

A COMPREHENSIVE EVALUATION OF COUNTY TOURISM DEVELOPMENT LEVEL IN HUANGGANG, CHINA.

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ABSTRACT

Huanggang City is rich in tourism resources and has huge space for the development of tourism industry. Focusing on the development of county tourism economy in Huanggang, this paper uses the entropy method to construct a comprehensive index system of county tourism development, and systematically analyzes the comprehensive level of county tourism development in Huanggang, to provide some ideas for the development of Huanggang's tourism economy.

Keywords: *County tourism; comprehensive evaluation; entropy method; index system.*

INTRODUCTION

As a specific form of regional organization, the county region is a territorial area within the scope of the administrative territorial entity, which is basically composed of towns, market towns, villages and other administrative units. It is at the third level in the administrative territorial entity of the People's Republic of China System, is an area of Basic Social Organization and Economic Unit with relative independence (Li et al., 1999). County tourism refers to the sum of tourism activities and tourism economic relations existing in the specific spatial structure of the county (Bu et al., 2020). With the prosperity and development of tourism, domestic and foreign research on county tourism has become more and more in-depth. According to Bu et al. (2020), experts and scholars such as Anne Zahra and Chris Ryan from abroad and Chen Lijun in China have provided guiding significance for the research on county tourism. In the overall environment of tourism, in order to make Huanggang County tourism development to a higher level, based on the principle of analyzing Huanggang County tourism development problems and solving problems, this paper will combine relevant information and data to use entropy analysis to construct Huanggang The city and county tourism economy development body takes the 10 county units of Huanggang City, Hubei Province (based on data reliability Longan Lake Management Area into the scope of consideration) as the research objects to comprehensively evaluate the tourism development of the county, and strive to shape a meaningful reference model for the development of county tourism in Hubei Province.

Building an Indicator System

The level of tourism development in a county is influenced by a number of factors. Taking into account the principles of operability, comparability and systematicity, this paper adopts a hierarchical analysis to construct a county tourism indicator system (Crouch & Ritchie, 1999). Tourism resources are a prerequisite for regional tourism development and the foundation of regional tourism development. In view of the relatively few types of tourism resources in the country and the city of Huanggang, due to the need for comparative analysis of the development status of each county, the National 2A, 3A, 4A and above scenic spots are selected to carry out the research; The scale of tourism industry mainly reflects the status quo of county tourism development, which is the embodiment of tourism comprehensive reception capacity, and at the same time has a predictive effect on the development trend of the tourism industry. The number of tourist receptions, total tourism revenue, the number of travel agencies and the number of star-rated hotels are selected here. Since the proportion of foreign exchange income from tourism is extremely low and the economic benefits are weak, they are not considered; the socio-economic foundation is an objective condition for the development of tourism, a developed economy and social progress in a region undoubtedly provide a solid material foundation for the development of tourism, which will not only cultivate a huge market of tourists but also become a source of tourists by virtue of its own advantages; on the contrary, it will restrict the development of the regional tourism economy (Calero & Turner, 2019). The total regional population, total GDP, value added of tertiary industry and per capita disposable income of urban residents are selected for analysis in this paper; the location conditions of tourism are the supporting conditions for the development of a region's tourism industry and a strong guarantee for the level of tourism reception (Butler, 2015). The annual passenger turnover, the annual passenger mileage, the total post and telecommunications business, the amount of investment in fixed value production, the total foreign trade and the forest cover are selected here as feedback from regional transport communications, the degree of openness and the natural environment, which influence the long-term development of the tourism industry; The scientific, educational and cultural basis of tourism development is made up of the amount of books in public libraries, the number of students in schools and the number of health institutions. These elements also affect the quality of tourism growth and are worth considering (Khan et al., 2020). Based on these, we construct the data system shown in Table 1.

