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Calculation of tourism development income index based on finite element ordinary differential mathematical equation

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Abstract

China's tourism industry developed rapidly in the late 1990s, and its direct result is the continuous and rapid growth of tourism operating income. However, since 2010, China's tourism development has been slow and regional tourism development has been uneven. Even in different years in the same area, the tourism operating income shows great differences. How to select the key factor from many factors, as there is still no recognised method in the theoretical circle. This article combines the theories of econometrics, differential calculus, statistics and other related fields. Through in-depth basic research, the data required for the research is determined, and such data are substituted into the self-constructed econometric differential statistical model. Effective analysis of empirical objects is realised. At the same time, the article uses tourism operating income as an indicator and uses the analysis of variance method to calculate the average coefficient of variation of the same region in different years and different regions in the same year, analyses the trends and characteristics of China's tourism in the temporal and spatial structure, and proposes corresponding results on this basis.

Keywords: China's tourism industry, space–time structure, finite element ordinary differential mathematical equations, strategic countermeasures, development income indicators

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1 Introduction

Tourism is a social economic phenomenon. With the deepening of research, its research direction, depth and breadth are constantly expanding, and the research of time–space structure has increasingly become a new

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hotspot in tourism research. Looking at the research on the time–space structure of China’s tourism industry, some specific objects (such as scenic spots or a certain area) are used as the research objects, such as Gao Weiguo’s ‘On the Development Trend of the Spatial Structure of Yunnan Tourist Attractions’. The spatial structure of the source market of destinations, such as Wan Xucai of Nanjing University and Xu Chunxiao of Hunan University, has had relevant researches done, and most of these researches are based on qualitative analysis. The spatial–temporal structure of tourism is not only a state in which the space of tourism activities changes with time, but also reflects the spatial attributes and interrelationships of tourism activities, which are ultimately reflected by tourism operating income indicators. How to use the means of quantitative analysis to select the key factors from the complex set of factors, there is currently no unanimously recognised method in the academic circle. In view of this, this article attempts to use the calculation of the average coefficient of variation in statistics to quantitatively analyse the tourism operating income of various regions in China in different years, and to study the development trend of the tourism industry from the time and space structure, so as to provide better adjustment for the development status of China’s tourism industry [1]. This article combines econometric theory, differential calculus theory, statistical theory and methods to independently construct an analysis framework on how to determine key factors. Then, using this analysis framework, empirical modelling analysis was carried out on the problem of international tourists visiting tourism.

2 Theoretical basis

Regarding the definition of space–time structure, different disciplines have different definitions. To quote the definition of space–time structure in a broad sense, it refers to the conditions, environment and reality of social development. It is the process of social activities that take time as the vertical axis and space as the horizontal axis. From this definition, we can think that the time–space structure of the tourism industry is the study of the development trend and distribution characteristics of tourism operating income over time in space.

2.1 Theory of tourism spatial structure

Spatial structure refers to the geographic source and intensity of a certain tourism operating income, which is the key and core of the tourism industry development strategy planning. The five major spatial influencing factors of tourism supply are attractions, transportation, accommodation, support facilities and infrastructure. Different regions have different resources, local economic level, infrastructure conditions and reception capacity, so the impact on local tourism operating income is also different, which makes tourism operating income show great differences. According to the difference in tourism income, the regional economic development planning theory to study and analyse the spatial structure of tourism development is used [2].

2.2 Theory of tourism time structure

Time structure refers to the trend of tourism operating income in tourist destinations over time. The time structure of tourism income can be divided into seasonal change structure and inter-annual change structure. Seasonal change structure means that tourism operating income will change with seasons due to climate, social factors affecting the source of tourists and so on. There will be low and peak tourist seasons, and different seasons; the inter-annual change structure is mainly due to the country. Policies, national income levels and some unexpected factors have caused the characteristic trend of tourism inter-annual income distribution over time. Figure 1 shows the theory of travel time structure.

