

Research on the Urban Image Construction of Zhuhai Driven by Big Data

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Abstract—As the only city in China listed in the "top 40 national tourist resorts" with the overall urban landscape, Zhuhai possesses the best ecological environment in the pearl river delta economic circle and the most advantages in developing the leisure tourism industry. Therefore, tourism has become one of the pillar industries for Zhuhai. In the era, against the background of a variety of technical methods, combining big data with the Internet, the Internet of things, cloud computing, artificial intelligence, intelligent technology like virtual reality, this paper researches cases of smart tourism at home and abroad to enhance Zhuhai tourism city image as a starting point, analyzes the current situation of Zhuhai city image and some existing problems, and puts forward some suggestions on future construction of Zhuhai.

Keywords—Zhuhai image; Smart tourism; The tourism industry

I. ANALYSIS OF ZHUHAI CITY IMAGE STATUS

Located in the southwest of the pearl river estuary in Guangdong province, near Macao and Hong Kong, Zhuhai is an important city at the southern of the pearl river delta. In 1980, Zhuhai became a special economic zone, and also become one of the first four special economic zones in China to implement the opening-up policy. By observing and studying the development situation of Zhuhai in the past, we can find that the development of Zhuhai in the past ten years is different from that of Shenzhen, which was also established as a special economic zone. Since the reform and opening up, Zhuhai has always adhered to the environment-friendly development path, and set the development goal of "modern garden-like coastal city" in the early stage of the establishment of the special zone. Therefore, talking about the place "Zhuhai", its image in people's mind are the following key words: "romantic city", "livable city", "tourist city" and so on.

Zhuhai is the largest city in the pearl river delta with the largest ocean area, the largest number of islands and the longest coastline, it is known as the "city of numerous islands". Therefore, the city is suitable for the development of island tourism, beach tourism and rock tourism. The ten scenic spots of The New Yuan Ming Palace (圆明新园), Dong'ao island (东澳岛), Tang Jiakong paradise(唐家共乐园), Zhuhai female fish(珠海渔女), Mexi Memorial Archways(梅溪牌坊), Agricultural Science Center(农科中心), Fei shatan(飞沙滩),

Zhuhai Martyrs Cemetery(珠海烈士陵园), Huangyang mountain(黄杨山) and Qi'ao island (淇澳岛) are called "the ten scenes of Zhuhai". Apart from these well-known tourist attractions, tourists can also choose the less popular scenic spots, and have an in-depth cultural tour of Zhuhai, such as the Jintai temple(金台寺) (which contains buddhist culture), Luyi hall (慕猗堂)(the representative architecture of Zhao culture), Dou men Ancient Street (斗门古街)(traditional ancient architecture), and the Tomb of Zhang Shijie (张世杰墓)(a famous famer).

The concept of greater bay area has great significance for the development of Zhuhai's GDP. With the opening of the Hong Kong-Zhuhai-Macao bridge, the influence of Hong Kong international financial center, especially in terms of services and talents, will have a more direct and profound impact on the development of Zhuhai. The Hong Kong-Zhuhai-Macao bridge is for both passenger and cargo transportation. Hong Kong and Zhuhai can be directly transported through the Hong Kong-Zhuhai-Macao bridge, instead of the transit station in other cities in the future. The opening of the Hong Kong-Zhuhai-Macao bridge also gives tourists who come from Hong Kong and Macao a more convenient way to visit Zhuhai. So far, the public transport options available to people traveling within Zhuhai include taxis, buses (regular buses and Zhuhai BRT) and Guangzhou-Zhuhai intercity rail transit. Once upon a time, the local residents all hoped that Zhuhai could have a subway to solve the travel inconvenience. According to the 13th five-year plan for the development of Guangdong's comprehensive transport system jointly released by the Guangdong provincial development and reform commission and the Guangdong provincial department of transport, Zhuhai is already a qualified city and can develop an urban rail transit system in an orderly way. It is mentioned in "the layout planning of Zhuhai comprehensive transportation hub and detailed planning of key transportation hub" that seven urban rail lines (subways) will be built in Zhuhai. Zhuhai metro is in the preliminary planning stage, and it is expected to start construction of line 1 and line 2 (including branch lines) in 2020, and complete and open to traffic in 2024. It is learned that the underground of the traffic center of the Zhuhai port of the Hong Kong-Zhuhai-Macao bridge also has a reserved area for the subway, which has reserved space for the extension of the branch line of Zhuhai metro line 2 in the future. The

construction of the subway will provide great convenience to the people and passengers in Zhuhai.

