

Construction and Application of Evaluation Index of Rural Tourism Symbiotic Development Level

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Abstract: The evaluation of rural tourism symbiotic development level plays an important guiding role in the integrated development of rural tourism. Based on the existing research results, this paper defines the concepts related to the symbiotic development of rural tourism, and from different dimensions, constructs a set of relatively perfect rural tourism symbiotic development level evaluation index system. On this basis, this paper chooses Chengdu, a classic rural tourism destination, as the case to evaluate and study the coordination degree of rural tourism symbiotic units, the patency degree of symbiotic mode, the fit degree of symbiotic environment and the development degree of symbiotic interface in Chengdu. Finally, some management enlightenments are put forward, such as straightening out the management mechanism system, optimizing the symbiotic development environment, cultivating leading enterprises in the industry, and stimulating the vitality of symbiotic development.

1. Introduction

Symbiosis theory is an important theory in biology. German biologist Anton DE Bery put forward the concept of “symbiosis” in 1879. He defined symbiosis as a state in which different species form mutually promoting and harmonious coexistence in a specific environment. As an ecological theory to explore how species can coexist in harmony, symbiosis theory has been widely used in multi-disciplinary research, involving economics, geography, urban planning and other disciplines. Its theoretical system has a positive impact on the research of other disciplines. The application of symbiosis theory in the field of rural tourism focuses more on the coordination of relations between relevant stakeholders and analyses the promotion effect of symbiosis on the tourism industry and benefit distribution, so as to promote the sustainable development of rural tourism.

2. The Research Reviewed

In the relevant studies on tourism symbiotic development system, Browna interpreted the practice of Marine tourism development in Australia and pointed out the important role of the support from stakeholders of Marine tourism development in the planning and management of Marine tourism. Waligo pays attention to the contradictions and conflicts existing in various symbiotic units in rural tourism development. Centering on strengthening management and intervention to alleviate conflicts and realize cooperation, Waligo creatively created the institutional framework of “MSIM-multi-stakeholder participation in management” and constructed the management model of rural tourism symbiotic development system. By analyzing all relevant elements of the Tourism industry in Norway and introducing the symbiosis theory, Arvid puts forward the symbiosis model of tourism, researchers and management institutions, and emphasizes the importance of symbiosis development for the prosperity and development of tourism. Butcher pays more attention to the symbiotic relationship between tourism development and environmental protection, and proposes that in ecotourism development, protection and development build a symbiotic system of tourism and emphasize the importance of environmental protection.

3. Concept Definition

3.1 Rural Tourism Symbiotic System

Rural tourism symbiotic system is an organic whole composed of symbiotic units, symbiotic environment and symbiotic mode. The rural tourism symbiotic unit starts from all stakeholders and abstracts the relevant industry departments as the core of the unit, which constitutes the basic module of rural tourism symbiotic development. This module includes the relevant industry authorities, industrial enterprises, industry associations, all practitioners and so on. Starting from the six elements of the tourism industry, this paper further divides the rural tourism symbiotic unit into six basic modules: tourism catering, tourism accommodation, tourism transportation, tourism sightseeing, tourism shopping and tourism entertainment.

Rural tourism symbiotic environment covers all the factors other than rural tourism symbiotic unit, including social, political, ecological, economic, market and other environmental factors other than rural tourism and related industries, as well as various public service factors related to tourism. Among them, tourists, as direct consumers of rural tourism, and suppliers of rural tourism products jointly constitute the market environment of rural tourism and provide space carriers for the production and trade of rural tourism.

Rural tourism symbiosis model focuses on the operation and management model of rural tourism symbiosis development. How each symbiotic unit interacts with the symbiotic environment to achieve dynamic balance through game and form a set of symbiotic development model. In the practice of rural tourism development, it can be embodied in the elements of the facilitator and participants, the development operation and management mode, and the interest communication and coordination mechanism.

3.2 Rural Tourism Symbiotic Development Level

The development of organism refers to the dynamic process from the birth of organism to the biological function and structural evolution to realize the development and maturity of the whole organism. Similar to living organisms, rural tourism symbiotic development is the evolution and perfection of the symbiotic unit, so as to reach a mature state. In this process, the game balance between the symbiotic environment and the symbiotic mode is realized to achieve the optimal allocation. Specifically, it is the process of rural tourism symbiotic unit from generation to maturity, and in the process of development, various mechanisms and structures are improved, so as to achieve high-quality and sustainable development of rural tourism.

4. Construction of Evaluation Index System of Rural Tourism Symbiotic Development Level

4.1 Assessment Dimensions

The evaluation dimensions of this paper were obtained through literature review and expert interviews. First reviews the literature review, the rural tourism development level reflects the symbiosis rural tourism symbiotic unit build and symbiotic organization coordinated ability, reveals the symbiosis unit, symbiosis mode, symbiosis environment on the basis of sexual function, to determine the symbiosis unit coordination degrees, symbiotic mode unobstructed, symbiotic environment fit three dimensions.

