Analysis of Tourism City Image Based on Big Data of Network Text——Take Guangzhou as an Example

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Abstract. Based on 16979 tourist reviews of six scenic spots in Guangzhou by ctrip.com, using the triple process of open coding, spindle coding and selective coding based on grounded theory, it is found that the tourist image of Guangzhou is mainly composed of cognitive image, emotional image and conative image; the tourists are satisfied with a high degree of willingness to revisit and recommend to their relatives and friends; the tourists are emotional towards Guangzhou tourism High evaluation and strong willingness of tourists to travel.

1. Introduction
In recent years, with the rise and popularization of mass tourism, the tourist demand is more and more personalized and diversified, and the competition among tourist destinations is more and more fierce. Destinations with distinctive destination characteristics and typical images are more attractive to tourists and are favored by more tourists. It is found that a good image of a tourist destination can attract tourists and affect their willingness to revisit[1-2]. The traditional tourism image is perceived by the public through TV, advertising and other media. Now with the arrival of the era of big data, the network has become the backbone of tourism destination image communication, an important medium for tourists to obtain tourism information, as well as an important channel for tourists to share their tourism experience and express their emotions. Because of the experience of tourists, online reviews are believed and recognized by more tourists, and can also affect more tourists' travel decisions.

At present, there are many scholars who use Internet text to analyze the image of tourism destination, but most of them use the Internet travel notes of tourism websites to explore the image of tourism destination, few of them use Internet comments to study the image of tourism destination. This paper attempts to analyze the tourist image of Guangzhou perceived by tourists by mining 16977 comments from six of the most popular scenic spots in Guangzhou in the past two years.

2. Literature review
Tourism destination image research began in the 1970s. After Dr. Hunt of the United States discussed the tourism destination image in 1971, the tourism destination image has become a hot spot of tourism research[3]. Domestic research on tourism destination image started late. In 1998, Li Lei published a paper on urban tourism image[4], and in 1999, Li Lei published the first monograph on tourism destination image planning: Theory and practice[5], and then domestic scholars began to enter this research field.
At present, the research on tourism destination image mainly focuses on the definition, composition, promotion, function and formation mechanism of tourism destination image. There is not a universally accepted definition of tourism destination topography. Crompton believes that tourism destination image is the overall perception of tourism destination formed by tourists and potential tourists through processing information from various channels, and a series of impressions, views and emotional expressions of tourism destination[6]. Tourism destination image is the sum of tourists' beliefs, views and impressions of tourism destination[7]. Xu Cuiping defines the destination image from the perspective of supply and demand: from the perspective of supply, the destination image is the impression that tourists hope to perceive and form through publicity; from the perspective of demand, the destination image is the specific internal psychological cognition that tourists form through various information sources and personal experience to the tourist destination[8]. Most studies believe that the destination image is a three-dimensional structure. Gunn divides the formation process of the target terrain image into the organic image and the induced image. The organic image refers to the image formed through newspapers, magazines, relatives and friends and other information sources, while the induced image refers to the image formed through commercial information sources such as advertisements and promotions[9]. Fakeye and Crompton expand Gunn's theory, and divide the target terrain image into organic image, induced image and complex image. The complex image refers to the image formed by tourists visiting the destination through personal experience[10]. Gartner's research optimizes the theoretical basis of destination image structure, and puts forward the "three-dimensional structure" of destination image: cognitive image, emotional image and conative image[11]. Baloglu and McCleary proposed a "new three-dimensional structure" of destination image: cognitive image, emotional image and overall image[12]. Now, the "new three-dimensional structure" model of the destination image has been basically recognized by scholars, and has carried out more in-depth and extensive research. The research of Liu Li[7], Zhang Hongmei et al.[13] also confirmed the three-component structure of the destination image and its applicability in the context of Chinese culture.

The existing research shows that the tourism destination terrain image affects the decision-making and behavior tendency of tourists[14-15], has important value and significance for the satisfaction and loyalty of tourists[16-17], and becomes an important way of tourism destination marketing and promotion[18]. Zhang Hongmei et al.[13] took Chinese potential consumers as samples and Bai Kai et al.[19] took South Korean potential tourists as samples, which also confirmed the positive correlation between the perception of destination terrain image and tourism intention. Liu Li found that the cognitive dimension of destination image significantly affects the emotional dimension, which together determine the overall image of the destination, and the overall image perception of potential tourists' destination significantly affects their tourism intention[7]. Secondly, the destination image will affect the tourists' tourism experience and experience, and the tourists' evaluation of their own tourism experience will affect the behavior after tourism, such as revisiting intention, recommendation intention and positive word-of-mouth[20-21].

