An Analysis of the Dominance and Effect on Tourism in Provincial Capitals

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Abstract
Under the guidance of the government, tourism in provincial capitals will show the phenomenon of organizing and driving the tourism development in surrounding cities, that is, the dominance of regional tourism. Based on the hegemony theory in urban geography, this author proposes the concept of tourism dominance in provincial capitals and builds the determination index of dominance. And then, he takes Chengdu as an example and conducts an empirical analysis which shows that the dominance of Chengdu in the urban tourism development of Sichuan is manifested in six aspects: performance contribution, investment and resources, traffic location and organization and reception capacity, of which the monopoly index is over 30% and standing-out index above 8.0. Chengdu has a coefficient of elasticity of 0.47 for promoting tourism development in the province, and plays a leading role in stimulating tourism development in the surrounding areas of the city. It exerts a positive effect of output overflow on the radiated tourists of surrounding cities and the difference is 5.56 between the output and the accepting overflow. The dominance of tourism in provincial capitals and its radiation diffusion effect also have an impact on the central cities in the larger surrounding areas.

Key words: Regional Tourism, Central City, Dominance, Radiation Diffusion Effect

1. INTRODUCTION

Provincial capitals are superior to other cities in tourism investment, traffic location and infrastructure construction and can obtain substantial investment for resource development, transportation and infrastructure construction, producing strong attraction for tourists and creating great tourism economic benefits. Since the development of tourism in provincial capitals is driven by the government, they are dominant in terms of performance and factor supply, and prominent in regional tourism development. Yang et al. (2016) showed that most of the provincial capitals in central and western China (Xi’an, Wuhan, Ningxia, etc.) have the strongest overall tourism strength and have achieved remarkable results through their leading role. Milivoj et al. (2017) analyzed than this was a common phenomenon in domestic regional tourism. Kim and Scott (2017) analyzed that provincial capitals stand out from the cities in the regional tourism development, promoting the metropolis as a node in the formation of tourism network structure. Based on the perspective of urban geography, this author calls the monopoly phenomenon as dominance and conducts a quantitative study on its effects.

2. LITERATURE REVIEW AND CONCEPT DEFINITION

Jefferson (1939) and Nestor (2016) proposed the concept of the first city (Primate City) in the study of urban size. Since then, many scholars have discussed and studied it. Ades,Glaeser(2001) and Wei et al. (2017) analyzed the formation factors of city primacy and believed political factor is more important than economic one; Odell(1967), after analyzing panel data of ninety countries, found if the prime city is the administrative center, then the country is generally growing. In addition, Luisito et al. (2003) conducted a comparative study on city primacy in 39 developing countries. There are scholars studying from the prime city, primacy of province, tourism performance and other aspects.

The concept of tourism “dominance” of provincial capitals comes from the “primacy” idea in urban geography and the “hegemony theory” in international relations. Central cities rely on their superpower and high popularity to play an important role. Introducing the concept of “dominance” in the development of regional tourism, the author not only tries to highlight the prominent position of provincial capitals in the development of regional tourism, but also emphasizes its leading role and the provision of “public service” to other cities, and stresses on the spreading tourism overflow to the surrounding cities, through the function of accumulation and conversion to promote the formation of regional tourism network.
3. DATA SOURCES AND RESEARCH METHODS

Taking Chengdu as an example, this author constructs a conceptual model of urban tourism dominance, measures its dominance in the city tourism of Sichuan from the six aspects like tourism performance, resources and investment, transportation location, and organization and reception capacity, analyzes its three effects on regional tourism development, and provides some reference for the organization and development of regional tourism spatial in western region.

