Evaluation of the Sustainable Development of Traditional Ethnic Village Tourist Destinations: A Case Study of Jiaju Tibetan Village in Danba County, China

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Abstract: In the process of development, traditional villages, as important tourism resources, have been impacted by external factors and lost their original authenticity. Looking for the important factors affecting its tourism development, in an attempt to assist the sustainable development of a rural destination, is Jiaju Tibetan Village in the Southwest of China. The sustainable evaluation index system divides the assessment criteria into five guideline layers: economic development, ethnic culture, management, sustainable development, and infrastructure and service facilities. The sub-criteria layer and the index layer under each of the guideline layers were refined, and matrices were constructed for various layers of indices, which calculate the weight of each indicator to produce a comprehensive score of the destination’s sustainability. The findings of this study are as follow: (1) the Tibetan ethnic cultural life experience and the convenience of transportation are the most influential factors. (2) Jiaju Tibetan Village is in a stage of basic sustainable development. (3) The determinants of the indicators should be adjusted according to the tourist destination. (4) Traditional villages should learn from each other’s tourism development experience. Finally, this study provides a reference for adjusting and formulating the tourism development strategy of ethnic traditional villages, and reasonable planning to use land, and plays an exemplary role for the development of traditional villages in concentrated ethnic minority areas.

Keywords: traditional village; hierarchical analysis; evaluable index system; ethnic tourism; Jiaju Tibetan Village

1. Introduction

As a non-renewable resource for rural tourism development, land resources are the material basis and prerequisite for sustainable development. Reasonable planning and use of land resources will make traditional villages become the primary protection and development objective for the development of rural tourism. The administrative mode, planning, and utilization of land have gradually become intelligent, digitized, and networked to build an information network chain, provide convenience for rural tourism, and promote traditional villages to have reliable resource support in their protection and development. Therefore, analyzing the influencing factors of the development of ethnic traditional villages, scientific planning and utilization of land resources, and constructing a reasonable tourism sustainable evaluation index system become a vital part of the realization of sustainable development in traditional villages.

Due to its unique geographical environment, local history, and complete traditional village settings, Ganzi Tibetan Autonomous Prefecture is the only concentrated traditional village protection and utilization area in Sichuan Province. This area covers...
the traditional villages in Niexia Town and Bawang Town in Danba County. Guaranteeing the sustainable development of such traditional villages, and the rational and scientific planning of the land is not only necessary for the protection of local village culture and customs, but also for inheritance and development of the Chinese traditional culture, and forming an important expression of cultural diversity and ethnic diversity.

When developing local tourism sectors, traditional villages should focus on ensuring the rational use of land. Currently, two prefectures in Sichuan Province, the Aba Prefecture and the Liangshan Prefecture, are recognized as good research locations to study the role of traditional villages in modern tourism development. This is because the two prefectures have hundreds of years of history of rural minority settlement, convenient transportation, an underdeveloped economy, reasonable land resource planning and a relatively large proportion of land. The data from the “Danba County Statistical Yearbook—2020” shows that Jiaju Tibetan village covers an area of 22.6 km², and its core tourism area is 9.3 km², accounting for 41.15%; among them, forestry land accounts for 53.6%, agricultural land for 37.9%, transportation land for 7%, and construction land for 1.5%. Because of its good environment, good land use, and good protection, Jiaju Tibetan Village was selected as the most beautiful village in China, which makes it a typical and representative case study area. This study uses Delphi expert scoring and hierarchical analysis to construct a sustainable evaluation system of Jiaju Tibetan Village.

2. Literature Review

An overview of the academic research and industry practice shows that the sustainable development goals are interconnected and inseparable, mainly centering on the dimensions of economy, resources, environment, and ecology [1], which is a social and economic development model pursued by all mankind and continuously explored and improved [2]. Sustainable development of traditional village tourism is a development concept that pays attention to long-term interests [3]. Evaluation and research can better reflect the development status of local rural tourism, which not only provides a certain theoretical basis for sustainable prediction, but also helps decision-makers formulate targeted countermeasures [4].

There are several challenges that come with the sustainable development of traditional village tourism [5] and its corresponding countermeasures. In terms of the social aspect, there is a need to strengthen the construction of basic service facilities, promote the convenience of transportation [6], improve the support of community members [7], and reasonably plan the space production of the community [8]. In terms of employment, it is important to create employment opportunities [9], make good use of surplus rural labor [10], and encourage stakeholders to actively participate in rural tourism activities [11] as well as the sustainable development of the destination [12]. Economically, it is essential to assist industrial integration through extending the industrial chain of rural tourism [13], optimizing the tourism industry structure [14], integrating the development mode of a circular economy into rural tourism, and developing and innovating the benefit distribution mechanism of rural tourism [15]. In terms of resources, it is necessary to preserve the rural culture [15] and promote its generational inheritance. In terms of the environment and ecology, the rural ecological environment [16] and living environment should be maintained and improved [17] so as to conserve resources [18] and enhance ecological efficiency [19]. On this basis, it is necessary to create new ideas for sustainably developing rural tourism destinations in China, adjust and improve the development strategy and policy system in a timely manner, and achieve high-quality development of rural tourism [20].