Table 1: Composition of the Indicator System for the Level of Integrated Tourism Development

Target layer	Criterion layer	Index layer
Comprehensive level of tourism development	Tourism resource endowment	Class 2A tourist attractions (pcs) Class 3A tourist attractions (pcs) 4A and above tourist attractions
	Tourism industry scale	Tourist reception (ten thousand) Total tourism revenue (billion RMB) Number of travel agencies (units) Star hotels (nos.)
	Socio-economic foundation	Total regional population (tens of thousands) Total GDP (billion RMB) Added value of tertiary industry (billion RMB) Per capita disposable income of urban residents (yuan) Annual passenger turnover (10,000 passengers) Annual passenger transportation mileage (billion/kilometres)
	Tourist location conditions	Total post and telecommunications business (billion RMB) Fixed value production investment (billion RMB) Total foreign trade exports (USD 10,000) Forest Coverage (%)
	Foundation of Science, education and culture	Public library holdings (10,000 books) Number of students at school (10,000) Number of health facilities (units)

Index Weight Determination

This study is based on the entropy weighting method to determine the weight of each indicator. The entropy method is an evaluation method to determine the weight coefficient according to the amount of information provided by the observation value of the indicator group (Zha, 2000). According to the information entropy attribute value, it describes the randomness and disorder of an event to determine the degree of dispersion of the index group, and then determine the influence of the comprehensive evaluation index (Zhao & Song, 2001). The greater the amount of information, the higher the stability, and the lower the entropy value; conversely, the smaller the amount of information, the lower the stability and the higher the entropy value.

Data Collection

According to the indicator system, based on the availability, comparability and authenticity of the data, the Longgan Lake Management area is taken into consideration. Collected the "Huanggang Tourism Statistical Yearbook", the official website of Huanggang Tourism Bureau, and the 2015 National Economic and Social Development Statistical Communiqués of Huanggang counties and cities, etc., and obtained 20 original data as shown in Table 2.

Table 2: Related data of Huanggang City Tourism Economic System

Index layer	Hong'an County	Macheng	Luotian County	Yingshan County	Tuanfeng County	Huangzhou District	Xishui County	Qichun County	Wuxue	Huangmei County
Class 2A tourist attractions	0	1	0	0	1	2	3	1	0	0
Class 3A tourist attractions	3	2	2	1	0	4	0	4	4	0
4A and above tourist attractions	3	3	2	2	0	2	0	1	0	2
Tourist reception (ten thousand)	509	480	465	360	88	228	203.81	142.4	157	242.5
Total tourism revenue (billion RMB)	30.52	32.3	24.5	21.23	5	13.95	14.19	8.96	13.4	8.8
Number of travel agencies	4	8	5	4	2	21	4	3	6	5
Star hotels	4	7	5	6	1	6	3	4	3	2
Total regional population (tens of thousands)	65.6	116.66	59.64	40.3094	37.5317	34.82	101.73	102.82	81.72	100.3928
Total GDP (billion RMB)	130.66	245.46	113.24	83.27	75.82	135.8	160.22	193.5	241.87	174.87
Added value of tertiary industry (billion RMB)	42.09	89.79	45.61	25.35	17.86	61.41	50.2	72.49	73.08	55.3
Per capita disposable income of urban residents (yuan)	21202	23279	21027	20502	20699	25538	20284	21848	24003	22733
Annual passenger turnover (10,000 passengers)	717	382.5	1100	1229	679	2200	1200	1500	1176	1325
Annual passenger transportation mileage (billion person kilometres)	2.7572	25.2	23.87	10.2063	5.5652	31	9	12	9.76217	18
Total post and telecommunications business (billion RMB)	2.64	3.74	2.3	1.6669	1.73	6.8	2.8	3.62	2.67	198
Fixed value production investment (billion RMB)	169.06	311.2	171.51	87	75.82	168.6	172.49	263.26	247.3	113.65
Total foreign trade exports (USD 10,000)	1684	5079	5653	1687	1280	6339	5317	9768	15417	4527
Investment in environmental pollution control (RMB billion)	47.30%	51%	63.90%	70%	34.23%	36.51%	37.20%	37.90%	48%	45%
Public library holdings (10,000 books)	13.5	15.2	16	15.3	8	10.47	18	28.6	15.7	21
Number of students at school (10,000)	7.4286	13.13	5.1359	4.8246	2.6134	3.3994	9.08	10.2038	12.63	4.2497
Number of health facilities (units)	492	35	25	331	27	288	38	100	311	567

Data Weight Calculation

In this paper, the entropy method is calculated on the collected raw data. To obtain the standard value of the proportion, the formula is as follows:

$$a_{ij} = x_{ij} / \sum_{i=1}^m x_{ij}, \quad a_{ij} \in [0, n]$$

To solve the information entropy value E_j , the formula is as follows:

$$E_j = -(\ln m)^{-1} \sum_{i=1}^m a_{ij} \ln a_{ij}, \quad j \in [1, n]$$

In the above formula, if there is $a_{ij} = 0$, then there is $a_{ij} \ln a_{ij} = 0$.

