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# A Study on Urban Tourism Competitiveness of Henan Province

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**Abstract:** According to the principle of science, system, pertinency and hierarchy, combining the availability of the evaluation data, this paper establishes the urban competitiveness evaluation system, analyzes the tourism competitiveness of 18 regions in Henan province with the method of factor analysis and puts forward the related suggestions for improving the competitiveness.

**Keywords:** Henan, urban tourism competitiveness, factor analysis

Since the growth of the tourist industry is subject to a series of natural or human factors, such as the resource conditions, passenger source markets, the regional socio-economic conditions and the regional economic structure and so on, the speed, mode, and the mutual influence with the regional economy vary in different regions. In recent years, the tourism in Henan province has been growing very rapidly and its tourist market has been continuously expanded, the tourist resources have been continually developed, the tourist products have been abundant day by day, and the tourism has played an important role in driving the national economic growth and promoting the employment. However, affected by resource conditions, regional conditions, economic conditions and other factors, the tourism in each city in Henan province behaves differently from each other<sup>[1]</sup>. Therefore, it is of important significance to understand the development level of tourism in Henan province in an all-round way and find out the differences in the development scale, environment and potential of the tourism in these cities so as to realize the regional cooperation and make the tourism in Henan develop better and quicker.

## 1. SCOPE OF STUDY AND ESTABLISHMENT OF THE EVALUATION INDEXES

Due to the administrative division, it makes the economic relations among the cities become steady. This paper selects the 18 cities of Henan province as the subject of study. The development level of tourism can be embodied in scale, environment and development potential, etc. Among them, the scale of the tourism reflects the current development situation of tourism in each city. Tourism environment reflects the related supporting systems in the development process of the tourism in each city. The development potential of the tourism reflects the potential force of the tourism development.

In recent years, some scholars have proposed the related research findings related to the comprehensive evaluation index system. There are some representative findings. For example, Wobo<sup>[2]</sup> makes the comparative study on the economic disparities of 39 capital cities in Europe with five indicators (tourism demand, growth in overnight tourists, seasonal distribution of tourists, tourism destination bearing capacity). Wan Xucai<sup>[3]</sup> establishes an evaluation index system concerning three aspects: tourism resources and product conditions, socio-economic conditions and other conditions, and makes an empirical study on the cities in Jiangsu Province. Based on urban tourism competition performance, competition potential and urban tourism environment supporting force, Su Weizhong and Gu Chaolin<sup>[4]</sup> establish the index system, then evaluate the tourism economic disparities among Beijing, Najing, Xi'an and Zhengzhou. In studying the international competitiveness of the tourism in Shaanxi Province, Feng Maoe<sup>[5]</sup> establishes an evaluation system containing 56 evaluation indexes in

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three aspects including environment, infrastructure and core. In studying the tourism competitiveness of Northeast region, Xu Shumei<sup>[6]</sup> establishes an evaluation system totally containing 80 evaluation indexes from three aspects including performance, environment and potential.

Based on the above-mentioned existing study on regional tourism development, according to the principles of science, systematicness and comparability, combining the characteristics of the regional tourism development in Henan Province, this paper mainly adopts the principal factor analysis as the statistical analysis method and selects 6 indexes (X1, X2, X3, X4, X5 and X6 separately indicate domestic tourism spending per person, the turnover of accommodation industry, the turnover of catering industry, urban disposable income, the level of urbanization, the proportion of the third industry) to establish the evaluation system for the comprehensive development of urban tourism economy in Henan Province.

## 2. EVALUATION OF COMPREHENSIVE DEVELOPMENT LEVEL OF TOURISM ECONOMY IN EACH CITY IN HENAN PROVINCE

### 2.1 Data selection and methods

Based on the principle of fairness, rationality and reliability, the data are extracted from Henan Statistical Yearbook 2009. Most of the indexes are directly extracted from the yearbook and a few are obtained through calculation of the original data.

The study on economic disparities of regional tourism began in the 1990s. The study methods mainly include AHP (analytic hierarchy process), factor analysis, cluster analysis<sup>[7]</sup>, variance analysis<sup>[8]</sup>, regression analysis<sup>[9]</sup>, important performance analysis<sup>[10]</sup> and shift-share analysis<sup>[11]</sup>. This paper uses the quite sophisticated method-factor analysis. The steps include the establishment of original data matrix, data conversion, the solution of correlation matrix and its characteristic value and feature vector of the correlation matrix, the selection of principal factors according to factor contribution rate, the solution of orthogonal factor and the establishment of factor scoring model. Finally, the paper ranks the competitiveness of these cities.

