



# Research on Perceived Tourism Image of Gansu Based on Structural Equation Modeling

Minghui Ouyang\*

Lanzhou Institute of Technology, Lanzhou 730050, China

\*446703983@qq.com

**Abstract.** Taking tourism as the vital focus for promoting high-quality development, Gansu Province, China, has been complying with the trend of diversified upgrade of tourism consumption and has made incredible breakthroughs in the development of its tourism industry. In an attempt to dig further into the tourism potential of Gansu, this research builds a structural equation model involving 7 latent variables (e.g., tourists' perceptions of tourism resources, tourism services, the quality of local residents, and urban characteristics) and 24 variables (e.g., natural landscape, humanistic landscape, and history and culture). Based on the path coefficients, it can be concluded that: (1) tourists' perception of tourism resources is the most important factor influencing Gansu's tourism image; (2) the quality of local residents has a positive effect on Gansu's tourism image, among others. The research is expected to provide decision references for Gansu's tourism administration to improve the province's tourism image and promote high-quality development of its tourism industry in the era of we-media.

**Keywords:** Tourism image; Tourist perception; Structural equation model

## 1 Introduction

Across China, unleashing the potential of tourism consumption, promoting the high-quality development of tourism, and fostering new drivers for the innovative development of tourism have been esteemed as three important focuses for boosting high-quality economic and social development<sup>[1]</sup>. In 2023, Gansu Province attracted 388 million tourists and achieved a tourism revenue of 274.58 billion yuan, rising 187.8% and 312.9%, respectively, on a year-on-year basis. In the spring of 2024, as Gansu-style Tianshui Malatang (Spicy Hot Pot) has been trending on China's social media, all parties concerned in Gansu Province were united as one and committed to making Tianshui Malatang a new experience element of local cultural tourism. By the end of the May Day holiday in 2024, short videos and other kinds of media content concerning "Gansu cultural tourism" and "Gansu Tianshui Malatang", throughout all of China's social media, harvested 36.66 billion clicks and views, 3.397 billion likes, and 2.48 billion interactive comments, which has continued to stimulate the vitality of Gansu's cultural tourism market and increase its tourism supply efficiency. Accordingly, how to maintain such a desirable trajectory and improve visitors' satisfaction and sense of gain so as to

© The Author(s) 2024

H. Cheng et al. (eds.), *Proceedings of the 2024 4th International Conference on Enterprise Management and Economic Development (ICEMED 2024)*, Advances in Economics, Business and Management Research 295, [https://doi.org/10.2991/978-94-6463-506-5\\_45](https://doi.org/10.2991/978-94-6463-506-5_45)

bring new increments to Gansu's cultural tourism industry has become its main challenge<sup>[2]</sup>.

## 2 Methodology and Data Source

### 2.1 Methodology

Factors that dominate a region's tourism image can be diversified, and it increases the difficulty of such research due to some of the key factors are inherently unmeasurable. Therefore, this research introduces structural equation modeling (SEM), which is a multivariate statistical analysis capable of building, estimating, and testing causal models. Also, it can integrate with other methods such as factor analysis, path analysis, and multiple linear regression analysis<sup>[3]</sup>. The model can be divided into a structural model and a measurement model. The measurement equation describes the correlations between the latent variables and the indicators, such as those between tourists' perceptions of total cost, total value, and cost-value ratio (i.e., the three indicators of tourists' perceived value) and their perceived value. The structural equation describes the correlations between the latent variables, such as the one between tourists' perceived value and their degree of satisfaction<sup>[4]</sup>. As for the correlations between the latent variables and the indicators, such as those between the three indicators of tourists' perceived value and tourists' perceived value, and between the three indicators of tourists' satisfaction and tourists' satisfaction, the measurement equations are often expressed as:

$$x = \Lambda_x \xi + \delta \quad (1)$$

$$y = \Lambda_y \eta + \varepsilon \quad (2)$$

where  $x$  is the vector consisting of exogenous indicators (e.g., the three indicators of tourists' perceived value);  $y$  is the vector consisting of endogenous indicators (e.g., the three indicators of tourists' satisfaction);  $\xi$  is the vector of the exogenous latent variable (e.g., tourists' perceived value);  $\eta$  is the vector of the endogenous latent variable (e.g., tourists' satisfaction);  $\Lambda_x$  is the component matrix that reflects the correlations between the exogenous indicators and the exogenous latent variable (between the three indicators of tourists' perceived value and tourists' perceived value, for example);  $\Lambda_y$  is the component matrix that reflects the correlations between the endogenous indicators and the endogenous latent variable (between the three indicators of tourists' satisfaction and tourists' satisfaction, for example)<sup>[5]</sup>.

