

Study on the Connotation and Evaluation Index System of Social-ecosystem Vulnerability in Rural Tourism Destinations

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Keywords: Rural tourism destination; social-ecological system; vulnerability; evaluation index system

Abstract: As an important part of new rural construction and rural economic and social development, rural tourism has received great attention and support from the state and local governments. In recent years, it has shown a strong trend of development, but there are also a series of problems. Based on the perspective of systemic vulnerability study and the related theories of social ecosystem and vulnerability of tourism destination, this paper makes an in-depth analysis of the connotation of social-ecosystem and vulnerability of rural tourism destination. And from the two main dimensions of system sensitivity and adaptability, the social and ecological system vulnerability evaluation index system of rural tourism sites is constructed, and the evaluation methods combining qualitative and quantitative are clarified. The purpose of this paper is to explore the vulnerability of the original extensive development in the process of rural tourism development and the involvement of tourism media in the development of tourism industry to the rural society-ecological system. Promote the upgrading and sustainable development of rural tourism and help rural revitalization.

1. Introduction

As a new type of tourism industry, rural tourism has dual significance of tourism and agricultural development. On the one hand, it is an effective way to realize the deep integration of agriculture and secondary and tertiary industries, promote agricultural modernization and promote rural revitalization. On the other hand, the natural rural scenery, good ecological environment and authentic cultural customs in rural areas have a strong attraction to the tourist market. Rural tourist destinations have become an important space choice for public leisure vacation and recreational experience. According to relevant statistics, in 2017, the total revenue of rural tourism and leisure agriculture in China exceeded 620 billion yuan. The total scale of tourism consumption reached 1.4 trillion yuan, and more than 2.5 billion tourists were received, of which 9 million peasant employees benefited more than 7 million peasant households. However, in the process of rural tourism development in the context of rapid urbanization. Extensive and predatory tourism development models and the entry of external tourism media in tourism activities have made the contradiction between rural tourism development and background ecological environment, local natural and cultural resources, and local culture increasingly intensified. Affecting the survival of the countryside and the stability of the social environment, it has caused deep disturbances to the coordinated development of the rural economy, society and ecological environment. The rural social ecosystem is under new pressure. To this end, the state and local governments, enterprises, academia and the interests of all parties in the society attach great importance to the sustainable development of rural tourism. In 2017, China began to implement the strategy of rural revitalization and development. The comprehensive and sustainable development of rural tourism has been mentioned many times. In 2018, the Ministry of Culture and Tourism, the National Development and Reform Commission and other 17 departments issued the "Guiding Opinions on Promoting the Sustainable Development of Rural Tourism." At the same time, the sustainable development of tourism sites based on the carrying capacity of rural social ecological environment has gradually become one of the hot issues in tourism geography research at home and abroad.

In recent years, the sustainable development of tourism industry has become one of the important

contents of global economic sustainable development. Relevant foreign scholars pay more and more attention to the coordinated development of economic and ecological coupling, the optimization of rural ecological spatial layout, the compensation of rural ecological environment restoration based on ecological footprint method, the analysis of ecosystem vulnerability and the research of resilience. The application of social-ecosystem theory in rural tourism is increasing day by day. Combining with vulnerability theory, it provides a new research perspective for the analysis of the relationship between people and land in rural tourism destinations. Turner, Adger and others build the system vulnerability evaluation model and evaluation system, based on system theory and vulnerability theory [1-2]. Polsky and others rely on system theory to analyze tourist destinations as a system with complex adaptability characteristics [3]. Petrosillo et al., taking the rural area of Salento in southern Italy as an example, combined the socio-ecological system theory of tourism sites to quantitatively analyze the vulnerability of rural tourism systems [4]. Compared with foreign studies, Chinese scholars are relatively lacking in research on rural tourism ecological environment protection and sustainable development, mainly in the study of ecological environment of ecologically sensitive villages. Most of them do not analyze the evolution of human-land relationship and sustainable development in rural tourism from the perspective of social-ecological system. At the same time, the combination of the theory of vulnerability of tourism system is mainly based on a certain city or county. The research on the construction and method of social-ecological vulnerability assessment indicators for rural tourism sites has not yet formed a clear research system. Guided by the theoretical framework of social ecosystems, Li Jia regards rural tourism sites as a tourism social ecosystem and quantifies the evolution of social-ecological systems in the development of rural tourism in Wangcun, Chang'an District [5]. Wang Qun et al., taking Zhao'an County of Zhejiang Province as an example, conducted a comparative study on the resilience of social-ecological systems, with a view to promoting the comprehensive and sustainable development of tourism in Chun'an County [6].

