Empirical Suggestions on Constructing Smart Tourism City Based on City Tourism Image - Taking Shenzhen as an Example

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Abstract: Smart tourism city is the combination and application of the concepts of "smart tourism" and "smart city" in the tourism industry and tourist activities, and is the upgrading of tourism information under the wave of new technology. With the advent of the era of big data, collecting online travel notes to build a text database can obtain the comprehensive perception of tourism destination image. Urban tourism image perception records the tourism resources and impressions of Shenzhen, reflects the concerns and demands of tourists on tourism, and provides necessary information basis and decision-making reference for the construction of a smart tourism city based on tourism behavior. This paper takes tourist travel notes collected by Ctrip and Mafengwo as research samples, the text analysis method is used to extract the high-frequency characteristic words of Shenzhen's image perception, and obtains the main tourism resources and tourist behavior characteristics of Shenzhen .The research results show that we should start from the construction of smart scenic spots, smart tourism facilities, smart platform, smart city group linkage and other measures, so as to successfully develop smart tourism in Shenzhen and achieve the goal of building Shenzhen as a smart city.

Keywords: Smart tourism; Text analysis; Image perception

1. Introduction

At present, the rapid development of science and technology has penetrated into all aspects of tourism. Like changes in other industries, the era of smart tourism has arrived. In the era of big data, we have a clearer data source for tourists' travel behavior and perception of tourists, and it has become the hotspot and focus of current tourism development research, and these focuses are just indispensable in the construction of the smart tourism department. The construction of smart tourism should be carried out according to the actual situation of the city's tourism image, which is inseparable from the comprehensive analysis of the city's tourism image[1]. Tourists' attention to tourism and multi-level needs are the important contents of the analysis of tourism economic behavior. In the context of the era of big data, it is not uncommon to collect tourism data through text mining. The research of domestic scholars focuses on the extraction and promotion of tourism destination images, tourism image analysis, and tourism image evaluation[2], tourism image promotion strategy, tourism perception image construction and other fields. In the field of smart tourism city construction, the current systematic research in my country is still focused on in-depth research from the initial development stage. In-depth research mainly uses quantitative methods to focus on innovative smart tourism city application software research. It is not difficult to find that the empirical research on the construction of a specific regional smart tourism system from the perspective of tourism image is still blank. This paper believes that the scenic spots of different cities have a certain corresponding relationship with the positioning, functions and planning of the city. The construction of smart tourism must be focused, hierarchical and targeted, and must combine the actual perception of tourists and the actual tourism resources of the city. Therefore, this paper attempts to construct the tourism image of Shenzhen, find out the attention of tourists and the problems encountered in Shenzhen tourism, and strive to provide an important information basis and useful decision-making reference for the construction of the public service system of Shenzhen smart tourism.

2. Data sources and preprocessing

In the current era of big data, content analysis with network text and coordinate information as the research objects has become a hot spot in the study of tourist destination image perception. Selecting the Ctrip.com strategy channel and the Mafengwo strategy channel to collect relevant travel text data to

establish a basic information database. Searching for "Shenzhen" related strategy texts and comments on Ctrip and Qunar.com, 346 travel texts about Shenzhen were collected. In order to ensure the quality of travel notes, we chose to delete travel notes unrelated to the research content and travel notes with a low number of likes and replies. In the end, a total of 200 valid travel notes were obtained. Due to differences in tourists' cultural cognition and expression, the aggregated travel notes will be biased and redundant. In order to extract and refine the text to the greatest extent, the sample data is pre-segmented according to the principle of retaining the original evaluation of tourists as much as possible: first integrate the crawled content, remove blank lines and delete expressions, etc.; Supplement the vocabulary, for many Words such as "Happy Valley", "Eastern Overseas Chinese Town", "Happy Coast", "Tanglang Mountain", "Creative Industry Park", "Science and Technology New City" and other tourist attractions, folk activities, characteristic cultural products, etc. that cannot be correctly identified, are defined in the word segmentation. After the table is supplemented, the word segmentation is carried out, similar items are merged, the names or words of similar attractions in 336 travel notes are integrated and replaced, and these words with similar meanings are merged and replaced in the text; finally, Load the preprocessed online travel text into the ROSTCM6 software to run the word segmentation and word frequency analysis functions, supplemented by further manual processing and screening, to eliminate words that are irrelevant to this article, and finally obtain a high-frequency feature word list for follow-up research.

