Study on the influence of tourism industry agglomeration in southwest China on tourism economic growth

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Abstract

This study investigates the spatial characteristics of tourism industry agglomeration in Southwest China and its impact on tourism economic growth, aiming to provide a theoretical basis for regional planning. Using panel data from five provinces (Sichuan, Yunnan, Guizhou, Chongqing, and Tibet) between 2005 and 2020, the research employs the location entropy method to measure clustering levels and a Spatial Durbin Model (SDM) with fixed effects to analyze the impact mechanisms.

The empirical results indicate that the degree of tourism agglomeration in Southwest China is high and has steadily increased over the study period. Regression analysis reveals that tourism industry agglomeration has a significant positive direct effect on tourism economic growth (coefficient=0.452). Additionally, a significant positive spatial spillover effect (ρ=0.312) was observed, demonstrating that tourism development in neighboring regions constructively influences local economic growth.

The study also identifies transportation infrastructure, human capital, and urbanization as key mediating factors that further drive development. Based on

these findings, it is recommended that policymakers strengthen regional cooperation, optimize industrial layouts, and enhance infrastructure and talent development to promote high-quality, coordinated regional tourism growth.

Keywords: tourism industry agglomeration; tourism economic growth; spatial econometric model; southwest China; spatial spillover effect

1. Introduction

In recent years, with the rapid development of global tourism, the clustering of tourism industries has gradually become an important driving force for regional economic growth. The southwestern region of China, with its unique natural landscapes, rich cultural heritage, and diverse ethnic customs, has become a favored tourist destination both domestically and internationally. The clustering phenomenon in this area is significant, forming core tourism industry clusters centered around cities like Chengdu, Kunming, and Guiyang. However, due to the pandemic in recent years, China's tourism economy has been severely impacted, making it imperative to study how to enhance the tourism economy.

This study takes southwest China as the research object, aiming to reveal the impact mechanism and spatial characteristics of tourism industry agglomeration on tourism economic growth. Specifically, the study focuses on the following issues:

(1) what is the development situation of tourism industry in southwest China?

(2) What is the impact of regional tourism industry agglomeration on tourism economic growth?

(3) What role do factors such as transportation infrastructure, human capital and policy support play between tourism industry agglomeration and

economic growth? Through in-depth analysis of these issues, this study aims to provide theoretical basis and policy suggestions for the high-quality development of tourism industry in southwest China.

This paper, based on the summarization and evaluation of research dynamics and related theories in the tourism industry both domestically and internationally, (1) selects the impact of tourism industry agglomeration in five southwestern provinces as the research object. (2) Uses the location entropy method to measure the degree of tourism industry agglomeration in these five southwestern provinces from 2005 to 2020. (3) Drawing on existing scholars 'approaches, spatial econometric models are selected to conduct spatial econometric analysis of the independent variables affecting southwest's tourism economic growth; (4) Based on the research findings, conclusions are drawn and corresponding countermeasures and suggestions are proposed.

2. Research Objectives

This study aims to investigate how tourism industry agglomeration drives economic growth in southwest China by quantifying agglomeration levels, examining the mediating roles of transportation infrastructure, human capital, and policy support-including spatial spillover effects-and formulating evidence-based policy recommendations to optimize tourism development and promote coordinated regional growth.

literature review

1. Previous studies For a long time, tourism has been regarded as a key driving force for economic growth, and many studies have examined its impact from different perspectives. The existing literature can be divided into three main areas: (1) research on tourism industry agglomeration and regional economy; (2) research on tourism industry agglomeration and total factor productivity; (3) research on tourism industry agglomeration and economic growth

(1) Research on tourism industry agglomeration and regional economy Yong Yang (2012) [1]. and Gollub (2003) [2]. both argue that the increase in tourism industry agglomeration will have a positive promoting effect on regional tourism development. Lanlan L et al. (2017) used partial differential methods in spatial regression models to study the spillover effects of tourism industry agglomeration on regional tourism economic growth [3]. Wang Zhaofeng and Huo Feifei (2018) believe that there is an inseparable connection between regional economic development and tourism industry agglomeration [4].

