Research on the Construction of Jiangxi Provincial Intelligent Tourism Public Service Platform based on Analytic Hierarchy Process (AHP) and Fuzzy Comprehensive Evaluation

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Abstract. In this paper, the construction of public service system under the background of intelligent tourism is analyzed, and the relevant factors affecting the construction of public service system in intelligent tourism is summarized through the construction of evaluation indexes of the tourism public service. Through the analysis of these factors, it is aimed to build targeted solutions to promote the steady development of tourism industry service system.

Keywords: Intelligent Tourism; Public Service System; Management

1. Introduction

Under the background of the rapid development of tourism industry, the public service system in intelligent tourism has been widely concerned by people. Through the construction of tourism public service system, taking the tourists as the core, combined with information technology, in view of the regional differences and people's differences, an intelligent service system will be formed to enrich people's cognition and experience to tourism projects, and show the humanization and scientific and technological development of the tourism industry. In the current tourism industry, the public service evaluation system of intelligent tourism is rare. Although the intelligent tourism model has been established in some areas, there are some problems in the tourism public service system, such as lack of public information, service differences and so on. The emergence of these phenomena has an impact on the construction of tourism public service system under the background of intelligent tourism. Therefore, in the current development of tourism industry, in order to show the value of the construction of tourism public service system, we should combine the construction characteristics of tourism information platform and carry on the comprehensive evaluation of service content, service center and so on to gradually build a perfect intelligent tourism system to meet the needs of the innovative development of the current tourism industry.

2. Construction of Evaluation Index System of Tourism Public Service under Background of Intelligent Tourism

2.1. Principles for Selection of Evaluation Indexes

2.1.1. Comprehensiveness Principle. In the context of intelligent tourism, the theme of tourism public service platform includes government, tourists and tourism enterprises. Under the background of multi-subject joint participation, the public service platform presents the characteristics of comprehensive evaluation. In general, in the public service of intelligent tourism, the specific evaluation indexes include intelligent business, intelligent management and so on. Through the support of the hardware parameters of the system, we can ensure the independence and comprehensiveness of the indexes.

2.1.2. Scientific Principle. Through the analysis of intelligent tourism projects, in the construction of public evaluation index system, it is necessary to analyze the concept of scientific and effective management to ensure the rationality of evaluation indexes in order to promote the economic and steady development of tourism industry. Moreover, in the determination of evaluation methods, it is necessary to analyze the data under scientific and objective conditions and determine the evaluation system in order to ensure the scientific nature of intelligent tourism services.

2.1.3. Comparability Principle. Through the analysis of the operation mode of the intelligent tourism industry, in the intelligent tourism, through the comprehensive comparison of the performance evaluation index and the performance evaluation work, the problems existing in the tourism public service platform can be solved and the dynamic evaluation indexes can be formed gradually. the purpose for the comparison and measurement of equilibrium indexes can be achieved.

2.2. System Composition of Evaluation Indexes
According to the evaluation of tourism public service and the performance experience of public service platform, the functions and goals of tourism public service system under the background of intelligent tourism are studied. The evaluation content of the public service platform is accurately reflected in both qualitative and quantitative combinations, and some aspects such as the service capacity, service content and management level are evaluated and analyzed, in order to better improve the accuracy of public service evaluation. The framework of tourism public service evaluation index system under the background of intelligent tourism is shown in Table 1.

Table 1. Evaluation Index system of Tourism Public Service under Background of Intelligent Tourism

Level I Index	Level II Index	Level III Index
Intelligent Tourism Public Service Platform (A)	Service Capability (B1)	Capacity
		Operation Quality
		Security
		Interface with Other Platforms
	Service Content (B2)	Information Service
		Intelligent Marketing Service
		Intelligent Management Service
		Intelligent Government Affairs Service
	Management Level (B3)	Infrastructure
		Organization and Management
		Funds Operation
	Service Effectiveness (B4)	Service Benefit
		Platform Visits
		Satisfaction of Stakeholders

3. Performance Evaluation of Public Service Platform under Background of Intelligent Tourism. Combined with the construction of intelligent tourism public service platform, the performance of the service platform is evaluated, a fuzzy evaluation model is established, and a comprehensive evaluation on the construction of the public service platform is made.

3.1. Analytic Hierarchy Process

3.1.1. Judgment Matrix. In the intelligent tourism public service platform, through the construction of evaluation index level model, it is necessary to compare the factors of different levels, construct the judgment matrices and calculate the weights.