As for the correlations between the latent variables (i.e., between tourists' perceived value and tourists' satisfaction), the common structural equation is as follows:

$$\eta = \beta \eta + \Gamma \xi + \zeta \quad (3)$$

where  $B$  is the correlation between the endogenous latent variables (between tourists' satisfaction and another endogenous latent variable, for example);  $\Gamma$  is the influences of the exogenous latent variables on the endogenous latent variables (that of

tourists' perceived value on tourists' satisfaction, for example);  $\zeta$  is the structural equation's residual term, which acts as the unexplained factor<sup>[6]</sup>.

To some extent, tourists' satisfaction and loyalty (to a tourism destination) may demonstrate their perceived tourism destination image. Based on the theory, inferences, and assumptions that contribute to the structural equation modeling, the research proposes the following models describing the correlations between different variables:

Hb 1: Tourists' perception of tourism resources has a significantly positive effect on their satisfaction.

Hb 2: Tourists' perception of tourism services has a significantly positive effect on their satisfaction.

Hb 3: Tourists' perception of the quality of local residents has a significantly positive effect on their satisfaction.

Hb 4: Tourists' perception of the quality of local tourism workers has a significantly positive effect on their satisfaction.

Hb 5: Tourists' perception of urban characteristics has a significantly positive effect on their satisfaction.

Hb 6: Tourists' satisfaction has a significantly positive effect on their loyalty.

## 2.2 Data Source

Considering the fact that tourism image is a relatively abstract percept, this research has reviewed and extracted the questionnaire information from existing literature so that five influence factors of tourists' perceived tourism destination image and two variables that can be indirectly impacted by the five influence factors are summed up. The five influence factors include tourists' perceptions of tourism resources, tourism services, the quality of local residents and tourism workers, and urban characteristics. The two variables are tourists' satisfaction and loyalty<sup>[7]</sup>. From the seven perspectives, a questionnaire was designed in the form of a five-point scale to measure tourists' perceived tourism image of Gansu Province.

In this research, the survey subjects comprised all Chinese tourists who have visited Gansu Province. The questionnaires were issued both online and offline. In Zhongshan Bridge, Wuquan Mountain Park, food streets where Tianshui Malatang was catered, and other scenic spots with a large flow of people, an offline street intercept survey was carried out. At the same time, questionnaires were issued online to the users who posted pictures concerning Gansu tourism on social platforms. A total of 560 questionnaires were collected, and 344 were valid after eliminating those with a completion degree below 80% and a response time of less than 120 seconds from overlapped or similar geographic locations and IP addresses. The reliability analysis suggested that Cronbach's alpha coefficient is 0.964, and the data's reliability coefficient is greater than 0.9. The validity analysis based on the KMO test and Bartlett's test showed that the KMO value is 0.960, greater than 0.8, which indicated that the research data is available for information extraction and further analysis.

### 3 Empirical Research

#### 3.1 Structural Equation Modeling of Gansu Tourism Image

In light of the basic theory of the structural equation, as well as the influence factors of perceived tourism destination image, a structural equation model of the Gansu tourism image involving seven latent variables and 22 observed variables is proposed (Figure 1). Specifically, the latent variables include tourists' perceptions of tourism resources, tourism services, and urban characteristics, as well as tourists' satisfaction and loyalty; the observed variables are natural landscape, humanistic landscape, history and culture, social activities, accommodation, catering, entertainment, etc.