In recent years, scholars in China have conducted an increasing number of studies on the evaluation of sustainable rural tourism development. The current evaluation system of rural tourism has several approaches. Among them, the macro evaluation of a destination’s development level is one of the most popular approaches. For example, the comprehensive evaluation index and coordinated development degree are used to
evaluate the sustainable development level of rural tourism destinations in Guangdong Province [21]. In addition, TOPSIS is utilized to scrutinize the development level of rural tourism in typical villages in Jilin Province [22]. Another popular approach is the mesoscopic evaluation of tourism resources, such as CAI Wenfang’s (2018) evaluation of Ordos Grassland [23], Li Yan’s (2020) evaluation of rural tourism resources in Zhejiang Province [24], He Xiaofei’s (2020) assessment of the rural tourism resources in the Inner Mongolia Autonomous Region [25], Gu Hui’s (2019) analysis of rural tourism resources in Chongqing Municipality [26], and Mo Li Qiu’s (2017) appraisal of the rural tourism resources in Hainan Province [27]. The core competence mesoscopic evaluation [28] is another frequently employed approach, since cultivating the core competitiveness of rural tourism is an important guarantee for rural tourism sustainable development. In addition, ecological vulnerability mesoscopic evaluation, utilizing criteria such as environmental quality [29], ecological balance [30], development and operation strategies [31], and seasonality [32], have also been used in the existing literature. Furthermore, micro evaluation approaches, such as residents’ adaptability towards tourism development [33] and publicity channels [34] are also employed by the existing literature as part of the evaluative toolkit. Finally, when evaluating the sustainable development of traditional villages, the analytic hierarchy process (AHP) and fuzzy comprehensive evaluation method are commonly used to provide a comprehensive evaluation of the sustainable development of rural destinations [35]. The diverse evaluative methods used in the extant literature indicates that the sustainable development of rural tourism plays an important role in solving the economic, ecological, resource, environmental, society and market problems experienced by a rural destination.

Regarding the sustainable development of tourism destinations, scholars believe that attention should be paid to the dual needs of tourists and local residents. From the perspective of local residents, the sustainable tourism development can drive economic development and infrastructure construction, achieve economic prosperity and improve the quality of life of residents [36]. From the perspective of tourists, tourist experience is one of the key elements in determining the sustainable development level of tourist destinations [37]. Tourists’ values, beliefs, and personal behavior norms are closely related to the sustainable development of tourist destinations [38]. Through the personal experience of tourists, they can participate in all aspects of the sustainable development of the tourism destination, generate a high degree of recognition, and influence the economy, culture and sustainability of the tourism destination [39]. The sustainable development of tourism destinations should be paid enough attention, and we need to actively think and discuss around this topic.

3. Methodology

According to the results of the index factors assessed by experts, the statistical index data and selecting the AHP analysis method can accurately calculate the weight of the indicators, get an important direction affecting the development of traditional villages, and provide guidance for the government to develop tourism.

3.1. Evaluation Index System

Through reading the literature, on-the-spot investigation and in-depth interview, the index range of the sustainable evaluation system of traditional villages was preliminarily selected using the following method: ① The relevant research and government documents on the sustainable development of traditional villages at home and abroad was systematically listed and summarized, and the index framework was preliminarily formulated. ② The area in question was visited, and the practicability, validity, and operability of the initial indicators was evaluated. ③ Leaders of Danba County Culture and Tourism Bureau, directors of cultural and tourism companies, government personnel, and local residents were invited to interview the sustainable development indicators of
traditional villages from their respective perspectives, and eliminate the low ranking and irrelevant indicators.

After the elimination of irrelevant indicators, the construction of the traditional village sustainable development evaluation system needed to take into account several factors such as economy, culture, society, management, and service. Comprehensively considering the various factors of tourism development and closely following the current situation of traditional village development, the researchers divided the guideline layer into five categories: economic development subsystem, ethnic culture subsystem, management subsystem, sustainable development subsystem, and infrastructure and service facility subsystem.

Under the criteria level, 13 sub-criteria levels and 42 index factors were divided to build the whole system framework (Table 1), the specific analysis is as follows:

The economic development subsystem includes the sub-criteria level of the economic aggregate and economic benefits, and evaluates indicators such as local fiscal revenue, tourism’s share of GDP, the contribution of tourism to the income of villagers, and the financial support for rural tourism. These criteria are believed to play important roles in promoting rural tourism and rural revitalization.

