INBOUND TOURISM DEVELOPMENT AND GREY CORRELATIVE ANALYSIS ON ITS AFFECTING FACTORS IN SICHUAN CITY

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Abstract  
The inbound tourism is a very important part in the tourism industry. It has a considerable influence on the local economy’s development of Sichuan province and on the image’s publicity for Sichuan. In this article, we use a model named gray correlation model to analysis the relevancy of inbound tourism and some impact factors such as green area of urban land, star hotels which are concerning foreign affairs, volume of passenger traffic for commercial aviation etc., which based on the gray system feature of inbound tourism industry. The model result indicates that increasing the construction of involved infrastructure for tourism could boost the development of inbound tourism for Sichuan province.

Keywords: INBOUND TOURISM; AFFECTING FACTOR; GRAY CORRELATIVE ANALYSIS

Introduction  
Inbound tourism has been the focus of tourism research because of it is helpful to earn foreign exchange and balance international payments. So, seeking the relationship between tourism and its influencing factors became a hot issue of Tourism Research. The grey relational analysis is mainly according to the sequence of influence factors to curve geometric shape and be explained variable degree of similar to judge whether the relationship between them is closely. The curve track is more closer, the degree of correlation between the corresponding sequence of explanatory variables is greater. The paper established a grey correlation model of Sichuan inbound tourism influence factors after quantified the factors on Sichuan. According to sort the associate degrees, it is concluded the result that the accommodation and catering industry employment personnel to Sichuan inbound tourism influence larger. Finally, to make Sichuan’s inbound tourism business better, the paper suggest to further strengthen the services personnel quality of training and then improve the quality of tourism service countermeasures.

1. The research on Grey Correlation Model of inbound tourism  
Our tourism industry is developed on the basis of inbound tourism, the research on the demand influencing factors is extremely fruitful. Li Ying (2005) introduced the main situations of China's inbound tourism in 1978, which regarded the peaceful and stable international environment as
important factors. Yet his research was just from the perspective of political environment, some specific factors are not included. Professor Deng Julong proposed the Grey Theory in 1982, yet its application, which was not widely, remained mainly concentrated in the gray forecast with gray association analysis. Wang Haihong (2001) was the first one to take advantage of the gray relational model to analyze the development trend of China's inbound tourism and predict the 2001-2005 China inbound tourism trends. Cheng Jingjing, Zhang Yuangang and Zhou Binggen (2006) also used the gray relational model in feasibility analysis of driving tour to predict the per capita income of rural residents, rural residents travel rate, per capita income of urban residents, urban residents travel rate. Wei Wei, Xie Chunshan (2008) conducted dynamic analysis of the international tourism industry structure in Liaoning Province, and the conclusion showed the structure that transportation, shopping, dining, accommodation are of higher proportion and entertainment, telecommunications, tour departments of less proportion contributed to the disadvantages, which indicated the structural contradictions were more prominent, and put forward a series of policy recommendations.

From the previous documents that analyzed the influencing factors of inbound tourism by gray relational model, each article had its own focus and of different influencing factors. But from the overall perspective, the gray relational analysis of inbound tourism in Sichuan is still not abundant. Since the 2008 Sichuan earthquake, more and more attention is paid to Sichuan, which brings about opportunities for its tourism. Therefore, this article will analyze the influencing factors by gray relational model, and give some suggestion to help promote the development of inbound tourism in Sichuan.

2. The gray correlation analysis of the influences for the inbound tourism of Sichuan province
Sichuan province has a long history, which is one of the origin of Chinese civilization for China's pluralistic integration. It is also the central place and development of the civilization for Yangtze river. Sichuan province is a big tourism province which has a rich Tourism resource, unique taste, and outstanding advantage. Therefore, it attracts a large number of overseas visitors to Sichuan. Because of the grey tourism system, using the grey connection model to analysis it is viable. The grey relational analysis can comprehensively reflect the influence of the inbound tourism between various factors interaction, so we can quantitatively evaluate the effects of various factors of inbound tourism’s development.

2.1 Influence the choice of traveling to Sichuan inbound tourism factors
2.1.1 The numbers of foreign visitors to Sichuan
According to China Statistical Yearbook’s definition, the number of inbound tourists to Sichuan province refers to those who visiting, travelling, visiting relative and friends, other activities as well.

