprehensive Evaluation of Factor layer

Index	very	satisfactory	normal	discontent	Very discontent
food	0.175	0.368	0.277	0.140	0.041
housing	0.226	0.495	0.237	0.037	0.005
travel	0.325	0.373	0.214	0.067	0.020
tour	0.191	0.331	0.386	0.071	0.021
shop	0.085	0.400	0.432	0.045	0.038
amuse	0.279	0.392	0.226	0.078	0.025
supporting facilities	0.235	0.487	0.210	0.050	0.018

Table 4.Values of Fuzzy Comprehensive Evaluation of Criterion layer

Index	very	satisfactory	normal	discontent	Very discontent
Overall satisfaction	0.206	0.399	0.295	0.074	0.026

Comprehensive evaluation

Using Euclidean closeness calculation method, the evaluation grade is determined as shown in Table 5.

Table 5.Values of euclidean closeness

very	satisfactory	normal	discontent	Very discontent
0.605	0.704	0.534	0.550	0.552

According to Table 5, combined with the close principle of fuzzy mathematics theory, the subordinate vector of the target level corresponding to the evaluation grade is close to the second level evaluation. That is, the final result of tourist satisfaction is satisfactory. However, we also see that there is more or less poor tourist satisfaction in each secondary index. For example, tourists attach the highest importance to entertainment, but the evaluation is not too high, it can be seen that Red scenic spots need to pay attention to the experience, interest and diversity of entertainment projects. The importance of tourism is in the second place, but nearly 30% of the people are not satisfied with the design of tourism route, the layout of scenic spot and the service level, while the importance of purchase is in the third place, and nearly 20% of the people are not satisfied with the specialty characteristics, pricing and richness. These unsatisfactory aspects bring challenges to scenic spot managers, but at the same time, it is also the opportunity. To a certain extent, the managers of scenic spots should not only consider improving the overall satisfaction of tourists through the construction of soft and hard years of scenic spots, but also highlight the characteristics of scenic spots to meet the personality needs of tourists, constantly improve the overall planning of scenic spots, highlight the construction of characteristics. Attach importance to detail design.

References

[1] Huang J, Guo Q, Application of Fuzzy Comprehensive Evaluation method in Investment decision-making of tourist Holiday apartment [J], Mall Modernization, 2011 (9): 57.

[2] Yang XG, A study on Tourism and Shopping satisfaction in Zhengzhou City under the New normal-based on Fuzzy Comprehensive Evaluation method [J], Journal of Liaoning University of Technology (Social Science Edition), 2016 (10): 30 -33.

[3] Qu C, A study on the satisfaction of inbound tourists in Guilin based on Fuzzy Comprehensive Evaluation [D], Guangxi University, 2016:17.

[4] Zhao YW, Yang YJ, Study on tourist satisfaction of Rural Tourism Planning based on Fuzzy Comprehensive Evaluation method-A case study of Donghan Village, Huxian County, Shaanxi Province [J], Western Journal of Human Settlements Environment, 2015 (9): 74-75.

The paper is a phased achievement of 2022 Gansu philosophy and Social Science Planning Project (No.:2022YB121)