The ethnic culture subsystem covers the sub-criteria layers of cultural characteristics and cultural publicity. Ethnic minorities have a unique cultural background and cultural connotation, and occupy an important position in tourism resources. Indicators under this subsystem include destination popularity, destination reputation, destination aesthetics, historical and cultural value, and the degree of impact of other ethnic cultures.

The management subsystem contains three sub-criteria layers: maintenance management, village management, and personnel management. The three sub-criteria layers mainly include the construction and maintenance of daily safety facilities, and the effectiveness of household waste treatment, village comprehensive management, and the comprehensive management of tourists and tourism practitioners. These indicators are formulated in order to assess whether the operation of village tourism is well-managed or not.

The sustainable development subsystem incorporates four sub-criteria layers of market potential, visitor experience, natural resources, and cultural resources. It is the core skeleton of the sustainable evaluation system of traditional village tourism. It should not only ensure the sustainability of tourism resources, but also support the whole tourism chain, expand the tourism influence, and improve the experience and satisfaction of tourists.

The infrastructure and service facility subsystem includes two sub-criteria of infrastructure equipment and service supply capacity, and they mainly take the level of tourism IT infrastructure, tourism transportation convenience, tourism accommodation facilities, tourism service quality, and the supply potential of agricultural and sideline products as evaluation indicators.

<table>
<thead>
<tr>
<th>Target Layer A</th>
<th>Guideline Layer B</th>
<th>Sub-Criterion Layer C</th>
<th>Indicator Layer D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation of Sustainable Development of Traditional Villages for Ethnic Tourism A_i</td>
<td>Economic Development Subsystem B_i</td>
<td>Economic aggregate C_1</td>
<td>Local fiscal revenue D_1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Economic benefits C_2</td>
<td>The proportion of financial investment in tourism D_2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Per capita consumption of tourists D_3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The proportion of tourism in the tertiary sector D_4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tourism’s share of GDP D_5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The contribution of the villagers’ income from tourism D_6</td>
</tr>
<tr>
<td>Subsystem</td>
<td>Components</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Ethnic Culture Subsystem \( B_2 \) | Cultural characteristics \( C_2 \): The uniqueness and distinctiveness of ethnic culture \( D_1 \)  
|                  |                                                                            | The historical and cultural values of ethnic villages \( D_2 \)  
|                  |                                                                            | Degree of impact from other ethnic cultures \( D_3 \)  
|                  | Cultural Publicity \( C_3 \): The popularity of ethnic villages as tourism destinations \( D_4 \)  
|                  |                                                                            | Reputation of the ethnic village as tourism destinations \( D_5 \)  
|                  |                                                                            | Aesthetic value of ethnic village \( D_6 \)  
| Maintenance Management \( C_4 \): Construction of tourism security measures \( D_7 \)  
|                  |                                                                            | Domestic garbage disposal \( D_8 \)  
| Management Subsystem \( B_3 \): Government support and publicity efforts \( D_9 \)  
|                  | Village Management \( C_5 \): Implementation efforts of tourism management target \( D_{10} \)  
|                  |                                                                            | Destination image of ethnic village \( D_{11} \)  
|                  |                                                                            | Effectiveness and strength of village tourism management \( D_{12} \)  
|                  |                                                                            | Quality of villagers \( D_{13} \)  
|                  |                                                                            | Population engaged in tourism \( D_{14} \)  
| Personnel Management \( C_6 \): Professional training of tourism practitioners \( D_{15} \)  
|                  |                                                                            | Pro-environment behaviors of tourists \( D_{16} \)  
| Sustainable Development Subsystem \( B_4 \): The rationality of tourism development planning \( D_{17} \)  
|                  | Market Potential \( C_7 \): Accessibility of the destination (tourist flow) \( D_{18} \)  
|                  |                                                                            | Market influence \( D_{19} \)  
|                  | Tourists Experience \( C_8 \): Tourists’ satisfaction \( D_{20} \)  
|                  |                                                                            | Tourists’ awareness of environmental protection \( D_{21} \)  
|                  |                                                                            | Length of stay of tourists \( D_{22} \)  
|                  |                                                                            | Revisit rate of tourists \( D_{23} \)  
| Natural Resources \( C_9 \): Drinking water quality \( D_{24} \)  
|                  |                                                                            | Air quality \( D_{25} \)  
|                  |                                                                            | Heterogeneity and rarity of tourism resources \( D_{26} \)  
|                  | Folk customs \( D_{27} \)  
| Cultural Resources \( C_{10} \): Landscape architecture of ethnic villages \( D_{28} \)  
|                  | Number of venues for ethnic performance of singing and dancing \( D_{29} \)  
|                  | Number of important festivals and events \( D_{30} \)  
|                  | Ethnic cultural life experience \( D_{31} \)  
|                  | Tourism IT infrastructure \( D_{32} \)  
| Infrastructure and Service Facilities Subsystem \( B_5 \): Convenience of tourism transportation \( D_{33} \)  
|                  | Infrastructure Equipment \( C_{11} \): Improvement of accommodation facilities \( D_{34} \)  
|                  |                                                                            |
3.2. AHP Computational Method

