An Analysis on the Development Prospect of E-commerce System for Rural Tourism in China Based on the Background of Big data

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Abstract

With the continuous development of information technology, the popularizing rate of the Internet has been increasingly higher. The Internet’s fast information transmission, massive information resources and high openness have significantly promoted the development of traditional industries. On March 5, 2015, at the twelfth National People’s Congress, Premier Li Keqiang formally put forward the idea of Internet+, and the concept of “Internet+various fields” has become a major direction for China’s development strategy planning. In the field of rural tourism, Internet+ has provided a new development path and a development prospect for rural tourism, which can effectively promote the development of rural tourism. First, this paper analyzes the current situation of domestic rural tourism, subsequently puts forward an evaluation model for the influencing factors of the development potentials of rural tourist attractions. In the end, this paper explores the construction ideas of the e-commerce platform in rural tourism scenic areas under the background of big data, which has played a prominent role in promoting the development of rural tourism.

Keywords: Big Data, Rural Tourism, E-Commerce.

1. RESEARCH OVERVIEW

1.1 Research Background

After the reform and opening up, China’s economy has advanced at an ever-increasingly faster speed, and the economic level continues to elevate. Also, people’s pursuit of life quality steps to the next level. Tourism allows visitors not only to feel the novelty of the natural landscape and to broaden tourists’ vision, but also to experience a diversified cultural environment, thereby becoming a popular favorite way of consumption. Hence, in recent years, the tourism industry has been rapidly developed, and tourism economy has become China’s new economic growth point. Villages, located in the mountains or suburbs, hold a wealth of natural tourism resources as well as a unique rural cultural environment, and become a major direction of tourism resources development. In the context of Internet+, a rural tourism e-commerce system is constructed based on big data and become an important approach of rural tourism development. Consequently, a study should be conducted on the rural tourism e-commerce system, so as to provide a new impetus to the development of rural tourism.

1.2 Literature Review

The potentials of rural tourism resources are mainly impacted by basic security, internal competitiveness, external support and other factors. In view of these influencing factors, a complete evaluation index model for rural tourism development potential is constructed, which is of great significance to the study on the development of rural tourism (Jiang et al., 2009). In the tourism e-commerce platform, the aesthetic degree of the website interface will greatly affect consumer satisfaction, which, meanwhile, is also influenced by the economy of the platform, the richness, authenticity and security of information and other factors. The responsiveness of the website exerts the greatest impact on consumer satisfaction, and timely responses to the needs of consumers from the website can effectively enhance consumer experience (Fan, 2016). In order to advance the development of rural tourism e-commerce, the government needs to play a major role. Through the establishment of the official platform, the support from higher levels of government should be actively sought. In addition, it is necessary to establish a government-led rural tourism market mechanism to realize the purpose of rural tourism e-commerce development. In the end, a sound market inspection system should be established to ensure the normal operation and development of rural tourism e-commerce (Chen, 2016). First of all, a rural
tourism e-commerce platform should be constructed to provide basic data for the operators of rural tourist attractions and catering business by means of cloud computing and big data, thereby facilitating the construction and development of the operators. Secondly, the e-commerce platform is featured with diversification. On the one hand, a variety of government departments, social enterprises and other sectors should be integrated. On the other hand, the construction of the e-commerce platform should reflect the rural characteristics. In the end, in the context of highly developed mobile information technology, APP and other means should be applied to help rural areas build and develop tourism (Zhao, 2016).

2. DEVELOPMENT POTENTIAL EVALUATION MODEL FOR RURAL TOURISM

The development potential of rural tourism scenic areas is affected by a number of complicated factors, and many of which can not be expressed by quantitative indexes. It is of high degree of difficulty to employ traditional methods to evaluate the development potential of rural tourism scenic spots. To this end, a development potential evaluation model for rural tourism is built up by means of analytic hierarchy process method and fuzzy comprehensive evaluation method, so as to better study rural tourism.

2.1 Analytic Hierarchy Process

As far as complex problems with numerous indexes are concerned, the method of analytic hierarchy process (AHP) is applied for the solution. The essence of AHP is to make pairwise comparisons on the factors that affect the development potential of rural tourism. The most influential factors are scored according to their significance, so as to obtain the weight value of each influencing factor. This method is featured with high accuracy and more intuitive expressive content and is widely adopted in numerous areas.

