The Construction of Performance Evaluation Index System for Rural Tourism Poverty Alleviation

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Abstract: As a new poverty alleviation model, rural tourism has become one of the important weapons in the current fight against poverty. In practice, due to the difficulty in defining the cost-effectiveness of rural tourism projects and the difficulty in measuring poverty alleviation performance, it is urgent to establish a scientific rural tourism poverty alleviation performance evaluation index system. Based on the central poverty alleviation guidance document, this paper uses fuzzy quantitative models and mature measurement models to quantify quantitative and qualitative indicators respectively, and initially establishes a set of indicator systems specifically for the performance evaluation of rural tourism poverty alleviation. Taking Gulin County, Luzhou City, Sichuan Province as an example, based on this indicator system, the rural tourism performance score of Gulin County is 72 points, and its tourism poverty alleviation performance is good, which shows that the development of rural tourism has a great role in promoting poverty alleviation in Gulin County. The government should increase its support for the development of tourism poverty alleviation and maximize the effectiveness of rural tourism in poverty alleviation.

1 Summary of Research on Performance Evaluation of Rural Tourism Poverty Alleviation

In 1991, the British Ministry of International Development first proposed the concept of PPT (Pro-Poor Tourism), which means tourism beneficial to the development of the poor. Zhang Wei.[4] based on the economic and non-economic impacts of the poverty alleviation and development of tourism on the poor, the benefits and development of the poverty alleviation effects of the tourism poverty alleviation were carried out from three aspects: actual effects, perceived effects, and sustainability of effects Evaluation.

Tourism poverty alleviation performance evaluation research methods can be divided into qualitative and quantitative categories. In the mid-1970s, American operations researcher T.L.saaty formally proposed the analytic hierarchy process (AHP) to provide guidance for solving multi-objective, multi-criteria or complex decision-making problems without structural characteristics. Li Li and Haixia Bi[5] used field surveys and focused on the perspectives of local residents 'micro-evaluation to use factor analysis to extract several tourism poverty alleviation assessment variables as main factors such as the perception of local residents' participation in utility and anticipation of tourism poverty alleviation.

It can be concluded from the research on the above related literatures that, although China's rural tourism research has entered the development stage, and research on performance evaluation indicators has remained on quantitative analysis and qualitative The scoring of indicators is greatly affected by subjectivity. Based on existing assessment methods, this article tries to build a scientific, effective, qualitative and quantitative evaluation system based on this, in order to provide reference for related research.

2 Design of Tourism Poverty Alleviation Index System

2.1 Structural Standards of the Index System

The first-level indicator is the dimension and direction of the assessment. It focuses on the important strategies and instructions issued by the state and relevant departments. The second-level

indicators are: The basic indicators are the expansion and extension of the evaluation dimension, focusing on the goals and completion of the project; the third-level indicators are specific indicators, which can directly reflect the effectiveness of a specific activity.

2.2 Construction of Indicator System

Table 1 Table of performance evaluation system indicators for rural tourism poverty alleviation