(2) Research on tourism industry agglomeration and tourism economy Wang Zhaofeng and Huang Manli (2022) used a panel autoregression model to study the dynamic relationship between tourism economic efficiency and tourism industry agglomeration. The results show that there is a long-term dynamic correlation

between the two, with tourism industry agglomeration having a significant promoting effect on tourism economic efficiency[5]. Wang Man and Hong Zhen et al. (2021) collected data on the tourism industry in 14 prefecture-level cities in Hunan Province from 2008 to 2018, estimated the level of tourism industry agglomeration in each region using location entropy, and empirically analyzed the relationship between tourism industry agglomeration and tourism economy using the Tapio decoupling model[6].

(3) Research on tourism industry agglomeration and economic growth Novelli M et al. (2006) proposed that to promote the development of tourism and regional economic growth, it is crucial to establish and nurture tourism industry clusters [7]. Although most scholars currently believe that the clustering of the tourism industry has a positive impact on economic growth, some have reached opposite conclusions: Balaguer and Pernias (2013) found that high-density hotel clusters can reduce hotel costs, thereby lowering room rates and thus having a certain negative effect on local economic growth [8]; Zhang Yunfei (2014), through analyzing data from major city clusters in the Shandong Peninsula, concluded that there is an "inverted U-shaped" relationship between industrial agglomeration and economic growth [9]; Chen Dewen and Miao Jianjun (2010), after analyzing China's provincial economic development from 1995 to 2008, discovered an endogenous relationship between industrial agglomeration and economic growth [10].

2. The deficiencies of existing research and the significance of this study Despite existing research providing important theoretical foundations for the economic effects of tourism industry clusters, several shortcomings remain: (1) there is a lack of studies on the spatial characteristics and economic impacts of tourism industry clusters in southwestern regions; (2) insufficient analysis of factors such as transportation infrastructure, human capital, and policy support. These research gaps limit a comprehensive understanding of the economic

effects of tourism industry clusters and also affect the scientific rigor and effectiveness of relevant policy formulation.

This study aims to fill these research gaps by systematically exploring the impact mechanism of tourism industry agglomeration on tourism economic growth in southwestern China through spatial econometric models and empirical analysis. At the same time, the study will focus on analyzing the influence of factors such as transportation infrastructure, human capital, and policy support, providing theoretical basis and empirical support for optimizing regional tourism industry layout and formulating economic policies. By combining theoretical analysis with empirical research, this study not only enriches the theoretical framework of tourism industry agglomeration but also provides practical guidance for the high-quality development of the tourism economy in southwestern China.

conceptual framework

1. Theoretical model

This study constructs a theoretical model of the impact of tourism industry agglomeration on tourism economic growth based on industrial agglomeration theory and economic growth theory. The core hypothesis of the model is that tourism industry agglomeration directly promotes regional tourism economic growth through mechanisms such as economies of scale, knowledge spillovers, and specialized division of labor; at the same time, factors like transportation infrastructure, human capital, and policy support play a facilitating role between tourism industry agglomeration and economic growth. The model employs spatial econometric methods to capture the spatial correlation of agglomeration effects and their spillover effects.

2. Identify variables

Based on these theoretical foundations, this study constructs a conceptual framework with tourism economic growth (measured by TEG) as the dependent variable, tourism industry agglomeration as the core explanatory variable, and tourism development, fixed asset investment, human capital, industrial value-added and foreign direct investment (FDI) as the control variables.

(1) Tourism industry agglomeration (Tourism Industry Agglomeration, TIA): refers to the phenomenon of concentration of tourism-related enterprises, resources and services in a specific geographical space. For example, the concentrated distribution of tourist attractions, hotels, travel agencies and so on in the same region is a kind of tourism industry agglomeration.

(2) Transportation infrastructure (TIC): As the transmission medium of material resources and information resources, transportation infrastructure is indispensable for the development and construction of tourism destinations. The degree of its development has a profound impact on the development effect of tourism.

