Analysis of the Economic Factors Influencing Rural Tourism Based on the Grey Relational Method: A Case Study of Zhejiang Province

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Abstract: The development of rural tourism is a key task for the revitalisation of rural areas and is of great significance for narrowing the gap between urban and rural areas and achieving shared prosperity. Zhejiang Province is one of the first provinces in China to develop rural tourism. Studying the factors influencing the economic impact of rural tourism in recent years is a reference for other provinces and cities to develop rural tourism and achieve rural revitalisation. This paper selects the total number of rural tourism visitors, the total number of farmhouses, the total number of rural tourism employees and the total number of travel agencies as variables to study their relationship with the total output value of rural tourism. Based on the data from 2013 to 2023, the grey correlation method is used to conduct an empirical analysis. The results show that the total number of rural tourists and the total number of travel agencies have a stronger impact on the development of rural tourism economy.

Keywords: Rural tourism, Rural revitalisation, Grey relational analysis, Influencing factors.

1. Introduction

2023 Central Document No. 1 made a comprehensive deployment of the work of the "three rural areas" and the key work of rural revitalisation in the new era, which also put forward new requirements for rural tourism development. At the same time, it also puts forward new requirements for the development of rural tourism.

Since 2007, rural tourism has been included in the central government's No 1 document, which requires that priority be given to the development of horticulture, speciality agriculture and rural tourism. In the ten years since, almost every year's Central No 1 Document has stressed the importance of rural tourism in promoting the strategy of rural revitalisation. In China, the rapid development of tourism has opened up new areas for the rural economy, and it has increasingly become a pillar industry in some regions, playing an important role in achieving industrial revitalisation and urban-rural integration [1-3].

Since the 19th National Congress, the strategy of rural revitalisation has become an important national strategy, and rural tourism is an important driving force for China's rural revitalisation and an effective hand for rural development [4]. Domestic scholars also pay more attention to applied

research. In the new era, rural tourism still has huge development space, and rural tourism research still has great potential [5].

For the economic development of rural tourism in a region, there are various influencing factors, such as the number of tourists choosing rural tourism, the income of rural tourism, and the number of travel agencies doing rural tourism business. Among these factors, which factors play a more important role in the development of rural tourism economy is a key issue that needs to be quantitatively analysed, so that the countermeasures formulated to promote the development of rural tourism economy can be more targeted.

Zhejiang has rich landscape resources, unique rural scenery, high-quality ecological environment, from the evaluation of tourism resources, the development of rural tourism conditions is unique and has great potential. The development of rural tourism is crucial for Zhejiang Province to achieve rural revitalisation and promote rural economic development in Zhejiang. However, there are many factors affecting the rural tourism economy, and there is a lack of direct visible correlation between the factors. This paper adopts the grey scale correlation method to carry out specific empirical research and analysis work to provide a theoretical basis and strategic support for promoting the development of rural tourism in Zhejiang Province.

2. Grey Relational Calculation and Result Analysis of Economic Influencing Factors of Rural Tourism in Zhejiang Province

2.1. Grey Relational Analysis

The concept of grey correlation comes from grey system theory, which is based on the degree of similarity in the shape of the sequence curve of factors between two systems to determine the degree of correlation between the factors.

The advantage of grey correlation analysis is that the computational volume is small, and the sample capacity requirement is not high, even if there are only four samples, and it can also be applied to the data without regularity [6]. Its basic idea is: the raw data collected, if it needs to be pre-processed, it will be dimensionless. After calculating the correlation coefficient and correlation degree, then compare the size of the correlation degree, and rank the evaluation indices according to the size of the correlation degree [7].

2.2. Selection and Calculation of Indicators

In order to analyse the factors influencing the development of rural tourism in Zhejiang, the variables needed for the empirical study were first selected for the grey relational analysis model. For the development of rural tourism, the total output value of rural tourism was selected as the representative variable, and its size reflects the level of development of rural tourism. For the factors influencing the development of rural tourism, the total number of rural tourism visitors, the total number of rural tourism farms, the total number of rural tourism employees and the total number of travel agencies were selected as representative variables. The reasons for selecting these factors as variables in the grey relational analysis are based on two considerations:

A. These variables have been used in the literature, either individually or in combination, and their usefulness has been confirmed.