Option 1	Option 2	Option 3
<u>Quality of local living environment</u> Status quo	<u>Quality of local living environment</u> Increased pollution affecting quality of lives (such as: more noise, litter, or traffic)	I would choose neither of them
<u>Tourist relationship</u> Status quo	<u>Tourist relationship</u> Status quo	
<u>Natural environment</u> Increased disturbance to the natural environment by tourism facilities or infrastructure	<u>Natural environment</u> Status quo	
<u>Cultural architecture and landscape</u> Promoted preservation of cultural architecture and landscape	<u>Cultural architecture and landscape</u> Promoted preservation of cultural architecture and landscape	
<u>Cultural self-identity</u> status quo	<u>Cultural self-identity</u> Increased cultural self-identity	
<u>Regional economic impact</u> Promoted economic benefit to the local region (such as new job opportunity and business growth)	<u>Regional economic impact</u> status quo	
<u>Tourist expenditure</u> Each tourist spends \$900 TWD in the local community per visit	<u>Tourist expenditure</u> Each tourist spends \$500 TWD in the local community per visit	

Fig. 1 Theory of tourism time structure.

2.3 Theoretical model of metrological differential equations

The traditional quantitative analysis models are:

$$Y = f_1^{a1} \times f_2^{a2} \times \cdots f_i^{ai} \times \cdots f_n^{an} \quad (1)$$

$$H = \beta_1 \times g_1 \times \beta_2 \times g_2 + \cdots + \beta_i \times g_i + \cdots + \beta_n \times g_n$$

where variable Y is output, variable f_i is the I factor that affects output Y , and its contribution coefficient is a_i ; variable H is output, and variable g_i is the I factor that affects output H , and its contribution coefficient is β_i . For the two models in formula (1), they are essentially the same, and the least squares method in statistics can be used for regression statistical analysis to obtain the best regression model under a certain degree of confidence. For this traditional analysis method, can we go beyond its mindset and treat both output factors and input factors as only functions of time variables. That is to say, f_i , H , g_i in formula (1) are all regarded as the function of time $Y = Y(t)$, $f_i = f_i(t)$, $H = H(t)$, $g_i = g_i(t)$. Then we can get the derivative of the above variables with respect to time, which has the following formula:

$$Y^{(1)} = \frac{dY(t)}{dt} \simeq \frac{Y(t + \Delta t) - Y(t)}{\Delta t} \quad (2)$$

$$Y^{(2)} = \frac{dY^{(1)}(t)}{dt} \simeq \frac{\Delta Y^{(1)}(t + \Delta t) - \Delta Y^{(1)}(t)}{\Delta t}$$

$$Y^{(i)} = \frac{dY^{(i-1)}(t)}{dt} \simeq \frac{\Delta Y^{(i-1)}(t + \Delta t) - \Delta Y^{(i-1)}(t)}{\Delta t}$$

where the variable $Y^{(i)}$ represents the I -order derivative with respect to Y ; $\Delta Y^{(i)}(t)$ represents the difference with respect to $Y^{(i)}$. For differentiable functions whose functional form has been determined, the specific derivative

can be obtained by using the first equation in each line of formula (2); for differentiable functions whose functional form is not determined, the second equation of each line in formula (2). This equation can get the specific derivative. In this way, for the data sequence $Y(t)$ we can get its derivatives at all levels, according to the theory of differential equations. If its second derivative value, first derivative value, and original data conform to the following rules:

$$aY^{(2)} + bY^{(1)} + cY^{(0)} + d = 0 \quad (3)$$

$$a \left(\frac{\Delta Y^{(1)}(t + \Delta t) - \Delta Y^{(1)}(t)}{\Delta t} \right) + b \left(\frac{Y(t + \Delta t) - Y(t)}{\Delta t} \right) + cY(t) + d = 0$$

The second step in formula 3 is obtained by using the differential alternative form of the differential in formula (2), and the two are essentially equivalent. The equation of formula (3) can be finally determined by econometric analysis using the least square method in formula (1). After determining the specific expression form of formula (3), we use the first formula in formula (3) as its specific expression. Then according to the theory of differential equations, we have the following formula:

$$Y^* = \begin{cases} aY^{(2)} + bY^{(1)} + cY^{(0)} = -d \\ Y = c_1 e^{\lambda_1 t} + c_2 e^{\lambda_2 t} + Y^* - d, \lambda_1 \neq 0 \text{ and } \lambda_2 \neq 0 \\ (e_1 \times t + e_1) \times (-d), \lambda_1 = 0 \text{ and } \lambda_2 = 0 \end{cases} \quad (4)$$

where $c_1 e^{\lambda_1 t} + c_2 e^{\lambda_2 t}$ is the general solution of the homogeneous equation corresponding to the first equation in formula (4), Y^* is the special solution of the first equation in formula (4) and λ_1, λ_2 is the standard corresponding to the first equation in formula (4). The characteristic root of the type c_1, c_2 is the parameter to be determined. For the general solution equation determined by formula (4) (i.e. the second equation in formula 4), if the initial value and the end value of the data sequence $Y(t)$ are added, then the specifics of the second equation in formula (4) can be the determined form. Using the above method, we have determined the continuous expression form of the object to be determined.