(3) Regional economic development level (PGDP): Economic development level not only has an important impact on the economic development of a region, but also is the core driving force and basic guarantee for tourism economic growth. Therefore, this paper uses per capita GDP to represent regional economic development level.

(4) Industrial structure (IS): The tourism industry belongs to the tertiary industry, which is highly correlated with other industries. Optimizing the structure of the tourism industry can promote the growth of tourism economy. Therefore, this paper uses the proportion of the tertiary industry in GDP to express the industrial structure

(5) Urbanization level (URB): The improvement of urbanization level can improve the ability to gather resources, which has an important impact on the development of tourism industry. Therefore, this paper chooses the proportion of urban population in the total population at the end of the year as the indicator

(6) Human capital (L): The number of tourism employees is an ideal indicator of labor input, including the number of direct and indirect employment in tourism, which reflects the comprehensiveness of tourism to a certain extent

(7) Physical capital (K): This paper chooses a more comprehensive fixed assets to measure the capital input;

To illustrate the relationships between these variables, Figure 1 shows the conceptual framework of this study:

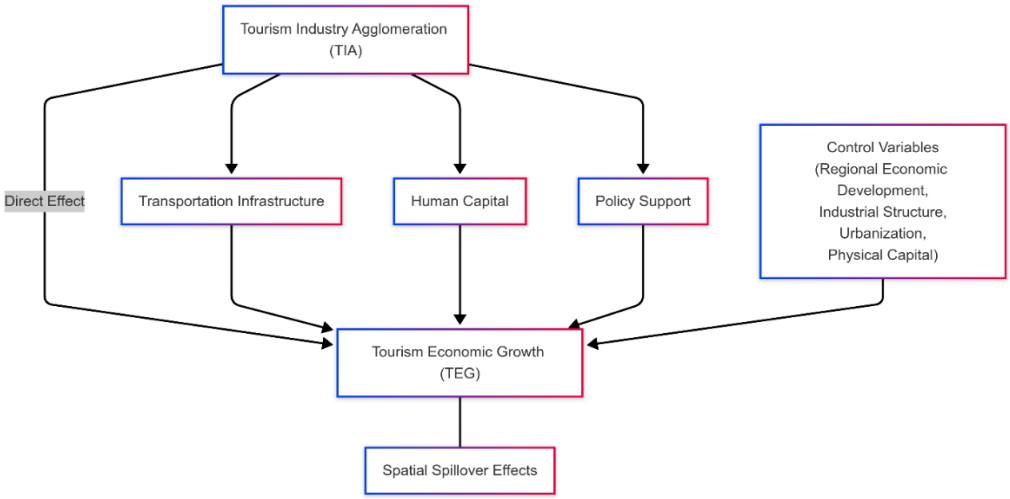

Figure 1 Framework.

3. Research Methodology

This section provides an overview of the basic ideas of research data, data collection methods and data analysis techniques. The information provided is summarized as follows:

Using economic and panel data analysis techniques, this paper discusses the influence of tourism industry agglomeration on tourism economic growth in southwest China

1. Data sources

To ensure the accuracy and consistency of the data, this study adopted official statistical sources to collect data from 2005 to 2020 in southwestern China (Sichuan, Yunnan, Guizhou, Chongqing, Tibet). The data came from provincial statistical yearbooks, the "China Statistical Yearbook," the "China Tourism Statistical Yearbook," and the "China Cultural Relics and Tourism Statistical Yearbook." Due to incomplete data before 2010, linear interpolation was used to fill in missing values.

2. Data collection methods

The study relies primarily on data obtained from official government reports, statistical yearbooks and international economic databases.