A large number of studies in the field of consumer behavior and tourism show that word-of-mouth communication is a far more reliable information source than corporate advertising, which has a significant impact on tourists' purchase decision-making and destination selection[22-23]. Wang Jinsong thinks that the network is one of the important modes of tourism destination image communication, and discusses the network communication mode[24]. Wu Xuefei proposed the influence of online word-of-mouth marketing and customer loyalty on the promotion of tourism destination image[25]. Ruzzier discusses the construction of tourism destination image, and proposes that the survey and evaluation of tourism destination image from the perspective of tourists should be applied to tourism brand building[26]. Lee develops and shapes the marketing strategy of shopping tourism image based on the perspective of tourist attraction, which is a new way of tourism destination image publicity[27].

Tourism city image is one of the most important categories of tourism destination image, but there is a lack of research on tourism city image at present, which is mostly extended from tourism destination image to tourism city image.
3. Research design

3.1. Case selection

As the capital of Guangdong Province, Guangzhou is one of the first tier cities in China and one of the important cities in Guangdong Hong Kong Macao Bay area. It is not only the transfer station of Guangdong tourism, but also the important distribution center of international tourism. Its tourism destination development level can directly affect the impression of International tourists on China. Based on the ranking of online tourism operator Ctrip on Guangzhou scenic spots, the top 6 scenic spots are selected, which are Guangzhou tower, Chimelong wildlife world, Shamian, Chimelong happy world, Chenjiaci and Baiyunshan. All of the six scenic spots scored above 4.5 points (full score 5 points), and were able to accommodate 60% of tourists to Guangzhou.

3.2. Data acquisition and analysis tools

In this study, we use the crawler software octopus to capture the tourist comments of six scenic spots on ctrip.com from December 1, 2017 to November 30, 2019. There are 16979 tourist comments, including 2985 from Guangzhou tower, 2960 from Changlong wildlife world, 3001 from Shamian, 2941 from Changlong happy world, 2100 from Chenjiaci and 2992 from Baiyun Mountain. In this study, the text analysis software RST CM6 and NVivo11.0 are used to assist the analysis, and the grounded theory and content analysis method are used.

3.3. Construction of tourism city image

Open coding is a process of classifying and summarizing the acquired preliminary data to form a conceptualized category, from being simple and disorderly to being conceptualized and categorized. After sorting out and coding 16979 comments of tourists, refining the spoken words of tourists, and refining and summarizing for many times, more than 1000 original sentences and corresponding initial codes are finally extracted. Because the number of initial codes is large and there is a certain cross, the repeated initial codes are eliminated and refined again. At last, more than 1000 initial codes eventually form 30 initial categories, which are festivals, sightseeing, pension, sports, shopping, natural attractions, human culture primers, public leisure places, public services and ancillary facilities, guide services, price level, popularity, external transportation, internal transportation, catering, accommodation, tourism information consulting service, safety, social customs, residents’ attitude, landscape style, climate, urbanization level, biology, folk culture, education, entertainment, tourist behavior, staff quality and creative goods. See Table 1 for specific process examples.
Table 1. The example of open coding.

| Some Original Data                                                                 | Code                          | Initial Categories         |
|----------------------------------------------------------------------------------|-------------------------------|----------------------------|
| The overall environment of Shamian is very good; the main street is relatively   | Environment, greening, quiet  | Natural attraction         |
| broad, which is a garden style pedestrian street with good greening; it is quiet | and leisure                   |                            |
| and leisurely.                                                                   | Rainy, cold                   | Climate                    |
| In the rainy days of Guangzhou, the northerners are very cold; it's really        | Morning tea                   | Catering                   |
| worth tasting the morning tea in the White Swan Hotel.                            | Admissions ticket             | Price level                |
| Baiyun Mountain tickets 5 yuan, half price for students, tickets are very       | Cableway                      | Internal traffic           |
| cheap! Like to climb the mountain can climb to the main peak of Moxing ridge,    | Inscriptions, culture         |                            |
| do not want to climb can take cableway!                                         | Night scene                   | Urbanization level         |
| Indoor steles, outdoor steles, cliff inscriptions and other forms are           | Photograph                    | Entertainment              |
| integrated into the garden and natural scenery, showing the splendid culture of  | Popular Science               |                            |
| the Chinese nation.                                                             | Interpreter                   | Tour Guide Service         |
| Guangzhou tower Ferris wheel 460 meters high experience, the night scene is    | Employee dedication           | Staff quality              |
| particularly beautiful.                                                        | Mosquito                      | Security                   |
| If you find the right angle to take photos, you can take photos with            |                              |                            |
| Xiaomanyao to create countless interesting shapes.                               |                              |                            |
| All kinds of animal performances, animal science popularization, catering,     |                              |                            |
| toilet, baby cart rental, luggage storage are all done very well.                |                              |                            |
| Need to explain, but the service desk didn't have an interpreter, just met     |                              |                            |
| another 6 people, so we rented an interpreter together, about an hour's        |                              |                            |
| explanation, it felt very good.                                                 |                              |                            |
| The stunt theater is worth watching. Although it's hot, the staff are            |                              |                            |
| dedicated.                                                                      |                              |                            |
| I hope it can be improved very well. I can't buy any anti mosquito or           |                              |                            |
| medicine. It's a bit troublesome.                                               |                              |                            |