### 2.2 The process of factor analysis and its results

The statistical software SPSS 17.0 is used to make the factor analysis of the selected samples. First, KMO is used to compare the simple correlation coefficients and the partial correlation coefficients among the variables. The value of KMO statistic is between 0 and 1. When the quadratic sum of all the simple correlation coefficients among the variables is far greater than the one of the partial correlation coefficients, the value of KMO gets close to 1. It means the closer the KMO to 1, the stronger correlation among the variables, the more suitable relativity, and the original variables are more suitable for using factor analysis. When the quadratic sum of the simple correlation coefficients approaches to the value '0', the value of KMO gets close to 0. It means that the correlation among the variables become weaker. Then the original variables are unsuitable for the factor analysis. The common KMO standard includes: if the value is more than 0.9, it is very suitable for using factor analysis. The value '0.8', '0.7', and '0.6' separately means suitable, common and unsuitable. When the value is under 0.5, it is extremely unsuitable for factor analysis. It can be seen from Table 1 that the KMO value of the sample gets close to 0.7, so factor analysis can be used in this paper.

**Table 1. KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.699
Bartlett's Test of Sphericity	Approx. Chi-Square	82.165
	df	15
	Sig.	.000

Then the characteristic values of factor analysis and its contribution rate as well as the cumulative contribution rate are obtained (see Table 2). Since the contribution rate reflects the information of each factor containing original data, the selected two principal factors contain 84.60 percent information of the original variables. It meets the requirement on explain the whole variable with variable factor by the factor analysis.

**Table 2. Total Variance Explained**

Component	Initial characteristic value			Uploading of extracted quadratic sum			Uploading of Rotated quadratic sum		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.889	64.818	64.818	3.889	64.818	64.818	2.613	43.550	43.550
2	1.187	19.783	84.601	1.187	19.783	84.601	2.463	41.051	84.601
3	.507	8.457	93.059						
4	.224	3.725	96.784						
5	.156	2.598	99.382						
6	.037	.618	100.000						

The next step is to make a maximum variance rotation on the initial load matrix (see Table 3) of the above-mentioned two principal factors to get the rotated load matrix (see Table 4).

**Table 3. Component Matrix <sup>a</sup>**

	Component	
	1	2
X2	.938	-.214
X3	.879	-.376
X5	.784	.441
X4	.782	.546
X1	.741	.276
X6	.679	-.656

**Table 4. Rotated Component Matrix <sup>a</sup>**

	Component	
	1	2
X4	.943	.141
X5	.872	.219
X1	.728	.308
X6	.042	.943
X3	.380	.878
X2	.535	.800

In order to make a correct and reasonable explanation for the principal factors and simplify the structure (the square of each factor load is polarized to 0 or 1 according to the column), it is necessary to make the factor load matrix implement the varimax rotation so as to get two principal factors( F1 and F2) after the rotation.

According the results, the first principal factor F1 has a maximum factor load coefficient on the indexes including X1, X4 and X5. This indicates that F1 reflects the factors related to the development potential of the tourism. So this factor can be named as “industrial potential factor”.

The second principal factor F2 has the maximum factor load coefficient when it selects the factor of X2, X3, and X6. It can be seen that F2 reflects the factors related to the development scale of the tourism. So it can be named as “industrial potential factor”. [12]-[14]

F1 and F2 account for about 84.6% of total information of the indexes. That is to say, F1 and F2 can represent the six original factors to evaluate the urban tourism economy of Henan province. It is clearly that the selection of the two principal factors can fully interpret the information expressed by the original data, and the lost information is only 15.4%. The economic significance of the principal factor is mainly determined by the comprehensive significance of the indexes with relatively large weight number in the model. In this study, the principal factors F1 and F2 are used respectively to evaluate the development level of the regional tourism in Henan Province from two aspects including the industrial development potential factor and tourism scale factor. First of all, the paper sets formulas to calculate the score of the original variable.

$$F1=0.728X1+0.535X2+0.380X3+0.943X4+0.872X5+0.042X6$$

$$F2=0.308X1+0.800X2+0.878X3+0.141X4+0.219X5+0.943X6$$

“Display factor score coefficient matrix” is used to output a standardized score coefficient matrix. After standardizing the original variable, it can calculate the factor score of each variable according to the matrix (see Table 5). Then the score and ranking of regional tourism in the cities in Henan Province can be calculated according to the variance contribution rate.

