Research on Tourist Satisfaction of Red Tourism in Shandong Province Based on Structural Equation Model

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Abstract. In order to explore the influencing factors of tourist satisfaction of red tourism in Shandong province, this paper establishes an evaluation model of tourist satisfaction and uses structural equation model to process the data. Results show that: Tourist Expectation has a positive influence on Tourist Perceived Quality, Tourist Perceived Value and Tourist Satisfaction. Tourist Perceived Quality has a positive influence on Tourist Perceived Value and Tourist Satisfaction. Tourist Perceived Value has a positive influence on Tourist Satisfaction. Tourist Satisfaction has a positive influence on Ideological and Political Education and Tourist Loyalty. Therefore, to improve tourist satisfaction, red tourist attractions in Shandong Province should be comprehensively promoted and improved by expanding publicity, improving infrastructure, and intervening costs reasonably.

Keywords: Red tourism · Tourist satisfaction · Structural equation model

1 Introduction

Red tourism is the Communist Party of China, which leads the people in the revolution and the war of the memorial, markers for the carrier, with its revolutionary history and spirit connotation, carried by the organizing tourists to carry out memory of learning, tour, and other tourist activities [1]. Shandong Province is with large resources of red tourism and a large population in China. Vigorously developing red tourism is both a strong support for the economic development of Shandong and an important starting point under the background of party history education, so it is of great significance for the study of red tourism in Shandong Province.

By constructing a red tourism tourist satisfaction model, this paper clarifies the causality of tourist satisfaction in red tourism attractions in Shandong Province. Accordingly, it puts forward feasible suggestions to help achieve the sustainable development of red tourism attractions in Shandong Province.

2 Literature Review

Red tourism is a tourism industry unique to Chinese society, which is determined by the social system and culture of China.

Jiao (2012) constructed a comprehensive evaluation index system of red tourist attractions based on 5 evaluation factors, including education, experience, charm, service, and environment [2]. Chen et al. (2014) refined the satisfaction evaluation into 3 main factors: tourism projects, hardware facilities and software services [3]. Zhangsun (2018) evaluated the satisfaction of red tourists with 6 factors including food, accommodation, transportation, visiting, shopping, and entertainment [4]. Cao (2020), used 4 evaluation factors such as infrastructure, supporting services, quality perceptions, and behavioral intentions in the process of measuring the former residence of Chen Wangdao [5]. Lin et al. (2021) took catering, service perception, accommodation, product presentation and public facilities as evaluation factors [6]. And Feng (2022) used tourism projects, hardware level, and software environment as 3 factors for evaluating red attractions [7]. Each scholar has measured the satisfaction of red tourism tourists in a certain region by their own evaluation system.

In addition, structural equation model has been widely used in satisfaction evaluation [8]. Lu et al. (2017) used Xibaipo as a case study to investigate the effects of 3 variables: tourism involvement, satisfaction, and place attachment [9]. Lu et al. (2018) took Jinggang Mountains as an example to conduct a study on the correlation between tourism quality, tourist satisfaction and tourist loyalty [10]. Zhang et al. (2020) constructed an evaluation path for Taihang Memorial Hall from the perspectives of activities, experience, cultural identity, and functional identity [11]. And Fan et al. (2021) studied the effect of awe on satisfaction in red tourism using Yan'an as an example [12]. Scholars have first constructed conceptual models, followed by path tests, to finally determine the effect of each potential variable.

In summary, there are more domestic studies on tourist satisfaction in red tourism attractions in China, and the research methods are becoming more and more mature [13]. After considering various factors, this paper selects the structural equation model, which has been commonly used in domestic and foreign academia in recent years, to evaluate the satisfaction of tourists in red tourism in Shandong Province.

3 Materials and Methods

3.1 Research Model

Most scholars have used the original ACSI model as the basis for their research on structural equation model of tourist satisfaction. After adding or deleting latent variables to the ACSI model, the new influence paths have been tested (Fig. 1).

This paper focuses on the satisfaction of tourists in red tourism attractions in Shandong Province, and it intends to add or delete variables to the ACSI model. To be more specific, red tourism can not only provide economic benefits, but more importantly, also brings social benefits. This is mainly reflected in the fact that red tourism can provide ideological and political education to tourists, and the degree of satisfaction of tourists will affect their understanding and absorption of them. Therefore, Ideological and Political Education is added as an outcome variable of Tourist Satisfaction. In addition, this paper believes that most of the tourists of red tourist attractions take learning as their main purpose and hold red tourist attractions in awe, so they are less likely to take complaint behavior. Therefore, Customer Complaint is deleted.
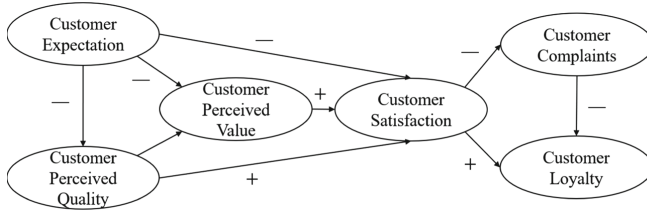
Fig. 1. ACSI Model