Spindle coding is to cluster the initial categories extracted from open coding and merge the interrelated initial categories. Through refining and clustering 30 initial categories, five main categories are obtained, namely, urban soft environment, tourism services, public places and services, tourism attractions and tourism activities. See Table 2 for details.
Table 2: Formatting sections, subsections and subsubsections.

| Open categories                                                                 | Axial categories                              | Selective categories                        |
|---------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------|
| Security, Social customs, Resident attitude, Price level, Urbanization level     | Urban soft environment                         | Cognitive image, Emotional image            |
| Tourist behaviour, Staff quality, External traffic, Internal traffic, Catering, | Tourism service                                | Conative image                              |
| Accommodation, Tour Guide, Service, Tourism information consulting service Public| Public places and services                     |                                             |
| leisure places, Public services and ancillary facilities                         |                                              |                                             |
| Natural attraction, Human attraction, Landscape style and features, Biology,     |                                              |                                             |
| Climate, Folk culture, Popularity, Tourist attractions, Creative Goods           |                                              |                                             |
| Festival, Sightseeing, Pension, Sports, Shopping, Entertainment, Education        | Tourism activities                             |                                             |

Selective coding is the process of selecting a core category and systematically connecting it with other categories after systematic analysis of all discovered categories. Through the systematic and comprehensive analysis of the five main categories, we can get three choice categories, including cognitive image, emotional image and emotional image. See Table 2 for details.

3.4. Emotional analysis of tourist destination

The six scenic spots in this study can be divided into three categories according to natural landscape, historical sites and man-made landscape, among which Baiyun Mountain and Changlong wildlife world belong to natural landscape, Chenjiaci and Shamian belong to historical sites, Guangzhou tower and Changlong happy world belong to man-made landscape. The three types of scenic spot visitors' comments were analyzed with the rose CM6, and the analysis results are shown in Table 3.

Table 3: An analysis of tourists' feelings towards the scenic spot.

| Scenic type             | Positive emotion (%) | Neutral emotion (%) | Negative emotion (%) |
|-------------------------|----------------------|---------------------|----------------------|
| Natural landscape       | 66.42                | 24.13               | 9.45                 |
| Historical site         | 73.28                | 19.14               | 7.58                 |
| Man-made Tourist Site   | 62.32                | 26.44               | 11.24                |
| Whole                   | 67.34                | 23.24               | 9.42                 |

4. Research conclusion and Prospect

4.1. Research conclusion

First, this study concludes that the tourism image of Guangzhou is mainly composed of cognitive image, emotional image and emotional image. Among them, tourists have the strongest perception of the cognitive image. Tourists are mainly interested in Guangzhou tourist attractions, catering, accommodation, Lingnan architecture and unique street landscape, especially the image of "eating in Guangzhou" is deeply rooted in the hearts of the people. Tourists' voluntary image is the actual tourism activities that make tourists make decisions on tourism behavior, which is the most important for tourists, and tourists can make decisions on the purpose What kind of tourism activities does the city carry out. Secondly, most of the tourists are satisfied with the trip and express their willingness to revisit and recommend to their relatives and friends. A few tourists are not satisfied with the long queue time, insufficient parking space and high price of some tourist commodities. Third, the six scenic spots are divided into three categories. Through the emotional analysis of the tourists'
comments, it is found that the positive emotions of the tourists in the three categories are all greater than 62%, and the positive emotions and neutral emotions are all more than 88%, which indicates that the overall tourism image given to tourists by Guangzhou is relatively good. The tourists’ attitude towards the destination directly affects the tourists’ willingness to travel, and the tourists’ willingness to travel is also correspondingly high Enhance.

4.2. Research limitations and Prospects
First, this study only grabs the tourist comments of one website, and the data source is monotonous. In the later stage, we can try to grab the research data from more tourism related websites, even the comments and travel notes of foreign tourism websites about Guangzhou. Second, this study only analyzes the tourists’ comments, not the data of travel notes, photos and videos. In the future, it can analyze the pictures and videos taken by tourists, so as to obtain the most accurate image of the tourist city perceived by tourists. Third, the young and middle-aged tourists are the majority who comment and publish the travel notes on the Internet. The perception of the young children and the elderly tourists to the destination image is not analyzed. In the future, we can interview or questionnaire the two groups to obtain more accurate tourism city image.

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