In the study, According to Saay, the numbers 1-9 and reciprocal were used to evaluate different indexes, with the specific scales shown in Table 2 [1].

Table 2. Analytic Hierarchy Process

Scale α_{ij}	Meanings
1	The two factors are equally important
3	The former is slightly more important than the latter in the two factors
5	The former is obviously more important than the latter in the two factors
7	The former is very more important than the latter in the two factors
9	The former is extremely more important than the latter in the two factors
2、4、6、8	The median of the two adjacent grades
Reciprocal	It means that the order of exchange of the two factors is more important

Where, in Table II, in the unified layer index, α_{ij} is the influence ratio of the index i and the index j to the upper layer index, n is the pairwise comparison of different factors. The resulting judgment matrix is such as (1). The condition to be met in formula (1) is $\alpha_{ij} > 0$、 $\alpha_{ij} = 1/\alpha_{ij}$、 $\alpha_{ij} = 1$.

$$A = (\alpha_{ij}) \, n \times n \tag{1}$$

3.1.2. Specific Vector and Maximum Eigenvalue. The multiplication data of different elements in each row of the judgment matrix is analyzed, and the result is Mi. The calculation process is as follows: (2).

$$Mi = \prod_{j=1}^{n} \alpha_{ij}, \quad i=1,2, \ ..., \ n \tag{2}$$

In dealing with the product to the power of n, the result obtained is as follows: (3).

$$\overline{W_i} = \sqrt[n]{M_i} \tag{3}$$

After that, the vector processing of $\overline{W}$ is carried out, $\overline{W} - [\overline{W_1}, \overline{W_2}, ..., \overline{W_n}]$T, and the normalized processing is carried out, and the result is as follows: (4).

$$Wi= \dfrac{\overline{W_i}}{\displaystyle\sum_{j=1}^{n}\overline{W_j}} \tag{4}$$

According to (4), the eigenvector (5) of index weight can be obtained.

$$W= [W1, W2, ...W n]T \tag{5}$$

Finally, the maximum eigenvalue is calculated as: $\lambda_{\max} = \displaystyle\sum_{i=1}^{n}\dfrac{(AW)_i}{nW_i}$ 。

3.1.3. Consistency Checking. In the process of consistency checking, all the judgment matrices should be tested and analyzed for consistency. Through this calculation, the accuracy of the weight of each index can be guaranteed. In general, CR is used in consistency checking. If CR is found to be less than 0.1, it means that the degree of inconsistency of the judgment matrix is within the allowable range, so, it can be normalized by eigenvector processing. If it is found to be outside the allowable range, a re-comparison needs to be made until the consistent results are accurate. In the process of CR calculation, the specific calculation method is as follows: (6)

$$CR= \dfrac{CI}{RI} \tag{6}$$

The RI in the formula is the consistency index in average random, and the CI is the consistency index, where CI= （$\lambda_{\max}$ -n）/（n-1）.

3.2. Calculation of Weights of Public Service Evaluation Indexes of Intelligent Tourism in Jiangxi Province

3.2.1. Construction of Hierarchical Model. In the establishment of hierarchical model, we should evaluate the performance of intelligent tourism public service platform, and analyze the service capacity, service content, management level, service effect and so on.

3.2.2. Judgment Matrix. Combined with the hierarchical structure model, according to the above scaling method, the performance indexes in the intelligent tourism public service platform are judged. By consulting the performance of the intelligent tourism public service platform of Jiangxi Tourism Bureau, the evaluation indexes are constructed, and the judgment matrix is as follows:

$$\begin{bmatrix} 1 & 2 & 3 & 1/2 \\ 1/2 & 1 & 2 & 1/3 \\ 1/3 & 1/2 & 1 & 1/3 \\ 2 & 3 & 3 & 1 \end{bmatrix}$$

3.2.3. Weight Vectors and Consistency Checking. According to the content of the judgment matrix, the consistency is checked, and the results are obtained after all passing the consistency checking, as shown in Table 3 [2].

