

Research on Spatial Form of Cultural Tourism Based on Big Data Resources Construction

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Abstract. Cultural space represents the spatial dimension of the human world, which is symmetrical with time, that is, cultural space must be extended and developed vertically through time. The spatial form of cultural tourism belongs to the concept of multi-scale. Relevant studies analyze the philosophical significance of the spatial form of cultural tourism and define it as the exclusive attribute of intangible cultural heritage. Use big data to actively interact with cultural tourism brands, optimize brand design, promote brand awareness and promote brand image communication. Improve the quality of tourism products through the cross-language big data platform of cultural tourism, and improve the awareness and recognition of tourism enterprises "going out"; As the most important spatial form, cultural field is the real scene of production, life and service in tourist destination, which embodies the social and cultural relationship between people and tourist landscape.

Keywords: Big data; Cultural tourism; spatial form.

1. Introduction

"Big data" in the era of mobile Internet has rapidly spread to all fields of social economy, profoundly affected the development and transformation of society, and has become a new strategy for the country to revitalize the economy and realize the innovation and development of social economy [1]. The concept of tourism flow can be divided into broad sense and narrow sense. The broad sense of tourism flow refers to one-way or two-way tourist flow, capital flow, material flow, energy flow and cultural flow between tourist source and destination as well as within the destination. Tourism flow in a narrow sense refers to tourist flow, which is a collective spatial displacement phenomenon caused by tourists' similar tourism needs [2]. With the increasing frequency of social activities on the Internet, the emergence and application of big data has become an important opportunity that all industries must face. The acquisition and analysis of these massive and multi-type data can bring far-reaching influence to the research on the development of scenic spots and tourism-related fields.

Spatial research has always been an important field to explore the social relations and humanistic activities of destinations, and the spatial form can better reflect the elements and structural relations of cultural tourism [3]. Therefore, it is very timely and necessary to explore strategies and methods to optimize the effects of metropolitan areas from the aspects of spatial structure and cooperation. Cultural tourism can maximize and effectively release the attraction of the city or region by means of various media, so that consumers can reach a consistent identity. Under the background of big data, a large number of digital footprints with information such as the time and location of tourists' activities are generated on the network, which is convenient, time-saving and labor-saving, and has higher data accuracy and reliability. Constructing the analysis system of the spatial form of cultural tourism will help to clarify the research ideas and research framework of cultural tourism, and this paper makes a peeping exploration.

2. The concept of cultural tourism

Cultural tourism is an advanced evolution form of tourism economic development, and it is also an important space supplement for building tourist attractions. Clearly recognizing the concept of cultural tourism is also the essential requirement for realizing the sustainable development of tourism economy. There are objective differences in the occurrence of tourism resources and the level of

market development among regions, but with the deepening of the links between transportation infrastructure and economic and cultural exchanges. The formation of cultural space is closely related to specific historical scenes and cultural traditions, and in the process of development, it is led by the government, social organizations, national elites, ordinary community residents and foreign tourists [4-5]. Through the comprehensive mining and analysis of these data sets, we can accurately understand the characteristics of tourists' temporal and spatial behavior in tourism gathering hotspots and rationality of tourist routes, and provide accurate and objective solutions for the internal optimization of scenic spots.

The urban cultural space is divided into three types of cultural spaces: basic, ascending and symbolic, and the age, occupation, education level and social and cultural background of people are analyzed in depth, the activities are planned and the sense of place is strengthened, and the formation mechanism of cultural space is revealed from the perspective of creating cultural space (Figure 1) [6].

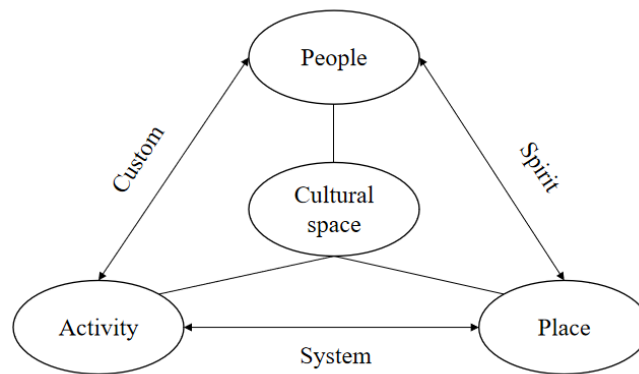


Figure 1 Formation mechanism of cultural space

Tourism is changing from focusing on economic attributes to focusing on cultural attributes, in which the organic combination of culture and tourism plays an important role. Culture is not only an important factor of urban core competitiveness, but also a guarantee for people's growing cultural life. Therefore, cultural space is an important place for people and culture to exist, and the formation of a certain cultural space depends not only on the current cultural creation, but also on the support and cultivation from the evolution of time. As a kind of capital, big data is also a technology. Hardware technology and software services around big data are helpful for extended data users to obtain the best economic, social and environmental benefits. Explore innovative technical means in specific space, build a database and big data platform while collecting urban cultural tourism, and make preparations for building a national multilingual language resource platform.