In order to calculate the degree of industrial agglomeration, this paper adopts the location entropy (LQ) method to determine the concentration and specialization degree of a certain industry in a certain region, and the formula is as follows:

$$LQ_{ij} = \frac{eij/_{ej}}{Ei/E}$$

It represents the location entropy of an $\mathrm{LQ_{ij}eijejEiLQ_{ij}LQ_{ij}LQ_{ij}LQ_{ij}}$ industry in a certain region, indicating the output value of industry i in area j. It also represents the gross production value of area j and the national output value of industry i. E stands for the national gross production value. Generally,

when>0, it indicates that there is industrial agglomeration in area j for industry i; when =0, it indicates that there is no industrial agglomeration in area j for industry i, making the study of its impact on the economy meaningless; when 0 <<1, it indicates that the level of industrial agglomeration in area j for industry i is low; conversely, when>1, it represents that the level of industrial agglomeration in area j for industry i is high, with significant agglomeration effects and a high degree of specialization.

3. Data analysis

(1) Descriptive statistical analysis

Because the different dimensions between variables will lead to deviation of empirical results, in order to ensure the accuracy of the results, all variables are standardized in this paper. The min-max standardization is used in this paper, and subsequent empirical analysis is based on regression analysis after data standardization

(2) Calculation of tourism concentration

After use, the location entropy method was used to calculate the tourism industry agglomeration degree in western China. The relationship between tourism industry agglomeration and tourism economic growth was tested

(3) Spatial econometric model

The spatial Durbin model was used to empirically study the influence of tourism industry agglomeration on tourism economic growth in western China; then the industry was analyzed

The effect of life is decomposed, and finally the robustness test is carried out.

$$Y = \rho WY + \beta X + \vartheta_1 WX + \varepsilon$$

W is the spatial weight, and $\vartheta_1 W \vartheta x$ represents the influence of the adjacent region variables, which is a coefficient variable.

bear fruit

1. All variables in this paper are standardized. Min-max standardization is adopted in this paper, and the subsequent empirical analysis is based on the regression analysis after data standardization

Table 1 Descriptive statistics of variables

Variable	Obs	Mean	Std.dev	Min	Max
PTR	204	0.2994	0.3002	0.001	1.001
LQ	204	0.2606	0.2461	0.001	1.001
TIC	204	0.5873	0.2997	0.001	1.001
pGDP	204	0.4520	0.3246	0.001	1.001
IS	204	0.4667	0.3179	0.001	1.001
URB	204	0.5044	0.3155	0.001	1.001
I	204	0.3966	0.2986	0.001	1.001
K	204	0.4480	0.3477	0.001	1.001

2. The specific values of tourism industry agglomeration in the five provinces and regions in southwest China from 2005 to 2020 are calculated by location entropy, as shown in Table (1) below:

Table 2 Tourism industry concentration in five provinces and regions in southwest China from 2005 to 2020

Area / A Particular	Chong Qing	Si Chuan	Yun Nan	Gui Zhou	Xi Zang
2005	2.26	2.59	3.18	3.35	2.06
2006	2.30	2.99	3.17	4.44	2.52
2007	2.39	2.97	2.84	4.65	3.64
2008	2.68	2.41	3.11	5.24	1.60

Area / A Particular	Chong Qing	Si Chuan	Yun Nan	Gui Zhou	Xi Zang
2009	2.88	2.83	3.36	5.69	3.42
2010	3.00	2.89	3.43	6.19	3.67
2011	2.69	2.5	2.94	5.48	3.42
2012	2.97	2.84	3.18	5.71	3.69
2013	2.70	2.9	3.27	5.90	3.69
2014	2.60	3.21	3.60	5.98	4.12
2015	2.31	3.37	3.62	5.49	4.47
2016	2.31	3.66	4.54	6.71	4.44
2017	2.55	3.64	5.80	8.10	4.35
2018	3.09	3.62	6.62	9.48	4.87
2019	3.64	3.74	7.11	10.99	4.94
2020	5.98	6.07	11.94	14.66	8.72
mean	2.85	3.21	4.39	6.51	4.668
Growth rate per annum	0.078	0.075	0.104	0.123	0.161