Secondly, the selected dimensions are supplemented and improved by expert group interview. In the interview, experts believed that symbiotic interface should be included to reflect the dynamic stability and sustainability of symbiotic development of water. Therefore, there are four dimensions to evaluate the level of symbiotic development: symbiotic unit coordination, symbiotic mode patency, symbiotic environment fit, and symbiotic interface development.

4.2 Evaluation Index Selection

In this paper, the symbiosis theory and the research results of rural tourism symbiosis are fully used for reference. Relevant research results are consulted from four dimensions. Preliminary evaluation indexes are extracted and adapted into appropriate evaluation indexes by combining the characteristics of rural tourism symbiosis, 15 first-level evaluation indexes and 32 second-level evaluation indexes are obtained. In the end, expert scoring and autocorrelation analysis were used to delete irrelevant indicators and combine repeated indicators, and 10 first-level and 22 second-level indicators were finally obtained.

Table.1 the Evaluation Index System of Symbiotic Development Level of Rural Tourism

Dimensions	First-level index	Second-level index
Symbiotic unit coordination degree	Symbiotic unit benefit level	Total tourism revenue
		Tourism brand
		Social effects
	Symbiotic unit open level	Open the breadth
		The depth of the open
	Symbiotic unit equity level	Equity of income distribution
		Symbiotic status equity
Patency of symbiosis pattern	Symbiotic organization model level	The patency of symbiotic communication
		The patency of the symbiotic cost
	Symbiotic behavior pattern level	Degree of patency of symbiotic division of labor
		The patency of symbiotic cooperation
Symbiotic environmental fit	The symbiotic environment is smooth	Symbiotic environmental entropy
		Symbiotic public service entropy
	Symbiotic environment equilibrium level	Symbiotic industry density is balanced
		Symbiosis density is balanced across industries
Symbiotic interface development	Symbiotic medium level	Number of symbiotic media
		Symbiotic medium complementarity
	Symbiotic interface stability	Degree of symbiotic conflict coordination
		Symbiotic interface persistence
	Symbiotic specificity	The total symbiosis
		Symbiotic interrupt number
		Degree of symbiotic repair

4.3 Evaluation Methods

Determine the scoring standards and weights of all levels of indicators. In this paper, analytic hierarchy process (AHP) is used to obtain the index weight of each layer. Through four steps of constructing hierarchical structure model, constructing judgment matrix of pairwise comparison among indexes, expert scoring and calculating the index weight of each layer, the index weight is obtained, and consistency test is conducted to obtain the final weight scale.

Structured interviews with experts. This paper obtained scores through structured interviews to understand the symbiotic development of rural tourism in Chengdu. In addition, 9 scholars and practitioners in the field of rural tourism were invited to interview the measurement dimensions and first-level indicators of the symbiotic development level of rural tourism in this paper, and they were invited to rate the importance of second-level indicators and the judgment matrix on the 1-9 scale.

The index weight data is obtained by constructing and calculating the judgment matrix. Firstly, the hierarchical model of the evaluation of rural tourism symbiotic development level is drawn, five comprehensive judgment matrices are constructed, and then 9 experts are invited to evaluate the judgment matrix. Then MATLAB R2014a was used to solve the judgment matrix according to the sum method, and the index weights of all levels and the maximum characteristic root λ_{\max} and the consistency ratio (CR) of the matrix were calculated (Table 2). When the consistency ratio is less than 0.1, it indicates that the judgment matrix satisfies the consistency test and the index weight

obtained is effective. The weight of the criteria level index (4 dimensions) is the single ranking weight of the hierarchy, while the weight of the indicator level index (the first level index) is the total ranking weight of the hierarchy. Due to the large number of refined indicators (the second level index), they are given the same weight according to the unified opinions of experts. After calculation, the following results can be obtained.

Table.2 Matrix Vector Table

Matrix	Feature vector	(λ_{\max})	C.R.	Description
Symbiotic development level	W=(0.301,0.383,0.143,0.173)	4.116	0.039	The matrix has good consistency and the weight of solution is effective
Symbiotic unit coordination degree	W=(0.136,0.086,0.079)	3.003	0.003	
Patency of symbiosis pattern	W=(0.189,0.194)	3.074	0.063	
Symbiotic environmental fit	W=(0.072,0.072)	2.000	0.000	
Symbiotic interface development	W=(0.076,0.041,0.056)	3.000	0.004	

5. The Measurement of Rural Tourism Symbiotic Development Level in Chengdu

The scoring standard of the refinement index is a 10-point system, and the calculation method of the index score is as follows: the score of the index layer is the arithmetic mean of the refinement index, the score of the criterion layer is the weighted total score of the index layer, and the score of the target layer is the weighted total score of the criterion layer. The specific calculation method is as follows:

$$S_D = \sum \left[\sum \left(S_{Am} / N_{Am} \right) \beta_{Bi} \right] \beta_{Ci}$$

S_{Am} represents the sum of the scores of all refinement indicators under each indicator layer; N_{Am} represents the number of refinement indicators contained in each indicator layer; β_{Bi} represents the weight of each indicator layer; β_{Ci} represents the weight of each criterion layer; S_D represents the score of target layer. The value of I is numbered consecutively starting from 1, and the value of M is determined by the number of indicators under each index.