3.1 Data Sources

The basic data needed in this paper include tourism performance, tourism investment, tourism resources, tourism traffic, hotel and restaurant and travel agency. Among them, A level scenic spot of tourism resources is taken as the observation index, weighting coefficient is designed according to the level and the abundance of tourism resources is calculated. Aviation, railway and highway passenger volume of tourism traffic is taken as the observation indexes and weighted coefficient is used to calculate traffic location index. The number of star hotels and restaurants is adopted as observation indicators in reception capacity which is calculated according to the level of weighted coefficient. As tourism is a comprehensive service industry, tourism investment involves the construction of scenic spots, hotels and restaurants, transportation construction and tourism-related community planning and landscaping. The author uses the investment of the tertiary industry as an alternative indicator. The data comes from Sichuan Tourism Administration Network, China Urban Statistical Yearbook, Sichuan Urban Statistical Yearbook, China Tourism Statistical Yearbook, Sample Survey of Inbound Tourists.

3.2 Research Methods

The tourism dominance of provincial capitals refers to the characteristic of monopoly and “standing-out from the cities” in provincial tourism in terms of supply factors and comprehensive output, which contains two meanings: the development of tourism, with a high monopoly index, occupies a large proportion in the entire province; it stands out from other cities and is significantly higher than other cities.

The dominance of urban tourism is composed of tourism performance and key supply factors, and is formulated as follows:

\[ DB_{ach} = f(DB_{inv}, DB_{res}, DB_{trf}, DB_{hot}, \cdots) \]  \hspace{1cm} (1)

In which, subscript ach stands for tourism performance (including passenger traffic and tourism revenue), “inv” is for tourism investment, “res” for attractions resources, “trf” for traffic location (including aviation, railways, highways), and “hot” for reception capacity (including hotels and travel agencies).

This author selects monopoly index CR1 and standing-out index HJI to determine the dominance of tourism in provincial capitals, and the formula is as follows.

3.2.1 Monopoly Index

The monopoly index is the share of the largest market in the entire regional market. In this study, the largest market is provincial capital, and the entire regional market is the provinces and autonomous regions. The formula is as follows:

\[ CR_1 = \frac{P_1}{\sum_{i=1}^{n} P_i} \]  \hspace{1cm} (2)

Of which, CR1 is for the market share of the provincial capital, and \( P_i \) for the largest market share.

According to the market classification standard by Cohen, it is generally believed that: CR1 <20% is low in monopoly and the regional market is more dispersed; 20% ≤ CR1 <35% is middle with high concentration; and CR1 ≥35% is high and CR1≥50 % is very high or exclusive.

3.2.2 Standing-out Index

Standing-out index is a short for “standing out from the crowd”, based on the city primacy. In order to avoid over-simplification and better reflect the differences between provincial capitals and other cities, this author uses the average of the largest city and other cities to measure. The improved formula is as follows:

\[ HJI = \frac{P_1}{n-1} \left( \frac{1}{n} \sum_{i=2}^{n} P_i \right) \]  \hspace{1cm} (3)

In which, HJI is for the standing-out index of the provincial capital, \( P_1 \) for the tourism scale of the capital and \( P_i \) for the tourism scale of the \( i \)th city.

According to the comparative experiment, the standing-out index of urban tourism is graded into three:
HJI≤2.0 means its primacy is weaker and the regional development is more balanced; 3≤HJI≤5 shows the primacy is middle and the advantage of provincial capital is obvious; HJI≥5 is high with strong overwhelming advantage.

4. THE DOMINANCE DETERMINATION OF PERFORMANCE AND KEY FACTORS

Tourism in Sichuan is a mononuclear structure centered on Chengdu in geography. However, the dominance determination of urban tourism in Chengdu is the result of the interaction of multiple and complex factors. Therefore, it is necessary to combine the performance and key factors in order to comprehensively analyze passenger volume, tourism revenue and tourism investment and resources, the traffic infrastructure indicators of aviation, railway and highway, and the reception capacity indicators of travel agencies and hotels and restaurants.