Table 1. Hypotheses

| No.	Content
H1	Tourist Expectation has a negative influence on Tourist Perceived Quality
H2	Tourist Expectation has a negative influence on Tourist Perceived Value
H3	Tourist Expectation has a negative influence on Tourist Satisfaction
H4	Tourist Perceived Quality has a positive influence on Tourist Perceived Value
H5	Tourist Perceived Quality has a positive influence on Tourist Satisfaction
H6	Tourist Perceived Value has a positive influence on Tourist Satisfaction
H7	Tourist Satisfaction has a positive influence on Ideological and Political Education
H8	Tourist Satisfaction has a positive influence on Tourist Loyalty
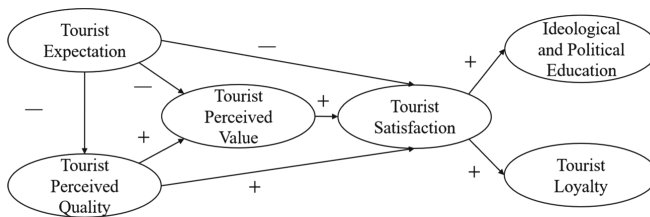
Fig. 2. New Model

Accordingly, this paper retains 7 pairs of relationships between 5 variables in the ACSI model and adds Ideological and Political Education. Besides, the concepts related to customer satisfaction are replaced with those related to tourist satisfaction. The research hypothesis and model diagram are shown in Table 1 and Fig. 2.

3.2 Evaluation Indicator

Referring to the indicators of tourist satisfaction of red tourism in the papers of scholars such as Jiao (2012), Chen (2014), Zhou (2016), and Cao (2020), this paper formulates 6 first-level indicators and 16 s-level indicators, which are all listed in Table 2.

Table 2. Evaluation Indicators and References

First-level indicators	Symbol	Second-level indicators	References
Tourist Perceived Quality	X1	Sanitary environment	Chen 2014; Feng 2022
	X2	Natural scenery	Jiao 2012; Zhou 2016
	X3	Scenic service	Chen 2014; Feng 2022
	X4	Convenience	Chen 2014; Zhangsun 2018
	X5	Tourism safety	Zhou 2016
Tourist Expectation	X6	Static viewing	Jiao 2012; Chen 2014
	X7	Site activities	Jiao 2012; Chen 2014
	X8	Educational expectations	Jiao 2012; Zuo 2014
Tourist Perceived Value	X9	Cost value	Chen 2014; Zhou 2016
	X10	Time value	Zhou 2016
Tourist Satisfaction	X11	Comparison to own projections	Lu 2014; Lu and Fu 2018
	X12	Comparison with other attractions	Lu 2014; Lu and Fu 2018
Tourist Loyalty	X13	Revisit intention	Zhangsun 2018; Cao 2020
	X14	Positive praise	Zhangsun 2018; Cao 2020
Ideological and Political Education	X15	Self-learning and understanding	Chen 2014; Fan 2021
	X16	Delivery to others	Jiao 2012; Fan 2021

3.3 Data Collection

The data in this paper are primary data, which come from visitors of some representative red tourism sites in Shandong Province, such as Liu Gong Island and Guo Yonghuai's former residence. The questionnaire was distributed in May 2021. The sample size was 262, of which 239 were valid samples, and the questionnaire efficiency was 91.22%.

4 Results

4.1 Descriptive Statistics

According to the questionnaire data, there are 6 tourists aged 18 and below, 176 tourists aged 18–34, 48 tourists aged 35–50 and 9 tourists aged over 50. There are 97 male tourists and 142 female tourists. 35 tourists are with high school degrees or below, while 204 tourists are with bachelor's degrees or above. 168 people go on trips organized by their school, company, and so on, and 71 people go on trips spontaneously.