3. Image perception of Shenzhen tourist destination

The higher the word frequency, the higher the tourists' awareness and attention to the image elements. Through the classification and analysis of high-frequency words, it can be seen that tourist attractions such as parks, squares, buildings, and OCT East are ranked higher, indicating that tourists pay more attention to the above-mentioned attractions. The above-mentioned scenic spots receive a large number of tourists each year, which fully reflects the image positioning of Shenzhen as a cultural park tourist city. At the same time, in terms of tourism experience, the frequency of positive adjectives such as beauty, convenience, cheapness, and cleanliness is very high, and there are no derogatory adjectives in high-frequency vocabulary, indicating that tourists are relatively satisfied with Shenzhen's tourism evaluation and have a good tourism impression; vacation, openness. The appearance of high-frequency words such as shopping and shopping malls reflects Shenzhen's leisure, creative and fashionable tourism slogen; reforms, new districts, and characteristics reflect Shenzhen's own history and culture. In terms of travel modes of tourism, words such as transportation, subway, bus, airport, etc., show the characteristics of Shenzhen's customer source distribution and tourists' travel preferences. Tourists' image of Shenzhen is getting closer and closer to the super-first-tier city characteristics of high-rise buildings and new technology cities.

Table 1: High-frequency vocabulary of Shenzhen's tourism image

Category	Feature words (frequency)
Tourist attraction	Park (452) Center (332) Project (331) Building (307) Square (298) OCT East (261) Flowers (259) OCT Bay (236) Culture (224) Shenzhen Bay Park (204) Window of the World (194) Splendid China (185) Dapeng Ancient City (168) Nan'ao (151) Chaxi Valley (140) Dongmen Pedestrian Street (128) Lotus Hill (125) Beach (125) Hakka Town (120) Performance (120) Diwang Mansion (117) Dutch Flower Town (116) Art Museum (114) Seaside (110) Museum (110) Intragan (107) OCT Loft (101) Sunset (96) Happy Harbor (94) Dameisha Beach (92) Art Museum (90) Avenue (90) Zhongying Street (89) Civic Center (87) Sea World (83) OCT (74) Grand Canyon (74) Shenzhen University (72) He Xiangning Art Museum (72) Litchi Park (71) Futian (69) Nantou Ancient City (68) Exhibition (67) Beach (66) Guan Lan Printmaking Village (65) Plants (65) Waterfall (65) Animals (62) Nanshan (61) Nature (60) Sea (57) Jingji (57) Convention and Exhibition Center (56) Shennan Blvd (53) Lighting (52) Performance (48) Zhongshan Park (43) Ferris Wheel (42) Coffee house (42) Observatory (41) Black Forest (39) Hot spring (37) Beach (36) Port (35) Financial Center (33) Mixc (32) Garden (30) Yangmei Pit (29) Bright Farm (27) Xiaomeisha (26) Coastline (24) Cruise Ship (23) Folk Culture Village (23) Wetland (23) Huaqiang North (20) Garden (20) Mangrove (20) Shenzhen Book City (18) Seascape (15) Theatre (13) Coconut Grove (6)
Tourist traffic	Time (272) Traffic (221) Subway (209) Parking (167) Drive (151) Bus (143) Walk (121) Navigation (108) Distance (98) Train (86) Airport (81) near (75) Mileage (72) Walk (64) Dock (36) Route (34) Bus station (29) Plane (26)
Tourist accommodation	Hotel (458)
Tourism environment	Facilities (403) Environment (269) Price (244) Scenery (231) Charge (176) Ticket Price (95)
Tourism services	Tickets (590) Queue (446) Reservation (350) Service (335) Map (226) Platform (201) Online (107)
City impression	Vacation (204) Open (191) Shopping (175) Shopping Malls (137) Convenience (132) Modernization (114) Leisure (107) Young (97) Design (83) Business (82) Reform (76) New District (76) Features (70) Tall Building (65) Civilization (55) The South (43) Summer (42) Sunshine (36) Special District (33) Romance (25) Planning (20) Times (18) Literature and Arts (15) Urban Area (13) Air (13) Office Building (13) Large (11)
Related sites	Hong Kong (267) China (248) Guangzhou (241) Guangdong (99) Foshan (81) Shantou (78) Macau (23) Zhuhai (14)
Emotional tendency	Beautiful (358) History (261) Free (248) Like (247) convenient (235) good (205) Delicious (143) enjoy (137) suitable (134) Worthy (133) exciting (131) Enjoy (128) comfortable (125) Beautiful (123) Famous (122) Beautiful (121) Famous (119) Brilliant (114) Fresh (113) Perfect (113) Beautiful (111) Beautiful (111) Clean (108) Delicious (79) Luxurious (78) Fresh (57) Dreamy (47) Stylish (44) Lovely (44) Cozy (23) Fun (23) spectacular (10)
Recommendation intention	Recommend (505) Suggest (319) Next time (177) Come again (102)

