

# ANALYSIS OF URBAN TOURISM COMPETITIVENESS BASED ON FACTOR ANALYSIS: A CASE STUDY OF LUOYANG AND SEVEN CITIES AROUND

Enhou Zu,

Henan University of Science & Technology, China

## ABSTRACT

*Firms in nearly the sectors of the economy are facing a highly competitive, volatile and complex business such as the advent of globalization. Economic globalization has forced and is still forcing firms to develop new global manufacturing and distribution concepts. Through the development of economic globalization, every government and firm in the world is proceeding to reform and redevelop in order to deal with globalization. This paper is an empirical study, describes and explores the case of competitiveness of urban tourism of Luoyang and the seven cities around. As for the tourism industry, on the one hand, publicity should be expanded and tourism resources should be integrated so as to highlight the tourism advantage and on the other hand, travel services should be improved, and travel agency and hotel management should be enhanced, so that it can better serve tourists.*

## KEYWORDS

*Tourist, Urban Tourism, Competitiveness, China, Luoyang, Global,*

## 1. INTRODUCTION

With the global economic recovery, the successful transformation of China's economy and the improvement of people's living standards, the demand for tourism by Chinese residents has increased substantially, and the consumption of tourism has become normalized, making the tourism industry one of the emerging industries with the fastest growth. In 2015, the annual domestic and foreign tourists received by China exceeded 4.1 billion. At the same time, tourism revenue as a whole exceeded RMB 4 trillion. Compared with 2014, the growth rates respectively reached 10% and 12%. China's tourism economy has entered a new era [1].

Under the joint support of the following two initiatives, the tourism industry is undoubtedly one of China's economic hot spots in the future. On the one hand, with the continuous development of the "One Belt, One Road" initiative, China's economic and trade relations with countries all over the world, especially those along the "One Belt, One Road" [11], will be gradually deepened. With China's economic integration with these countries, outbound and inbound tourism will be rapidly developed, which can boost a greater chain reaction in the tourism industry, making the tourism-related peripheral industries develop healthily; on the other hand, under the impetus of the "massive entrepreneurship and innovation by all", the tourism industry has rapidly become one of the most active and lively areas of mass entrepreneurship and innovation, and more and more enterprises, institutions and consortia have entered this healthy, environmentally friendly, green industry with great potential for development. Especially, as the Internet and the sharing economy mode integrate with tourism deeper, the development pattern of tourism is also being gradually rewritten.

In this context, the tourism industry has increasingly become the top priority of the national economy, and will undoubtedly become one of the most potential economic growth points. Therefore, focusing on tourism economy, achieving development and innovation of local tourism and helping the tourism market to flourish, cannot only effectively solve the local economic problems, but also promote common development and growth of local prefecture-level cities complementary to the tourism industry in order to form a synergistic effect and support their economic development. Therefore, "to address these problems, we must first of all conduct ourselves honorably." The tourism economy should be treated as one of the major breakthroughs in the development of the local economy. We should develop tourism resources, locate the pain points, tap the potential of tourism, give full play to the advantages of local tourism, make up for the shortcomings of local tourism, improve the reception ability of local tourism and raise the comprehensive service level of the local tourism industry, so as to continuously improve the local urban tourism competitiveness. Based on this, we will enhance the overall level of local tourism, making it the backbone of the local economy while turning the tourism economy into local characteristic economy at the same time, so that it will become a pillar industry. Therefore, the analysis of the urban tourism competitiveness of Luoyang has very positive significance.

## **2. THEORETICAL REVIEW OF URBAN COMPETITIVENESS**

Before the industrial revolution, when people thought of tourism, they thought of deviation from cities, longings for nature, views of the countryside, etc., which is almost deviated from the concept of city. But with the global socio-economic development, especially the occurrence of the industrial revolution, the progress of human civilization was greatly promoted. With the advancement of society, the functions of a city have been improved greatly. As cities' management, reception, recreation and entertainment and other abilities develop, cities have become a part of tourism. At the same time, tourism activities have greatly enriched the contents of cities and promoted city development. In modern tourism, cities have become an important part of tourism activities that cannot be obtained, and the competitiveness of a city's tourism has not only become one important indicator of urban competitiveness, but also become one of the most important factors of urban economic development and progress. As urban tourism competitiveness is gradually highlighted, research into urban tourism competitiveness at home and abroad has just been unfolding.