According to Equation (1), the score of symbiotic development level and sub-dimensional symbiotic development level of rural tourism in Chengdu was obtained. According to the calculation results, the overall level of symbiotic development of rural tourism in Chengdu is not high, scoring only 5.124 points. In terms of the scores, the symbiotic environment fit (6.051) was the highest, the symbiotic unit coordination degree (3.386) was the lowest, and the patency degree of the symbiotic mode and the development degree of the symbiotic interface both exceeded 5 points. Combined with the interview data, this paper makes an in-depth analysis of the evaluation results of each dimension, and presents the current situation of the symbiotic development of rural tourism in Chengdu.

5.1 The Coordination Degree of Rural Tourism Symbiotic Unit in Chengdu Needs to Be Improved

The coordination degree score of rural tourism symbiotic unit in Chengdu is 3.386, which is at a low level. Based on field investigation and interview, it is found that the level of openness and fairness of rural tourism symbiosis units in Chengdu are poor, the symbiosis status of each symbiosis unit is not balanced, and some symbiosis units are declining, which further affects the breadth and depth of opening of the symbiosis units and restricts the level of symbiosis benefits. A rural tourism practitioner said that as the actual operator of rural tourism, its dominant position has not been fully paid attention to, and more passive cooperation with platform companies and

competent departments has resulted in higher cost and lower initiative in the process of symbiotic development.

5.2 The Patency of Rural Tourism Symbiosis Model in Chengdu is Good

The patency score of rural tourism symbiotic mode in Chengdu was 5.050, which was in the middle level. On the one hand, the rural tourism in Chengdu started early with clear development path and remarkable achievements in business symbionts. It has produced numerous highly clustered rural tourism destinations and has advantages in rural tourism brands, talents, policy support and other aspects. On the other hand, there are obvious differences between symbiotic units at different development stages, such as large differences in development levels among rural tourism operation and management companies and practitioners. Mature enterprises drive the development of emerging enterprises, reduce the cost of symbiotic development, and promote the division of labour and cooperation among the symbiotic units.

5.3 Chengdu's Rural Tourism Symbiotic Environment Has a High Degree of Fit

The weight of rural tourism symbiotic environment fit in Chengdu was only 0.143, but the score was as high as 6.051, which was at a high level. This indicates that the symbiotic environment of rural tourism in Chengdu has a higher level of patency and equilibrium, and a relatively complete symbiotic development circle led by the government authorities, led by the operation company, dominated by the source market, participated by operators, and oriented to tourists has been established, thus achieving stable, orderly and efficient development. At the same time, after years of symbiotic development and accumulation, Chengdu's rural tourism symbiotic public service has profound connotations, balanced industrial density, good division of labour and coordination, and perfect industrial chain, so its symbiotic environment has a high degree of compatibility.

5.4 The Development Potential of Rural Tourism Symbiotic Interface in Chengdu is Huge

The score of symbiotic development of rural tourism in Chengdu was 6.016, which was at a high level. Symbiotic media are well developed, with a large number of media and strong complementarities. Specifically, there are many business cooperation among enterprises, most of which conclude agreements or contracts for cooperation, and most of which are long-term cooperation modes. Thus, the total amount of symbiosis is relatively high, which avoids the interruption of symbiosis, reduces the symbiosis conflict, strengthens the interdependence and trust between symbiosis units, and promotes the stability and specificity of symbiosis interface.

6. Conclusion

Based on rural tourism in Chengdu city symbiotic development level of evaluation and test analysis, the author thinks that to enhance the level of the symbiotic development of rural tourism of Chengdu and need further expansion of symbiotic space, rich tourism forms, straighten out the symbiotic mode, to deal with the government, enterprises, community residents and tourism practitioners, the symbiotic relationship between symbiotic unit, and then optimize the symbiotic environment, improve the development degree of the symbiotic interface, activate the symbiotic development.

6.1 Straighten out the Management System and Optimize the Symbiotic Development Environment

The public-private partnership mechanism should be further constructed to focus on the poor communication and interest conflicts among various symbiotic units such as the government, enterprises, local community residents and tourism practitioners, thus forming a synergy for development. Chengdu should clarify the boundaries among government, enterprises and

communities, clarify the role and positioning of each symbiotic unit, and optimize the symbiotic development environment. First of all, the government gives full play to the social function of supervision and management, makes great efforts to improve rural tourism infrastructure and public services, standardizes the audit and supervision of rural tourism projects, guides the sustainable development of rural tourism, and stimulates the vitality of rural tourism development. Second, build a symbiotic platform, relax the control over enterprises, introduce incentive policies, and strengthen the work of attracting investment.

6.2 To Foster Leading Enterprises in the Industry and Stimulate the Vitality of Symbiotic Development

At present, the symbiotic development process in Chengdu is dominated by small and medium-sized enterprises, which need to be cultivated as leading enterprises in the industry. Layout in advance should set an example in terms of management mode and symbiotic cooperation relationship, form a model enterprise, and promote the evolution of enterprises from the primary form of business symbiosis to the advanced form of brand symbiosis, research and development symbiosis and so on.

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