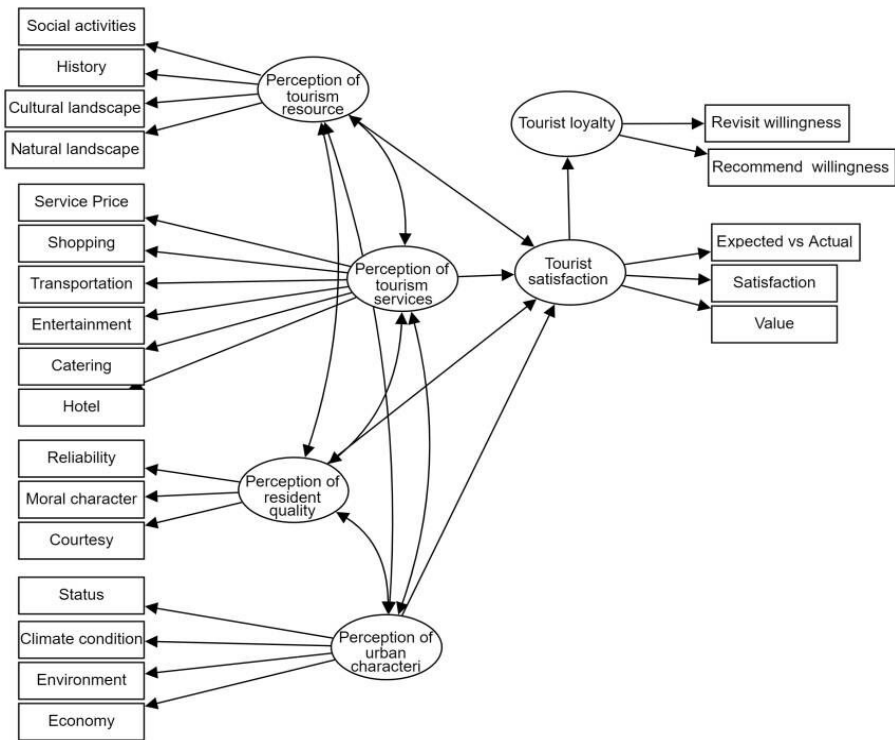


Fig. 1. Structural equation model of tourism destination image perception

#### 3.2 Fitting and Analysis

The SPSSAU software allows for setting up the causal paths illustrated in the structural equation model to output path coefficients and degrees of fitting (Table 1). and an diagram of path coefficients is achieved (Table 2 and Figure 2).

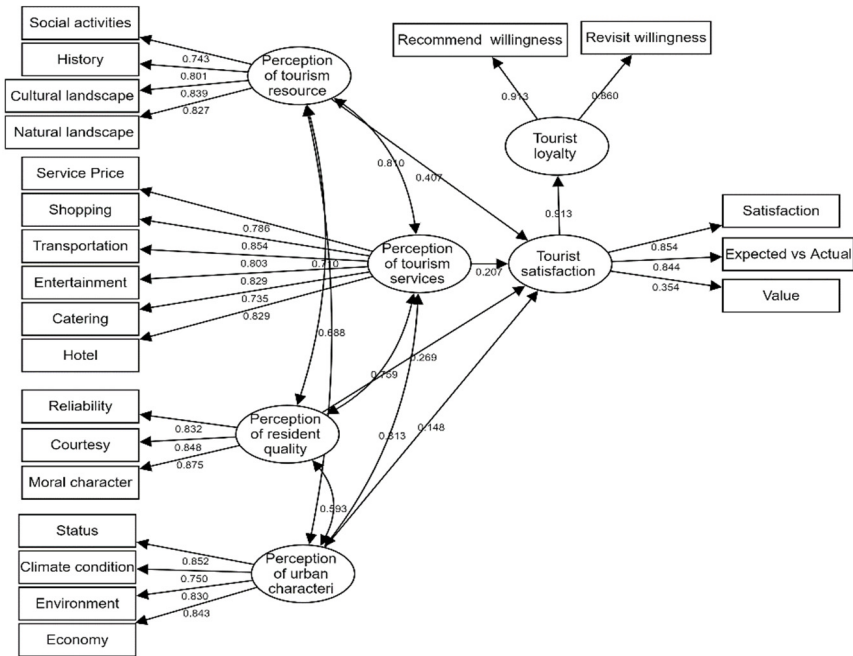
In evaluating the model's goodness of fit, the fit indices are summed up in Table 1. It shows that GFI and AGFI are slightly lower than the standard values, and all the other

indices meet the requirements. The model is interpretable and has a favorable overall fitting degree.