II. DEVELOPMENT OF ZHUHAI AND SMART TOURISM

Since 2008, international business machines corporation (IBM) has proposed the concept of a "smart earth". Subsequently, the term "smart city" is also highly concerned by countries. Nowadays, in such an environment, Zhuhai, as a Chinese city, is keeping pace with The Times. The smart city action plan of Zhuhai (2016-2020) released in 2017 puts forward that Zhuhai should strive to achieve "real-time visibility of urban operation, data support of government governance, accessibility of information for the convenience of the people and local guidance of information economy" by 2020. It is reported that the construction of smart city has been integrated into the daily life of Zhuhai citizens in recent years, and smart bus, smart medical treatment, smart community platform and other aspects have provided considerable convenience to the citizens and won their praise. In September of 2017, China's reform and development of cities and small towns center first published "Evaluation report on the wisdom level of urban governance in China", to evaluate the intelligence development of 293 prefecture-level listed companies, Zhuhai ranked sixth," wisdom city has been transformed from a kind of abstract words to a life perception that people can perceive and even touch.

The image of a city is the public perception of a city, but also a city of intangible wealth. It plays a significant role in the development of the city[1]. Smart city is also the main target of Zhuhai's future development and one of the city images of Zhuhai. Speaking of "Zhuhai", the public cannot leave its image without "tourism", which has always been one of the pillar industries of Zhuhai. With the improvement of people's living standard, tourism has become an indispensable part of people's life.

According to the China Internet network information center (CNNIC) statistics, as of December 2017, a total of 772 million Internet users in China, which have an airline tickets, hotel reservation, ticket or online travel size of Internet users reached 376 million, up to 48.7% utilization. This also shows that under the current Chinese environment, people have developed the habit of using the consumption Internet for tourism activities. So the wisdom of tourism development is promising. With the booming development of tourism and the increasingly fierce competition among cities, Zhuhai should focus on developing smart tourism with its own advantages, so as to improve the image of Zhuhai.

To sum up, it is found that Zhuhai has comfortable natural environment, superior social and cultural environment and construction environment, so it has unlimited tourism potential and cultural charm. In the era of big data, developing smart tourism is an important development direction for Zhuhai to establish its city image in the future.

III. CONCEPT DESCRIPTION AND ANALYSIS OF SMART TOURISM STATUS

Seriously speaking, there is no specific conception as "smart tourism". "Smart tourism" is a part of "smart city". Nowadays, some Internet encyclopedias interpret "smart tourism" as "smart tourism". It is to make use of cloud computing, Internet of things and other new science and technology, through the Internet or mobile Internet, with the help of portable terminal Internet equipment, to let people can timely understand the tourism information, so that people can timely arrange and adjust the tourism plan, in order to achieve the effect of intelligent perception and convenient use of tourism information. The construction and development of smart tourism are finally reflected in the four aspects of tourism experience, tourism management, tourism service and tourism marketing. Compared with foreign countries, the development of smart tourism in China is relatively late. In 2010, Jiangsu province put forward the concept of "smart tourism" first. One of the core technologies of smart tourism, the "moving core" technology, was successfully developed in the city and applied in the Beijing Olympic Games and Shanghai world expo. Later, some software for tourists was invented for human use. There are many cases of smart tourism abroad that are worth learning from. For example, South Korea is one of the first countries in the world to develop smart city construction. In 2000, the concept of "ubiquitous is in anywhere" in South Korea became the main basis for its smart city construction. South Korea has developed the "I Tour Seoul" mobile information service platform. This is the official tourism information service platform of Seoul city, which mainly meets tourists' travel route planning and hot spots inquiry, and can also provide reservation service and information inquiry for tourists' transportation, accommodation, catering, shopping and other aspects. Visitors can download via smartphones positioning software, free download information around scenic spot, and by "trip planner" schedule line, also can be in Internet booking accommodation, performance, film services, by choosing the right booking for overseas bank card, also can through the API to make tourists in the absence of the network can also receive the information, also can provide tourists with all kinds of coupons, e-books, and other services. The government attaches great importance to and invests in smart tourism, making it a fast track of smart tourism. In 2006, Singapore established the development concept of "building a smart country" and implemented the strategy of transforming from a traditional urban country to a smart country. Biometric identification technology is mainly used to help people avoid cumbersome procedures. People can learn about tourism information and service information through the Internet, mobile phones and tourist centers. Through smart phones, tourism information can be received at any time or place, and various needs of tourists can be met according to their needs. You can choose your own itinerary directly on the Internet according to your personal preference, or you can subscribe to the news and upcoming events in Singapore. The United States put forward the "big data research and development plan" to promote and improve the organization, analysis and collection of big data, so as to acquire knowledge from data and facilitate the intelligent development of tourism. In 2006, RFID "wristband" system