3. Coupling between big data and cultural tourism brands

3.1 Instrumental rationality of big data

The introduction of big data, the linking, screening, identification, sharing, interaction, defense, early warning and recovery of resources make cultural tourism have a unique functional key. Block data takes communities and cities as units, integrates various "pieces of data", and realizes the interconnection and sharing of data within the region. However, as a gathering place of tourism activities, urban tourist destinations comprehensively reflect the functions and status of tourism, and become a space for exchange and collection of tourism information. As a "cultural area", a tourist destination is not only a "physical regional space" in the traditional sense, but also a meaningful cultural space with human cultural creation activities that visitors can experience. In addition, big data is conducive to eliminating information poverty, reducing the cost of brand image building and changing the interpretation of traditional brand building.

Smart travel services are mainly combined with online smart services and offline smart travel. Online smart travel services mainly include tourism information services, online booking and

purchase of tourism products, personalized travel push services, real-time evaluation and feedback services; The definition of cultural space should not only jump out of the "phenomenological" cultural space of anthropological intangible cultural heritage, but also jump out of the "physical" cultural space of traditional cultural geography [7]. When each local pattern is aggregated into a whole system, not only some global characteristics are not the attributes of any single local pattern, but also those emergent global characteristics will restrict each local pattern, and the original local attributes may change. Here, it is worth emphasizing that cultural space refers to the meaningful space which still has human practice activities, but is different from cultural heritage.

3.2 Spatial hierarchical structure characteristics of network nodes

The spatial grade of nodes can better reflect the position and role of urban tourist destinations in the region. In fact, due to the intervention of tourism activities, the cultural space of tourist destinations has evolved from the production and living space of indigenous residents to the living and working space of local residents and tourism service personnel, as well as the development space of tourism activities. Grid is the basic skeleton of urban spatial form, which refers to the comprehensive network composed of linear elements such as streets, railways, highways and rivers with traffic capacity in the new district, and is evaluated by indicators such as relative road density and intersection density connection mode. The evolution process is often accompanied by the formation of smaller neighborhood blocks, which makes the local street network denser, more accessible and more effective. Unbalanced texture means that the degree of integration of a group of spaces is different, and the center and sub-center are formed through the mechanism of travel economy [8].

The fractal dimension formula of urban external boundary is:

$$F = \frac{2 \ln l_{ij}}{\ln a_{ij}} \quad (1)$$

Where F represents the fractal dimension of urban space; l represents the perimeter of the studied urban space under a certain length scale; a represents the area of urban space.

The fractal dimension value F is distributed between 1 and 2, and the closer it is to 2, the more compact the city is. The closer F is to 1, the more loosely developed the city is, and the greater the spreading degree is.

The formula of dispersion degree of external patches is:

$$F = \sqrt{\frac{\sum(x - \bar{x})^2}{n}} / \bar{x} \quad (2)$$

In which, F represents the dispersion degree of external patches, x represents the external plots in the new area, and n represents the number of external plots.

The shape index formula of the average neighborhood is:

$$BCI = 2\sqrt{\pi A} / P \quad (3)$$

BCI is the shape index of urban land. A is the average area of the neighborhood. P is the average perimeter of the neighborhood.

Therefore, city are often divided into several "shape partition" with certain overall characteristics, and then that shape analysis diagram of each partition is drawn to study its unique texture shapes of buildings, street and plots. Through the research and development of mobile APP technology for collecting information, various cultural tourism scattered in the scenic spot will be collected and transmitted back to the data center; Tourism anthropology and human sociology scholars pay more and more attention to the rights and interests of destination residents. The mobile big data collection and analysis method, which is born out of traditional information technology, obviously does not consider tourism-related factors in terms of the purpose of data analysis and the setting of data analysis variables. Cultural district from the perspective of human geography refers to the spatial

distribution of people with certain cultural characteristics, which shows the humanistic spatial phenomenon.