**Table 1.** Fit Indices of the Structural Equation Model

Common Indices	$\chi^2$	df	p	$\chi^2/df$	GFI	RMSEA	RMR	CFI	NFI	NNFI
Standard Value	-	-	>0.05	<3	>0.9	<0.10	<0.05	>0.9	>0.9	>0.9
Value	653.9	236	0.000	2.771	0.850	0.072	0.045	0.937	0.905	0.926
Other Indices	TLI	AGFI	IFI	PGFI	PNFI	PCFI	SRMR	RMSEA90% CI		
Standard Value	>0.9	>0.9	>0.9	>0.5	>0.5	>0.5	<0.1	-		
Value	0.926	0.809	0.937	0.669	0.774	0.801	0.047	0.065~0.078		

Default Model:  $\chi^2(276)=6868.732, p=1.000$



**Fig. 2.** The Structural equation path coefficient diagram

**Table 2.** A summary table of model path coefficients

X	→	Y	SE	Z-score	P-value	Path coefficients
Perception of tourism resources	→	Tourist satisfaction	0.026	4.534	0.000	0.407
Perception of tourism services	→	Tourist satisfaction	0.030	2.149	0.032	0.207

X	→	Y	SE	Z-score	P-value	Path coefficients
Perception of resident quality	→	Tourist satisfaction	0.021	3.870	0.000	0.269
Perception of urban characteristics	→	Tourist satisfaction	0.018	2.214	0.027	0.148
Tourist satisfaction	→	Tourist loyalty	0.488	6.544	0.000	0.913

From the diagram of path coefficients, it can be known:

a. The coefficients of the paths from “perception of tourism resources”, “perception of tourism services”, “perception of the quality of local residents”, and “perception of urban characteristics” to “tourist satisfaction” are 0.407, 0.207, 0.269, 0.148, all greater than 0.1, indicating that the tourism resources, tourism services, quality of local residents, and urban characteristics in Gansu Province can positively influence its tourists’ satisfaction and loyalty and thus its tourism image;

b. The coefficient of the path from “perception of tourism resources” to “tourist satisfaction” is 0.406, ranking the first, which suggests that Gansu’s tourism resources have the most significant effect on its tourism image;

c. The coefficients of the paths from “natural resources”, “humanistic resources”, “history and culture”, “transportation”, “accommodation”, and “catering”, among others, to the latent variables are all above 0, indicating that all these factors have a positive effect on Gansu’s tourism image. Specifically, the “humanistic landscape” measurement item has the highest path coefficient, which demonstrates that it has the most significant effect on Gansu’s tourism image. In terms of the quality of local residents, their obligation to help others has the greatest positive effect on Gansu’s tourism image. The shopping experience, as one of the elements of the humanistic landscape, has a positive effect on Gansu’s tourism image. Despite Tianshui Malatang has gone viral on China’s social media, the coefficient of the “catering” path is relatively low among all the path coefficients. Environmental protection, as one of the urban characteristics, is essential to the shape of Gansu’s tourism image;

d. Not only are the influences of “perception of tourism resources”, “perception of tourism services”, “perception of the quality of local residents”, and “perception of urban characteristics” direct but also indirect. Particularly, tourists’ perception of the environment is dominant. Satisfactory tourism resources can improve tourists’ appreciation of a tourist destination to contribute to their willingness to revisit;

e. At the end of the model, for every 1 unit increase in “tourist loyalty”, “willingness to revisit”, and “willingness to recommend” increase by 0.86 and 0.913 units, respectively. The two elements are important indicators of tourists’ loyalty to a tourist destination.

## 4 Conclusion

Above, the following conclusions are summed up for Gansu’s tourism administration to adopt corresponding strategies to further enhance the province’s tourism image and promote high-quality development of tourism in the we-media era.

Firstly, the tourists' perceived tourism image of Gansu is favorable, but there is still room for improvement. Gansu should continue to strengthen the publicity of its tourism resources and cultural tourism activities via the Internet and social media. In addition to Mogao Grottoes, Crescent Moon Spring, Singing Sand Mountains, Maiji Mountain Grottoes, Jiayu Pass Gate Tower, and other attractions that enjoy fame, Gansu should pay more attention to advertise Zhagana, Kongtong Mountain, Bingling Temple, the Yellow River three gorges, and other scenic spots that are as well attractive yet less famous. Also, the distinctive landforms should be highlighted in publicity. Events such as the "Gansu Cultural Tourism Tik Tok Ecology Meeting" and the "Fly over Gansu" Aerial Photography Competition" should be held regularly to further promote Gansu's tourism image in the minds of massive netizens and travel enthusiasts.