was introduced to start the attempt of smart tourism. Visitors can use the RFID wristband to open their doors in the activity area, or they can buy food and souvenirs without any cash. This wristband is the identification of customers. Japan's "smart tourism" has also become a project vigorously promoted by the government, mainly focusing on the development of smart technology required by public applications such as the application of big data, IT innovation in traditional industries, medical technology development and traffic congestion alleviation. In 2009, British and German companies jointly developed an intelligent guide software under the self-service of the European Union, which enables tourists to experience the forgotten history by themselves through sound, light and video, thus promoting the development of tourism culture. When the visitors arrive at a site, only using a mobile phone camera at the front of the ruins or the monuments, global positioning system (GPS) in cell phones and image recognition software can determine its position, and then on the phone display here sites heyday original appearance, also can show sites on the imperfect part of virtual reconstruction. In addition, through interactive route planning tools, tourists can customize their own travel plans to help them plan their routes, which is equivalent to a full-time tour guide. In June 2012, the Belgian "sign city" project was officially launched, making Brussels the first digital mobile tourism city in the world. Microelectronics travel project uses near-field communication chips made of bar-coded adhesive to paste into museums and various monuments, shops and restaurants in Brussels. It enables tourists from all over the world to use their smart phones to download barcode scanner on i-nigma website, and scan the barcode anytime and anywhere in Brussels, making it convenient for tourists to obtain relevant historical and cultural introduction of the region, shopping offers and route navigation [2].

IV. SUGGESTIONS ON THE CONSTRUCTION OF ZHUHAI'S TOURISM IMAGE

Although the Zhuhai government has been making efforts to develop the city image in recent years, the results are not obvious. Zhuhai is not distinctive enough in tourism, and the city charm and cultural charm of Zhuhai are not well highlighted. Providing quality tourism services is one of the ways to improve Zhuhai's image. Referring to domestic and foreign smart tourism examples, in order to promote the urban tourism image design of Zhuhai, a unique, creative and appealing urban tourism image should be considered from the following aspects:

A. Optimize intelligent marketing methods

At present, Zhuhai tourism marketing means are still dominated by traditional methods, and the application of new information technology is insufficient. For example, in the channel of providing tourism information, the one-cloud multi-screen information release mode such as self-service touch screen has not been realized. In terms of the single content of tourism information, the traditional mode of information provision is still widely used, lacking of virtual tourism, 3D tourism and other new tourism experiences, which cannot better attract and meet the needs of self-service tour and self-driving tour tourists [3].

The smart marketing segment is optimized. Tourists can plan their own routes by using the tourism information service platform and information provided by the scenic area. Then, make travel experience into a guide and publish it on the internet public communication medium such as Weibo, INSTAGRAM, The Red Book and other major social platforms, so as to effectively interact with tourists in the scenic spot and let more and more tourists know about Zhuhai through social platforms. For example, beach music festival is a necessary cultural activity in Zhuhai every year. It is one of the festivals with a large flow of people in Zhuhai. Every year, it attracts nearly ten thousand music fans from all over the country, which drives the development of tourism in Zhuhai. Smart tourism enables more effective interaction between scenic spots and tourists, meets the needs of different tourists, and gradually expands its influence to attract more tourists. It is also hoped that relevant enterprises can make good use of some data, seize the points of interest of tourists through data mining, formulate marketing themes, and provide desirable tourism experience for tourists. The hotel industry can also build smart hotels by applying face recognition, voice control, smart room sensing and other black technologies to hotels, so that tourists can have a better experience. Open the door directly through your mobile phone or facial recognition system without a room card. Voice control room system, the room system for intelligent voice control. Alibaba has set up China's first unmanned hotel, indicating that the trend of intellectualization is becoming more and more obvious. For example, the Kapok Hotel recently opened in Shenzhen has such black technology. In addition to the bathroom system, some rooms are equipped with a sleep detection system, which allows visitors to provide comprehensive physical health information during sleep through sleep monitoring belts. Smart hotels can provide exclusive services or customized services for tourists according to their accommodation preferences. No longer need to go through the cumbersome procedures like traditional hotels to input troublesome information, as long as the self-check-in machine in the hotel, according to the tips for face recognition and brush ID, input mobile phone number can be checked in successfully, simple and convenient steps for tourists to quickly check in [4]. This is also a hotel in Zhuhai can learn from the advantages of attracting tourists to stay.