Table 3. Evaluation Results of Intelligent Tourism Public Service Platform

Public Service Performance of Intelligent Tourism	Service Capacity	Service Content	Management Level	Service Effect	Wi
Service Capacity	1.0000	2.0000	3.0000	0.5000	0.2848
Service Content	0.5000	1.0000	2.0000	0.3333	0.1644
Management Level	0.3333	0.5000	1.0000	0.3333	0.1051
Service Effect	2.0000	3.0000	3.0000	1.0000	0.4457

3.3. Fuzzy Evaluation Model

After the calculation of the basic evaluation indexes is completed, the appropriate evaluation method should be selected for the construction of intelligent tourism public service platform. In the use of fuzzy comprehensive evaluation method, through the application of fuzzy mathematics theory, a comprehensive evaluation scheme is constructed, which has the characteristics of clear and systematic results. We can put forward targeted solutions to some fuzzy decision-making problems, and the specific calculation methods are as follows: first, determining the set of factors. According to the relevant indexes of the public service platform, the factor set of the standard layer is obtained: U (service capability, service content, management level). Second, establishing the evaluation set. According to the actual situation, the evaluation level will be divided into different types, such as, the unqualified, bad, general, good, excellent and so on. Third, establishing a fuzzy evaluation matrix. Fourth, summarizing the evaluation analysis.

3.4. Fuzzy Comprehensive Evaluation

Through the analysis of the evaluation results, we can find the advantages and disadvantages of the evaluation object, timely determine the shortcomings of the system, and clearly specify solutions, in order to promote the steady development of the regional tourism industry.

4. Factors Affecting Construction of Tourism Public Service System under Background of Intelligent Tourism

4.1. Insufficient Financial Support

In the operation and development of the tourism industry, due to the economic differences in different regions, the tourism industry in some areas is limited by the level of social development, resulting in a large amount of investment and a small profit return on the public service platform in the tourism industry. The emergence of this phenomenon has an impact on the construction of tourism public service system under the background of intelligent tourism. Moreover, due to the lack of professional talents in tourist areas and the lack of understanding of the construction of intelligent tourism projects, the construction of tourism public service system is often affected by a variety of factors. It cannot meet the construction needs of tourism public service system under the background of intelligent tourism [3].

4.2. Lack of Understanding of Construction of Tourism Public Service System

Combined with the operation of the tourism industry, in the construction of tourism public service system under the background of intelligent tourism, there is a lack of awareness of the stakeholders, the specific content is reflected in the following aspects: first, Under the situation of new business type and diversified development of tourism industry, relevant government departments should actively seek partners to promote the development of tourism industry through the embodiment of third-party

advantages. However, due to the lack of understanding of the development and innovation of tourism industry, some stakeholders lack the understanding of the development and innovation of tourism industry, which leads to the construction of tourism public service system in the context of intelligent tourism. Second, tourism enterprises and third parties can not actively assume social responsibility, affecting the construction and development of tourism public service system. Third, due to the lack of investment in active participation in public tourism, it has an impact on the development of the tourism industry.

4.3. Relative Lack of Information on Public Service
In view of the construction of tourism public service system under the background of intelligent tourism, due to the relatively single mode of public information service, there are few tourism consultation services and few tourism information consultation centers and tourism societies in the region to limit the development of regional tourism industry. Moreover, there is the lack of tourism marks in the construction of tourism projects, for example, the external information of scenic spots is not comprehensive, the identification of service facilities is less, and so on. These problems will affect the construction of tourism public service system under the background of intelligent tourism [4].

5. Construction Strategy of Tourism Public Service System Under Background of Intelligent Tourism

5.1. Enhancing Service Capacity and Creating an Intelligent Tourism Environment
Under the background of the current development of intelligent tourism industry, in order to realize the construction of tourism public service system, the relevant government departments should strengthen human support and point out the development direction for tourism industry through the formulation of standardized laws and regulations. In order to meet the needs of the current public construction of the tourism industry, in general, we should do so: first, we should recognize the relevant contents of intelligent tourism and tourism public services, and promote the steady development of the tourism industry through the construction of a fair and open interactive platform. We should change our own functions and change the role of leaders in the past into service providers, so as to give full play to our guiding role and effectively solve the problems existing in the construction of tourism public service system to meet the development needs of humanization and innovative development of tourism industry. Second, while government departments support the construction of tourism public service system, they should also play a supervisory role in order to fully meet the needs of tourists in tourism public service and avoid the phenomenon of illegal fund-raising and illegal activities in the platform to create a good public service environment for the tourism industry. In the tourism public service platform, we should combine tourists, tourism industry, market economy and other needs, carry out service innovation and service improvement, enhance the service value of intelligent tourism platform, and promote the steady development of the industry [5].