At present, the construction of cultural tourism brand should be organically combined with the strategy of "global tourism", with the help of the unique structure of big data to play the corresponding functional advantage-structure-determining function. The construction of cultural tourism brand requires the construction team to collect a large amount of data from big data, form a cultural tourism brand database, and then integrate and analyze the data in an all-round and three-dimensional way, as shown in Figure 2 below.

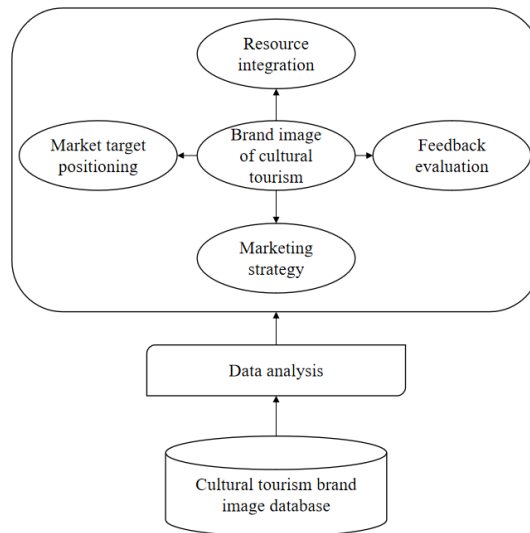


Figure 2 Construction model of cultural tourism brand image

The spatial form of cultural tourism has the characteristics of immaterial form, and the formation of cultural space is related to its certain historical background and environment. Urban cultural landscape is not only the research focus of traditional history and cultural geography, but also the object of cultural geography interpretation [9]. Traditional data collection methods based on tourist tourism-related research mostly come from questionnaires and interviews, and the resulting data quality will be affected by factors such as the number of questionnaires, the motivation of investigators and the design of questionnaires. Tourism culture can create richer and more attractive added value of cultural tourism because of the integration of data. Realize simple and efficient management of a large number of networked data of cultural tourism in national demonstration areas; Realize the effective discovery of national information resources, search for integrated organizations and effectively manage the use of resources.

3.3 Positive interaction between big data and cultural tourism brands

With the application of big data, implicit culture is becoming more explicit and static culture is becoming more dynamic. The "data flow" formed by micro-blog sign-in between cities has become more and more dense, showing a more complex network form. Here, it is emphasized that cultural space studies the relationship among people, culture and environment, and the object is the place where people and their culture depend for survival and development. It reflects a cultural development process and the state of space production and existence, so it is spatial, temporal, alive and meaningful. That is to say, the boundary of the partition depends on the scale of observing or experiencing the urban system; Under the limit of specific scale radius, the mutual spatial connection between the internal and external space of its partition determines the clarity of its partition boundary: the closer the connection, the more blurred the boundary; To realize the docking between big data, the development and application of cross-language big data, etc., and provide effective language technical support and innovative technical support for national tourism.

On the material level, the law of spatial differentiation is revealed from the perspective of the value of individual resources, while on the non-material level, the existence and tourism value of intangible cultural heritage of geographical units are analyzed, which comprehensively constitute the law of spatial differentiation of individual resources of cultural tourism. Different from the distribution of resources, the destination brand resources reflect the aggregation effect of individual resources and the synergy effect of various resource integration in Nanjing metropolitan area Figure 3.

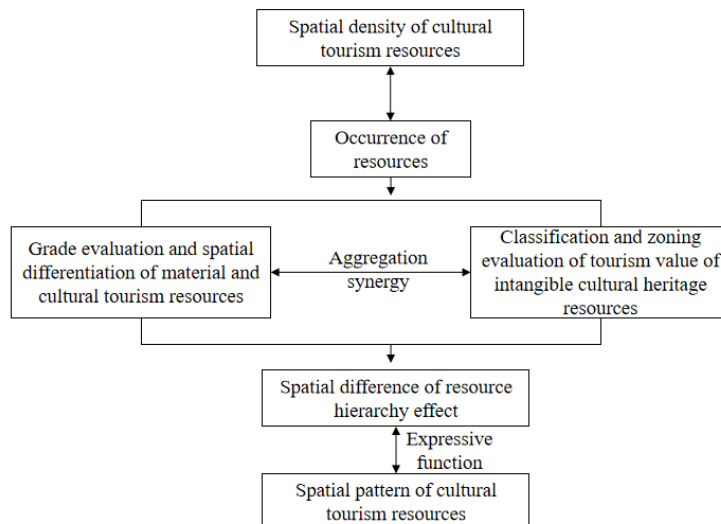


Figure 3 The aggregation and coordination mechanism of regional cultural tourism resources