2.1.2 The number of hotels which could receive foreign visitors
The star hotel which can receive foreigners is the main place for Inbound tourists. Grade and quality of service has a very important impact on the inbound tourism. The evaluation of inbound tourist to Sichuan depends on this seriously.
2.1.3 The number of bus stations, the length and passenger number of highway, the related infrastructures such as the volume of civil aviation

The construction level of infrastructure which related to tourism directly relates the inbound tourists’ convenience and the feeling of comfort when they are travelling in Sichuan. Therefore, the level for the related infrastructure’s construction directly influences the inbound tourism’s development.

2.1.4 Tourism resources

The tourism resources are the main factors that attract foreigners to travel in Sichuan, which mainly refers to the numbers of scene spots. In this paper, we use the assignment method for calculating the scores of tourism resource through the different dividing standard of scene spots which enhances the comparability among different spots with 5A, 4A and 3A star. The situation is, during year of 2004 and 2011, the number of spots in Sichuan barely changed, considering the importance of tourism resource in attracting the tourist, we put the factor of tourism resources in the model influencing the other factors.

2.1.5 The number of employees who works for accommodation and catering services

The quality of accommodation and catering service directly influence the services of tourism, so in this paper we also includes the number of people of catering service and accommodation services in our model.

2.1.6 The publish amount of books, magazine and newspapers

The foreign travelers usually would look up to some related information about their destination. The books, magazines and newspapers could be their main resources to get this. Therefore, we include this factor as well.

According to the state of the sichuan’s inbound tourism and combining the previous research, this paper will include the number of inbound tourism as a special serial, at the same time combine the data from statistical yearbook of Sichuan province during year 2004 and 2011. Using the grey correlation analysis model to analyse the factors to the impact level for Sichuan inbound tourism, which these factors include the number of star hotels which could receive foreign travelers, the area of city green land, the number of bus station, the length of highway, the number of passengers of highway, the tourism resource, the publish amount of book, magazines and newspapers, the number of employees for catering and accommodation services and the volume of civil aviation.

2.2 Using the grey correlation model to research the impact factors which could influence the inbound tourism

2.2.1 Confirm the reference serial and the comparable serial

In this paper the gray correlation model, the inbound tourists each year of Sichuan province will be as reference sequence \{X\_0\}.The number of foreign-star hotel, urban landscape green space areas, Public steam (electric) car passenger transportation amount, the length of road transportation line, the capacity of road passenger, tourism resources, book, magazine and newspaper publishing amount, accommodation and catering industry employment personnel, civil aviation passenger capacity and so on will be as comparative sequence \{X\_i\}. 
Among them, the X0 will be as inbound tourists of Sichuan to enter the number of visitors each year, the unit is million passengers.

\[ X0 = (45.09, 96.62, 106.28, 140.18, 170.87, 84.99, 104.93) \]

X1 is the quantity of foreign-star hotel, unit is a. Due to different levels of hotel have different attraction to tourists difference, so this paper adopted the assignment method to calculate the hotel scoring, the five-star hotel score for 5 points, four-star hotel score for three points, three star hotel score 1 points:

\[ X1 = (181, 313, 348, 386, 398, 498, 507, 534) \]

X2 is urban landscape green space areas, unit is hectare:

\[ X2 = (63163.2, 66399.7, 68079.9, 54488, 55918, 58003, 66817, 72259) \]

X3 is Public steam (electric) car passenger transportation amount, unit is million passengers:

\[ X3 = (181664, 173541, 192983, 205860, 229929, 425191, 436721, 451265) \]

X4 is the length of road transportation line, unit is kilometer:

\[ X4 = (112543, 113043, 114694, 164688, 189395, 224000, 249000, 266000) \]

X5 is the capacity of road passenger, unit is million passengers:

\[ X5 = (133728, 150176, 159450, 184852, 196871, 196055, 211288, 230988) \]

X6 is tourism resources. The valuation method of the world tourism heritage, national scenic spots, tourist attractions at the provincial level by different score to assignment:

\[ X6 = (139, 139, 139, 145, 145, 145, 145, 145) \]

X7 is book, magazine and newspaper publishing amount, unit is copies:

\[ X7 = (169922, 182931, 187010, 183658, 197743, 192000, 181081, 200262) \]

X8 is accommodation and catering industry employment personnel, unit is million passengers:

\[ X8 = (122.2, 148.7, 172.9, 183.7, 196.4, 190.75, 199.31, 203.59) \]

X9 is civil aviation passenger capacity, unit is kilometers:

\[ X9 = (104, 143, 173, 207.5, 248, 236, 303, 208.8) \]

2.2.2 The original data of the spheroidizing treatment for initial value

The purpose of the initial value of the spheroidizing treatment is to eliminate the original data dimension so that can direct comparison of the data series.