Foreign studies on the competitiveness of urban tourism began in the 1980s [9]. Their research on tourism competitiveness mainly treats city as a tourist destination. Topics such as tourism environmental management, tourist perception and tourism activities are the major contents of their studies. They hope that through these studies, the management of urban tourism can be strengthened. Murphy et al. conducted a competitiveness analysis of Victoria Town of Canada in 2000 [10]. Through their research, a conclusion was drawn that, the evaluation of tourists plays an important role in the competitiveness of tourist destinations.1 Enright (2005) took Hong Kong, Bangkok, Singapore and other major tourist cities in the Asia-Pacific region as samples, and studied the attributes and influencing factors of tourism attractions. Among them, 15 attributes and 37 influencing factors were selected. Then an F-test and variance analysis were introduced before the tourism competitiveness of these three cities was analyzed and an evaluation was made.2 Tanja (2000) suggested that the competitiveness of a tourist destination is closely related to local environmental management. In his view, in order to enhance the competitiveness of a tourist destination, it is necessary to develop more scientific environmental management measures, and use practical management methods.3

On the other hand, domestic studies on the competitiveness of urban tourism started later, in about the 1990s. Since the reform and opening up, China's tourism industry has been rapidly

developed. Scholars have also accelerated the study of urban tourism-related issues and achieved considerable results. The competitiveness of urban tourism is an important content in evaluating urban competitiveness and promoting the development of urban tourism industry. So it is a hot topic in China's tourism research. In the present, research of domestic scholars on the competitiveness of urban tourism mainly focuses on the following three aspects: the research on the influencing factors of urban tourism competitiveness, the research on how to enhance the competitiveness of urban tourism, and the quantitative analysis and evaluation of urban tourism competitiveness.

Regarding the related influencing factors of urban tourism competitiveness, Chinese scholars have done a lot of research. According to Gan (2003), favorable external conditions created by a city for urban tourism are the basis for the improvement of urban tourism competitiveness. Technology, human resources, access to information, and the level of tourism management of urban managers are important influencing factors. There is also a factor that is essential to the competitiveness of tourism, that is, visitor evaluation of the city's tourism. [3] studied the competitiveness of urban tourism through various factors and found that in most cases, the tourism competitiveness of a city cannot be separated from the following seven points: tourism environment, city image, city brand, geographical location, core attractions, tourist market growth rate and scale, and demand in the domestic and foreign tourism markets<sup>4</sup>.

Quantitative analysis of urban tourism competitiveness is a top priority for Chinese scholars. The quantification of tourism competitiveness indicators can give urban tourism managers a definite purpose to resolve the problems existing in the present. [4] took four famous coastal tourist cities in Shandong, i.e. Qingdao, Weihai, Yantai, and Rizhao, as the research subjects, and used 36 indicators from the four aspects of competition status, competitive potential, supporting factors and comprehensive competitiveness of urban tourism respectively, so as to establish a set of urban tourism competitiveness indicator evaluation system. Then they used the analytic hierarchy process to analyze and evaluate the tourism competitiveness of the four cities. [2] proposed that the main factors influencing the competitiveness of urban tourism are the following eight aspects: core attractions, supporting factors, basic factors, development factors, management innovation factors, eligibility factors, economic equilibrium, index economy marketization indicator, urban tourism enterprise growth and economic stability indicator. The eight aspects are subdivided into 50 indicators to form the indicator evaluation system of urban tourism competitiveness, with relevant analysis methods introduced, namely, factor analysis, cluster analysis and so on.<sup>5</sup>