Table 2: High-frequency vocabulary of Shenzhen's tourism resource

Ordinal	word	frequency	Ordinal	word	frequency
1	Park	452	21	Diwang Mansion	117
2	Center	332	22	Dutch Flower Town	116
3	Project	331	23	Art Museum	114
4	Building	307	24	Seaside	110
5	Square	298	25	Museum	110
6	OCT East	261	26	He Xiangning Art Museum	72
7	Flowers	259	27	Litchi Park	71
8	OCT Bay	236	28	Futian	69
9	Culture	224	29	Nantou Ancient City	68
10	Shenzhen Bay Park	204	30	Exhibition	67
11	Window of the World	194	31	Beach	66
12	Splendid China	185	32	Guan Lan Printmaking Village	65
13	Dapeng Ancient City	18	33	Plants	65
14	Nan'ao	151	34	Waterfall	65
15	Chaxi Valley	140	35	Animals	62
16	Dongmen Pedestrian Street	128	36	Nanshan	61
17	Lotus Hill	125	37	Nature	60
18	Beach	125	38	Sea	57
19	Hakka Town	120	39	Jingji	57
20	Performance	120	40	Convention and Exhibition Center	56

3.1. Analysis

3.1.1. Tourism resources

According to the frequency analysis of tourist attraction words, Shenzhen's tourism resources are mainly artificial resources, Window of the World, Happy Valley, and Splendid China fully reflect the artificial tourism landscape of Shenzhen. At the same time, buildings are mentioned many times in the high-frequency vocabulary related to tourist attractions (spots), which shows that the theme park image of Shenzhen's humanistic architecture is deeply rooted in the hearts of the people, but the artificial landscape is not unique and imitativel. A large number of tourism activities take place in the city's business circles, so building a modern and comprehensive business community is also an important measure to enhance the perceived image of Shenzhen's tourism resources.

3.1.2. Tourism facilities and services

The infrastructure and supporting services of scenic spots are the general term for various material facilities constructed and configured to meet the needs of tourists for "food, accommodation, travel, shopping and entertainment" in travel activities. From the analysis results, it can be seen that tourists are mainly concerned about service facilities and accommodation facilities, followed by transportation facilities. "Hotel" and "restaurant" are the most frequently mentioned in the supporting services, with a frequency of 458 and 347 times. Comfortable accommodation can provide tourists with high-quality leisure services, and also affect the overall evaluation of tourists on the tourist destination. From the content analysis, it can be seen that tourists have more positive perceptions of hotels in Shenzhen, indicating that the hotel industry in Shenzhen is developed, and there are many characteristic themed hotels and star-rated hotels in Shenzhen to meet the travel needs of people at different levels.