4.1 The Dominance of Performance and Development

Tourism is a special industry receiving tourists to obtain income. The development level of tourism in a region is mainly measured by the two indexes: passenger volume and tourism revenue. The passenger volume of reception is an index of “popularity” of the tourism industry. It is also a reflection of the preference of tourists in destinations, which largely reflects the popularity and development potential of the destinations. In 2013, Sichuan received a total of 51.918 million person times, in which Chengdu takes up nearly 30%, followed by Leshan and Liangshan. The proportion of tourists from other cities is less than 5%. After calculation, the monopoly index CR1 is 29.9% and the “standing-out” index HJI is 8.5. It can be seen that, Chengdu is prominent and high dominant in tourism.

Tourism revenue is the second key indicator of the development in tourism, that is, the indicator of “wealth”, which is the most direct indicator of tourism. In 2013, the total tourism revenue in Sichuan was 419.392 billion yuan, of which the tourism revenue in Chengdu was 132.75 billion yuan, accounting for 31.7% of that province. It was the city with the highest tourism income in Sichuan. Leshan took second place, accounting for 7.6%, 24% lower than in Chengdu. Tourism revenue of other cities was at 5% with weak competitiveness. This shows that there is a big difference between cities in Sichuan, with obvious tourism advantages in Chengdu. The monopoly index CR1 is 31.65% and the “standing-out” index HJI is 9.26, which is in a high dominance position.

4.2 Dominance of Resources and Investment

From the perspective of industrial utilization, the real tourist resources are tourist attractions, which are the core products and key attractions of tourism. The number of tourism resources in a region is measured by the abundance of tourism resources, while the abundance of resources is measured by the number and level of A-level scenic spots. At present, the quality of tourist areas (spots) in China is classified into five levels, which are 5A, 4A, 3A, 2A and A in descending order, with a big difference in attracting passengers. This author uses a weighted model to calculate the abundance of tourism resources. The formula is as follows:

$$RB = 5.0N_5 + 2.5N_4 + 1.75N_3 + 0.5N_2 + 0.25N_1.$$  \hspace{1cm} (4)

Of which, $RB$ stands for the abundance of tourism resources, $N_1 - N_5$ is for the number of A-level to 5A-level scenic spots, and 5.0, 2.5, 1.75, 0.5, 0.25 respectively for the number of weights. The weight is based on the survey in Sichuan, Shaanxi, Gansu and other cities by the author, calculated and obtained according to the reception average ratio of passenger flow in A-level scenic spots, and approved and applied in the practice and research.

The abundance of tourism resources in 21 cities of Sichuan Province is shown as follows. Among which Chengdu boasts the largest abundance of resources and is the only city with over 100 resources, accounting for 26.3% of the province. There are two 5A-level scenic spots and twenty 4A-level scenic spots in Chengdu ranking first in the province. Leshan and Aba each has two 5A-level scenic spots, with quite similar abundance of tourism resources, accounting for 8.02% of that of the province; Guangyuan and Nanchong follow after, accounting for 7.6% and 6.8% respectively; other regions are similar in abundance of resources with 2% -6% market share; Ya’an, Bazhong, Ziyang and Liangshan are lower in abundance of resources and poor combination of resources, accounting for less than 1%.

According to Formula (1), the monopoly index of Chengdu resources is 26.34%, which belongs to the medium concentration type. According to Formula (2), the standing-out Index HJI of tourism resources in Chengdu is 7.15, which has comparative advantage and belongs to the medium primacy.

Investment is the basis of tourism development. Tourism investment is the investment of various fixed assets and current assets used in tourism, including investment structure and total investment, which can be used
for the turnover of resource investigation, scenic spot development, traffic construction, hotel construction, neighborhood reconstruction, marketing and travel agency, and for the improvement of tourism infrastructure and reception conditions. After reviewing the relevant literature, the author found that the total tourism revenue in Sichuan takes up more than 20.5% of the tertiary industry in 2013, becoming the pillar of the tertiary industry. In the tertiary industry, investment in tourism and related industries is the largest, accounting for about 35%. Therefore, tertiary industry investment is taken as an alternative indicator of tourism investment.