### **3.ANALYSIS OF LUOYANG URBAN TOURISM COMPETITIVENESS BY FACTOR ANALYSIS**

#### **A. INTRODUCTION TO EVALUATION METHODS**

Only when a scientific evaluation model is established to evaluate the competitiveness of urban tourism and analyze the relevant data and research, can the problems be found so that the right remedies can be taken to improve the competitiveness of urban tourism in a targeted manner. There are many evaluation methods. The most commonly used methods are principal components analysis, analytic hierarchy process and factor analysis. Principal components analysis is based on associated variables. According to their complex relationships, the variables are simplified for analysis, that is, there are several linear combinations in the indicator system, but only a few can greatly affect the indicators so these key indicators are analyzed.

Analytic hierarchy process is a combination of quantitative analysis and qualitative research. It divides a problem into several levels and factors. It not only conducts quantitative analysis of

these levels and factors but also selects different plans according to the different levels and then analyzes and studies the different plans. Factor analysis is a simple and clear way to see a problem after data-mation of the problem. Specifically, it finds out the main variables causing the problem, studies the interrelations of variables, and classifies closely linked variables by category. Each category is a factor which carries a lot of the original information [8], so in the quantitative analysis of the problem, the workload is large, procedures are complex, and accuracy is poor. Therefore, the problem can be reflected more intuitively if quantitative analysis is conducted based on the few primary factors, weight is given according to the relevance of factors, and factor scores are calculated through factor analysis. In the analysis of urban tourism competitiveness, this method is simple and practical. Therefore, this paper adopts this method to analyze the urban tourism competitiveness of Luoyang.

## **B. RELEVANT DATA**

As the reference of Luoyang, the author compared and analyzed seven cities near Henan Province and Luoyang, i.e. Zhengzhou, Kaifeng, Pingdingshan, Jiaozuo, Sanmenxia, Nanyang and Jiyuan [5], so that we cannot only learn about the urban tourism competitiveness of Luoyang more intuitively but also see the status of Luoyang tourism in surrounding cities. The author also chose 8 cities including Luoyang for another purpose, that is, to provide data reference for the establishment of a relevant tourism cooperation mechanism through comparison.

The data for the eight cities are from the *China City Statistical Yearbook 20J5* and the *Henan Statistical Yearbook 20J5*, as well as the *20J6 Report on the Work of the Government* of different cities. Some data also come from the official website of the People's Government of Henan Province and the official websites of the local governments, as well as local tourism websites. Not only the accuracy of the data but also the authority of the data should be ensured [6, 7].

## **C. EVALUATION MODEL CONSTRUCTION: DETERMINATION OF EVALUATION INDICATORS.**

For the analysis of urban tourism competitiveness, we must first determine the evaluation indicators in order to make analysis and evaluation according to the indicator variables. Therefore, the accuracy of the rating indicators is the most important to the establishment of an evaluation model system, for it relates to whether the evaluation system can scientifically and completely reflect the situation of urban tourism competitiveness.

The most intuitive presentation of urban tourism competitiveness is the existing competitiveness, and it is also the basis for subsequent development. Therefore, a city's existing competitiveness should be the first primary factor; and secondly, the improvement of competitiveness depends on the development conditions so the competitiveness of urban development conditions should be the second primary factor; the third primary factor is the development potential of a city, which is also an important factor to measure the competitiveness of tourism. Under the primary factors, there are some variables to measure the primary factors, which also influence the development of the primary factors. This study chose 20 variables under the three primary factors for analysis, of which 4 are under the first primary factor,

7 are under the second primary factor, and 9 are under the third primary factor. As there are too many variables, the author will not introduce them one by one. The specific details are listed in Table 1.