First-level indicators	Secondary indicators	Tertiary indicators	Determine standards	Data Sources
Comprehensive Performance	Economic benefits	Tourism industry's share of local GDP /%	Sichuan Province	Luzhou Statistical Yearbook
		Per capital disposable income of rural residents / 10,000 yuan	Nationwide	
		Rural accommodation catering turnover / 100 million yuan	Sichuan Province	Gulin County Statistics Bureau
	Social benefit	Poor people transfer employment / person	Nationwide	Gulin County Poverty Alleviation Office
		Village clinics		Luzhou Statistical Yearbook
		Urbanization rate /%		
	Ecological Benefits	Proportion of days with good air quality /%	National standard	Gulin County People's Government
		Forest cover rate/%		
	Poverty	Number of poor villages	Negative index	Sichuan News Network
		Poverty incidence /%		
	Improvement of people's livelihood	Number of relocated households / households in poor villages	Nationwide	Gulin County Poverty Alleviation Office
		Rural power grid reconstruction villages / a	Food and clothing value	Gulin County Civil Affairs Bureau
		Rural residents' minimum guarantee rate /%		
Tourist facilities	Tourism infrastructure and public services	Completion of Tural Highway / km		Gulin County Transportation Bureau
		Newly built, rebuilt tourist toilets / seats	Nationwide	
	Travel security	Training number / person		
		Number of passengers received	Nationwide	
Product format	Sightseeing	Experience of cultural tourism projects	Whether it can provide tourists with sensory, behavioral, thinking and emotional experiences	Gulin County Government Work Report
	Travel Catering Accommodation	Number of 2 Star Country Hotels / Farmhouses / A	Nationwide	
	Travel goods	Number of new poverty alleviation products per year	Sichuan Province	
		New tourist poverty alleviation demonstration villages per year		
	Capital investment	Financial special poverty alleviation funds account for general public budget revenue /%	Indicator with reasonable value range	
Policy Support	Policy Implementation	Government support policies and coordination mechanisms	Does the local government have a policy and coordination mechanism for rural tourism development?	Gulin County Government Work Report
		Policy promotion and implementation efforts	Whether the policy is well publicized and implemented	

3 Evaluation of Tourism Poverty Alleviation Index

3.1 Assignment of Quantitative Indicators

Because the collected raw data of the quantitative indicators have significant differences in

practical significance, measurement methods, and units, they cannot be directly used for comparison and evaluation. Instead, the quantitative indicators need to be quantified and standardized first. The maturity levels are consistent, and we use the [0,5] level for the scoring interval of quantitative indicators.

3.1.1 Quantitative Model of Indicators

Based on the characteristics, applicability and practical application of the established indicators, we decided to adopt a fuzzy mathematical quantification model. We divided the positive indicators, negative indicators, and moderate indicators into three categories and quantified them separately, including the following formulas:

(1) Fuzzy quantification models with positive indicators:

$$R_j(x) = \begin{cases} 0.5 + 0.5\sin\left[\dfrac{\pi}{x_{j\max} - x_{j\min}}(x_j - \dfrac{x_{j\max} + x_{j\min}}{2})\right], x_{j\min} < x_j < x_{j\max} \\ 0, x_j \geq x_{j\max}; x_j \leq x_{j\min} \end{cases} \tag{1}$$

(2) Fuzzy quantification model of negative indicators:

$$R_j(x) = \begin{cases} 0.5 - 0.5\sin\left[\dfrac{\pi}{x_{j\max} - x_{j\min}}(x_j - \dfrac{x_{j\max} + x_{j\min}}{2})\right], x_{j\min} < x_j < x_{j\max} \\ 0, x_j \geq x_{j\max}; x_j \leq x_{j\min} \end{cases} \tag{2}$$

(3) Modest indicator quantitative fuzzy model:

$$R_j(x) = \begin{cases} 0.5 + 0.5\sin\left[\dfrac{\pi}{x_{j\mod} - x_{j\min}}(x_j - \dfrac{x_{j\mod} + x_{j\min}}{2})\right], x_{j\min} < x_j < x_{j\mod} \\ 0.5 - 0.5\sin\left[\dfrac{\pi}{x_{j\max} - x_{j\mod}}(x_j - \dfrac{x_{j\max} + x_{j\mod}}{2})\right], x_{j\mod} < x_j < x_{j\max} \\ \\ 0, x_j \geq x_{j\max}; x_j \leq x_{j\min} \end{cases} \tag{3}$$

R_j——The dimensionless evaluation value of the j-th evaluation index
X_j——The original score of the j-th evaluation index;
$X_{j\min}$——The minimum value in the scoring system used;
$X_{j\max}$——Maximum value in scoring system used
$X_{\mod}$——The most appropriate value for the j-th index

3.1.2 Index value

The 24 quantitative indicators in the rural tourism poverty alleviation performance evaluation system can be divided into 3 categories based on their characteristics, basic values, and target values.