This paper, the analysis of the sustainability evaluation system of traditional ethnic tourism villages, was carried out by using the analytic hierarchy method (AHP). The AHP analysis method was proposed by American operations researcher and professor, T.L. Saaty, of the University of Pittsburgh, in the early 1970s. It is a quantitative analysis of qualitative problems. This method can provide convenient, flexible, and practical analysis of the key problems, and thus guide the decision-making. AHP was introduced to China in 1982 and was then widely used in all fields of society. It analyzes the various layers of standards thoroughly, converts the qualitative information into quantitative data, and calculates the weight of each indicator.

In the index architecture diagram, the AHP analysis method usually employs either the sum product method or the square root method. In this study, the influence weights of the same level of indices are calculated by using the sum product method. In the expert scoring and evaluation, the Sadie 1–9 scale construction method is used for factor comparison (Table 2). The maximum eigenvalues and the corresponding eigenvectors of this matrix are calculated by comparing between the two factors and constructing a same-level comparison matrix. The influence degree of the index is determined by the accounting consistency test.

Table 2. The contrast degree of the indicators.

<table>
<thead>
<tr>
<th>Comparison of Importance Indicators</th>
<th>Absolutely Important</th>
<th>Very Important</th>
<th>More Important</th>
<th>Slightly Important</th>
<th>Equally Important</th>
<th>Slightly Unimportant</th>
<th>Comparatively Unimportant</th>
<th>Very Unimportant</th>
<th>Absolutely Unimportant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor ai with Factor aj</td>
<td>9</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>1/3</td>
<td>1/5</td>
<td>1/7</td>
<td>1/9</td>
</tr>
</tbody>
</table>

According to the comparison degree of the index, the process of calculating and judging the hierarchy matrix is as follows:

1. Normalization of each column of elements of the judgment matrix:

   \[ a'_{ij} = \frac{a_{ij}}{\sum_{j=1}^{n} a_{ij}} \quad i, j =1, 2, ... n \]

2. Normalized values of the judgment matrix summed by columns:

   \[ w' = \sum_{i=1}^{n} a_{ij} \quad i =1, 2, ... n \]

3. The vector \( w' = (w'_1, w'_2, ..., w'_n) \) is normalized as:

   \[ w_i = \frac{w'_i}{\sum_{i=1}^{n} w'_i} \quad i =1, 2, ... n \]

   The resulting \( w = (w_1, w_2, ..., w_n) \) is the approximation of the requested eigenvector.

4. The maximum eigenvalue of the judgment matrix was calculated \( \lambda_{\text{max}} \):

   \[ \lambda_{\text{max}} = \frac{1}{n} \sum_{i=1}^{n} \frac{AW}{Wi} \]

5. In order to avoid contradictions, a consistency test should be conducted to judge the consistency index of evidence:

   \[ CI = \frac{\lambda_{\text{max}} - n}{n-1} \]

   (n is the number of layers of the judgment matrix)

6. Random consistency ratio calculation:
The value of the RI is a fixed index, relative to the multi-stage matrix. Table 3 is the control table of the random consistency index of the fixed positive and negative matrix of class 1–15. The matrix was considered to pass the consistency test when the consistency ratio was CR < 0.1.

**Table 3. Consistency test RI values.**

<table>
<thead>
<tr>
<th>n</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI</td>
<td>0</td>
<td>0</td>
<td>0.58</td>
<td>0.9</td>
<td>1.12</td>
<td>1.24</td>
<td>1.32</td>
<td>1.41</td>
<td>1.46</td>
<td>1.49</td>
<td>1.52</td>
<td>1.54</td>
<td>1.56</td>
<td>1.58</td>
<td>1.59</td>
</tr>
</tbody>
</table>

**4. Results**

**4.1. Weights of the Sustainable Development Evaluation System**

The case-site data questionnaire contained five invalid questionnaires and 27 valid questionnaires, mainly derived from 32 experts including local government leaders, staff, tourism practitioners, and local residents. Excel and Yaanp 2.5 software were used to analyze the effective data, and the index weight table (Table 4) is as follows:

**Table 4. Weight table of index factors at each level.**

<table>
<thead>
<tr>
<th>Target Layer</th>
<th>Guideline Layer</th>
<th>Weights</th>
<th>Sub-Criterion Layer</th>
<th>Weights</th>
<th>Indicator Layer</th>
<th>Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Development Subsystem</td>
<td></td>
<td>0.0950</td>
<td>Economic Aggregate</td>
<td>0.3670</td>
<td>Local fiscal revenue</td>
<td>0.2983</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The proportion of financial investment in tourism</td>
<td>0.3867</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Per capita consumption of tourism</td>
<td>0.3149</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Economic benefits</td>
<td>0.6330</td>
<td>The proportion of tourism in the tertiary sector</td>
<td>0.2410</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tourism’s share of GDP</td>
<td>0.2735</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The contribution of the villagers’ income in the tourism.</td>
<td>0.4855</td>
</tr>
<tr>
<td>Evaluation of Sustainable Development of Traditional Villages for Ethnic Tourism</td>
<td></td>
<td>0.1974</td>
<td>Cultural characteristics</td>
<td>0.3833</td>
<td>The uniqueness and distinctiveness of ethnic culture</td>
<td>0.3818</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The historical and cultural values of ethnic villages</td>
<td>0.3694</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Degree of impact from other ethnic cultures</td>
<td>0.2488</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cultural Publicity</td>
<td>0.6167</td>
<td>The popularity of the ethnic village as a destination</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The reputation of the ethnic village as a destination</td>
<td>0.2549</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aesthetic value of the ethnic village</td>
<td>0.4598</td>
</tr>
<tr>
<td>Management Subsystem</td>
<td></td>
<td>0.1890</td>
<td>Maintenance Management</td>
<td>0.2148</td>
<td>Construction of tourism security measures</td>
<td>0.4384</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Village Management</td>
<td>0.4170</td>
<td>Domestic garbage disposal</td>
<td>0.5616</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Government support and publicity efforts</td>
<td>0.2278</td>
</tr>
<tr>
<td>Sustainable Development Subsystems</td>
<td>0.2615</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>-----------------------------------</td>
<td>-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infrastructure and service facilities subsystem</td>
<td>0.2571</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Potential</td>
<td>0.1509</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tourists Experience</td>
<td>0.3005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Resources</td>
<td>0.2319</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Resources</td>
<td>0.3167</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infrastructure Equipment</td>
<td>0.5489</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service supply capacity</td>
<td>0.4511</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the systematic calculation results, it can be seen that the consistency test of some individual matrices is greater than 0.1. This may be due to the fact that some of the survey experts filled in the questionnaire with a strong affection towards Jiaju Tibetan
Village. Thus, some indicators received slightly higher evaluation scores. On this basis, Yaanp 2.5 software was used to optimize and adjust the consistency test, so that the factor weight ratio is consistent with the actual development status of Tibetan village tourism. In addition, the deviation from the personal emotional sustenance of the survey experts has little impact, therefore the optimized data can be used.

As can be seen from Figure 1, in the continuous evaluation index of the traditional village, the weights of the standard large indicators are arranged from large to small as follow: sustainable development subsystem (0.2615) > infrastructure and service facility subsystem (0.2571) > ethnic culture subsystem (0.1974) > management subsystem (0.1890) > economic subsystem (0.0950).

![Figure 1. Criterion layer weight radar chart.](image)

The sustainable development subsystem has the largest weight in the evaluative system, reaching 26.15%. According to the proportion of the sub-criterion and index layer under this subsystem, the Tibetan cultural life experience affects the development of traditional villages tourism accounted for 35.56%, because tourists are more willing to experience local ethnic customs and cultural characteristics. Tourist experience has the second largest influence, at 30.05% in this subsystem. This means, the higher the revisit rate the more attractive the destination is.

Since Jiaju Tibetan Village is located at an altitude of 2000 m above sea level, a good infrastructure condition is considered essential for the development of tourism there. Therefore, the infrastructure and service subsystems ranked second in the evaluation system, contributing 25.71% of the evaluation power. One of the most important sub-criterion in this subsystem was infrastructure equipment (54.89%), under which tourist transportation convenience was considered to be the most influential indicator (42.37%). The result suggests that a longer travel time might reduce the attractiveness of a destination in the eyes of tourists.
The weight of the ethnic culture subsystem ranked third. In its corresponding under-layer, cultural publicity was a more influential sub-criterion than cultural characteristics since it has a larger weight (0.6167) in this two-sub-criterion subsystem. At the next level, the aesthetic value of ethnic Tibetan villages is a particularly important factor for cultural publicity as it accounted for 45.98% of the evaluation influence. The indicators of popularity and reputation ranked low, partly due to the influence of aesthetic value and government publicity.

Regarding the other two subsystems, the management subsystem has a weight that ranked fourth within the five evaluative subsystems. Within this category, village management had the greatest evaluative weight (0.4170), followed by personnel management (0.3683) and maintenance management (0.2148). Finally, the economic subsystem had the smallest weight among the evaluative subsystems, suggesting that this subsystem plays a less important role in the evaluation of sustainable tourism development in Jiaju Tibetan Village (Figure 2).