TABLE 1 Primary Factors and Variables of Evaluation System

Primary Factor	Variable
City's existing competitiveness (F1)	Number of domestic tourists received (X1)
	Number of inbound tourists received (X2)
	Total tourism income (X3)
	Tourism foreign exchange earnings (X4)
Competitiveness of urban development conditions (F2)	GDP per capita (X5)
	Proportion of the tertiary industry in GDP (X6)
	Illiteracy rate (X7)
	Air pollution index (X8)
	Engel coefficient (X9)
	Green space per capita (X10)
	Afforestation coverage rate in developed area (X11)
Competitiveness of urban development potential (F3)	Employment in the tertiary industry (X12)
	Number of tourist attractions (spots) above 3A (X13)
	Number of star hotels (X14)
	Number of travel agencies (international and domestic) (X15)
	Total annual volume of passenger transport by road (X16)
	Proportion of tourism revenue in GDP (X17)
	Number of students in institutions of

#### D. OPERATION OF EVALUATION SYSTEM

The SPSS 11.0 analysis software is a commonly used tool for statistical analysis. In this study, the SPSS 11.0 analysis software was used to analyze the relevant factor variables. It is necessary to test the statistics before the analysis-related operations are performed. Only after these 20 variables are tested can the accuracy of the variables' reflection of competitiveness be explained. After testing, the relevant KMO (i.e. test statistic) value is 79.631%, indicating that these variables reflect competitiveness accurately, while the variance contribution rate of the three primary factor is 79.683%, which indicates that it is quite accurate (see Table 2).

Table 2 Primary Factor Eigenvalue and Cumulative Variance Contribution Rate

Primary Factor	Eigenvalue	Variance Contribution Rate	Cumulative Variance Contribution Rate
F1	7.937	54.385	54.385
F2	2.251	16.624	71.009

F3	1.682	8.674	79.683
----	-------	-------	--------

For the factor loadings of the variables, the maximum variance rotation method was used. After 6 iterations, the relevant data were obtained. See Table 3 for details.

Table 3 Factor Loading Matrix after Rotation

Variable	Primary Factor		
	F1	F2	F3
X1	0.778	0.648	0.032
X2	0.914	0.247	- 0.034
X3	0.812	0.564	0.029
X4	0.857	0.364	- 0.003
X5	0.612	- 0.026	0.613
X6	0.168	- 0.409	0.594
X7	- 0.462	- 0.837	- 0.613
X8	- 0.187	0.946	0.058
X9	- 0.254	- 0.844	0.263
X10	0.076	- 0.097	0.659
X11	- 0.268	- 0.004	0.814
X12	0.219	0.918	- 0.016
X13	0.447	0.657	0.053
X14	0.667	0.719	0.099
X15	0.623	0.618	0.058
X16	0.019	0.927	- 0.141
X17	0.889	- 0.027	- 0.230
X18	0.534	0.627	0.231
X19	0.899	0.279	0.217
X20	0.848	0.147	0.244

According to the factor analysis formula, the score and rank of each city's tourism competitiveness were obtained. The formula is as follows:  $L=54.385f_1+16.624f_2+8.674f_3$  where,  $f_1$ ,  $f_2$  and  $f_3$  are the scores of the city on the three factors, and  $L$  is the tourism competitiveness of the city. The score of each factor, the comprehensive score and the ranking of each of the 8 cities are listed in Table 4.

Table 4 Factor Scores, Comprehensive Factor Scores and Rankings of Eight Cities

City	F1	F2	F3	F (Comprehensive Score)	Ranking
Zhengzhou	4.183 26	- 0.18 462	1.374 24	3.178746	1
Luoyang	2.384 54	0.617 38	- 1.62 845	1.562243	2
Jiaozuo	0.623 34	1.802 21	- 0.71 152	0.670102	3
Kaifeng	0.768 55	0.281 30	- 1.87 643	0.347792	4
Sanmenxia	- 0.25 037	1.594 46	0.147 75	0.131241	5
Nanyang	0.523 43	- 2.08 141	0.498 91	0.079152	6
Pingdingshan	- 0.15 113	- 0.00 537	0.334 16	- 0.06133	7
Jiyuan	- 0.65 375	1.496 67	- 0.02 683	0.190012	8

