Abstract. The research of tourism destination network of Capital Region in China is important to identify the function of each city in this area aiming to improve the development of region tourism development. To explore the relationship among the destination cities, a series of geography indicators (tourism resources density and location quotient) has been applied in this study. The paper examines the spatial characteristics in the region and finds that there is an uneven distribution of tourism resources among destination in Capital region of China. The quantity analysis gives the evidence that the agglomeration of tourism enterprises and the degree of clusters of each province is difference. Some development suggestions are put forward to deal with the problems of tourism of this region. To the whole region, the public transportation system should be improved, and the regional cooperation should be strengthened. Suggestions to Beijing, Tianjin, and Hebei Province are analyzed in the end of the paper.

Keywords: Tourism Destination Network, Tourism Resources Density, Location Quotient, Industrial Aggregation, Capital Region of China

1. Introduction

Tourism is basically a spatial phenomenon, which implies moving consumption within space [1]. The management of tourism destination network is an important subject in tourism research, and the role of the destination management organization (DMO) is to ensure the effective management of the destination by focusing on coordination, planning, informing and promoting, and thus to influence its overall success [2]. Yet, the tourism destination development is also affected by the characteristic both inside and outside the
destination, which means that the destination network plays important roles in region development. Thus, the research question arises: how to identify the destination network? Network science was one of the three toolboxes to study tourism destination network [3], and a wide variety of quantitative measurements were used to describe the characters of the network [4].

This article mainly focuses on the character of spatial structure and industry cluster of tourism destination network. By the study of destination network, it is possible to determine the development strategy of each tourism destination in the future.

In this paper, section 2 provides the researches on tourism destination, including characteristic of space structure and industrial cluster. Besides, researches about the spatial structure of Capital Region of China are concerned. The 3rd section addresses object of research and sources of research data in this article, as well as research methodologies including resource distribution density and location quotient. The forth section presents character analysis in Capital Region of China. Finally, the fifth section provides some suggestions to tourism development of this region.

2. Related research achievements

2.1. Spatial morphology of tourism destination

Tourist destination system is always in constant development, transforming from a lower stage to a higher level. Tourism destinations spatial structures are also constantly updated and a dynamic point of perspective is needed to study the spatial structure of tourism. The existing studies on spatial structure of tourism evolution model include both theoretical and empirical aspects.

In earlier years, there are many research results on theoretical aspect of tourism destination. The scholars of geography and economics study first, mainly focus on the study of spatial theoretical model, such as spatial economics, industry economics, urban geography, economic geography, and other professional fields. Besides, they have formatted some classical theory model: such as location theory, the core – edge theory, growth theory, the layer structural theory, point – axis system theory and the theory of "dual structure" and so on. In addition, some literature emphasizes its importance in terms of overall destination competitiveness, and it is generally associated with the destination management organization (DMO), which covers marketing, management or a mixture of both [4].
There are some empirical studies on tourism spatial structure evolution mode in recent years. Many scholars introduced new models from classical theoretical model or applied theoretical model into the specific cases. Such as the urban flow model comes from theory of "point – axis system". It determined three levels of key nodes and tourism development axis and four big tourist area of Liaoning coastal economic belt [6]. Based on the theoretical model, Jiangshan city of Zhejiang province put forward the reconstruction scheme of rural tourism cluster: taking a key tourist development axis as a link and massive aggregation as features, tourist brand as the center, network development pattern of tourism space as a target, which is advantageous to the effective implementation of the construction of tourism node and axis, and the improvement of attraction of tourism resources [7]. Besides, by applying quantitative methods of center function index and the gravity model into Wanjiang city, the tourist city nodes, tourism development axis and the tourism destination system are defined, and then tourism destination space organization system of this city were adjusted and optimized [8].

To sum up, the study of tourism spatial structure is very extensive and detailed, involved in all aspects and angles, but in-depth research on mechanism of level, and the construction of systematic spatial structure model and evolution model are needed.

2.2. Tourism industry cluster

The definition of "tourism industry cluster" has three aspects: the whole tourism industry, tourism industry organization or initiative and tourism cluster on the base of geographical agglomeration [9]. Regional tourism spatial agglomeration phenomenon has gradually become the focus of tourism industry, and the study of spatial agglomeration and industry cluster of regional tourism is increasingly becoming the important content of tourism research.