(1) The index compared with the average level.

When the level of the indicator is more than 50% of the average level, a fuzzy quantitative model of positive indicators can be used.;When the level of the indicator is less than 50% of the average level, a moderate quantitative fuzzy model can be used. The specific value is applicable to type 1

(2) An index with a reasonable range of values.

This type of indicator can use a moderate quantitative fuzzy model, starting from 50%. The specific value is applicable to type 2.

(3) Indicators with negative evaluation.

Such indicators can use negative quantitative fuzzy quantification models. The specific value is applicable to type 3

Table 2 Index value table (unit:%)

Score	0	1	2	3	4	5
1	(0%，40%]	(40%，55%]	(55%，70%]	(70%，85%]	(85%，95%]	(95，100%]
2	(0%，50%]	(50%，65%]	(65%，80%]	(80%，90%]	(90%，95%]	(95，100%]
3	(0%，30%]	(30%，45%]	(45%，60%]	(60%，75%]	(75%，90%]	(90，100%]

Note: The value of this indicator is mainly based on La Juanjuan, Tong Guangxin, and Li Qian[6]Research on the performance evaluation index system for precision poverty alleviation in the western region.

3.2 Assignment of Qualitative Indicators

Qualitative indicators are usually difficult to quantify. This article combines government work reports from three aspects: work quality, work process, and project completion. Based on previous relevant work evaluation experience, a certain score is given according to the evaluation indicators.

Table 3 Index value table (Unit: minutes)

	Extremely inefficient, unfinished	Low efficiency and substandard quality	Low efficiency with minor flaws	Average efficiency and quality	Higher efficiency and better quality	High efficiency and high quality
Score	0	1	2	3	4	5

4 Application Analysis of Performance Evaluation Index System for Rural Tourism Poverty Alleviation

4.1 Overview of Tourism Poverty Alleviation in Gulin County, Luzhou

Based on the construction of a poverty alleviation performance indicator system for rural tourism, this paper selects Gulin County of Luzhou City as a case for empirical research. There are two main reasons: First, Gulin County has been a state-level poverty-stricken village, which has achieved remarkable results since the development of tourism poverty alleviation. In 2017, Gulin County was rated as the Sichuan Tourism Poverty Alleviation Demonstration Area; in 2018, it was rated as the Sichuan Tourism Strong County. It is very typical and representative in the field of rural tourism poverty alleviation. Second, Gulin tourism resources are rich and unique. With the continuous improvement of transportation and other infrastructure conditions, Gulin rural tourism has developed rapidly, which has greatly promoted the county's gradual escape from poverty.

4.2 Performance Evaluation of Poverty Alleviation through Tourism in Gulin County, Luzhou City

4.2.1 Determination of indicators and data sources

With reference to the research results of relevant scholars, this article builds the indicator system based on the main indicators of poverty alleviation listed in the"Thirteenth Five-Year Plan for poverty alleviation". And refer to the existing indicators in the "National Basic Standards of Well-off Rural Living Standards" as the reference value for the score, and the values that are not in the basic indicators are based on the published standards of the country, industry and region as reference values.The actual data sources are: the work report of the Gulin County Government, such as the Statistics Bureau of   Luzhou.The determination of indicators is shown in Table 1.

4.2.2 Index score

Table 4 Performance scores of poverty alleviation in rural tourism in Gulin in 2017

First-level indicators	Secondary indicators	Scoring percentage	Grade 1 index score ratio /%
Comprehensive performance	Economic benefits	10/15	82.86%
	Social benefit	10/15	
	Ecological Benefits	9/10	
Social development	Poverty status	7/10	80%
	Improvement of people's livelihood	13/15	
Tourist facilities	Tourism infrastructure and public services	10/10	73.33%
	Travel security	1/5	
Product format	Sightseeing	5/10	67.5%
	Travel Dining and Accommodation	2/5	
	Travel goods	8/10	
	Capital investment	4/5	
	Policy Implementation	8/10	
overall ratings		87/120	72.5%

.From the table, it can be seen that from the national poverty-stricken counties to the present rural tourism poverty alleviation demonstration base in Gulin County, rural tourism has played an important role in boosting the overall comprehensive score of 72.5%, and its tourism poverty alleviation performance is at a good level. .