**Table 5. Component Score Coefficient Matrix**

	Component	
	1	2
X1	.298	-.038
X2	.051	.297
X3	-.054	.386
X4	.462	-.196
X5	.402	-.131
X6	-.253	.522

**Table 6 Comprehensive score of the tourism in the cities in Henan province**

City	The score of the first principal factor	The score of the second factor	Composite score	Ranking
Zhengzhou	0.88368	1.22334	2.10702	1
Luoyang	0.62561	0.05206	0.67767	2
Kaifeng	-0.19483	0.41823	0.22340	3
Anyang	0.21517	-0.1473	0.06787	4
Jiaozuo	0.27578	-0.22991	0.04587	5
Pingdingshan	0.17262	-0.15846	0.01416	6
Nanyang	-0.17559	0.16854	-0.00705	7
Jiyuan	0.54527	-0.55587	-0.01060	8
Xinxiang	-0.10033	0.02807	-0.07226	9
Sanmenxia	0.00938	-0.20842	-0.19904	10
Hebi	0.21500	-0.41612	-0.20112	11
Puyang	0.02335	-0.31763	-0.29428	12
Xuchang	-0.11770	-0.18135	-0.29905	13
Shangqiu	-0.37886	0.06232	-0.31654	14
Xinyang	-0.73248	0.38248	-0.35000	15
Zhumadian	-0.61251	0.21443	-0.39808	16
Luohe	-0.01524	-0.44138	-0.45662	17
Zhoukou	-0.63831	0.10697	-0.53134	18

It can be seen from Table 6 that the competitiveness of Zhengzhou takes the first place. The score of Zhengzhou is 1.42935 point more than Luoyang. This table also shows that there are six cities with good performance in tourism competitiveness, the tourism potential and the scale of tourism competitiveness, and

have significantly higher than the provincial average.

Though it lacks of high-grade tourism resources, Zhengzhou is the provincial capital of Henan province, and is also an important inland city in China. As an important hub of transportation, communications and energy, Zhengzhou is one of important cities on new Eurasian continental bridge. At the same time, Zhengzhou is one of the three commercial centers of pilot cities determined by the State Council, it has a large number of multi-functional commercial facilities and product distribution markets, so Zhengzhou has solid economic base.

The competitive score of tourism competitiveness in Luoyang, Kaifeng, Anyang, Jiaozuo and Pingdingshan are all above zero. Although the overall competitiveness score is less than Zhengzhou, these five cities have improved their infrastructure conditions, and have a rapid development in tourism economy and scale. Luoyang is an ancient capital of nine dynasties, and ranks in the first batch of the famous historical and cultural city assigned by the State Council. It has a relatively large number of high grade tourism resources. The degree of monopoly and abundance is obvious. The scale of tourism development and infrastructure condition is in a high level. Kaifeng is an ancient capital of seven dynasties, and also ranks in the first batch of the famous historical and cultural cities. So Kaifeng has a great number of high-class tourism resources. As the burgeoning tourism cities with strong competitiveness, Anyang, Jiaozuo and Pingdingshan have a rapid economic development, and the infrastructure has been greatly improved.

These 12 cities including Nanyang, Jiyuan, Xinxiang, Sanmenxia, Hebi, Puyang, Xuchang, Shangqiu, Xinyang, Zhumadian, Luohe and Zhoukou have low comprehensive scores of tourism competitiveness which are below zero. This indicates that their comprehensive competitiveness is just so-so. Among these cities, some cities have a high level of tourism resources and demand, so the tourism shows a rapid growth trend. However, because the infrastructure is not well developed, and the investment is not enough, so these cities could not produce great attraction to the tourists, the environment of the tourism then can be affected. The other cities face the problems, such as a low level of economic development, lack of resource and poor transportation. The tourism industry is in their infancy, and the urban tourism has less competitiveness.<sup>[15]-[17]</sup>

### 3. CONCLUSIONS AND SUGGESTIONS

On the whole, Zhengzhou takes the first place in the tourism in Henan Province. Both the industrial scale and the potential are better than the other cities. Though the comprehensiveness of Luoyang, Kaifeng, Anyang, Jiaozuo and Pingdingshan is not as strong as Zhengzhou, the tourism of these cities has formed a certain scale. Anyang, Jiaozuo and Pingdingshan have an enormous potential. Nanyang, Jiyuan and other cities are weak in tourism comprehensiveness, and have not formed the tourism scale, among which Jiyuan, Sanmenxia, Hebi and Puyang have good tourism potentia. Compared with other cities with underdeveloped tourism, Xinxiang, Shangqiu, Xinyang, Zhumadian and Zhoukou have a certain advantages over the scale of development in tourism.

Economic disparities in the tourism are fully embodied in the tourism scale and development potential. Differences in goals, orientation and pathways of tourism development in these city, so it is helpful for these cities to realize the tourism cooperation and alliance of regional division of labor, complementary advantages, resources sharing, market co-construction, benefit sharing and risk-sharing.<sup>[18]</sup>In recent years, regional cooperation in Henan Province presents a picture of prosperity, for example, the establishment of central city agglomeration makes it possible to cooperate with each other. Only correctly understanding the economic level of tourism in the cities in Henan Province, can the regional tourism resources be integrated, the regional tourism brand be established, the high quality tourism routes be determined, and the rapid and sustainable development of tourism in Henan Province be realized.

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