5.2. Innovating Service Content to Meet Needs of Tourists.
With the operation and development of tourism industry, the innovative service content should be taken as the core in the construction of tourism industry, so as to fully show the construction value of tourism public service system under the background of intelligent tourism. In the service content innovation, we should: first, improve the service level of tourism public information. In the tourism industry, we can establish a public information service platform matching with tourism development, and design special tourism, tourism consultation and infrastructure planning in the platform to enhance tourists' understanding of tourism transportation system and service system. Moreover, in the public service confidence service, it is also necessary to gradually increase the number of tourist distribution centers, through the service area, tourist area and comprehensive area planning to improve the satisfaction of tourists to the tourist area. Second, we should create a service management mechanism

for the tourism industry. In the development of the tourism industry, we should focus on the needs of tourists, for example, through the "toilet revolution", we expand the toilets to the tourist area along the line, gradually increase the quantity, improve the quality, to meet the travel needs of tourists. Third, we should actively build a service system for intelligent tourism. Under the service background of intelligent tourism, the transformation of industry should be carried out in time, through the development of intelligent tourism and global tourism, to ensure the principle of full information and full coverage, and through the perfection of intelligent tourism data center, to make tourists travel efficiently according to the data information. For example, in intelligent tourism, we can provide information services for tourists through the construction of tourism APP. APP includes GPS function, intelligent tourism functions and data collection modules. We can choose the regions according to our own needs, and fully meet the service needs of tourists for intelligent tourism.

5.3. Improving Level of Management and Promoting Development of Tourism Services

Under the background of intelligent tourism, it is necessary to take the construction of tourism public service system as the core. In order to ensure the normal operation of the platform, we should construct a scientific management scheme while supporting sufficient operating funds, so as to ensure the steady progress of various services, avoid the emergence of lazy work and untimely system maintenance, and improve the quality of tourists' experience of tourism projects. For the intelligent tourism public service platform, it involves a wide range, and needs the coordinated management of government departments, tourism industry departments and investors. Therefore, in the whole environment, it is necessary to gradually improve the level of service management. First of all, a standardized service management system shall be established. Through the design of hierarchical management scheme, the leadership functions at all levels shall be figured out, so that different service departments work according to management standards, and need to describe in detail the functions of employees in different positions. Through the establishment of standardization regulations, we can clarify the responsibilities of personnel at all levels and enhance the effectiveness of service management. Different levels and different departments need to cooperate closely in the work, through the sharing of information resources and the cooperation of various work to enhance the construction value of the tourism public service platform. Secondly, a standardized evaluation mechanism shall be established, the operation of the platform shall be regularly checked, and through the user experience and questionnaire survey, the satisfaction of tourists shall be analyzed and summarized, and the feedback information for tourists needs to be dealt with in a timely manner, so as to improve the service quality of tourism public service system under the background of intelligent tourism [6].

5.4. Training of New Talents to Improve Quality of Tourism Services.

With the development of tourism industry, under the background of intelligent tourism public service, the introduction and training of talents is very important. Therefore, in the tourism industry in the construction of intelligent tourism system, the reserve of talents should be carried out. First, we should actively create a diversified and open development environment to attract high-quality travel professionals to meet the needs of the construction of public service system in intelligent tourism. Through the combination with colleges and universities, the government speeds up the training of compound talents, and through the establishment of various optimization policies and policy environment, the government attracts professional tourism talents to participate in the construction of service platform, so as to provide support for the intelligent development of tourism industry. Second, in the development of the tourism industry, it is necessary to actively innovate the enterprise environment, change the previous management mode in time, and establish an enterprise system suitable for the development of talents through talent training and talent attraction, so as to better attract talents. So that the enterprises always maintain a good internal cycle, avoid the bad problems existing in the development of intelligent tourism, and promote the innovation of the industry [7].

6. Conclusions

In a word, under the background of the current development of tourism industry, it is necessary to take the demands of tourists as the core through the construction of intelligent tourism and tourism public service platform, to create a comfortable, quantitative and efficient tourism environment and tourism services for tourists, so that tourists in tourism at the same time feel the advantages of intelligent services. For the regional government departments, we should strengthen the support for the construction of the intelligent tourism public service system, and create a diversified development space for the tourism industry through the improvement of policies and the investment of funds. We should enhance the construction and use value of intelligent tourism platform. The relevant tourism industry needs to change the previous service concept in time, through the establishment of intelligent and service platform to enhance the service experience of tourists, in the construction of tourism public service system of intelligent tourism, And in the service capacity, service content and management level of the promotion, a good tourism environment shall be created for tourists to meet the needs of tourists, and promote the innovative development of the tourism industry.

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