(1) The first place that has made a significant contribution to the overall performance score is comprehensive benefits, of which the ecological benefit score is the highest, reaching 90%; among the economic benefits, the tourism industry accounted for 26.67% of the local GDP, which contributed the most and was in line with reality.

(2) The social development index, which ranks only behind comprehensive benefits, contributes 80% to the performance evaluation of rural tourism poverty alleviation, and the improvement of people's livelihood contributes the most to the comprehensive score of tourism poverty alleviation benefits of Gulin County in 2017. Contributed 86.67% of the comprehensive score.

(3) Excellent performance in the construction of tourism facilities,which accounting for 90.91% of the total score of tourism facilities. A total of 1,050 kilometers of highways to the village and a mileage exceeding the total of the previous ten years were built, and tourism was newly built or rebuilt. With 31 toilets, the "Toilet Revolution" was fully implemented.

(4) The two scores of tourism safety, tourism catering and accommodation have the lowest scores. The number of rural tourism safety training in She County is only 290, and the number of two-star farmhouses / rural hotels in Gulin County is only 11.

5 Research Conclusions

To further implement poverty alleviation in rural tourism, we must give full play to the "blood-making capacity" of tourism resources and to achieve poverty reduction.Therefore, the establishment of a performance evaluation index system is the basis for measuring whether or not poverty alleviation is accurate, and it also provides theoretical basis and guidance for the development of future poverty alleviation work.

This article mainly divides the indicators into two categories, qualitative and quantitative, and then uses fuzzy mathematical quantitative method and maturity model qualitative method to evaluate and score them, which is operable and peaceful rationality. We substituted the original data of Gulin County, Luzhou City, Sichuan Province into the index evaluation system to calculate.

Finally, we obtained a total score of 72.5 points for the performance evaluation of rural tourism in Gulin County in 2017, which belongs to the upper-middle level. The industrial chain is not closely connected and other practical issues.

Although the preliminary rural tourism poverty alleviation indicator system has been established, the current investment and cost of rural tourism projects are difficult to define. The value of the indicators is subjective and lacks theoretical innovation. These are all in the future research on poverty alleviation performance of tourism The focus of attention.

References

[1]   CPC Central Committee, State Council. Outline of China's Rural Poverty Alleviation and Development (2011-2020) [EB / OL]. 2017.

[2]   CPC Central Committee, State Council. "Thirteenth Five-Year Plan" to tackle poverty [EB / OL]. 2016.

[3]   Department of Planning and Finance, National Tourism Administration. Action plan for rural tourism poverty alleviation project. 2016.

[4]   Zhang Wei, Zhang Jianchun, Wei Hongyan. Evaluation of the Poverty Alleviation Effect of Tourism Based on the Development of the Poor: A Case Study of Tongluozhai Scenic Spot in Anhui Province [J]. Tourism Tribune, 2005 (5): 43-49.

[5]   Li Li, Haixia Bi. An Analysis of the Poverty Alleviation Effect of Tourism——Based on the Empirical Investigation of Meizhou City, Guangdong Province [J]. Anhui Agricultural Sciences, 2010 (27): 15353-15355.

[6]   La Juanjuan, Tong Guangxin, Li Qian. Research on the Performance Evaluation Index System of Precision Poverty Alleviation in Western Regions [J]. Forum on Economic Management of the West, 2018 (1): 15-22.

[7]   VANEGAS M. Poverty elimination through tourism dynamics [J]. Handbook of Tourism and Quality-of-life Research, 2012 (1): 65-83.