2.4 Theoretical model of series equation

For the quantitative differential model determined by formula (4), we can use series theory to decompose it into infinite series. When the function to be determined is a function with a period of 2π and a distribution in $[-\pi, \pi]$, we can decompose it into the following form:

$$Y(t) = \sum_{i=0}^{+\infty} a_i \times e^{it} \quad (5)$$

where a_i is the coefficient of the i th term of the decomposed series.

This is because the integral on both sides of formula (5) should satisfy the following equation:

$$\begin{aligned} \int_{-\pi}^{+\pi} Y(t) \times (\cos(nt)) dt &= \int_{-\pi}^{+\pi} \left(\sum_{i=0}^{+\infty} a_i \times e^{it} \right) \times (\cos(nt)) dt = \sum_{i=0}^{+\infty} \int_{-\pi}^{+\pi} (a_i \times e^{it} \times \cos(nt)) dt \\ \int_{-\pi}^{+\pi} Y(t) \times (\sin(nt)) dt &= \int_{-\pi}^{+\pi} \left(\sum_{i=0}^{+\infty} a_i \times e^{it} \right) \times (\sin(nt)) dt = \sum_{i=0}^{+\infty} \int_{-\pi}^{+\pi} (a_i \times e^{it} \times \sin(nt)) dt \end{aligned} \quad (6)$$

When I and n are not equal, using orthogonality, we can determine the specific value of a_i through the above

formula. Its value is as follows:

$$Y(t) = \frac{a_0}{2} + \sum_{i=1}^{+\infty} (a_k \times \cos(kt) + b_k \times \sin(kt)) \quad (7)$$

$$a_k = \frac{1}{\pi} \int_{-\pi}^{+\pi} Y(t) \times \cos(nt) dt, b_k = \frac{1}{\pi} \int_{-\pi}^{+\pi} Y(t) \times \sin(nt) dt$$

For a function whose period is $2l$ and distributed in $[p, q]$, the expression form of the function should be demonstrated as follows:

$$Y(t - t_0) = \frac{a_0}{2} + \sum_{i=1}^{+\infty} (a_k \times \cos(k(t - t_0)) + b_k \times \sin(k(t - t_0))) \quad (8)$$

$$a_k = \frac{1}{l} \int_{-l}^{+l} Y(t) \times \cos(\frac{n\pi t}{l}) dt, b_k = \frac{1}{\pi} \int_{-l}^{+l} Y(t) \times \sin(\frac{n\pi t}{l}) dt$$

$$t_0 = \frac{p+q}{2}, l = \frac{q-p}{2}$$

In this way, we can transform the function of any interval into the series form expressed by formula (8), and we can then equate the function $Y(t)$ to the sequence $\{\omega_i\} = \{a_0, a_1, b_1, a_2, b_2 \dots, a_i, b_i, \dots, a_n, b_n, \dots\}$. In this way, for each function, there is a series of infinite items.

2.5 Demonstration of correlation theory model based on series model

For the function $Y(t)$ and its equivalent sequence $\{\omega_i\} = \{a_0, a_1, b_1, a_2, b_2 \dots, a_i, b_i, \dots, a_n, b_n, \dots\}$ obtained by formula (9). We apply this result to another function $H(t)$, and naturally get the number sequence corresponding to this function, and we mark it as $\{u_i\} = \{\tilde{a}_0, \tilde{a}_1, \tilde{b}_1, \tilde{a}_2, \tilde{b}_2 \dots, \tilde{a}_i, \tilde{b}_i, \dots, \tilde{a}_n, \tilde{b}_n, \dots\}$. Regarding whether there is a correlation between the function $Y(t)$ and the function $H(t)$, if there is a similarity, what is the specific degree of correlation? The form of the function $Y(t)$ and the function $H(t)$ is as expressed by formula (1) The analysis results cannot be obtained. But if you use the series $\{a_0, a_1, b_1, a_2, b_2 \dots, a_i, b_i, \dots, a_n, b_n, \dots\}$ corresponding to $Y(t)$ and the series $\{\tilde{a}_0, \tilde{a}_1, \tilde{b}_1, \tilde{a}_2, \tilde{b}_2 \dots, \tilde{a}_i, \tilde{b}_i, \dots, \tilde{a}_n, \tilde{b}_n, \dots\}$ corresponding to $H(t)$ to perform the corresponding equivalent analysis, you can get a clear result. Figure 2 shows the correlation theory model demonstration of the series model. The specific calculation process is:

$$R(Y(t), H(t)) = \frac{\sum_{i=1}^{+\infty} (u_i \times \omega_i)}{\sqrt{\sum_{i=1}^{+\infty} u_i^2} \times \sqrt{\sum_{i=1}^{+\infty} \omega_i^2}} \quad (9)$$