Tourism investment in various cities is directly affected by economic power. The tourism investment in Chengdu reached 13.5 billion RMB in 2013, accounting for 33.3% of the total investment in the province. Nanchong follows, with 6.5%, and other sixteen cities with better economic strength take up 2%-5% of tourism investment. Ya’an, Aba and Ganzi is restricted by economic strength, and the tourism investment is relatively inadequate. After calculation, monopoly index of tourism investment in Chengdu is 33.29% and the standing-out Index HJI is 9.97 compared with other cities, which is second to none in tourism investment of Sichuan.

4.3 The Domination of Tourism Traffic

With travel as a prerequisite, tourism involves traffic location and passenger transportation capacity. Traffic location is the transportation network, level and passenger transport capacity between the city and other cities at home and abroad, including aviation, high-speed railways, expressways and so on, which determines the accessibility and reachability of the destinations and is a necessary condition for tourists to realize spatial movement. There is a long-term equilibrium relationship between tourism passenger volume and traffic volume, and the larger the traffic volume, the larger the tourism passenger volume, and there is a positive correlation between the two. There are large airports, railway stations and road passenger transport center in provincial capitals, which is the hub of provincial transportation and the center of passenger and freight transport. Sichuan is an inland province with aviation, railways and highways as the main modes of transport. The traffic location and reachability are measured by the passenger volume of each city.

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<td>-</td>
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<td>-</td>
<td>123.9</td>
<td>0.02</td>
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</table>

Note: “-” in the table means that there is no data on the passenger volume of aviation, railway and highway in the city or it is hard to obtain the data.

According to the related research by Professor Ma Yaofeng’s research group and questionnaire survey, aviation and railway passenger transport mainly solve the accessibility of tourists, while highway passenger transport takes the space diversion and turnover between cities and urban scenic spots. On the basis of consulting experts, the role of aviation, railway and highway in tourism traffic is fully taken into consideration.
The weight coefficients are 0.39, 0.35 and 0.26 respectively. Traffic location and passenger transportation capacity of tourism in cities are calculated as the following formula:

\[ RG = 0.39G_1 + 0.35G_2 + 0.26G_3 \]  

(5)

In which: RG is for the traffic capacity of urban tourism, and G1, G2 and G3 for the passenger volume of aviation, railway and highway respectively.

By the end of 2013, there were thirteen airports in Sichuan, with a total passenger throughput of 37.75 million person times. The passenger throughput of Shuangliu Airport in Chengdu was 33.44 million person times, ranking fifth in the country and diverting 4.31 million passengers of the other ten cities. Thus, Chengdu is absolutely dominant in aviation passenger transport of Sichuan. The monopoly index CR1 is 88.60%, standing-out index HJI is 77.7, and the primacy is extremely high.

In the end of 2013, railway passenger volume in Sichuan was 324.48 million person times. Among them, railway passenger volume Chengdu was 286.19 million person times. Chengdu became the primacy city of railway passenger transport, accounting for 86.81% of that of Sichuan; Dazhou, Nanchong, Bazhong and Mianyang rank after, with total railway passenger traffic taking up only 8.36%, less than one tenth of Chengdu. After calculation, monopoly index of Chengdu is 86.81% and standing-out index HJI is 92.2, with high monopoly.

Highway traffic is ubiquitous, playing the role of space diversion of tourists within a city. The total highway volume of Sichuan in 2013 was 26.23 billion person times, among which Chengdu takes up 9.41 billion person times, accounting for 35.91% of that of the province; there is little difference in the rest of the twenty cities with the sum of 1.68 billion. Compared with the twenty-one cities, Chengdu is high independent with standing-out index HJI 28.1.

As of aviation, railway and highway, the comprehensive transport capacity of Chengdu is 356.524 million person times. The dominance index CR1 is 44% and the standing-out index HJI is 15.7. Chengdu is strong in monopoly and high in dominance.