Therefore, from the perspective of human-land relationship in rural tourism destinations, this paper defines and analyses the connotation of social-ecosystem and its vulnerability. The evaluation index system of social-ecosystem vulnerability of rural tourism destination is constructed from two aspects of system sensitivity and adaptability, and the relevant evaluation methods are sorted out. It will provide some theoretical support for the follow-up exploration of the original extensive development in the process of rural tourism development and the impact of the involvement of tourism media in the development of tourism industry on the vulnerability of rural social-ecological system, as well as the realization of comprehensive economic, social and ecological benefits in the development of rural tourism and the promotion of the coordinated development of rural tourism economy, society and ecological system.

2. An Analysis of Social-Ecosystem and Its Vulnerability in Rural Tourist Destinations

As a kind of social behavior, tourism activities are closely related to the natural environment, but also affected by economic and social factors such as economic foundation, industrial structure, system and policy, social mechanism, cultural level and so on [7]. Rural tourism is a tourism activity based on rural ecological environment, with rural pastoral scenery and local folklore as its core resources, aiming at improving people's living quality and satisfying tourists'leisure and recreational needs. The Social-Ecological System of rural tourism destination is a complex adaptive system formed by the coupling of ecosystem and social system within the scope of space carrier directly affecting the development of tourism activities. It is a social-ecological system closely related to human and nature in rural tourism destination. It is disturbed and driven by internal and external factors, and has the characteristics of complexity, dynamics and non-linear correlation of elements [8]. Among them, the ecosystem provides basic resources for tourism activities and is an environmental carrier for the effective development and development of rural tourism. The social system centers on stakeholder and tourism industry activities in rural tourism development. The ecosystems and social systems of rural tourism areas are interdependent and closely related to form an eco-social coupling system. At the same time, under the influence and disturbance of external

factors, the system will undergo structural adjustment and transformation, which restricts the sustainable development of rural tourism.

The social-ecosystem vulnerability of rural tourism destination refers to that the social-ecosystem in the development of tourism activities in rural areas is affected by external factors such as changes in natural environment, development of tourism industry and exploitation and utilization of tourism resources. At the same time, rural tourism sites are driven by factors such as the change of management and development mode, the renewal of industrial format, new residents and the entry of foreign tourists. The ability to maintain its own state and cope with changes is the performance of the inherent attributes of the system under the driving action [9]. Exposure (EI)-sensitivity (SI)-adaptive (AI) is the basic element that constitutes the social-ecological vulnerability of tourism destinations. The three elements are interconnected and interact. Among them, exposure and sensitivity respectively reflect the factors that are most likely to be exposed to risks in rural tourism destinations and the probability of possible conversion to disaster events in the process of exposure to exposure factors in rural tourism development. Adaptability refers to the ability of rural tourism sites to withstand risks and self-healing under the influence of natural and human environments and adverse factors in industrial activities. The vulnerability of the social-ecological system in rural tourism destinations is directly proportional to the exposure and sensitivity, and inversely proportional to the adaptability, i.e. the greater the exposure and sensitivity, the higher the vulnerability; conversely, the greater the adaptability, the smaller the vulnerability [10].

3. Constructing Evaluation Index System

Table 1 Evaluation Index System of Social-Ecosystem Vulnerability in Rural Tourism Destinations

Target layer	Criterion level I	Criterion level II	Index factors	Index type
Tourism Society-Ecosystem Vulnerability	System sensitivity	Social subsystem	Immigration Rate of Migrant Population	Forward type
			Number of tourism practitioners	Forward type
			Tourism infrastructure	Forward type
		Economic Subsystem	Retail Price Index of Commodities	Forward type
			Per capita tourism income	Forward type
			The proportion of tourism income to GDP	Forward type
		Ecological subsystem	Change rate of tourism construction land	Forward type
			Vegetation coverage	Forward type
			Pollution Emissions per 10,000 yuan of Tourism Income	Forward type
	System Coping Ability (Adaptability)	Social subsystem	Educational level	Negative type
			The proportion of tourism employment	Negative type
			Ability to work	Negative type
		Economic Subsystem	Per capita household income	Negative type
			Total growth rate of Tourism	Negative type
			Gross Tourism Income Growth Rate	Negative type
		Ecological subsystem	Per capita arable land area	Negative type
			Investment rate of environmental protection	Negative type
			Regional biodiversity	Negative type