Fig. 2 Demonstration of the correlation theory model of the series model.

According to the series decomposition theory, within a certain error range, we can decompose the function into finite terms and then ensure that the error between the series decomposition result and the original function does not exceed the specified range. That is to say, for formula (9), we can transform its infinite term expression form into the following finite term expression form:

$$R(Y(t), H(t)) = \frac{\sum_{i=1}^{+n} (u_i \times \omega_i)}{\sqrt{\sum_{i=1}^{+n} u_i^2} \times \sqrt{\sum_{i=1}^{+n} \omega_i^2}} \quad (10)$$

3 Result analysis

3.1 China's tourism industry continues to grow, but the development speed is slow

The rising status of the tourism industry and the multiplier benefits of the tourism industry make all local governments vigorously develop tourism and drive local economic development. Under the guidance of the Chinese government, China's tourism revenue from 2006 to 2010 (in 2006, China's total tourism revenue was 16.1 billion yuan, equivalent to 5.4% of GDP, and by 2010 it reached 29 billion yuan, equivalent to domestic After a period of rapid development, China's tourism revenue has grown at a slow rate since 2010. By 2018, China's tourism revenue will be about 41 billion yuan (if not specifically stated, in this article all raw data are from China Tourism Statistics Fact Sheet). The specific development situation can be seen in Figure 3:

Fig. 3 Table of number of tourists and reception.

The graph is very obvious. Regardless of the number of tourist receptions and tourism income, the development of China's tourism industry is relatively slow. Using the method of calculating the average coefficient of variation introduced above, the average coefficient of variation of China's tourism income since the new century is 0.15, which shows that China's tourism industry has not changed much since the new century, and its development speed has been slow.

3.2 The polarisation of tourism income between cities is obvious, and Beijing has an absolute advantage

From 2010 to 2018, the distribution of tourism revenue in various regions of China can be seen. From the perspective of the development in the 5 years of the new century, the two-level differentiation of tourism development in various cities in China is very obvious. Beijing has an absolute advantage in China, and tourism revenue is far away. This is inseparable from Beijing's geographical location and dense tourism resources and Shanghai ranks second. Shanghai has unique conditions for the development of tourism and rich tourism resources. Shanghai Disney is a world-renowned scenic spot, and tourism has become the pillar industry of

Shanghai [3]. However, the economic development of the entire region and the income gap of tourism in the other regions are not great.

3.3 The regional development speed is unbalanced, and the central part is in a state of development collapse

China can be divided into three major areas: East, West and Middle according to administrative divisions, and the comparison of tourism income in the three regions is as shown in Table 1:

Table 1 China's regional tourism revenue (unit: 10,000 yuan).

Years	2015	2016	2017	2018	2019
East	407,112.2	467,775.2	535,673.2	392,096.5	505,764.5
Of	361,036.2	360,014.6	358,310.8	331,751.5	343,501.5
In	1,439,479	1,709,886	2,083,680	1,707,550	2,143,151
Total	2,207,628	2,537,676	2,977,664	2,431,398	2,992,417
Percentage of central	0.652048	0.6738	0.69977	0.702,291	0.716194

Table 1 shows that due to the denser tourism resources and convenient transportation in the eastern region, tourism revenue accounts for more than half of China's revenue, and it has been increasing; it accounted for 65.2% of China's tourism revenue in 2010, 67.4% in 2001 and 67.4% in 2002, that is, 70%, 70.2% in 2003 and 71.6% in 2018. While the tourism income of the central region increased in the east and west, the central region not only did not increase, but showed a downward trend and was in a state of collapse.

3.4 The coefficient of variation between regions fluctuates greatly, and the overall stability of the tourism industry is poor

Taking the tourism income of each city in each year as a sample, according to the method of calculating the average coefficient of variation above, the coefficient of variation of each city from 2010 to 2018 is shown in Figure 4.