The concentration of the tourism industry in the five southwestern provinces and cities from 2005 to 2020 was calculated using the location entropy method. The results show that the concentration of tourism industries in the southwestern region is relatively high, with significant clustering effects. Especially in 2021, despite the impact of the pandemic, the level of tourism industry concentration in the southwestern region remained at a high level, indicating that the region has formed a tourism industry cluster and possesses certain advantages for developing the tourism sector. The specific characteristics of the development process of the tourism industry cluster in the southwestern region are as follows: From an overall perspective, the tourism industry in southwestern China is developing well, with a relatively high degree of industrial agglomeration as measured by location entropy, showing significant improvement overall. The values for all five provinces exceed 1 and remain above 1 every year thereafter, indicating that the southwestern region has achieved a relatively high level of industrial agglomeration. In terms of overall growth rates from 2005 to 2020, Guizhou's tourism industry showed the fastest growth, with its tourism industry concentration reaching 5.48 in 2005 and 14.66 in 2020, growing at a rate of 10.96%, indicating a high level of industrial agglomeration by 2020; Yunnan's tourism industry concentration increased from 2.94 in 2011 to 11.94 in 2020, growing at a rate of 9%, also reflecting a high level of tourism industry concentration by 2020. From the average value of location entropy, it can be seen that the province with the highest location entropy is Guizhou (7.85), while Chongqing (3.084) has the lowest. Considering the annual growth rates, Guizhou (0.123) had both a high tourism industry concentration and a high annual growth rate in 2011; Sichuan (0.075) had a high tourism industry concentration but a low annual growth rate in 2011. Finally, the calculated location entropy results show that the proportion of tourism revenue in the regional GDP is relatively high for each

province, and it is also higher compared to the national average. On the one hand, it indicates that the tourism industry makes a significant contribution to the regional GDP and is an important pillar of economic growth in the region, holding a crucial position in the overall socio-economic development of the area. On the other hand, compared to the rest of the country, the southwestern region has relatively advantageous conditions for developing the tourism industry. For instance, it can leverage national support under the strategy of large-scale development in the west and utilize its abundant tourism resources to provide favorable conditions for the development of the tourism industry in the southwestern region, thereby driving the socio-economic development of the entire western region.

3. This paper selects the spatial Durbin model under fixed effects to conduct a spatial regression analysis on the impact of tourism industry agglomeration on tourism economic growth in five southwestern provinces from 2005to 2020. The spatial Durbin model is chosen here to analyze the influence of tourism industry agglomeration (TIA) and other independent variables on tourism economic growth (TEG) and their spatial spillover effects. The model formula is as follows:

$$TEG_{it}=\beta_0+\beta_1 TIA_{it}+\beta_2 TIC_{it}+\beta_3 PGDP_{it}+\beta_4 IS_{it}+\beta_5 URB_{it}$$
$$+\beta_6 L_{it}+\beta_7 K_{it}+\rho WTEG_{it}+\varepsilon_{it}$$

Among them, W is the spatial weight matrix and ρ is the spatial autoregressive coefficient.

Table 3 Regression results of spatial Dubin model

variable	coefficient	standard error	Z price	P price
TIA	0.452***	0.120	3.77	0.000
TIC	0.210**	0.085	2.47	0.014
PGDP	0.185*	0.095	1.95	0.051
IS	0.150*	0.080	1.88	0.060
URB	0.175**	0.070	2.50	0.012
L	0.230***	0.065	3.54	0.000
K	0.195**	0.075	2.60	0.009
ρ	0.312**	0.130	2.40	0.016
constant term	1.850***	0.450	4.11	0.000

Note: *, **, *** indicate significance at the 1%,5%, and 10% levels.

According to the above data analysis results:

Tourism industry agglomeration (TIA): The regression coefficient is 0.452 and significant at the 1% level, indicating that tourism industry agglomeration has a significant positive impact on tourism economic growth.

Transportation infrastructure (TIC): The regression coefficient is 0.210 and significant at the 5% level, indicating that the improvement of transportation infrastructure has a significant promoting effect on tourism economic growth.

Regional economic development level (PGDP): The regression coefficient is 0.185 and significant at the 10% level, indicating that regional economic development level has a positive impact on tourism economic growth.

Industrial structure (IS): The regression coefficient is 0.150 and significant at the 10% level, indicating that the increase of the proportion of tertiary industry contributes to the growth of tourism economy.