To calculate the variability of the J index. The formula is as follows:

$$H_j = 1 - E_j, \quad j \in [1, n]$$

The essence of entropy method is to select the size of index information coefficient to measure its value, and the contribution of entropy value affects the weight of the J index. The formula is as follows:

$$W_j = H_j / \sum_{j=1}^n H_j, \quad W_j \in [0,1]$$

By calculating the entropy value of the collected raw data, the tourism level evaluation index weights of the 10 counties in Huanggang City are obtained, as shown in Table 3.

Table 3: The Weight Value of the Tourism Development Index of Huanggang Counties

Target layer	Criterion layer	Criterion-level weight	Index layer	Index layer weight
Comprehensive level of tourism development	Tourism resource endowment	0.1669	Class 2A tourist attractions	0.0597
			Class 3A tourist attractions	0.0539
			4A and above tourist attractions	0.0533
	Tourism industry scale	0.1978	Tourist reception	0.0491
			Total tourism revenue	0.0491
			Number of travel agencies	0.0510
			Star hotels	0.0487
			Total regional population	0.0483
			Total GDP	0.0480
	Socio-economic foundation	0.1917	Added value of tertiary industry	0.0483
			Per capita disposable income of urban residents	0.0470
			Annual passenger turnover	0.0484
			Annual passenger transportation mileage	0.0499
			Total post and telecommunications business	0.0485
	Tourist location conditions	0.2933	Fixed value production investment	0.0483
			Total foreign trade exports	0.0507
			Forest Coverage	0.0474
			Public library holdings	0.0478
	Foundation of Science, education and culture	0.1503	Number of students at school	0.0490
			Number of health facilities	0.0515

The comprehensive index system for tourism development of 10 counties in Huanggang has gone through the fuzzy membership function model. The fuzzy membership function model formula is as follows:

$$f(x_{ij}) = \begin{cases} 1 & x_{ij} = x_{ij} \\ x_{ij} / (x_{ij})_{max} & x_{ij} \in [0, 1) \end{cases},$$

**Table 4: Dimensionless Index Value of Huanggang County
Tourism Development Index**

Index layer	Hong'an County	Macheng	Luotian County	Ying- Shan County	Tuan- Feng County	Huang- Zhou District	Xishui County	Qichun County	Wuxue	Huang- Mei County
Class 2A tourist attractions	0.00	33.33	0.00	0.00	33.33	66.67	100.00	33.33	0.00	0.00
Class 3A tourist attractions	75.00	50.00	50.00	25.00	0.00	100.00	0.00	100.00	100.00	0.00
4A and above tourist attractions	100.00	100.00	66.67	66.67	0.00	66.67	0.00	33.33	0.00	66.67
Tourist reception	100.00	94.30	91.36	70.73	17.29	44.79	40.04	27.98	30.84	47.64
Total tourism revenue	94.49	100.00	75.85	65.73	15.48	43.19	43.93	27.74	41.49	27.24
Number of travel agencies	19.05	38.10	27.81	19.05	9.52	100.00	19.05	14.29	28.57	23.81
Star hotels	57.14	100.00	71.43	85.71	14.29	85.71	42.86	57.14	42.86	28.57
Total regional population	56.23	100.00	51.12	34.55	32.17	29.85	87.20	88.14	70.05	86.06
Total GDP	53.23	100.00	46.13	33.92	30.89	55.32	65.27	78.83	98.54	71.24
Added value of tertiary industry	46.88	100.00	50.80	28.23	19.89	68.39	55.91	80.73	81.39	61.59
Per capita disposable income of urban residents	83.02	91.15	82.34	80.28	81.05	100.00	79.43	85.55	93.99	89.02
Annual passenger turnover	32.59	17.39	50.00	55.86	30.86	100.00	54.55	68.18	53.45	60.23
Annual passenger transportation mileage	8.89	81.29	77.00	32.92	17.95	100.00	29.03	38.71	31.49	58.06
Total post and telecommunications business	38.82	55.00	33.82	24.51	25.44	100.00	41.18	53.24	39.26	29.12
Fixed value production investment	54.33	100.00	55.11	27.96	24.36	54.18	55.43	84.6	79.47	36.52
Total foreign trade exports	10.92	32.94	36.67	10.94	8.30	41.12	34.49	63.36	100	29.36
Investment in environmental pollution control	67.57	72.86	91.29	100	48.90	52.16	53.14	54.14	68.57	64.29
Public library holdings	47.20	53.15	55.94	53.50	27.97	36.61	62.94	100.00	54.90	73.43
Number of students at school	56.58	100.00	39.12	36.74	19.90	25.89	69.15	77.71	96.19	32.37
Number of health facilities	86.77	6.17	4.41	58.38	4.76	50.79	6.70	17.64	54.85	100.00

Data Analysis

According to the data indicators, the comprehensive score map of each county is obtained, as shown in Figure 1.