For difference sequence, minimum difference and great difference sequence:

Minimum difference

\[ a = \min \min \Delta i(k) = \min \min |Xo(k) - Xi(k)| \]

\[ a = 0 \]

Great difference

\[ b = \max \max \Delta i(k) = \max \max |Xo(k) - Xi(k)| \]

\[ b = 2.9042 \]

Grey correlation calculation

Correlation coefficient

\[ E_i(k) = \frac{\min \min |Xo(k) - Xi(k)| + \theta \max \max |Xo(k) - Xi(k)|}{|Xo(k) - Xi(k)| + \theta \max \max |Xo(k) - Xi(k)|} \]
Among them $\theta$ is resolving coefficient, value range is (0, 1), general value is 0.5, this article is 0.5 value

Correlation:

$$R_i = \frac{1}{n} \sum_{k=1}^{n} E_i(k)$$

$R_1 = 0.6855, R_2 = 0.5891, R_3 = 0.6443, R_4 = 0.6896$

$R_5 = 0.6827, R_6 = 0.5924, R_7 = 0.6074, R_8 = 0.7029, R_9 = 0.6843$

According to each sequence calculate out of relational sort, identifying the influencing factors on the influence degree of the Sichuan inbound tourism.

3. Sichuan tourist arrivals influencing factors results analysis

From the above calculation of associate degree, grey correlation degree is sequenced as following: the employees of accommodation and catering industry > transport line length > the quantity of foreign star hotel > civil aviation passenger traffic > the volumes of highway passenger > the volumes of Public Vehicles > the publishing of books, magazines > the ownership of tourism resources > urban greenbelt areas.

From the grade of correlation degree, all influencing factors are above 0.5, indicating that the affecting factors have obvious effect to Sichuan tourist. The influence of employee of accommodation and catering is most obvious. Line length of road transport, civil aviation passenger traffic, highway passenger volume, and the total amount of public steam (electric) car passenger are above 0.64. These factors belong to the tourism-related infrastructure construction, which shows that construction of tourism infrastructure have a great impact. The number of foreign-star hotel of Sichuan Province, grades in the second. The foreign-star hotel is the main place of inbound tourists, also a more important factor to affect the entry of tourists. The associate degree of books, magazine in the newspapers is associated to 0.6074, also relatively high. We should increase the publicity of the tourist attractions in Sichuan, in order to attract more foreign tourists to Sichuan.

4. The countermeasure analysis of improving the inbound tourism industry for SiChuan province

Since the economic reform of china, the inbound tourism is becoming one of the most developing industries for national economy, meanwhile, the inbound tourism is about to be a more beneficial also a new type basic industry due to it could drive the related industries to develop directly or indirectly. I hope the following analysis about the results of gray correlation model in this article could drive the development of inbound tourism of Sichuan province quickly and accelerate the competition power for Sichuan province’s inbound tourism.

4.1 The greater efforts to erect the infrastructure for tourism industry

The infrastructures for tourism include the length of public road, the passenger capacity of civil aviation, the capacity of public road, the public transportation capability, which they are all could improve the convenience level for foreigners when they travel here locally. The model result tells these infrastructures have a correlation coefficient of 0.64 with the number of tourists, which indicates the convenience level for traveling is more important for tourists to choose their traveling destinations. Therefore, increasing the direct flights with those countries that have large number of inbound tourists, speeding up the construction of public roads, build the all-round
opening paths, all above would influence the inbound tourism for Sichuan province positively. Moreover, improving the development of related industries for tourism infrastructure such as transportation industries, public facility industry could proceed the progress of the inbound tourism of Sichuan province.

4.2 Think highly of the scheme of star hotels industry
Star hotels are the main places for foreign travelers to choose for the resting and having meals. The convenience level for choosing hotels and the construction of hotels are the important factors for the impression of traveling in sichuan’s scenic areas. Therefore, the involved departments should strengthen the construction level of star hotels, upgrade the hotel level in scenic area and improve the service quality.

4.3 Strengthen the surveillance of travel service, take the travel service quality seriously
The model result indicates that the number of employees for the whole service industry has an important influence to the inbound tourism. The impressions of foreign travelers to Sichuan scenic areas have an important and serious relationship with their feeling of hotels and restaurants when they travel here. So, the involved departments need to improve the service industry’s quality and strengthen the training of employees from these industries.
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