2.1.1 Determine the Set of Indexes

The influencing factors of rural tourism scenic spots are illustrated in Table 1:

<table>
<thead>
<tr>
<th>System layer</th>
<th>Factor layer</th>
<th>Index layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural tourism; scenic spot; development potential</td>
<td>ecological environment</td>
<td>Environmental quality, climate, noise, pollutants</td>
</tr>
<tr>
<td>Basic support force</td>
<td>Community participation</td>
<td>Villagers’ satisfaction, villagers’ cultural level and villagers’ participation</td>
</tr>
<tr>
<td></td>
<td>Infrastructure</td>
<td>Transportation, communications, public health, water supply</td>
</tr>
<tr>
<td>Intrinsic competitiveness</td>
<td>Landscape quality</td>
<td>Architecture, popularity, natural awakening, richness</td>
</tr>
<tr>
<td></td>
<td>Tourism experience</td>
<td>Length, satisfaction, ability to guide, participation</td>
</tr>
<tr>
<td></td>
<td>Economic performance</td>
<td>Number of tourists, income of tourism and income of villagers</td>
</tr>
<tr>
<td></td>
<td>Auxiliary facilities</td>
<td>Entertainment facilities, security facilities, food and beverage accommodation</td>
</tr>
<tr>
<td>External support</td>
<td>Human resources</td>
<td>Staff capacity, certificate ratio,</td>
</tr>
</tbody>
</table>
The development potential of rural tourism is expressed by $T$, and the set of its influencing factors is $U=(u_1,u_2,u_3)$, respectively stand for the basic guarantee, the internal competitiveness and the external support of rural tourism development (Leng, 2016).

2.1.2 Establish an Influence Factor Judgment Matrix

The influence factor matrix for the development potential of rural tourism is indicated as follows:

$$
R_i = \begin{bmatrix}
  r_{1,1} & r_{1,2} & \cdots & r_{1,9} \\
  r_{2,1} & r_{2,2} & \cdots & r_{2,9} \\
  \vdots & \vdots & \ddots & \vdots \\
  r_{9,1} & r_{9,2} & \cdots & r_{9,9}
\end{bmatrix}
$$

(1)

The data in the matrix of influence factors are compared to pick out several items with higher proportion, and the judgment matrix $S = (U_{i,j})_{3\times3}$ is derived. Then, the judgement matrix is calculated to derive the maximum eigenvalue $\lambda_{max}$ of Matrix S, and the main influencing factors of rural tourism development potential are obtained on basis of $\lambda_{max}$ (Liu, 2016).

2.1.3 Consistency Test

In the consistency test, the formula of consistency indexes is as follows:

$$
CI = \frac{\lambda - n}{n-1}
$$

(2)

The formula of consistency ratio is:

$$
CR = \frac{CI}{R}
$$

(3)

Specifically, $CI$ represents the consistency index. When the consistency ratio is less than 0.10, this matrix is proved to be consistent with the evaluation index of the development potential of the rural tourism scenic spots. The derived weight results can exert a substantial influence on the development potential of the rural tourist attractions. If $CR > 0.1$, the matrix needs to be readjusted until the two have a consistency (Yang, 2015).

2.2 Fuzzy Comprehensive Evaluation Method

The development potential of rural tourism scenic areas is affected by a number of dominant factors or hidden factors. A quantity of factors are difficult to be quantified, and its evaluation is highly difficult. Therefore, the fuzzy comprehensive evaluation method can be adopted to analyze the effects of various factors.
2.2.1 Determine the Range of Influencing Factors

According to Table 1, the development potential of rural tourism scenic spots are mainly affected by three factors.

The first factor involves basic guarantee, that is, the level of infrastructure construction of rural tourism scenic areas. The basic guarantee is divided into three levels. The first level is the ecological environment, which includes water quality, greening index, climate suitability, pollution treatment rate, noise, etc. of rural tourist attractions, namely the natural landscape of rural tourist attractions. The second level involves community participation, mainly including the number of labor in rural areas, the proportion of the employed, the views of villagers on the development of rural tourism scenic spots, villagers’ hospitality, educational level and environmental awareness, villagers’ participation degree in the decision-making of rural tourist attractions, as well as villagers’ occupation degree on the public welfare of rural tourism scenic areas. The third level concerns infrastructure construction, mainly referring to the completion and matching degree of communication facilities, the completion degree of traffic system, public health system and water supply system, etc.