4.4 The Dominance of Reception Capacity of Star-rated Hotels and Restaurants

The reception capacity in tourism is determined by the grade and quantity of hotels, restaurants and travel agencies. The travel agency plays an important role in the organization and tourist reception, linking the source and destination. The agency arranges tourist activities, also acts as an important link connecting scenic spots and hotels and restaurants, playing the role of organization and coordination. It can be seen that the number of travel agencies in Chengdu is the most, accounting for 41.1% of that of the province, and belonging to high concentration monopoly; compared with other cities, the standing-out index HJI of Chengdu is 13.9, with high primacy distribution. Chengdu is also a center for organizing the international and domestic tourism in Sichuan.

Hotels and restaurants are the most important tourist reception facilities. They are responsible for providing accommodation for tourists. It is an important place for tourists to relax, playing an important role in tourism revenue. The number and structure of star-rated hotels reflects the completeness of regional tourism infrastructure, which helps arrange overnight tourists, improves the residence time of tourists, and drives the development of related departments and promotes the employment in tourism.

In order to measure the reception capacity of hotels and restaurants, this author determines the weight: 0.35, 0.28, 0.22 and 0.15 respectively, by using the number of guest rooms and the average bed fee based on five-star, four-star, three-star, two-star and below. The following formula is used to calculate the reception capacity:

\[ RJ = 0.35J_2 + 0.28J_4 + 0.22J_3 + 0.15J_2 \]  

(6)

In which \( RJ \) stands for the reception capacity of hotels and restaurants, \( J_2, J_4, J_3, J_2 \) for the number of star hotels.

It can be seen that the reception capacity of star hotels in Chengdu is the strongest, occupying 30% of the market share in Sichuan, and ranking first among the cities; Leshan, Mianyang and Nanchong rank after, with the market share 6.87%, 5.61% and 5.50% respectively; the market share of other cities is below 5%, differing greatly from the capital city Chengdu. In this way, the monopoly index of hotels and restaurants in Chengdu is 29.8%, and the standing-out index HJI is 8.5, higher dominant than other cities.

4.5 The Structure Analysis of Dominance in Performance and Key Factors

The dominance of tourism in provincial capitals refers to the standing-out from the cities on the basis of the dominance of performance and key factors. The author makes a quantitative determination to the dominance of urban tourism in Sichuan from the six aspects: performance indicators, tourism investment, scenic spot resources, tourism transportation, hotels and restaurants and travel agency. The results are as follows (Table 2).
5.2 Aggregating Diffusion Effect and Overflow

The essence of center city driving the development of regional tourism is formed by the high visibility and strong attraction through high monopoly, aggregating and attracting more tourists at home and abroad; and then through the radiation diffusion, the radiation transport network will spread tourists to the around cities, promoting the development of tourism in the surrounding cities. The central city is known as distribution center in geography, and the spread of the tourist flow is called overflow in economics. The influence of a region on foreign region is known as output overflow, while the region will also be affected by the foreign region, known as accepting overflow.

Based on the analysis of the spatial mismatch and spatial spillover in urban tourism of Sichuan by Zhou...
Gongmei, the output overflow to surrounding cities in Chengdu is 6.92, and the accepting overflow from other cities is 1.35. The difference between the two is 5.56, and the output overflow is greater than the accepting overflow (Table 3). Affected by the theory of distance attenuation and selection of high spots, Chengdu has the highest outflow for Leshan followed by Mianyang, Meishan and Ziyang.

| Table 3. Tourism Overflow Value of Chengdu for Surrounding Cities |
|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                   | Zigong          | Deyang          | Mianyang        | Suining         | Leshan          | Nanchong        | Meishan         | Ziyang          | Aba              |
| Accepting         | 0.667           | 0.807           | 2.006           | 0.84            | 3.831           | 1.171           | 1.091           | 0.964           | 0.816           |
| Difference        | 4.074           | 4.951           | 7.757           | 3.589           | 12.473          | 3.668           | 5.339           | 5.098           | 3.113           |