![Figure 2. Sub-criterion Layer Weight Radar Chart.](image)

4.2. The Sustainable Development Status Quo of Jiaju Tibetan Village

The sustainable development process is divided into five stages by using the common fuzzy comprehensive scoring method and the multi-objective linear weighting function to evaluate the sustainable development degree of Jiaju Tibetan Village. The evaluation table is presented as follows (Table 5):

<table>
<thead>
<tr>
<th>Integrated Assessment Value</th>
<th>0 to 20</th>
<th>20 to 40</th>
<th>40 to 60</th>
<th>60 to 80</th>
<th>80 to 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage of development</td>
<td>Tourism unsustainable development stage</td>
<td>Tourism sustainability preparation Stage</td>
<td>Early stages of sustainable tourism development</td>
<td>Tourism basic sustainable development Stage</td>
<td>Tourism sustainable development Stage</td>
</tr>
</tbody>
</table>

The calculation process involves three steps. Firstly, the score assessed by experts was calculated and the index layer judgment matrix R was constructed. Secondly, the AHP method was used to calculate the weight value and to frame the weight vector matrix
A. Finally, the average value of a five-level evaluation was taken to calculate the expert comprehensive weight through the following formula: 

\[ T = \sum_{i=1}^{m} \left( \sum_{j=1}^{n} \left( \sum_{k=1}^{l} l_i \cdot R_k \right) \cdot W_j \right) \cdot U_i \]

In this formula, \( T \) is the overall rating value of Jiaju Tibetan Village; \( l_i \) is the rating value of a single indicator factor in the indicator layer; \( R_k \) is the weight value of that single indicator within the indicator layer; \( W_i \) is the weight value of the indicator in the sub-criterion layer; and \( U_i \) is the weight value of the indicator in the guideline layer. Through the multi-level fuzzy comprehensive evaluation of SPSSAU (v22.0) software, it was concluded that the evaluation weight set of experts for Jiaju Tibetan Village was \( \{0.452, 0.156, 0.097, 0.151, 0.144\} \), and the five-level classification average was inserted into the formula to compute a comprehensive score of 62.42. The sustainable development reference in Table 5 indicates that Jiaju Tibetan Village is in the stage of the basic sustainable development of tourism. This is manifested in the improvement of natural landscape protection, the retention of traditional Tibetan architecture, the profound awareness of villagers’ of tourism protection and development, and the strong government support. At the same time, tourists’ awareness of protection has been enhanced, thanks to years of publicity effort. In conclusion, Jiaju Tibetan Village has great potential to achieve sustainable tourism development in its planning and development process.

4.3. Verification of the Coordination of Sustainable Development in the Traditional Villages

4.3.1. Calculation of the Coupling Coordination Degree

The traditional village sustainable development coordination degree uses the coupled coordinated development degree correction model, which can efficiently and accurately assess the degree of relationship between the various criterion layers:

\[
C = \sqrt{1 - \sum_{i=1}^{n} \left( Y_i - \overline{Y} \right)^2 \cdot \frac{1}{n}}
\]

In the above equation, \( Y_i \) is the i-th criterion layer score, \( Y_i \in [0,1] \), and the coupling degree \( C \in [0,1] \). The larger the \( C \) values, the more concentrated the criterion layers are. In contrast, the smaller the \( C \) values, the more discrete the criterion layers are. Therefore, if \( n = 3 \) and we choose to calculate the coupling coordination degree of the subsystems of ethnic culture (B2), management (B3), and sustainable development (B4), with sustainable development being \( \text{max}(Y_i) \), then the following equation is obtained:

\[
C_B = \sqrt{1 - \frac{(Y_{B4} - Y_{B3})^2 + (Y_{B4} - Y_{B2})^2 + (Y_{B3} - Y_{B2})^2}{s}} \cdot \frac{\frac{Y_{B3}}{Y_{B4}} \cdot \frac{Y_{B2}}{Y_{B4}}}{\frac{Y_{B3}}{Y_{B4}} \cdot \frac{Y_{B2}}{Y_{B4}}}
\]

The formula for calculating the degree of coordinated development \( D \) is:

\[
D = \sqrt{C \cdot T}
\]

In the above equation, \( C \) is the coupling coordination degree, \( T \) is the comprehensive evaluation value, and \( D \) is the coordinated development degree of factors within each layer. In addition, the main division criteria are as follows (Table 6):
Table 6. Criteria for Dividing the Level of Coupling Coordination.