Currently, the researches of Chinese tourism industry aggregation reflected its diversification and existed dispute about its concept to some extent. Most researchers supported it. They analyzed the motive mechanism of tourism industry aggregation and its boosting effect by specific cases. The driving factors of tourism cluster in Wuhan city include natural forces, external driving force and internal driving. Only by translating into dynamic mechanism, driving factors can play a long-term advantage. Besides, government-driven mechanism and market-guided mechanisms are two kinds of dynamic mechanism of tourism industry spatial agglomeration [10]. Furthermore, the essential
requirements in developing tourism industry aggregation have been provided and some scholars focused on the level of tourism industry aggregation in Yangtze River delta [11] [12].

On the other hand, some researchers didn’t emphasize on the judgment of the concept of tourism industry aggregation and did some empirical studies, such as researches on combination of spatial aggregation and scattered area of Chinese tourism industry and the trends of tourism industry aggregation in China [13] [14]. In the meantime, some researchers hold a prudent attitude and discussed that whether this concept is suitable for tourism industry. Such as tourism industry aggregation lacks motivation, and therefore, tourism industry aggregation is not suitable for the tourism industry [15]. The view relatively modest is that industry cluster theory can be applied to tourism research, while we should distinguish the concept between tourism industry aggregation and tourism corporation[16].

2.3. Spatial characteristic of Capital Region in China

The problem of tourism development of Capital Region has been one of the focuses for tourism industry and academia. The reasons are as follows: on the one hand, regional development of metropolitan area is one of the key goals of the current national development, and tourism development is an important part of the regional development; on the other hand, regional tourism cooperation of Capital Region lags behind that of the other two metropolitan circle (The Yangtze river delta and Pearl river delta).

Currently, the research about the spatial structure of Capital Region focused primarily on the pattern of development of tourism spatial and the pattern of economic cooperation. For space development pattern, some scholars think that the development of the Capital Region belongs to mononuclear radiation mode [17]; some take the opinion that this region belongs to dual–core linkage mode of Tianjin and Beijing [18]. So, there is a general view that three provinces in the region have a serious imbalance in development of tourism economic. In addition, for the spatial economic cooperation patterns, some scholars put forward three independent tourism laps of North of Hebei, South of Hebei, new area close to sea of Tianjin into a competition model for Capital Region [19].Then tourism economic cooperation structure has been constructed as the "three points, five laps" pattern [20]. On top of these, analysis of the pros and cons of tourism industry cluster development in Capital Region and strategy of building metropolitan tourism cluster have became the hot topics[21].
3. Research methodologies

3.1. Object of research and sources of research data

The Capital Region of China means the administration areas around Beijing, including the two municipalities of Beijing and Tianjin and 11 cities (Qinhuangdao, Tangshan, Langfang, Baoding, Shijiazhuang, Cangzhou, Zhangjiakou, Chengde, Xingtai, Hengshui, Handan) in Hebei Province. The area is 76 square kilometers, and the total population is about 85 million, which accounts for 2.3% of territory proportion and 7.23% of population in China. In recent years, the tourism has developed rapidly in this area, and it has hosted 19.64% of domestic tourists and 6.44% of overseas visitors in 2012. Its tourism revenue accounts for one third of the national tourism revenue. In addition, Beijing’s tourism income is far higher than that of Tianjin and Hebei, and the trend of growth is very obvious. However, inbound tourism income of Hebei is stagnated and slow to develop. After 2008, the rising of Hebei’s domestic tourism income is obvious.

Fig: 1. The map of Capital Region

This paper aims to understand the relationship among the cities in the destination network of Capital Region. To explore the character of the destination network of this region, the author introduces two geographical indexes in the second section of the paper. Using the origin data, several characters of the destination network in the Capital Region is deduced from the
fourth section. At last, some suggestions put forward to deal with the problems about the tourism destination network of this region.

The research data in this paper comes from following references: Statistical Yearbook of China Tourism of 2013; Statistic Communiqure of National Economic and Social Development of Beijing, Tianjin and Hebei of 2012.

### 3.2. Resource distribution density

Resource distribution density refers to the degree of concentration of tourism resources in a certain area. It is often used to reflect the relative amount of resources available for comparative analysis of different cities. It can also reflect the degree of concentration and dispersion of tourism resources, which is the qualification of the tourism industry cluster [22]. Using GIS technology, Wang zhangjun and Fangzhongquan took Conghua city tourist resources as an example, and carried out a detailed study of density of tourism resources [23]. By simplifying the model, the mathematical expression of resource distribution density is:

\[ D = \frac{n}{A} \]  

Where, \( n \) is the number of scenic spots, \( A \) is the area of the city. When \( D \) is larger, it means the relative amount of resources is more, and the greater the degree of aggregation of resources. In this article, the region includes 13 cities; \( n \) is the number of all A-level scenic spots in each cities for the convenience of statistical.