Urbanization level (URB): The regression coefficient is 0.175 and significant at the 5% level, indicating that the improvement of urbanization level has a significant promoting effect on tourism economic growth.

Human capital (L): The regression coefficient is 0.230 and significant at the 1% level, indicating that the improvement of human capital has a significant positive impact on tourism economic growth.

Material capital (K): The regression coefficient is 0.195 and significant at the level of 5%, indicating that the input of material capital has a significant promoting effect on tourism economic growth.

Spatial autoregressive coefficient (ρ): The regression coefficient is 0.312 and significant at the 5% level, indicating that there are significant spatial spillover effects of tourism economic growth.

4. Robustness test

In order to test the robustness of the model results, a fixed effect model was used for regression analysis. The results showed that the regression coefficients of tourism industry agglomeration (TIA) and other independent variables were consistent with the results of spatial Durbin model, which further verified the reliability of the research conclusions.

Table 4 Regression results of fixed effect model

variable	coefficient	standard error	T price	P price
TIA	0.438***	0.115	3.81	0.000
TIC	0.205**	0.080	2.56	0.011
PGDP	0.180*	0.090	2.00	0.046
IS	0.145*	0.075	1.93	0.054

variable	coefficient	standard error	T price	P price
URB	0.170**	0.065	2.62	0.009
L	0.225***	0.060	3.75	0.000
K	0.190**	0.070	2.71	0.007
constant term	1.800***	0.430	4.19	0.000

Note: *, **, *** indicate significance at the 1%,5%, and 10% levels.

4. Research Findings

The study found that there was an obvious industrial agglomeration phenomenon in the tourism industry of 5 southwest provinces and regions, and the degree of industrial agglomeration increased with the passage of time.

After using the spatial Durbin model under the fixed effect, the study found that the tourism industry agglomeration had a positive promoting effect on the tourism economic growth of this province, but had a strong negative spillover effect on other provinces.

policy proposal:

It is suggested to narrow the gap between tourism industry and tourism economic growth in each province and promote regional coordinated development.

It is necessary to break through the administrative barriers and realize the complementarity of resources to promote the coordinated growth of tourism economy in the whole western region.

Strengthen infrastructure construction to improve the environment for tourism development and enhance overall competitiveness.

5. Discussion of Research Findings

1. Interpretation of research results

This study systematically analyzes the impact of tourism industry agglomeration (TIA) on tourism economic growth (TEG) in southwest China through spatial Durbin model. The empirical results show that:

Tourism industry agglomeration (TIA) has a significant positive impact on tourism economic growth (TEG) (the coefficient is 0.452, P value <0.01), indicating that tourism industry agglomeration significantly promotes regional tourism economic growth through the mechanisms of scale economy, knowledge spillover and specialization.

Transportation infrastructure (TIC), regional economic development level (PGDP), industrial structure (IS), urbanization level (URB), human capital (L) and physical capital (K) ** also have a significant positive impact on tourism economic growth, indicating that these factors are important driving forces for tourism economic growth.

The spatial autoregressive coefficient (ρ) is 0.312 (P value <0.05), indicating that there is a significant spatial spillover effect of tourism economic growth, and the tourism economic growth in neighboring regions has a positive impact on this region.

2. Comparison with previous studies

The results of this study are basically consistent with the conclusions of existing literature, but there are some differences and supplements:

Consistency:(1) Consistent with the studies of Sara & Marco (2015) and Wang et al. (2019), this study finds that tourism industry agglomeration has a significant positive impact on tourism economic growth.

(2) Consistent with the research of Liu & Chen (2021), this study finds that there are significant spatial spillover effects on tourism economic growth.

Differences:(1) Compared with existing studies, this study further reveals the mediating role of transportation infrastructure, human capital and policy support in the relationship between tourism industry agglomeration and economic growth, enriching the research on the impact mechanism of tourism industry agglomeration.

(2) This study focuses on southwest China, which fills the gap in the research of tourism industry agglomeration in this region and provides new empirical evidence for regional tourism economic development.