<table>
<thead>
<tr>
<th>Coupling Coordination Degree D Value Interval</th>
<th>Coordination Level</th>
<th>Degree of Coupling Coordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0.0~0.1)</td>
<td>1</td>
<td>Extreme disorder</td>
</tr>
<tr>
<td>[0.1~0.2)</td>
<td>2</td>
<td>Severe disorder</td>
</tr>
<tr>
<td>[0.2~0.3)</td>
<td>3</td>
<td>Moderate disorder</td>
</tr>
<tr>
<td>[0.3~0.4)</td>
<td>4</td>
<td>Mild disorder</td>
</tr>
<tr>
<td>[0.4~0.5)</td>
<td>5</td>
<td>On the verge of disorder</td>
</tr>
<tr>
<td>[0.5~0.6)</td>
<td>6</td>
<td>Basic coordination</td>
</tr>
<tr>
<td>[0.6~0.7)</td>
<td>7</td>
<td>Primary coordination</td>
</tr>
<tr>
<td>[0.7~0.8)</td>
<td>8</td>
<td>Intermediate coordination</td>
</tr>
<tr>
<td>[0.8~0.9)</td>
<td>9</td>
<td>Good coordination</td>
</tr>
<tr>
<td>[0.9~1.0]</td>
<td>10</td>
<td>High-quality coordination</td>
</tr>
</tbody>
</table>

Through importing the evaluation values into SPSSAU (v22.0) software, the researchers obtained the coupling and coordination degree of the five sub-criterion layers. The analysis results are as follows (Table 7):

Table 7. Calculation Results of Coupling Coordination.

<table>
<thead>
<tr>
<th>Item</th>
<th>Coupling Degree C-Value</th>
<th>Coordination Index T-Value</th>
<th>Coupling Coordination Degree D-Value</th>
<th>Coordination Level</th>
<th>Degree of Coupling Coordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic development subsystem</td>
<td>0.499</td>
<td>0.01</td>
<td>0.071</td>
<td>1</td>
<td>Extreme disorder</td>
</tr>
<tr>
<td>Ethnic culture subsystem</td>
<td>0.905</td>
<td>0.613</td>
<td>0.745</td>
<td>8</td>
<td>Intermediate coordination</td>
</tr>
<tr>
<td>Management subsystem</td>
<td>0.24</td>
<td>0.563</td>
<td>0.368</td>
<td>4</td>
<td>Mild disorders</td>
</tr>
<tr>
<td>Sustainable development subsystem</td>
<td>0.895</td>
<td>0.99</td>
<td>0.941</td>
<td>10</td>
<td>High-quality Coordination</td>
</tr>
<tr>
<td>Infrastructure and service facilities subsystem</td>
<td>0.274</td>
<td>0.964</td>
<td>0.514</td>
<td>6</td>
<td>Basic coordination</td>
</tr>
</tbody>
</table>

4.3.2. Coupling Coordination Degree of Sustainable Development in Jiaju Tibetan Village

As is shown in Table 7, the coupling coordination degree of the economic development subsystem was 0.071, with a corresponding coordination level of 1. The figures suggest that this subsystem is currently experiencing extreme disorder. The reason was probably related to the overall development of Danba County. Danba County was located on the Western Sichuan Plateau, and its residents’ means of production is rather primitive due to geographical limitations. In addition, the economy of the county was highly undeveloped. More specifically, a large proportion of the county’s fiscal revenue relied on the subsidies from provincial governments. Consequently, the county is experiencing a significant imbalance between income and expenditure.

The coupling coordination degree of the ethnic culture subsystem was 0.745 and the coordination level was 8, which suggests a moderate coordination. This is probably due to a lesser influence of other ethnic cultures. The majority of residents of Jiaju Tibetan Village were Jiarong Tibetans, who have been living in isolation for hundreds of years. As a result, the traditions and customs of this ethnic group were well preserved, such as architectural features, lifestyle, food customs, language, and literature.

The coupling coordination degree of the management subsystem was 0.368, with a coordination level of 4, which indicates a mild imbalance. The reasons behind this are
probably associated with the education levels of the locals. Jiarong Tibetans were hospitable and kind-hearted. However, since they have lived in remote and mountainous areas for centuries, their general level of education is not advanced. Hence, some managerial problems may occur in village governance as well as in the implementation and execution of policies.

The coupling coordination degree value of the sustainable development subsystem was 0.941 and the coordination level was 10, which represents high-quality coordination. Jiaju Tibetan Village is under the influence of the Qinghai-Tibet Plateau monsoon climate. With a mild climate and a high-quality ecological environment, the implementation of national policies such as Returning Farmland to Forests and Grasslands was able to achieve good outcomes. The natural landscape and resources restored from this process would become important resources for future tourism development.

The coupling coordination value of the infrastructure and service facility subsystem was 0.514 and the coordination level was 6, which represents basic coordination. The roads in this area were under the process of being upgraded and renovated, and the tourism infrastructure was constantly being improved. The constructions of the tourist center, the Chenghua Ring Road, and Tibetan B&Bs have contributed to the continuous improvement of Jiaju Tibetan Village’s travel experience.