### 3.3. Location quotient

The location quotient was brought up by P. Haggett in 1965, and can be used to show the relative distribution or concentration of some industry. In the analysis of tourism spatial structure, the location quotient can evaluate the proportion of specialized sectors and their level of specialization [24]. With a location quotient model, some scholars analyzed the changes and differences among different regions of our core industries of tourism and characteristic of tourism industry agglomeration [25][26].

Then, this paper uses the location quotients of tourism enterprises to evaluate the situation and effect of industrial cluster. The formula of location quotients (LQ) is:

\[ LQ_{ij} = \left( \frac{x_{ij}}{x_j} \right) / \left( \frac{x_i}{x} \right) \]  

(2)
LQ_{ij} is the location quotient of the industry i in the region j. x_{ij} is the production value of the industry i in the region j. x_j is the production value of the region j. x_i is the production value of the industry i. x is the production value in the whole country.

From the definition, we can conclude that it indicates the deviation of certain industry from the average level of the region. If LQ value is less than 1, then local concentration of activity is less than that of the region as a whole; if LQ value is equal to 1, indicating the extent of local concentration is equivalent to the regional average level; If LQ value is more than 1, then local concentration is greater than that of the region as a whole.

Limited by the data collection, this paper only chooses three administrative regions (Beijing, Tianjin, Hebei) to discuss the tourism cluster. Then two indicators of location entropy (travel agencies and star hotels) are selected to describe the tourism enterprises cluster, and the numbers of travel agencies/star hotels of three regions come from Statistic Communique of National Economic and Social Development of Beijing, Tianjin and Hebei of 2012.

4. Character analysis in Capital Region of China

In this section, character of tourism distribution and tourism enterprise cluster of Capital Region of China will be discussed by resource distribution density and location entropy index respectively.

4.1. Character of tourism resource distribution

The cluster of tourism resources is the basic factor for the industry clustering. With the formula of resource distribution density, this article obtains resource distribution density of destination cities in the study area based on processing of the original data (Area of each cities and number of the A-scenic ) as table 1.

Obviously, seen from table 1, there is an uneven distribution of resources and large differences among cities in Capital region of China. Beijing is in a leading position, whose absolute amount of resources is the most, and the degree of resources aggregation is also much larger than other regions. Hebei is rich in tourism resources, but most are dispersed distribution. Moreover, there are only four cities have 5A tourist attractions and in a small number in Hebei. Besides, the top three cities of the total number of scenic spots and the distribution density of A-level scenic spots are Beijing, Tianjin and Qinhuangdao. So Tianjin and Qinhuangdao are two important tourism cities in this spatial network.
Tab: 1. The data of A–level tourist attractions of Capital Region of China (statistics of 2012)

<table>
<thead>
<tr>
<th>Province</th>
<th>Area (square kilometer)</th>
<th>The total of the A–scenic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>5A</td>
</tr>
<tr>
<td>Beijing</td>
<td>16808</td>
<td>203</td>
</tr>
<tr>
<td>Tianjin</td>
<td>11919.7</td>
<td>36</td>
</tr>
<tr>
<td>Zhangjiakou</td>
<td>37000</td>
<td>32</td>
</tr>
<tr>
<td>Chengde</td>
<td>39519</td>
<td>23</td>
</tr>
<tr>
<td>Tangshan</td>
<td>13472</td>
<td>23</td>
</tr>
<tr>
<td>Qinhuangdao</td>
<td>7812.4</td>
<td>26</td>
</tr>
<tr>
<td>Cangzhou</td>
<td>13419</td>
<td>10</td>
</tr>
<tr>
<td>Langfang</td>
<td>6429</td>
<td>17</td>
</tr>
<tr>
<td>Shijiazhuang</td>
<td>15848</td>
<td>27</td>
</tr>
<tr>
<td>Hengshui</td>
<td>8815</td>
<td>11</td>
</tr>
<tr>
<td>Xingtai</td>
<td>12486</td>
<td>22</td>
</tr>
<tr>
<td>Handan</td>
<td>12000</td>
<td>20</td>
</tr>
<tr>
<td>Baoding</td>
<td>22100</td>
<td>33</td>
</tr>
</tbody>
</table>

According to five developing patterns of regional spatial structure model, the Capital Region belongs to a single nuclear radiation pattern, whose feature is: regional tourism resources and market distribution is extremely uneven; besides, its density of regional net is low and visitors usually gather in a point or a few points[17].