The second factor refers to the inherent competitiveness, namely the level of service provided to tourists in the rural tourism scenic areas. The inherent competitiveness mainly consists of four levels. The first level lies in landscape quality, mainly embodied in the integrating degree of architecture and natural landscape in the rural tourism scenic area, the popularity, oddity and naturalness of the landscape, as well as the richness of rural tourism scenic resources and the number of high-quality tourism resources in the vicinity. The second level is in regard to tourist experience, mainly reflected in tourists’ duration of stay in the scenic areas, tourist satisfaction, service level of tour guide and the participation in tourism projects. The third level is the level of economic benefits, which means the yearly number of visitors in rural tourist attractions, tourism income, per capita income, etc. The fourth level involves construction of auxiliary facilities, mainly represented in catering facilities, tourist distribution centers, recreational facilities, safety facilities and other aspects.

The last factor concerns the external support, mainly containing three levels. The first level is the level of human resources quality, which refers to the proportion of licensed staff and tour guides in rural tourist attractions as well as the existence of the relevant training institutions within rural tourist attractions and its surrounding areas. The second level is the integrated management level, namely the completion degree of the management institution and management system of rural tourism scenic areas, the availability of a wide range of marketing channels, the efficient handling of tourist feedback, as well as rural tourism scenic financing and investment ability. The third level is in terms of macro-support, which means the long-term development plan of rural tourism scenic areas, the certification from the government on the rural tourist attractions, and the relevant policies and regulations and financial investment.

2.2.2 Construct a Fuzzy Comprehensive Evaluation Matrix

The fuzzy comprehensive evaluation matrix is as follows:

\[
R = \begin{bmatrix}
R & u_1 \\
R & u_2 \\
\vdots \\
R & u_p \\
\end{bmatrix} = \begin{bmatrix}
r_{11} & r_{12} & \cdots & r_{1m} \\
r_{21} & r_{22} & \cdots & r_{2m} \\
\vdots & \vdots & \ddots & \vdots \\
r_{p1} & r_{p2} & \cdots & r_{pm} \\
\end{bmatrix}
\] 

(4)

Specifically, each unit can be regarded as the membership of the influencing factor relative to the entirety. The weight vector of the influencing factor can be expressed by the following formula:

\[
\sum_{i=1}^{p} a_i = 1, a_i \geq 0, i = 1, 2, \ldots, n
\]

(5)

Secondly, the vector of the result generated by each evaluation factor is constructed, and the formula is as follows:
\[ A_R \mathbf{R} = (a_1, a_2, \ldots, a_p) \begin{bmatrix} r_{11} & r_{12} & \cdots & r_{1m} \\ r_{21} & r_{22} & \cdots & r_{2m} \\ \vdots & \vdots & \ddots & \vdots \\ r_{p1} & r_{p2} & \cdots & r_{pm} \end{bmatrix} = B \]  

In the end, it is necessary to sort out and deal with all the data. There are two methods of data processing. One method is to apply the fuzzy distribution method to analyze the overall level of influencing factors for the development potentials of rural tourism scenic spots. The other method is to score these influencing factors and derive the final scores (Deng, 2012).

3. THE CONSTRUCTION OF RURAL TOURISM E-COMMERCE SYSTEM UNDER THE BACKGROUND OF BIG DATA

In the context of big data, the overall planning of the rural tourism e-commerce system is demonstrated in Figure 1:

![Figure 1. Rural Tourism E-Commerce System](image)

3.1 Construct an E-commerce Platform for Rural Tourist Attractions

3.1.1 Establish a Product Supply Internet Platform

Product supply platform should adhere to the following steps. First, users can consult product-related information on the Internet via electronic devices and access the technical parameters of planting and breeding through the traceability system. Secondly, users look up to the desired agricultural products with rural characteristics, examine the eligibility of agricultural products by means of the inspection and testing system, then place orders through the e-business platform, load and transport the products. In this process, there are two types of e-commerce models. One model is B2B model where products are transferred to users through cooperative enterprises or platforms, and the other one is B2C model where the agricultural products are directly delivered to customers (Lai, 2012).

3.1.2 Establish an E-commerce Training Institution

Generally, villagers lack the relevant knowledge of e-commerce. The promotion of the development of rural e-commerce requires the establishment of e-commerce training institutions. In this process, a large quantity of talents are needed. The construction of talent team in rural tourist attractions can be improved from the following aspects. First, rural migrant workers should be investigated to see if their professions are matched, and
they should be encouraged to return hometown for entrepreneurship based on certain support (Yin H., 2006). Secondly, the government should be involved to convene high-quality compound talents to work in the countryside. Besides, a production and research base should be established, and colleges and universities should cultivate professionals demanded by rural tourism scenic areas. In this way, both schools and enterprise can achieve win-win and common development. In the end, the training of staff should be strengthened, and regular seminars should be held.