3. Meaning and application of research results

theoretical significance:

This study verifies the positive impact of tourism industry agglomeration on tourism economic growth and its spatial spillover effect, and enriches the application of new economic geography and industrial agglomeration theory in the field of tourism.

By revealing the mediating role of transportation infrastructure, human capital and policy support, this study expands the theoretical framework of tourism industry agglomeration influence mechanism.

practical significance:

Optimize the layout of tourism industry: The government should strengthen the spatial planning of tourism industry, promote the development of tourism industry cluster, and give full play to the agglomeration effect.

Improve transportation infrastructure: Increase investment in transportation infrastructure, improve regional accessibility, and promote the flow and sharing of tourism resources.

Improve human capital: strengthen the training and education of tourism practitioners, improve the quality of labor force, and provide talent support for tourism economic growth.

Promote regional coordinated development: strengthen the cooperation and coordination among regions, give full play to the spatial spillover effect, and realize the balanced development of tourism economy.

Propose Based on the findings, we propose the following policy recommendations to enhance the economic impact of tourism:

1. It is suggested to narrow the development gap, promote the coordinated development of regional tourism industry, and realize the "rich first, rich later" model through policy and resource inclination.

2. Break down administrative barriers, realize resource complementarity, strengthen cooperation, establish a tourism development cooperation platform, and promote the integration of tourism economy.

3. Strengthen infrastructure construction, especially transportation network, to promote the integration of tourism economy and improve social production efficiency.

4. Strengthen talent training and improve the quality of tourism industry development by attracting professional talents in tourism through training, education and policy support.

5. Explore new models of tourism development using new media and technologies, strengthen publicity, enhance the influence of tourism brands, and promote sustained growth of the tourism economy.

6. References

Balaguer, J., & Pernias, J. C. (2013). Relationship between spatial agglomeration and hotel prices: Evidence from business and tourism consumers. Tourism Management, 36, 391–400. https://doi.org/10.1016/j.tourman.2012.10.008.

Chen, D., & Miao, J. (2010). Spatial agglomeration and endogenous regional economic growth: Based on 1995–2008 analysis of provincial panel data in China. *Quantitative Economic and Technical Research, 27*(9), 82–106.

Gollub, J., Hosier, A., & Woo, G. (2003). Using cluster-based economic strategy to minimize tourism leakages. *World Tourism Organization, 1*(1), 1–59.

Lanlan, L., & Qiang, Y. (2017). Spatial econometric analysis of the relationship between Chinese tourism industry agglomeration and economic growth. *Agro Food Industry Hi Tech, 28*(1), 2754–2758.

Novelli, M., Schmitz, B., & Spencer, T. (2006). Networks, clusters and innovation in tourism: A UK experience. *Tourism Management, 27*(6), 1141–1152. https://doi.org/10.1016/j.tourman.2005.11.011

Wang, M., Zuo, H., Chen, S., & Zong, Q. (2021). An empirical study on the decoupling effect of regional tourism industry agglomeration and tourism economy: Taking Hunan Province as an example. *Southern Agricultural Machinery, 52*(13), 27–28, 55.

Wang, Z., & Huo, F. (2018). Measurement of the relationship between tourism industry agglomeration and regional economic development in Wuling Mountains, Hunan. *Region Research and Development, 37*(2), 94–98.

Wang, Z., & Huang, M. (2022). Study on the dynamic correlation between tourism industry agglomeration and tourism economic efficiency in Western Hunan. *Journal of South China University of Finance and Economics, 38*(1), 15–24.

Yang, Y. (2012). Agglomeration density and tourism development in China: An empirical research based on dynamic panel data model. *Tourism Management, 33*, 1347–1359. https://doi.org/10.1016/j.tourman.2011.12.016

Zhang, Y. (2014). An empirical study on the relationship between industrial agglomeration and economic growth in urban agglomerations: Based on panel data analysis. *Economic Geography, 34*(1), 108–113. https://doi.org/10.15957/j.cnki.jjdl.2014.01.016.