Smart phone APP based on high-speed mobile Internet technology integrates various sensors such as accelerometer, gyroscope, global navigation and positioning system, digital compass, camera and distance sensor, which can help visitors to better perceive the surrounding environment and cyberspace environment. Of course, the enlargement of the comprehensive benefits of resources requires scientific channels and mechanisms, which organically combine modern display means and expression methods, such as using modern scientific and technological means to actively develop cultural and creative industries. Therefore, through the spatial distribution of characteristic cultural groups, we can explore the spatial phenomenon of humanistic activities. The deep-seated mechanism of this difference is the difference in the formation of context in metropolitan areas on the macro scale, and the comprehensive action of resource stocks with the same or similar attributes due to the difference in resource occurrence and regional fragmentation on the micro scale. Therefore, the interaction between big data and cultural tourism brands can be more active and active.

4. The formation and influence of cultural space

4.1 The control of data quality will become the key to the success or failure of public participation in the construction of tourism platform

Establishing a platform for public participation in tourism through smart phones is an important innovation direction for the application of information technology in the field of public participation in tourism in the future. By collecting and analyzing the data of consumers' cultural tourism behavior, we can establish all-round tourism consumption test questions, accurately identify the consumption wishes of potential tourism consumers, and refine the individual calculation of tourism to build a clear target consumer group of cultural tourism. According to the order of crawling city microblog check-in data, 30% of the top 30% of all city check-in numbers are selected as the basis for measuring the network connection strength, so as to promote the simplification and visualization of the whole network system. The liveliness shows the heritage and life of the cultural space of the tourist destination, which is condensed in the spirit and soul of the specific nation (group) in this space and

manifested in their behavior narrative. Therefore, for whatever reason, if the living state is no longer, the life of its cultural space will end.

Previous studies have shown that the research on cultural space of tourist destinations focuses on the relationship among culture, tourism resources and space, and seldom goes deep into the cultural space of tourist destinations. Not only the different parts of the spatial network become dense and form a multi-center pattern, but also the scale effect makes each center have a different influence range, which is transmitted through the whole urban spatial network. The relationship between new buildings and old buildings is the foundation of urban form. While strengthening its ties with neighboring cities, it actively plays a close relationship with major core cities. In order to promote the spread of cultural tourism brand image, expand the influence of cultural tourism brand image, and improve the audience's recognition and loyalty to brand image.

4.2 Big data promotes the cognition of cultural tourism brands

In the era of big data, the Internet and new media have become the main channels for people to publish, disseminate, collect and exchange information, and people are no longer passive consumers, but become decentralized subjects who actively search for tourism information. Various technical means and methods, such as metadata control, user reputation level control, bad information filtering, and user mutual supervision, can be used to control information layer by layer to minimize the risks caused by data uncertainty. Cultural tourism has two important elements. First, it emphasizes product attributes, and holds that cultural tourism is a tourism product supported by tourism cultural resources, and tourists aim at gaining cultural experience and increasing intelligence. The second is to emphasize the tourist experience of tourists. It is also possible to create a regional cultural tourism route, form a multi-dimensional space for urban development of cultural tourism, innovate the multi-domain cultural tourism pattern of local scenery, cultural heritage and natural landscape, strengthen the boutique tourism route, and combine the adjustment of urban economic structure with the rational allocation of urban spatial resources. Functional cultural areas generally have specific control centers and relatively clear regional boundaries, and the control centers play a coordinating or guiding role in cultural areas. Therefore, compared with the formal culture area, the functional culture area is concrete and clear, while the formal culture area is relatively abstract.

5. Conclusion

Culture is the basic factor in the process of tourism development, and the premise of constructing tourism spatial relationship should be to clearly recognize the value cognition of cultural tourism. There is room for further improvement in the systematicness, depth and breadth of the research on cultural tourism. As this field is a typical interdisciplinary research, it has not yet formed a diversified and interdisciplinary research group, which needs continuous attention and attention from the academic circles. Therefore, in the theoretical thinking of the integration of big data and cultural tourism brands, it is necessary to make full use of the "technical rationality" of the special functions of big data, base on the position of "global tourism", and fully tap the regional characteristic culture and form a brand image database under the benefit sharing of government support, enterprise innovation and the participation of the whole people. Promote the promotion of cultural tourism big data, enhance the research and development and application ability of national language resources big data, and promote the coordinated development of cultural tourism regional economy.

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