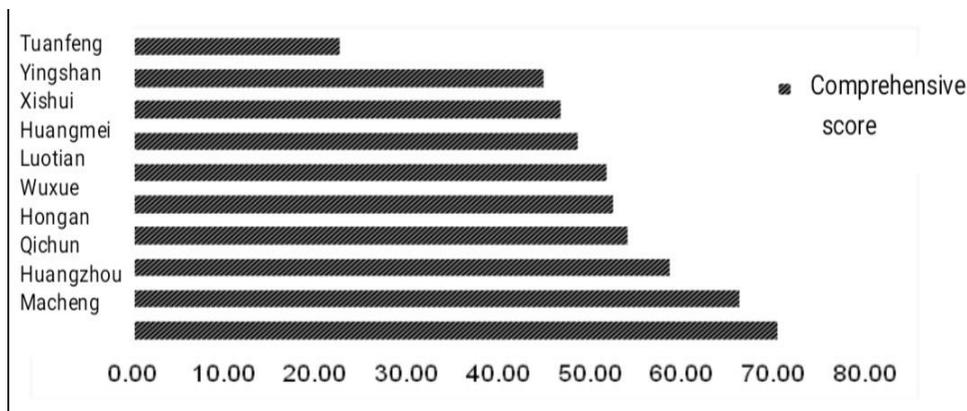


Figure 1: Overall Score of Tourism Development Level of Huanggang

It can be seen that the tourism development gap of Huanggang counties: Tuanfeng County, Yingshan County and Xishui County are relatively poor in tourism development. The comprehensive scores of tourism development level are 22.70, 44.85 and 46.72 respectively. Tuanfeng County ranks last in the entire Huanggang City. Compared with Macheng City, the comprehensive tourism development index is 47.71, which proves the uneven development of tourism in Huanggang City. The reason is that, on the one hand, the geographical scale is small, the tourism resources are low, the development of the tourism industry is at the initial stage, and the comprehensive development strength is weak; on the other hand, the population base is small, the tourism development is insufficient, the socio-economic foundation and tourism location conditions. It is not yet able to constitute a strong support, resulting in a low level of tourism market development and a lagging level of tourism development (Bu at el., 2020; Khan at el., 2020). The difference between the scores of Yingshan County and Xishui County is small, but Yingshan County is mainly due to the poor socio-economic foundation and tourism location conditions, affecting the overall quality of development. While Xishui County is subject to factors such as tourism resource endowment and tourism industry scale. If Yingshan County and Xishui County can reasonably formulate regional tourism development strategies and actively leverage the late-comer advantages of tourism in lagging areas, they may achieve leapfrog development in the future.

The counties with the intermediate level of tourism development are Hong'an County, Wuxue City, Luotian County, and Huangmei County. The comprehensive scores for tourism development are 54.08, 52.43, 51.74 and 48.55. The four counties and cities have relatively small differences in overall scores and similar levels of industrial development. They are in the middle of the 10 counties in Huanggang, but tend to be discrete in spatial distribution except that Wuxue and Huangmei County are adjacent to each other (Figure 1). Although the above-mentioned four counties and cities have a strong convergence in the development level, the inherent differences still exist. Hong'an County has obvious advantages in the scale of tourism industry composed of tourism reception volume and total

tourism revenue; Luotian County has relatively good development in tourism reception volume and forest coverage; Wuxue City ranks first in the total foreign trade export index and has a relatively good degree of external contact Strong; Huangmei County has obvious comparative advantages in the number of health institutions and the per capita income of urban residents.