3.1.3. Perception of tourism environment

The image perception of Shenzhen's tourism environment mainly focuses on three aspects: humanities, location environment and natural environment. Due to Shenzhen's developed economy, mature tourism development and stable tourist market, tourists pay more attention to the cultural environment; secondly, because Shenzhen is located in a subtropical area, most of the time is summer, so the tourist landscape in different seasons is different.

3.1.4. City Impression Perception

In the analysis of Shenzhen's overall impression, it mainly focuses on Shenzhen's reform and opening up and the special political environment of the special economic zone. The keywords of holiday destination and shopping paradise indicate that Shenzhen's urban life is rich and colorful. At present, most tourists' impression of Shenzhen is based on the image of a super first-tier city, that is, the image of a prosperous economy and a prosperous business. The special words of youth, innovation and openness distinguish Shenzhen from some other tourist cities, and fully reflect the development vitality and innovative planning of Shenzhen. Generally speaking, Shenzhen is a modern international metropolis.

3.1.5. Location Environment Awareness

The main reason is that the tourist source market of Shenzhen is mainly in southern and southern China, and the distance between the tourist source and the tourist destination is relatively low. It also indicates that the tourist resources of Shenzhen and its surrounding areas have a tendency of aggregation. Tourists prefer to take Guangdong as a tourist route, that is, the tourist route of Guangdong -- Foshan -- Shenzhen -- Shantou. Moreover, with the implementation of the Greater Bay Area planning, Shenzhen, as a key construction city of the Guangdong-Hong Kong-Macao Greater Bay Area, enjoys unique advantages for tourists to visit Hong Kong and Macao. Therefore, it is urgent to build the integrated tourism construction of Guangdong and the Guangdong-Hong Kong-Macao Greater Bay Area.

4. Measures

As a new form of tourism in China's tourism industry, smart tourism is a multi-level and multi-angle improvement of traditional tourism. Smart tourism APP is not only a manifestation of smart tourism, but also an important way to obtain information about urban tourism[3]. The text of travel notes has a strong tendency, and its analysis results have certain universality and credibility. Shenzhen is currently at the forefront of the national smart tourism construction, but according to the perception of the city's tourism image, a large number of human landscape smart tourism facilities in Shenzhen are still incomplete. The overall competitiveness of Shenzhen's tourism is weak, but it has strong development momentum. Therefore, it is necessary to carry forward the advantages of Shenzhen's capital and technology location to make up for the lack of tourism resources. According to the results of the empirical research combined with the construction of Shenzhen's smart tourism, suggestions are put forward to promote the construction of Shenzhen's smart tourism city as follows. Build a government information platform; Construction of Smart Scenic Spots; Smart Infrastructure; Technology Construction of Smart City; Urban agglomeration construction

5. Conclusion

In this paper, we uses text analysis and semantic network to discuss tourists' perception of Shenzhen's tourism destination image from three aspects: cognitive image, emotional image and overall image, and analyzes how Shenzhen integrates its own development according to the impression of Shenzhen and popular tourism resources. Create a unique and innovative smart tourism city. As an open economic zone for reform and opening up, Shenzhen's technological innovation is at the forefront of the country and even the world. Shenzhen has advanced technology and experience for building a smart tourism city. Shenzhen not only needs to build, but also to innovate and lead the construction of a smart tourism city. This is an opportunity and a challenge for Shenzhen. The construction of smart tourism city plays a vital role in the upgrading of Shenzhen's tourism industry, the technological innovation of the city, and the development of regional economy. Shenzhen should adhere to the principles of government leadership, participation of the whole industry, and joint construction of the whole people, adhere to regional principles, systematic principles, and typical principles in the construction of smart tourism, vigorously promote the work of smart tourism, and achieve the goal of building a smart tourism city.

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