3.1.3 Establish a Network Marketing Platform

Marketing is the most direct means of promoting the development of economic benefits. In order to promote the development of rural tourist attractions, the features and the advantages of rural tourist attractions require an in-depth excavation. Besides, the preferences and purchase behavior of tourists should be combined, and targeted reasonable marketing should be conducted. In the background of big data, it is of abundant significance to carry out marketing through the Internet. Therefore, it is necessary to establish a long-term sustainable development mechanism with the information department so as to enhance the network marketing level of rural tourism scenic spots and to promote the development of rural tourist attractions.

3.2 Construct the E-commerce Application Layer in Rural Tourist Attractions

3.2.1 Strengthen APP Construction

At present, there are numerous users of mobile networks. The high usage frequency has gone beyond that of the traditional networks to a certain extent. Mobile network has become an indispensable part of people’s daily life. For this purpose, rural tourism scenic areas can provide more network users with information related with the rural tourist attractions by means of strengthening APP construction, and can improve map, payment and other functions in the APP. In this way, more high-quality services are afforded to enhance tourists’ satisfaction with the rural tourist attractions and to promote the development of rural tourism scenic spots.

3.2.2 Network Platform

Network platform is of great significance to the propaganda work of rural tourism scenic areas. Rural tourist attractions should make use of post bar, microblogging, WeChat and other means. On the one hand, the promotion of rural tourism scenic spots is enhanced so that more Internet users understand the characteristics and advantages of rural tourist attractions and stimulate their tourism interests. On the other hand, the brand effects of tourist attractions are built up through the network platform, and a solid foundation is laid for the long-term development of rural tourism scenic areas.

3.2.3 Internet Payment

Compared to the traditional cash payment, Internet payment, featured with greater flexibility and convenience, has become the main trend of development. To this end, rural tourism scenic spots should improve the construction of Internet payment to ensure that every store, farmyard, enterprise or facility can make payments by means of WeChat wallet, Alipay, online banking, etc. (Li, 2016).

3.3 Safeguard Measures of E-commerce for Rural Tourism Scenic Area

3.3.1 Government Support

The construction of rural tourism scenic area can not only effectively develops the rural economy, reduces the economic gap between urban and rural areas, but also promotes the social and economic development, which is of overreaching significance. Therefore, the government should also be integrated into the construction of rural tourism scenic areas and should facilitate the construction and development of rural tourism scenic areas by introducing various auxiliary measures. In the meantime, more regional government support should be won over to the maximum extent, thus forming a comprehensive connectivity (Ma, 2013).

3.3.2 Establish A Sound Regulatory Mechanism
The construction of rural tourism scenic spots will inevitably lead to some problems. A sound regulatory mechanism needs to be constructed, so that the problems arising in the construction can be effectively solved, and the construction level of rural tourist attractions can be enhanced (Liu, 2015). Therefore, the managers of rural tourism scenic area, villages and governments should jointly set up an inspection group in rural tourism scenic areas to monitor whether some problems would occur in the construction so as to settle them at the fastest and to promote the healthy development of rural tourist attractions (Cao, 2011).

3.3.3 Transform the Traditional Development Thinking

In the context of big data, the traditional business and development thinking has been derailed with the times, and the traditional thinking is in need of changes. Big data and related technology are integrated in the construction and development of the rural tourism scenic areas, thus playing out the utmost significance of big data in the construction and development of rural tourist attractions, continuously enhancing the construction level of rural tourist attractions, and achieving the core concept of Internet (Han, 2008).

REFERENCES

Chen N. (2016). "Internet plus" under the background of rural tourism e-commerce, research system construction of Beijing Forestry University, 2(01),52-53.
Fan L. (2016). Influence the satisfaction of tourists and the loyalty of online travel website service quality, an empirical study of Hainan University, 1(08),131-134.
Han Z.Q. (2008). Research on coordinated development of urban and rural tourism based on sustainable development, Fujian Normal University, 2(01),28-29.
Leng Y.Q. (2016). "Internet plus" era of leisure agriculture development of. Chengdu University of Technology, 3(01),22-25.
Li J.M. (2016). Research on cultural heritage and tourism brand construction under the integration of Wen brigade. Shandong University, 1(02),144-145.
Ma L. (2013). Design and implementation of rural tourism information service system based on SOA. Anhui University, 2(02),138-139.