Table 3. The Test Result of Reliability and Validity

First-level indicators	Second-level indicators	Factor loading	AVE	CR	Alpha
Tourist Perceived Quality	Sanitary environment	0.734	0.576	0.871	0.863
	Natural scenery	0.678			
	Scenic service	0.795			
	Convenience	0.831			
	Tourism safety	0.748			
Tourist Expectation	Static viewing	0.760	0.581	0.804	0.764
	Site activities	0.866			
	Educational expectations	0.645			
Tourist Perceived Value	Cost value	0.857	0.713	0.833	0.833
	Time value	0.832			
Tourist Satisfaction	Comparison to own projections	0.683	0.547	0.706	0.830
	Comparison with other attractions	0.792			
Tourist Loyalty	Revisit intention	0.862	0.700	0.823	0.817
	Positive praise	0.810			
Ideological and Political Education	Self-learning and understanding	0.875	0.799	0.889	0.887
	Delivery to others	0.912			

4.2 Testing of Reliability and Validity

SPSS 26.0 is used to test the reliability. The Cronbach's Alpha of the whole questionnaire and six first-level indicators are all greater than 0.750, indicating that the questionnaire has good reliability.

SPSS 26.0 and AMOS 23.0 are used to test the validity. The results show that KMO value is 0.913, the p-value of Bartlett's test of sphericity is less than 0.001, AVE of each variance is greater than 0.500, CR of each variance is greater than 0.700, and the loading of each factor is higher than 0.600. Therefore, the questionnaire has good validity (Table 3).

4.3 Data Analysis

AMOS 23.0 is used to process data of the model shown in Fig. 3.

All path tests of the model are significant (p < 0.001). χ^2/df, GFI, CFI and NFI, all reach the ideal standard. RMSEA, although not less than 0.050, is less than 0.080 and has

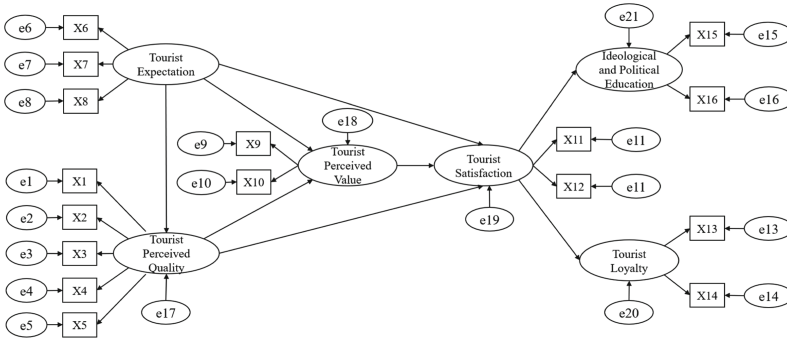**Fig. 3.** Red Tourist Satisfaction Model

Table 4. Test Indicators of Model Effect

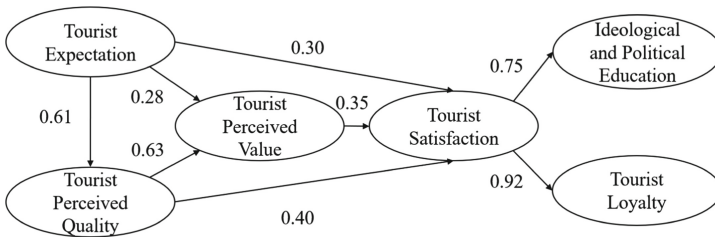| Indicators	χ^2/df	RMSEA	GFI	AGFI	CFI	NFI
Actual value	2.418	0.077	0.902	0.866	0.945	0.911
Standard	<3.000	<0.080	>0.900	>0.900	>0.900	>0.900

Fig. 4. The Model and Influence Coefficients

reached the acceptable standard. AGFI, while less than 0.900, is close to it. Therefore, the overall effect of the red tourist satisfaction model is better (Table 4).

The result is shown in Fig. 4. The test results of H1, H2 and H3 are inconsistent with the hypothesis, while those of H4, H5, H6, H7 and H8 are consistent.

To be specific, Tourist Expectation has a positive influence on Tourist Perceived Quality, Tourist Perceived Value and Tourist Satisfaction. Tourist Perceived Quality has a positive influence on Tourist Perceived Value and Tourist Satisfaction. Tourist Perceived Value has a positive influence on Tourist Satisfaction. Tourist Satisfaction has a positive influence on Ideological and Political Education and Tourist Loyalty.

5   Conclusions

Accordingly, in order to enhance the satisfaction of tourists, red tourism scenic spots in Shandong Province should take the following measures: Firstly, raise the expectations of

tourists appropriately, for example, expanding the publicity of the scenic spots in order to increase the popularity of it. Secondly, enhance the quality of service by improving the supply of infrastructure and the level of management personnel. Thirdly, control costs reasonably, reduce the economic burden of tourists, and improve the perceived value of tourists. Fourthly, learn from the excellent practices of other attractions and conduct regular tourist satisfaction surveys, so as to achieve continuous improvement and enhancement.

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