### E. COMPARATIVE ANALYSIS OF TOURISM COMPETITIVENESS OF LUOYANG AND SURROUNDING CITIES

As can be seen from Table 5, compared with the surrounding cities, Luoyang is less competitive than Zhengzhou, the provincial capital, but more competitive than the surrounding cities such as Jiaozuo, Kaifeng, Sanmenxia, Nanyang, Pingdingshan and Jiyuan, which is in line with Luoyang's current tourism development. From the three primary factors of a city's existing competitiveness (F1), competitiveness of urban development conditions (F2), and competitiveness of urban development potential (F3), the existing competitiveness of Luoyang is lower than that of Zhengzhou and higher than that of other provinces, which is in line with its comprehensive ranking; the competitiveness of urban development conditions of Luoyang is higher than that of Zhengzhou, but lower than that of Jiaozuo, Sanmenxia, Xuchang and Jiyuan, which is in line with the actual situation. The competitiveness of development conditions includes air pollution index, GDP per capita, green space per capita, afforestation coverage rate and other indicators, which is the disadvantage of Zhengzhou and Luoyang with a large population base and at the forefront of development; as for the competitiveness of urban development potential, the ranking of Luoyang is relatively low, only a little higher than Kaifeng, another ancient capital. It also reflects the looming problem of Luoyang, that is, the insufficient potential of urban tourism development. Although there are many tourism resources, the development of tourism is seriously restricted and more attention is needed.

### 3. CONCLUSION

Although the existing competitiveness of Luoyang (valued to be 1.562243) is strong, only second to Zhengzhou (valued to be 3.178746), some weaknesses are still exposed in the long run, leading to the lack of tourism development momentum. Especially in terms of development potential, adjustment should be made by reference to the indicators. In particular, in infrastructure construction, great efforts should be made and more care should be given to people's livelihood. As for the tourism industry, on the one hand, publicity should be expanded and tourism resources should be integrated so as to highlight the tourism advantage and on the other hand, travel

services should be improved, and travel agency and hotel management should be enhanced, so that it can better serve tourists.

## REFERENCES

- [1] Chou, C., Study on the Network of Tourism Industry Clusters. Dalian: Dongbei University of Finance & Economics, 2007, pp.10-13.
- [2] Hsiang, C.Y., Hsu, H.C., Disputes on the Study of Domestic Tourism Industry Clusters. Tourism Science. 2007, Vol6, pp. 8-9
- [3] Hsieh, H.H., A Study on Tourism Cooperation among Five Cities inNortheast of Fujian. Master's Graduation Thesis. 2006, Vol. 6, No.1.
- [4] Hsieh, Y.C., Fundamentals of Tourism. Beijing: China Tourism Publishing House, 1999, pp.26-28.
- [5] Kan, C.M., Ma, Y.F., Tourism Resources and Development. Tianjin: Nankai University Press, 2000, Vol.9 No. 2.
- [6] Li, T.Y., Tourism. Beijing: Higher Education Press, 2002, Vol.5, No.
- [7] Li, T.Y., Introduction to Tourism Fifth Edition. Tianjin: Nankai University Press. 2003. p.42.
- [8] Tang, L.H., Modern Tourism Industrial Economics. Guangzhou: Guangdong Travel & Tourism Press, 2005, pp. 66-67.
- [9] Wang, Y., Wang, C., Tourism Location Analysis: A Case Study of Yunnan [J]. Journal of Geographical Sciences, 2000, Vol. 55, No.3, pp.346-353.
- [10] Yin, I.M., Lu, Y.C., Liu, C.K., Tourist Enterprise Cluster: A New Strategic Model for Improving Competitiveness of Tourist Destinations.
- [11] Huang, Y.S., Wang, C.P., Tourism Planning. Fuzhou: Fujian People's Publishing House, 1999.
- [12] Tang, L.H., Modern Tourism Industrial Economics. Guangzhou: Guangdong Travel & Tourism Press, 2005, pp. 66-67.