B. Optimize the tourism information service platform

At present, Zhuhai's tourism development is far from perfect, the online information is not comprehensive and standard, the information release efficiency is low, and there are doubts about the authenticity. There is also no complete system website to provide detailed tourism information for tourists and plan their travel routes. Although there are a large number of smart tourism applications in the market and the utilization rate is high, the homogenization is serious. Tourism service information, therefore, should also have the feature of personalization and characterization, in order to meet the needs of tourists, the travel agency and the third part platform for the tourism should be according to the needs of tourists, use of the Internet technology tailor travel for tourists, more about the history of the local culture and food culture, to attract more tourists to come and visit [5].

C. Promote the development of island resources

As a tourist city and a livable city, Zhuhai is rich in tourism resources and has unique resource advantages for the development of beach tourism and island tourism. There are eight big islands in Zhuhai, and Wai Lingding island is one of them. Wai Lingding island has a unique style, beautiful scenery, clear and blue sea water, fresh air and four seasons like spring. The accommodation and catering facilities on the island are quite perfect. In addition, Qi'ao island can also be deep tourism, the island has several historical sites: Su Zhaozheng former residence, white rock street, spirit pigeon princess statue, battery, can also ride a bicycle tour around the island. However, many facilities in the development of these islands are not perfect and the publicity is not enough. Non-local residents are not familiar with the facilities of these islands. Therefore, if Zhuhai wants to develop characteristic tourism, it can also start from this aspect to create a unique tourism city image [6].

D. Make good use of the two international events to promote tourism

"Circus festival on single year and airplane exhibition on biennial". Beads every two years, Zhuhai will draw attention of the world China international exposition of aeronautics and astronautics, hereinafter referred to as "China (Zhuhai) air show". China international circus festival is approved by the state of an international competition and cultural exchanges, These two exhibitions are a calling card for Zhuhai to face the world, during this visit will attract tourists at home and abroad [7]. Zhuhai in the future can also use this event held in two, seize the opportunity to better to promote the image of Zhuhai and tourist culture, for tourists at home and abroad to provide high-quality tourism service experience, so as to upgrade the image of the tourist city of Zhuhai. A series of intelligent measures such as Parking, intelligent transportation, wisdom a complete coverage of new police, free public WiFi around the exhibition optimizing the related industries, and expand the big data application effect of radiation [8].

V. CONCLUSION

Smart tourism is an inevitable product of the information age. As one of the pillar industries of Zhuhai, the tourism industry, the traditional tourism mode can no longer meet the needs of tourists. Therefore, Zhuhai should focus on the development of smart tourism. However, smart tourism is still on the way of development, and there are still some problems to be solved step by step. For example, smart tourism in Zhuhai should optimize smart marketing methods, solve the problem of single and homogeneous smart tourism information services, and improve the image of Zhuhai as a tourism city with high-quality services, optimize the tourism information service platform, so as to meet the personalized needs of passengers, to provide a good sense of user use. And to promote the development of islands, highlight the unique charm of Zhuhai tourism, and create the unique tourism of Zhuhai. Taking advantage of some large-scale annual activities in Zhuhai, such as China airshow, China international circus festival and beach

music festival, etc., this paper takes the opportunity to promote Zhuhai's tourism culture. As the development of smart tourism involves a wide range of fields, the strength of enterprises alone is not enough to build smart tourism. Therefore, to develop smart tourism, the government needs to play a leading role, increase overall planning and coordination, integrate all resources, strengthen information supervision, encourage the development of related industries, and jointly create the image of a high-quality Zhuhai tourism city.

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