CONCLUSION

Lack of In-Depth Development of High-Quality Tourism Resources

The natural tourism resources of all counties in Huanggang are of high quality, and the cultural tourism resources are rich in variety. To create a competitive product, it is necessary to vigorously refine superior resources and finely package boutique tourism projects. However, all counties in Huanggang are more or less lack of in-depth Tourism Development. Despite its high overall score, Huangzhou District still has the potential to develop its tourism development resources. Its Dongpo Culture and Red Cliff culture are our “trump cards”, but insufficient development has become the main bottleneck for its development. Xishui County ranks lower, and the Xishui Triangle Mountain tourist area has an excellent summer vacation environment, but there is still room for improvement in the value, grade and scale of the development of the scenic spot. Qichun’s ancient city of Qizhou, Li Shizhen’s former residence, and Chinese medicine culture are rich in resources, but it has not formed a large-scale and influential tourist destination. The essence of history and humanity needs to be deeply explored and developed. Building a national monopoly tourism product is the future development important goal.

Lack of Leading Companies in Tourism Industry Development

As one of the tertiary industries, the scale of the tourism industry determines the trend of local tourism development. In recent years, city and county governments at all levels have supported the tourism industry for all to see (Bu at el., 2020; Li at el., 1999). However, there is still a lack of stronger leading industries, especially in some cities and counties where the tourism industry has only just started, and the development difficulties of Tuanfeng County are to some extent related to the underdevelopment of the tourism industry. The government needs to implement the executive power in the development of the tourism industry, and implement the development strategies and tactics into actual development, such as the development and investment of scenic spots, the investment of tourism enterprises, the preferential policies for the development of the tourism industry, and investment in the marketing of tourist destinations, etc. These are issues that need to be taken seriously. In addition, how to attract more investment and integration of enterprises and the optimization of the tourism industry structure to enhance requires government selection and support. By vigorously attracting foreign enterprises with strong strength to settle in the city, selectively fostering local enterprises, and building a group of leading enterprises with core attractiveness and strong competitiveness, making them an important engine for the development of Huanggang tourism.

Weak County-Municipality Integration Linkages

The main reason why the comprehensive scores of the cities and counties of Huanggang appear in Figure 1 is that each place is confined to its own development, has no integration with each other, and lacks long-term effective macro-distribution and linkage-type strategic measures. In the long run, it will lose the comparative advantage of each county, resulting in serious waste of resources and arbitrary loss of development opportunities. It will also cause the comprehensive development level of Huanggang City's tourism to lag behind the overall level of Hubei Province. History and practice have proven that the development of tourism in Huanggang City and the counties is a dialectical relationship between the whole and the part (Bu et al., 2020; Zha, 2000). In the future, it is necessary to break through conventional thinking and establish the concept of grand tourism. Therefore, all counties and cities need to integrate resources, products, routes and brands, and strive to form a lively situation of coordinated development, jointly shape and strengthen the Huanggang tourism brand, and form a new Huanggang tourism model.

Marketing Capabilities Restrict the Scale of the Industry

In 2015, Huanggang visited by 20.39 million tourists. It is difficult to form strong competition with cities such as Wuhan, Yichang and Xiangyang. This reflects the problems in marketing, the small amount of capital investment, and a time lag in marketing, and the weak market scale. They have become the key to the development of Huanggang's tourism economy. Market positioning is the top priority for the development of tourism destinations. As one of the important member cities of Wuhan City Circle, Huanggang has certain market advantages. Therefore, it is necessary to actively use its own geographical location conditions to establish connection development ideas, and develop the cities along the road network, and link up the trump resources of Hubei province on the macro scale, actively integrate into the line, and jointly develop the national and overseas markets, attracting domestic and foreign tourists to visit.

The Comprehensive Supporting Capacity of Tourism Development Needs to be Strengthened Urgently

The development of tourism industry is a long-term systematic project, and the stimulation of tourism productivity is the core purpose of tourism development (Nooripoor et al., 2019; Saarinen et al., 2017; Samimi et al., 2017; WTO, 2017; Ataei et al., 2016; Khosrowjerdi & Nooripoor, 2016; Anderson et al., 2015; Chin et al., 2014; Cawley & Gillmor, 2008). The optimization of the tourism industry structure is related to the sound development of the entire tourism industry. There are six elements of tourism of outstanding significance to the development and maturity of the tourism industry in Huanggang. At present, for example, tourism catering lacks the participation of multiple subjects, and the awareness of food branding is weak; the types of tourism accommodations need to be diversified; the road level in tourism traffic needs to be improved, the landscape avenue needs to be constructed reasonably according to local conditions; and the tourist boutique routes should also be improved in time. Tourism shopping also needs to rely on the characteristics of Huanggang to build a large-scale tourism shopping center to attract tourists to produce consumer demand in tourist destinations. In short, tourism and entertainment development can create large-scale

scene interpretations as appropriate to gather popularity through real-world means and expand the popularity of Huanggang tourism.