B. These variables can be quantified by data and are useful for grey relational analysis. Among them, the total number of rural tourism tourists reflects the customer base that the rural tourism economy can attract; the total number of rural homestays reflects the scale of rural accommodation, catering and entertainment facilities available to tourists; the total number of rural tourism employees reflects the scale of staff involved in rural tourism; and the total number of travel agencies reflects the scale of economic organisations that can provide rural tourism services.

In order to obtain the original data needed for empirical research and the availability of reference data, this paper collates data from the Zhejiang Statistical Yearbook, the China Tourism Industry Development Report and other survey reports on the five variables from 2016 to 2023. The specific results are presented in Table 1.

Table 1: Raw data on the influencing factors of rural tourism economic development in Zhejiang Province

Year	Total rural tourism output value (100 million yuan)	Total number of rural tourists (100 million)	Total number of farmhouses (10,000)	Total number of people employed in rural tourism (10,000)	Total number of travel agencies (households)
2016	291	2.8	1.9	16.6	2105
2017	353.8	3.4	2.04	16.7	2173
2018	427.7	4	2.2	16.9	2707
2019	522.2217	4.22	2.12	17	2769
2020	431.3	2.47	2.1	17	2885
2021	469.4	3.9	2.1	31.5	3014
2022	514.6	3.22	2.29	32	3181
2023	471	3.6	2	32.7	3497

The calculation of grey relational degrees is mainly concentrated in four steps [8]:

Step1. Based on the original data in Table 1, each sequence must be dimensionless and the initial value of each sequence must be calculated;

Step2. Find the absolute value sequence of the difference between the initial value image of the parent sequence and the corresponding component of each subsequence;

Step3. Find the maximum and minimum values of the absolute value sequence;

Step4. Calculate the correlation coefficient and the average of each correlation coefficient. The average of each correlation coefficient is the correlation coefficient.

In this paper, Spss Pro is used to import the original data and directly calculate the correlation between each sub-sequence and the parent sequence, as shown in Tables 2 and 3.

Table 2: Annual correlation between the sequence variables of each influencing factor and the variables of tourism economic development

	Total number of rural tourists	Total number of farmhouses	Total number of people employed in rural tourism	Total number of travel agencies
2016	1.000000	1.000000	1.000000	1.000000
2017	0.996065	0.730502	0.647437	0.677353
2018	0.903412	0.552629	0.460303	0.677031
2019	0.572700	0.362059	0.333333	0.445685
2020	0.391016	0.505493	0.456838	0.775405
2021	0.636296	0.431383	0.575181	0.680072
2022	0.383849	0.406216	0.707426	0.599632
2023	0.536484	0.405019	0.523024	0.900165

Table 3: Total correlation of the impact of each influencing factor on the development of rural tourism economy

Influencing Factor	Total Relevance	Rank
Total number of travel agencies	0.719	1
Total number of rural tourists	0.677	2
Total number of people employed in rural tourism	0.588	3
Total number of farmhouses	0.549	4

2.3. Grey Relational Calculation and Result Analysis

According to the results of the grey relational analysis given in Table 3, it can be seen that the factor that has the greatest impact on the development of rural tourism in Zhejiang Province is the total number of travel agencies, with a grey relational degree of 0.719; followed by the total number of rural tourism visitors, with a grey relational degree of 0.677; and then the total number of rural tourism employees, with a grey relational degree of 0.588; the weakest influence is the total number of farmhouses, with a grey relational degree of 0.549.

Empirical research also found that the grey relational method pays special attention to the measurability of variables in practical applications. If the variables are not measurable and cannot be quantified, the grey relational method cannot be applied. Therefore, when using the grey relational method to solve practical problems, it is necessary to consider the existence of this limitation.

3. Analysis and Suggestion

3.1. Establishment of Professional Rural Tourism Travel Agencies

According to the conclusions of the grey relation analysis, the total number of travel agencies ranks first in terms of its impact on the development of the rural tourism economy, indicating that the advertising and promotion, route design and full service of travel agencies are of great significance in attracting tourists to choose rural tourism projects and expanding the scale of the rural tourism economy. From the current situation, Zhejiang travel agencies are fully developed, providing both international and domestic tourism services, as well as scenic and rural tourism services. Relevant departments should take a series of effective measures to build professional rural tourism travel agencies and promote the upgrading of the rural tourism industry. Make good plans for the development of the rural tourism industry and try to avoid low-quality homogeneous industry development. Create a wide range of health and wellness tourism products, including farm experience, healthy eating and physical management, which can activate the use of rural resources, increase the added value of rural tourism, enhance the resilience of the industry and accelerate the iterative upgrading of traditional rural industries, thereby promoting overall regional development.