Fig: 2. Contrast of resource distribution density in Capital region

In figure 2, the depth of the color represents the size of the resource distribution density, which means the deeper the color, the bigger the value of resource distribution density. So, it is clear that the top three cities of resource
distribution density of the A-scenic are Beijing, Tianjin and Qinhuangdao, which is the same as Dong Jing said: the first-class tourism nodes of this region are Beijing, Tianjin and Qinhuangdao [27]. From the core – periphery theory, these three regions belong to the core area of this region and other parts are transition zone and marginal areas. Besides, for the clustering structure that tourism resource densely clustered in the central city in this region, long-distance tourists are not diversion to surrounding areas easily. In this case, the convenience degree of traffic that links the central city and the surrounding cities will play a significant role in promoting tourism development of Capital Region.

4.2. Character of tourism industry cluster

Although tourism consumption has the character of flowability, and although it scattered in different space in the process of tourism, it also has the gathering effect. The following article uses the location entropy index to discuss the situation and effect of industrial agglomeration of Capital Region. Based on the formula and relevant statistical data, the paper calculates the two indicators of location entropy.

Tab: 2. Statistical data and the calculations of location quotient of 2012

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Beijing</th>
<th>Tianjin</th>
<th>Hebei</th>
<th>The whole county</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total tourism revenue (billion)</td>
<td>362.66</td>
<td>178.86</td>
<td>158.83</td>
<td>2570.60</td>
</tr>
<tr>
<td>The number of travel agencies</td>
<td>1021</td>
<td>344</td>
<td>1252</td>
<td>24944</td>
</tr>
<tr>
<td>The number of hotels</td>
<td>584</td>
<td>103</td>
<td>404</td>
<td>11367</td>
</tr>
<tr>
<td>Location quotient of travel agencies</td>
<td>23.39</td>
<td>1.61</td>
<td>2.55</td>
<td>—</td>
</tr>
<tr>
<td>Location quotient of star hotel</td>
<td>13.38</td>
<td>0.48</td>
<td>0.82</td>
<td>—</td>
</tr>
<tr>
<td>Average of Location quotient</td>
<td>18.38</td>
<td>1.05</td>
<td>1.69</td>
<td>—</td>
</tr>
</tbody>
</table>

In table 2, we can see LQ value of Beijing are all more than 1 and much higher than other cities, so local concentration of tourism industry is greater than that of the region as a whole. Besides, the LQ of hotel in Tianjin and Hebei are lower than 1, which means the degrees of clusters in these two cities are relatively lower than national average level. But the average location quotient of tourism enterprises is all higher than 1, which indicates that there exists the agglomeration of tourism enterprises in Capital Region.

There are more tourism resources and the travel agencies in Hebei than that in
Beijing and Tianjin, and the location quotients of tourism enterprises are higher than Tianjin. However, the total tourism revenue of Hebei is lowest among Capital Region, which indicates tourism revenue is not proportional to the degree of industrial aggregation. The core of the tourism rely on is tourism resources, and the phenomenon that economic benefits increased by tourism industry cluster is restricted by quantity and quality of tourism resources, so it do not have a universal meaning.

5. Suggestions for future regional development

Through the analysis of the tourism destination network characteristics of Capital Region, it is obvious that tourism development has such problems as uneven spatial distribution and the slow development. So, this paper puts forward the following suggestions.

5.1. The tourism transportation system should be improved

The growth of the spatial morphology has many relative connections with transportation. As the inter-city rapid rail transportation has not yet fully formed in this region currently, the tourism industry of Beijing always in the forefront of the country while resource potential of Hebei has not been made full use of. Therefore, it is necessary to improve the transport system from Beijing to tourism cities in Hebei. In recent years, the construction of high-speed rail has promoted the integration of tourism. Then the intercity trains and tourist trains among Beijing, Tianjin and cities of Hebei should be opened, enlarging the coverage of bus lines of Capital Region. With the public transport system building, the tourists can enjoy the preferential prices and fast service in the future[28].

5.2. The government should strengthen the regional tourism cooperation

Though regional tourism cooperation of Capital Region has been put forward early in the 20th century, it has no substantive progress. Tourism resource aggregation and the market concentration is a special way that differs from the traditional industry. In Capital Region of China, the center of the city – Beijing densely gathered with resources and markets has an impact on the surrounding cities. So, if the center city cannot be well combined with surrounding cities, it
will form an independent state of development. Regional cooperation in tourism development should select the appropriate development model based on the region's tourism resources and characters of market aggregation [29].