Sustainable tourism development was a multi-field, multi-structure, and multi-level comprehensive common development. In order to scientifically analyze the trend and coordination of sustainable development of Jiaju Tibetan Village, the weight value, comprehensive evaluation value, coupling degree value, and coupling coordination degree value of the five major systems of the index layer were calculated and presented in a line chart, as shown in Figure 3. The chart provides a convenient reference for scholars to understand the degree of coordination between the indicators of sustainable development and their importance in the sustainable tourism development of Jiaju Tibetan Village.

![Figure 3. Evaluation of Sustainable Development of Jiaju Tibetan Village.](image-url)
5. Discussions

The academic community has taken part in a lot of discussions on the sustainable development of rural tourism. Some scholars researched “green management practice” [40], and they believe that the tourism industry should save energy and water. At the same time, it is necessary to strengthen the coordinated relationship between economic development and environmental protection, and carry out environmental protection education for tourists. Based on the perspective of community stakeholders, some scholars have researched the importance of tourism to rural regional development, focusing on the positive impact of environmental protection on the sustainable development of rural tourism. However, these studies did not conduct an in-depth and systematic discussion on the sustainable development evaluation of traditional village tourism. Under the background of China’s rural revitalization, it is urgent to establish a sustainable development evaluation index system to adapt to the traditional village tourism in the new era, so as to solve the dilemma of the sustainable development of traditional village tourism and scientifically guide multi-interest subjects to develop traditional tourism.

Based on the previous studies, the evaluation index system of the sustainable development of traditional village tourism was constructed to verify the coordination of sustainable development. This study represents a supplement and expansion of previous studies and puts forward corresponding suggestions:

(1) Improve the convenience and accessibility of tourism transportation

Transportation is an important lifeblood of tourism development, especially for remote ethnic minority areas. By improving road traffic routes, increasing routes, and reducing travel time, it is conducive to promoting tourists to choose the tourist destination, increasing its market share and attracting more tourists to visit.

(2) Improve the natural resource protection system to promote sustainable development

Natural resources are irremediable tourism resources; once destroyed, it is irreversible. For remote areas inhabited by ethnic minorities, there is a beautiful natural environment, rich tourism resources, and a low degree of damage. Therefore, it is necessary to improve the natural resource protection system and enhance the management capacity, so as to achieve sustainable development.

(3) Dig deeper into ethnic characteristics and improve the tourist experience

Ethnic characteristics are distinguished from other tourism resources. They are a tourism resource that is unique to local residents and their living environment. In addition, they also represent the unique local lifestyle and cannot be copied. Therefore, it is important to integrate tourism with local ethnic customs, folk culture, architectural characteristics, and lifestyles to fully present the authenticity of ethnic tourism in order to improve the attractiveness of tourist destinations and allow tourists to have enough exotic life experience.

(4) Increase the intensity of talent development and enhance the competitiveness of tourism

Tourism service capability is one of the key foundations of the tourism industry, and the improvement of service capability will help to improve tourist satisfaction. Improving the quality and level of service personnel is conducive to enhancing the competitiveness of tourism. Therefore, we should provide more professional training to tourism practitioners, and improve the service concepts, service cultures, and service skills of the local tourism industry.

6. Conclusions

(1) In the analysis of the evaluation system construction, the Tibetan life experience and transportation convenience have a significant influence on the tourism development of Jiaju Tibetan Village. The influence of each index on the development of tourism is differentiated, which can provide an important direction for the sustainable development
of traditional villages and indirectly affect the rational utilization of land resources. The impact of the tourist destination environment, the completeness of building preservation, and the villagers’ awareness of independent protection will all affect the development stage of traditional villages. Through evaluation and calculation, it is concluded that Jiaju Tibetan Village is still in the stage of basic sustainable development, which is an important direction for the development of tourism in the future. At the same time, sustainable development will become the core of tourism competition.

(2) The single development force of ethnic villages is weak, and the tourism development momentum is insufficient. They should learn from mutual development experience, develop together, and improve the ability to protect the ecological environment quality and the integrity of ethnic buildings. In order to pursue economic benefits and develop rural tourism, tourism destinations have different focuses on the development planning of traditional villages, but more attention should be paid to the balance and coordination of local development when developing traditional villages. Jiaju Tibetan Village is in a state of imbalance in economic development and management, and it should pay attention to the comprehensive and coordinated development of various major systems in future development. Not only traditional villages, but also other tourism areas are developing local tourism, so we should focus on the balance and coordination of development.

(3) Ethnic rural tourism has its own unique development characteristics, that is to say, the construction of the index system has a certain flexibility. With the development of the region’s economy, society, culture, natural scenery, and human customs, the influencing factors may also change, and the development policies and marketing methods of regional tourism will also be adjusted accordingly. Therefore, there are certain fluctuation factors in the selection of indicators in this region, which need to be further adjusted and discussed.

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References