REFERENCES

- Anderson, E., Bakir, A., & Wickens, E. (2015). Rural tourism development in Connemara, Ireland. *Tourism Planning and Development*, 12(1), 73–86. <https://doi.org/10.1080/21568316.2014.965844>
- Ataei, P., Izadi, N., & Yaghobi Farani, A. (2016). Structural determinants of attracting tourists in rural areas from host society perspective in Esfidan Village, Bojnourd. *Quarterly Rural Development Strategies*, 3(1), 113–125. <https://www.cabdirect.org/cabdirect/abstract/20173377914>
- Bu, N.P., Kong, H.Y., & Ye, S. (2020). County tourism development in China: A case study. *Journal of China Tourism Research*. <https://doi.org/10.1080/19388160.2020.1761501>
- Butler, R. (2015). The evolution of tourism and tourism research. *Tourism Recreation Research*, 40(1), 16–27. <https://doi.org/10.1080/02508281.2015.1007632>
- Calero, C., & Turner, L.W. (2019). Regional economic development and tourism: A literature review to highlight future directions for regional tourism research. *Tourism Economics*, 26(1), 3-26. <https://doi.org/10.1177/1354816619881244>
- Cawley, M., & Gillmor, D. A. (2008). Integrated rural tourism: Concepts and practice. *Annals of Tourism Research*, 35(2), 316–337. <https://doi.org/10.1016/j.annals.2007.07.011>
- Chin, C. H., Lo, M. C., Songan, P., & Nair, V. (2014). Rural tourism destination competitiveness: A study on Annah Rais Longhouse Homestay, Sarawak. *Procedia: Social and Behavioral Sciences*, 144, 35–44. <https://doi.org/10.1016/j.sbspro.2014.07.271>
- Crouch, G. I., & Ritchie, B. J. R. (1999). Tourism, competitiveness, and societal prosperity. *Journal of Business Research*, 44(3), 37–152. [https://doi.org/10.1016/S0148-2963\(97\)00196-3](https://doi.org/10.1016/S0148-2963(97)00196-3)
- Khan, A., Bibi, S., Lorenzo, A., Lyu, J.Y., & Babar, Z.U. (2020). Tourism and development in developing economies: A policy implication perspective. *Sustainability*, 12(1618), 1-19. <https://doi.org/10.3390/su12041618>
- Khosrowjerdi, M., & Nooripoor, M. (2016). An analysis of the attitude of rural people toward rural tourism using planned behavior theory case study: Doroodzan District, Marvdasht County. *Journal of Tourism Planning and Development*, 19, 153–174. http://tourismpd.journals.umz.ac.ir/article_1435.html?lang=en
- Li, Z.Q., Yang, W.Z., & Lu, X.X. (1999). *Economic Geography of China*. Shanghai: East China Normal University Press.

- Nooripoor, M., Derakhshan, E., & Sharifi, Z. (2019). The effects of tourism development on rural areas of the central district of Boyer-Ahmad township. *Rural Development Strategies*, 5(4), 427–440. <https://www.cabdirect.org/cabdirect/abstract/20193493689>
- Saarinen, J., Rogerson, C.M., & Hall, C.M. (2017). Geographies of tourism development and planning. *Tourism Geographies*, 9(3), 307-317. <https://doi.org/10.1080/14616688.2017.1307442>
- Samimi, A.J., Sadeghi, S., & Sadeghi, S. (2017). The relationship between foreign direct investment and tourism development: Evidence from developing countries. *Institutions and Economies*, 5(2), 59–68. <https://ijie.um.edu.my/article/view/4884>
- World Tourism Organization. (2017). *Tourism for Development—Volume I: Key Areas for Action*, 47. <https://www.e-unwto.org/doi/pdf/10.18111/9789284419722>
- Zha, X.J. (2000). *Information Analysis and Prediction*. Wuchang: Wuhan University Press, 182-187.
- Zhao, D.Y., & Song, H. (2001). Improved multi-index comprehensive evaluation method and application based on entropy weight. *Journal of Ordnance Engineering College*, 13(3), 47-51.