The three administrative regions (Beijing, Tianjin and Hebei) have close contact in many aspects such as geographical, cultural traditions. Besides, they are all rich in tourist resources and each has its own characteristics. They have not only the aspirations of unitization and cooperation in tourism development, but also the well foundation and prospects for implementing regional cooperation. From the current situation, the role of government is the key point in determining a new starting point of tourism development cooperation in Capital Region. At last, government should actively promote and improve the system of paid vacation and make it truly implemented.

5.3. Improve the tourist service system of Beijing based on tourist centers

Beijing has a better resource advantage in Capital Region, but it should strengthen the management of scenic spots and improve the tourist service system. Such as scenic capacity constraints, environmental health management, travel consulting management and fighting against illegal trading activities as reselling scenic tickets, tourist maps and bully off or soliciting tourists. The new "Travel law" passed in 2013 proposed that: tourists have the right to choose tourism products and services, as well as refuse compulsory transaction of tour operators.

Besides, construction of car rental system is important as independent travelers are increasing in recent years. Car rental management system has been grown pretty mature in European and American countries while China begun to develop in recent years. As the capital of China and the main region that inbound tourist destination, Beijing should construct a complete car rental system to provide more convenient service to visitors. Such as set the car rental points at the major transport hub.

At last, as air pollution problem of Beijing is increasing serious in recent years, the numbers of both inbound tourists and domestic tourists have declined gradually. Therefore, it is critical for Beijing to control the problem of environmental pollution.

5.4. Tianjin should innovative tourism products by highlighting its own characteristic
Tianjin should highlight the characteristic of port city and take advantage of its location and transportation to appeal the tourists from Beijing and Hebei. In addition, Tianjin can also deal with depth development of existing cultural tourism resources, and excavate “nine countries’ concession” to attract the foreigners living in Beijing.

In order to make visitors accommodation in tourism destination, tourism activities at night is necessary. There are three types of nighttime tourism products, which are performance, participation, attraction. Performance is one of popular nighttime tourism products, and many tourism cities exploited performances to rich the tourism products in nighttime[30]. Relying on its tourism resources, parks, squares, Tianjin could develop tourism performing arts activities that outstanding features and scenic features of Tianjin.

5.5. Hebei should enhance the exploitation and upgrading of tourism products

Hebei province has a big area and is rich in tourism resources, but most are dispersed distribution, mainly because of low utilization rate of tourism resources. Furthermore, there are a lot of scenic areas have not yet been recognized. So it is most important to emphasis the integrate exploitation of tourist resources and design of individualistic attractions lines. And by combining the resources of the same type, the essence tourist routes covering the whole region should be designed.

Besides, strengthening scenic construction and upgrading the level of scenic spots while enhancing publicity [31]. Then, building road sign systems plays an important role especially for self–driving tourists.

Lastly, on the one hand, Hebei should promote business prosperity and the development of the leisure entertainment, such as striving for construction of super large modern entertainment projects similar as universal studio. On the other hand, with its own characteristics, it can develop agricultural ecological tourism, rural tourism and other tourism projects. Beijing and Tianjin region is a fairly large tourism consumer groups and a potential tourist market, so Hebei could focus on leisure tourist market development of local residents in Beijing and Tianjin.

6. Conclusion

By tourism resources density and location quotient, the paper discusses the
character of the tourism destination network of Capital Region.

Firstly, there is an uneven distribution of resources and large differences among cities in Capital region of China, and it belongs to a single nuclear radiation pattern. Beijing is in a leading position, whose absolute amount of resources is the most, and the degree of resources aggregation is also much larger than other cities. Secondly, with the quantity analysis, there exists tourism industry clustering around this region. But the degree of tourism industry clustering of Tianjin is lowest while Hebei is lowest in tourism revenue, which means tourism revenue is not proportional to the degree of industrial aggregation.

According to the situation discussed above, some suggestions put forward to deal with the problems of tourism of this region. To the whole region, the role of government is the key point. They should improve the transport system and strengthen the regional cooperation. For each province/cities: Beijing should strengthen the management of scenic spots, improve the tourist service system and complete car rental system. Tianjin should highlight the characteristic of port city and take advantage of its location and transportation to appeal the tourists from Beijing and Hebei. To Hebei, it is most important to emphasis the integrate exploitation of tourist resources and design of individualistic attractions lines. Secondly, strengthening scenic construction, upgrading the level of scenic spots and building road sign systems. Thirdly, promoting business prosperity and the development of the leisure entertainment and develop agricultural ecological tourism, rural tourism and other tourism projects.

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