In order to understand and evaluate the social-ecosystem vulnerability of rural tourism destination more scientifically and reasonably, the principles of representativeness, systematicness and operability are followed. The evaluation index system of social-ecosystem vulnerability of rural tourism destination is constructed. Based on the analysis of the connotation of the Social-Ecological System and vulnerability of tourist destination, this paper studies it from three perspectives of society, economy and ecology. The system vulnerability index is defined as two aspects: sensitivity to external interference and adaptability to risk. It contains 18 indicators. Among them, the social system vulnerability includes two aspects: rural tourism social environment stability and basic security and social welfare; economic system vulnerability includes two aspects of rural tourism economic development and economic industrial foundation. The vulnerability of ecosystems involves two major aspects of rural natural ecological environment and environmental changes

caused by tourism industry activities. The indicators and indicators of social-ecological vulnerability assessment indicators for specific rural tourism sites are shown in Table 1.

4. Selection of evaluation methods

4.1 Standardization of Indicators

Before quantitative measurement and analysis of social-ecosystem vulnerability evaluation index of rural tourism destination, the original data should be standardized to achieve dimensional consistency. However, due to the differences in magnitude and positive and negative orientation of each index in the vulnerability evaluation index system, it is more appropriate to standardize the initial data using the maximum and minimum method. That is, for the indicators of the system vulnerability assessment index system, which are positively correlated with the vulnerability, the forward index calculation method is adopted, and for the vulnerability evaluation index system, the negative correlation index calculation method is adopted for each index which is negatively correlated with the vulnerability. The specific formula is: Positive Indicator: Negative Indicator.

4.2 Method of Determining Index Weight

There are many methods to determine the weight of indicators, including subjective and objective empowerment. Among them, subjective empowerment methods include analytic hierarchy process and Delphi method, which mainly depend on experts' subjective judgment of the importance of each index. The objective weighting method includes entropy method, factor analysis method, principal component analysis method, cluster analysis method, etc. It is mainly driven by the information quantity of each index or the difference of samples. Compared with the subjective weighting method, the objective weighting method effectively avoids the subjective randomness of the expert scoring, especially the entropy method, which is based on the expert scoring and combines the original effect value of each index to improve it. optimization. Better objectively reflects the relative importance of the information volume and indicators of each indicator, reduces the subjectivity of the evaluation, and is more suitable for the weight assignment of the social-ecological vulnerability assessment indicators of rural tourism destinations.

4.3 Comprehensive Evaluation Method of Indicators

At present, comprehensive evaluation methods for system vulnerability at home and abroad mainly include comprehensive index method, vulnerability function model evaluation method, fuzzy matter element evaluation method, etc. Among them, the comprehensive index method is simple to operate and easy to calculate. It can measure and analyze the vulnerability index data comprehensively and form the vulnerability evaluation index. In order to quantify the vulnerability of rural tourism destination, it is a widely used method in vulnerability assessment. It is more suitable for the quantitative assessment of social-ecosystem vulnerability of rural tourism destination. The specific calculation formula is as follows:

$$F = \sum_{j=1}^n w_j \times X_{ij} \quad (1)$$

Where F represents the system vulnerability index of a rural tourism destination, w_j represents the weight of index J, and X_{ij} represents the standardized value of index J of a rural tourism destination.

5. Conclusion

Based on the perspective of system vulnerability, this paper combs the relevant theories and research results at home and abroad, and makes a thorough analysis of the Social-Ecological System and its vulnerability connotation of rural tourism destination. On this basis, the evaluation index system of social-ecosystem vulnerability of rural tourism destination is constructed, and its

quantitative measurement, evaluation and analysis methods are considered comprehensively. In order to carry out quantitative analysis and evaluation of the social-ecological vulnerability of specific rural tourism destinations, this paper explores the constraints and disturbance factors of coordinated development of tourism, society and ecology in the process of rural tourism development. The analysis of the mechanism of social-ecological vulnerability of rural tourism sites and the optimization of development models provide a certain theoretical basis and quantitative analysis methods. In order to effectively realize the coupling and coordination of human-land relationship in rural tourism development and benign interaction, promote the optimization and upgrading of rural tourism and sustainable development.

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