3.2. Adapting to Local Conditions to Increase Attractiveness

Although the total number of rural tourism visitors ranks second in terms of its impact on the development of the rural tourism economy, the number of rural tourism visitors is still an important factor affecting the development of the rural tourism economy. Affected by the epidemic, most tourists chose to travel within the city and province. Therefore, from 2020 to 2021, the total number of rural tourism visitors in Zhejiang Province increased rapidly. However, after the epidemic, although the number of rural tourism visitors in Zhejiang Province increased, the growth rate

slowed down, mainly due to the increase in the number of routes and scope of travel options for residents. China's traditional rural tourism industry does not have a distinctive personality, market competition is fierce and the industry is highly replicable. However, in order to form a core competitiveness and make rural tourism products unique and different from other products in the industry, they must have regional characteristics. Therefore, villages that have the prerequisites should be encouraged to develop local resources with local characteristics. Professional tourism planning agencies can help with creative ideas, and provincial organisations can explore, protect and promote rural cultural tourism areas. They can also establish relevant provincial rural cultural tourism demonstration zones to raise the social status of the project, increase its influence, enhance the attractiveness of rural tourism to tourists, stabilise the number of tourists, and prevent tourists from abandoning rural tourism and choosing other forms of tourism.

3.3. Improving the Quality of Rural Tourism Service Personnel

In rural tourism, the most important factor in attracting tourists is the quality of the staff providing services in various aspects such as catering, accommodation, guided tours and entertainment. The skills and quality of rural tourism employees affect the taste of rural tourism services and the attraction of tourists in all aspects. The quality of employees can be improved in two ways: first, by recruiting professionals to go to scenic spots and conduct various forms of training activities, including university scholars and experienced employees in the tourism industry. At the same time, employees should be organised to study at universities or rural tourism model areas to improve the theoretical knowledge and practical skills of service personnel.

Second, rural tourism areas can introduce high-quality professional high-end talent, including the following two aspects: first, directly introduce staff with high professional quality, such as hotel management, professional tour guides, professional cooks, etc.; second, introduce new investment units to attract high-quality talent to join, and some investors themselves are very professional and will also bring a lot of related resources.

3.4. Enriching the Service Content and Improving the Service Quality of Agritourism

Farm holidays are an important factor in attracting tourists to rural tourism, and the food, accommodation and folk entertainment they provide are important services in rural tourism. However, the results of this analysis show that their impact on the development of rural tourism is not commensurate with the role they should play. The reasons for this are related to the single service content of some farm stays, the poor food and accommodation environment and the vulgarity of the service items. Therefore, in order to increase the impact of farm stays on the development of rural tourism, it is necessary to further enrich the service content of farm stays so that tourists feel that they get value for money when they visit farm stays. At the same time, considering that most tourists who go to rural areas are urban citizens with relatively high quality and education, farm-stay must pay attention to service quality, food hygiene, clean accommodation environment, attitude in the service process and other issues.

4. Conclusion

Tourism is a wealth-creating industry, and in the context of common prosperity, rural tourism has huge room for development. Vigorously developing the rural tourism industry helps develop the rural economy, exploit rural natural and cultural resources, optimise the integration of rural industries, promote employment among farmers, drive up farmers' incomes, and inject vitality into rural economic development. The development of rural tourism in Zhejiang Province requires support from all sides. The government, tourism enterprises and local villagers should all recognise

the intrinsic connection between the rural tourism industry and rural revitalisation, do their own jobs well, improve the overall quality of rural tourism in Zhejiang Province by building specialised rural tourism travel agencies and designing multi-level tourism products to increase their appeal to tourists, and promote the sustainable development of the rural tourism industry to support the comprehensive promotion of the rural revitalisation strategy. This paper also lacks field visits and investigations into the local rural tourism situation. The above methods can be incorporated into future research to better collect local data.

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