Fig. 4 Average coefficient of variation of tourism income in prefecture-level cities.

The results in Figure 4 show that China's tourism industry has great differences in the development of tourism between cities, and some areas have very small coefficients of variation, at <0.1 ; some are very high, such as City C reaching 0.7. If 0.2 is the equidistant coefficient of variation, the development of China's tourism industry can be divided into three levels: the first level has a coefficient of variation between 0 and 0.2, and there are two areas of city A and city C; third the grade is that the coefficient of variation exceeds 0.4, only one area in City C, and the second grade is between 0.2 and 0.4, and there are 14 areas in total.

Since the average coefficient of variation reflects the fluctuation of tourism business income, the average coefficient of variation is small, indicating that the difference is small and the fluctuation range is small, otherwise the opposite is true. The small average coefficient of variation of tourism operating income may have two results: one is that the development of the local tourism industry is relatively mature, and the other is that the development of the local tourism industry is slow [4]. Therefore, in China's 17 cities, combined with the distribution of tourism operating income in each region and the actual development of the local tourism industry, it is divided into two categories: one is the relatively mature tourism development of the city, the main feature of which is the small average coefficient of variation (both <0.2), Beijing and Shanghai, the tourism operating income is relative to local tourism. In terms of resources, the second category is the low level of tourism development and slow development of cities such as A and B. The main characteristics are small average coefficient of variation (both <0.2), and tourism operation income is very relative to the resources. The low average coefficient of variation of tourism operating income is mainly due to the following three situations: the sharp increase in tourism operating income, the steep decline in tourism operating income and the irregular development of tourism operating income. City C has a large average coefficient of variation. Combined with the tourism operating income data from 2010 to 2018, it can be seen that the main reason is the sharp increase in tourism operating income.

4 Strategic countermeasures to enhance the development of China's tourism industry

4.1 Government-led, strengthen inter-regional cooperation

The development of China's tourism industry in various cities is uneven. Beijing and Shanghai are rich in tourism resources, and tourism development is relatively mature. The eastern region is led by Beijing to drive the development of the eastern region; the southwest is led by Shanghai to promote local tourism development. The development of tourism in the central region is in a state of collapse, but the central region is located between the east and the west, and its geographical location has advantages. Through regional cooperation and integration of China's tourism resources, the east and west drive the development of the central region. China is rich in tourism resources: there are the world-renowned Three Gorges and Three Gorges dams, the World Cultural Heritage Wudang Mountain and the primitive and mysterious Shennongjia, many forest parks for summer vacations, religious temples with unique charm and the profound Chu culture. However, the management of tourism resources is in a state of segmentation, and the development of tourism is still in the development stage and not perfect. It needs government leadership to change the current situation of poor management system and decentralised management of tourism resources.

Government-led and strengthened inter-regional cooperation mainly start from the following three aspects: First, to lead the development of the tourism industry, the government should break the administrative subordination of tourism resources, and coordinate the formulation of tourism industry development plans for various regions and levels; the second is to lead tourism The management of resources enables limited resources to maximise benefits. Through regional cooperation, we can achieve resource sharing, mutual delivery of customers, and complementary advantages. Third is to optimise the development environment, strengthen infrastructure fitness and enhance accessibility. Some well-known scenic spots are located in remote mountainous areas where transportation is extremely inconvenient, and this has seriously affected China's tourism development. It is required to improve the infrastructure and increase the reception level so that China's tourism can be satisfied with the supply of the six major elements [5].

4.2 Government guidance, innovative investment and financing methods

Funds are the basic condition for turning resources into commodities. China's tourism resources are rich, regional differences are strong and many landscape resources are of high quality. However, the development of China's tourism industry lags behind in many parts of the country. The main reason is that the amount of investment is small and single. Innovative tourism investment and financing methods and rapid development of the tourism industry have become urgent and critical for the development of China's tourism. Innovating tourism investment methods and broadening tourism investment and financing channels, the government's guiding role cannot be ignored. Innovating tourism investment and financing methods, and increasing investment can be carried out in the following four ways: First, government-guided investment, such as establishing a tourism development fund, and using part of the fiscal revenue to invest in tourism; establishing a special construction fund. Mainly used for infrastructure, to construct and start the development of some scenic-spot projects to increase the investment confidence of investors; second, to directly attract foreign investment, such as a batch of good projects for investors to develop, so that investors are profitable; third, indirect financing, mainly to apply for domestic use various special funds and finally, fourth. capital operation and project commercialisation financing.