The agglomeration and diffusion function of tourism in Chengdu is related to its aviation and railway network and transport capacity. It is also affected by the complementarity of tourism products in Chengdu and surrounding cities. Chengdu is rich in tourism resources. Shuangliu Airport has a large throughput of civil aviation and can attract and gather a large number of domestic tourists. It then spreads the tourists to neighboring cities through the radio-type railway road network. Under the conditions given by the transportation network, the central cities spill over into the surrounding cities mainly due to the abundance of tourism resources in each city and the product differentiation in Chengdu. Leshan, Mianyang, Meishan and Ziyang are able to obtain higher tourism spillovers, mainly related to their higher abundance of tourism resources.

5.3 Larger Regional Hub Function

As the political, economic and cultural center of Sichuan Province, Chengdu is dominant in tourism and key factors. Also as a central city in southwestern China, it is the No. one in the competitiveness of comprehensive tourism. It plays a central role in the transfer of inter-provincial tourists and hub of visitors flow between the central cities. According to the statistics by national civil aviation in 2013, the throughput of Chengdu Shuangliu Airport ranked the fifth in the country and the first in western regions. In 2013, Chengdu received 155 million person times with 133 billion of tourism revenue. It is the only major city receiving over 100 million person times and boasting over 100 billion of tourism revenue in the southwest.

In general, the transfer of tourists in a larger area is mainly achieved by air and rail transport, thus capital cities play a transit role in inter-provincial tourism. According to the study by Liu Fajian, Chengdu is the strongest city close to the center in the southwest, with the center of the middle and the center of the agency. It is an important hub for other provinces and autonomous regions to undertake tourist flow and for the trans-provincial tourism in southwestern regions.

Due to the large number of domestic tourists and the complicated route of space flow, there is a lack of detailed tracking data. This author chooses the sample survey data of inbound tourism from 2004 to 2014, measures the intensity of spatial transfer, and analyzes the transfer of Chengdu in the tourist flow between big cities in southwest China. Referring to the market transfer model, the transfer index of Chengdu is 6.9, 0.5, 21.7, 11.5, 18.2 respectively to Chongqing, Guiyang, Kunming, Lhasa and Xi’an. In terms of spatial flow, Kunming, Xi’an and Chongqing are the main destinations for outbound tourism flows in Chengdu, followed by Lhasa and Guiyang. Thus, Chengdu is not only the distribution center of tourism in Sichuan, but also the hub of tourism in various cities in the southwest region, playing an important role in conversion.

6. CONCLUSION AND DISCUSSION

Due to the development of government-led regional tourism, provincial capitals are dominant in the development of regional tourism. This domination is conducive to playing its role of gathering, spreading and leading. It is an important way of organizing regional tourism. Based on the theory of primacy and “hegemony”, this author puts forward the concept and determination model of tourism “dominance” in provincial capitals. Taking Chengdu as an example, he tests its dominance and three effects in urban tourism in Sichuan Province. The conclusion is as follows:

(1) As a single center city, Chengdu is absolutely dominant in urban tourism of Sichuan. Its monopoly index of performance and key factors is above 30% and the standing-out index is higher than 8.0 compared with other cities. Especially in such technical and organizational factors as aviation, railways and travel agencies, Chengdu is an organizer and manager of tourism in Sichuan, with higher than 40% of monopoly index and greater than 10 of standing-out index.
Chengdu tourism is dominant and standing out from the cities. It does not cause regional imbalance, but plays a “leading role” and exerts an “gathering proliferation” effect. The output overflow outweighs the accepting overflow and Chengdu became the radiation center for urban tourism in the surrounding cities. Its dominance makes it a tourist hub connecting the regions in the northwest and southwest provinces and promoting the formation of an urban tourism network in the western region.

Quantitative indicators are selected in the determination of dominance which is not included in the index system, due to the limitations of the indicators and methods for determining the impact of government management and preferential policies, human resources and knowledge innovation, which will be further studied by the author in the future.

REFERENCES