Secondly, tourism resources are the dominant influence factor for Gansu Province to shape its tourism image. Gansu should dig further into its tourism resources in terms of natural landscape, humanistic landscape, history and culture, and social activities to present more tourist attractions according to their locations and styles, improving the depth and width of Gansu's tourism scope. Tourism series may include the Dunhuang series, (desert) landform self-driving tour, Danxia landform, Yellow River series, ancient temples series, etc.

Thirdly, the quality of local residents has a positive effect on Gansu's tourism image. Gansu should emphasize the expression of humanistic care throughout its tourism services. It is an opportunity to improve the professional quality of local tourism workers by reminding tourists about objective problems such as sandstorms and altitude stress via texting, front desk, and post-it notes, among others, as a way of expressing humanistic care. Local residents are the inheritors of a region's culture, and their lifestyle, traditional customs, artistic expressions, and festivals and celebrations are important attractions. Particularly, the research shows that the tourists are sensitive to Gansu people's obligation to help others, integrity, and other characteristics, for which Gansu should provide its people with a high-quality spiritual and cultural life so as to better promote the province's development of cultural tourism.

At last, tourism services and urban characteristics are positive to Gansu's tourism image, but several improvements could be made. Gansu should increase the frequency of airport shuttle buses and intercity trains and especially ensure convenient transportation and accommodation in the vicinity of the airports at night. Different forms of tourism accommodation facilities, such as hotels and guest houses, should be supported. In addition, regular classical performances such as Flying Apsaras, A Fantasy at Dunhuang (Dameng Dunhuang), and Silk Road Flower Rain (Silu Huayu) should be performed more often and forged into must-see cultural tourism events in Gansu, just like the Opera Face in Sichuan. Special events, including the "Highland Music Festival" and "Desert Music Festival" that allow tourists to participate wholeheartedly in tourism and entertainment are recommended, increasing tourists' perceived tourism image of Gansu.

## References

1. Li Shiyang. The Impact of Tourist Destination Image on Tourist Loyalty: Under the Chain Mediation of Tourist Satisfaction and Place Attachment [J]. *Shanghai Management Science*, 2024:88-93
2. LIANG Shuhui, HUANG Mengdie, ZHANG Haixia. A comparative study on official projected image and tourists' perceived image in national park: A case of Wuyishan national park[J]. *Tourism and Hospitality Prospects*, 2024, 8 (2).
3. GAO Wei-zhong. Study on the Relationship between Residents' Satisfaction with, Expectation of and Attitude toward Regional Tourism Development——An Empirical Analysis by SEM Based on the Samples of Urban and Rural Residents of the North Ecological Zone, Guangdong Province[J]. *Journal of Sichuan Tourism University*, 2016, 1(01):51-55
4. Din M W ,Ahmad Z D ,Ahmad S S . The impact of community empowerment on sustainable tourism development and the mediation effect of local support: a structural equation Modeling approach [J]. *Community Development*, 2024, 55 (1): 50-66.
5. Hossein E ,Shahla C ,Yadgar M , et al. Sustainable rural development in Northwest Iran: proposing a wellness-based tourism pattern using a structural equation modeling approach [J]. *Humanities and Social Sciences Communications*, 2023, 10 (1):
6. Ekkapong C ,Sajjakaj J ,Vatanavongs R . Impacts of Tourist Loyalty on Service Providers: Examining the Role of the Service Quality of Tourism Supply Chains, Tourism Logistics, Commitment, Satisfaction, and Trust [J]. *Journal of Quality Assurance in Hospitality & Tourism*, 2022, 23 (6): 1397-1429.
7. Wang Chunyang, Huang Fucui. On Factors of Tourism Destination Competitiveness Based on SEM——A Case Study of Zhangjiajie [J]. *Contemporary Economic Management*, 2013, 33(04):63-71

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