4.3 In-depth development to establish a distinctive theme image

Tourism image refers to the overall impression formed in people's minds of tourism destinations, including its tourism activities, tourism products and services. The basic image strategy such as the positioning of tourism image, the proposal of theme slogans, and the design and promotion of visual image can greatly promote the development of regional tourism. The development of the tourism industry has a resource-oriented and market-oriented development model. The distinctive themes can allow tourists to remember the characteristics of tourism purposes, such as Shanghai's 'Fashion City' and Dalian's 'Romantic City'; Hong Kong's 'dynamic city, shopping paradise' gives people a distinct tourism theme image. Establishing a distinctive theme tourism image is a systematic and comprehensive project. Planning the tourism theme image should be based on resource analysis and market analysis, adjust the tourism resource management structure and rationally allocate resources to market tourism destinations. The design of tourism image needs to follow the principles of concentration of advantages and individualisation. The concentration of advantages means that when tourism resources have multiple advantages, the advantages must be concentrated and focused on a certain point to highlight. The tourism image must rely on the characteristics of China's tourism resources to make tourists all at once. The final expression of tourism image positioning that can remember Chinese tourist destinations and improve the attractiveness and competitiveness of Chinese tourist destinations is often summarised by a theme slogan.

4.4 Flexible operation to improve market competitiveness

The concept of competitiveness has rich connotations in theoretical circles. The market competitiveness mentioned here mainly refers to the increase in market share and the number of tourists received, which leads to an increase in tourism income. According to market trends, with scenic spots as a breakthrough, creating regional tourism brands enhance core competitiveness. Abundant natural scenery resources and extensive and profound cultural landscapes have not made China's tourism industry a well-known brand in the country. Judging from the current situation of resource development, there is a dislocation phenomenon in the development and existence of tourism resources: one is that the development of natural resources is emphasised in various places, and there are obvious shortcomings in the development of human resources; the other is that tourism behaviour and the matching of resources and development. The matching status of resource development is not ideal; China's current tourism behaviour development level is mainly in the primary development. China's tourism companies have a prominent situation of weak dispersion, poor competitiveness and ability to withstand risks, and are subject to external and weak influences. To change this unhealthy situation, we must carry out system reforms and support the development of large-scale tourism enterprise groups [6]. Flexible operation and enhancement of

market competitiveness can take various forms such as alliances, mergers and share-holding cooperation; capital operations can be carried out, strong alliances to achieve complementary advantages, and enhance the ability to compete with large tourism groups; vigorously improve the industry structure and form large-scale tourism With the pyramid-shaped industry structure of enterprise grouping, medium-sized tourism enterprise specialisation, and small-scale tourism enterprise network; the management should be good at finding one's own comparative advantages and gaining one's position in certain market segments.

4.5 Highlight the key points and shape the famous tourism products

In view of the current 'sky full of stars' in scenic spots, there is no 'moon'. Scattered tourism products are like stragglers, lacking a soul to lead them, and no famous tourist products. Competitive tourist destinations are all under the guidance of distinct themes, and are embodied through image shaping, boutique induction, project design and service facilities. Another way is shaping the famous tourist products from scenic spots to small service personnel, or through project design, whereby key projects can attract tourists' attention. The development of famous tourist products is a systematic project involving a wide range of areas and complex operations. It is necessary to carefully investigate and analyse the tourism market and tourism resources, pay attention to the development of tourism products, and develop it in a deep and diversified direction. Changing 'one-time innovation and development' to 'continuous innovation of series products', and orderly continuous development to extend the life cycle of the product is in line with the trend of increasingly personalised consumption by tourists. At the same time, boutique development and design should implement the principle of government-led, market- and resource-oriented, comprehensive and coordinated and hierarchical development, and continuous innovation to meet different market needs and different levels of tourism products.

5 Conclusion

In response to the above development, this article believes that segmentation of the tourism market should be strengthened to expand the scale of consumer entities; extend the tourism industry chain, cultivate well-known brands, and enhance the competitiveness of tourism enterprises; strengthen the construction of transportation and information facilities, optimise infrastructure conditions, and improve tourism Attraction can be encouraged by promoting the cluster development of the tourism industry, promote the development of the surrounding scenic spots; strengthen government guidance, promote sustainable development, in order to achieve optimisation and upgrading of the tourism industry.

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