Asia Pacific
Academy of Science Pte. Ltd.

ORIGINAL RESEARCH ARTICLE

Research on the construction countermeasure and patterns of smart famous scenic site—A case study of Gulangyu scenic area in Xiamen

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ABSTRACT

Through field survey, understanding the current situation of the smart tourist spot construction of Gulangyu in Xiamen, finding some problems such as the poor network coverage and communication, and incomplete data center. It puts forward feasible countermeasures from the four aspects such as the basis of the scenic area construction, supervision system construction, the intelligence services and marketing construction, environment and resources protection. It proposes the mode of composite construction of "the government leading, marketing orientation, the scenic spot construction", expecting to promote the smart construction of Gulangyu.

Keywords: smart famous scenic site; construction countermeasure; construction patterns; Gulangyu scenic area in Xiamen

1. Introduction

In 2011, Shao of the National Tourism Administration proposed to preliminarily realize "smart tourism" in China in 10 years and build a number of "smart cities", "smart scenic spots" and "smart tourism enterprises"[1]. In 2012, Xiamen, Fujian Province was selected as one of the first 18 "National Smart tourism pilot cities". As a 5A scenic spot with high popularity in Fujian Province, Xiamen Gulangyu scenic spot (hereinafter referred to as Gulangyu scenic spot) began to be put into the research and construction of smart scenic spot "Smart scenic spot" is a new term in the tourism industry. This professional term has not appeared in foreign countries, but

foreign countries have long applied relevant theories to scenic spot information technology and customer service, so as to better serve tourists and enhance tourists' favor of the scenic spot. In China, many scholars have studied the concept, construction content, development mode, platform construction and other aspects. Although it is only a preliminary study, it reflects the importance China attaches to the construction and development of smart scenic spots. At present, there is little research on the construction mode and platform construction of smart scenic spots, especially the construction mode of smart scenic spots. To sum up, the domestic scenic spot has just started to be further studied.

On the basis of relevant literature research, questionnaire survey and field interview, further

understand the construction of Gulangyu scenic spot, apply the relevant theories of smart scenic spot construction to the construction of Gulangyu smart scenic spot, and put forward the corresponding construction countermeasures and models.

2. Concept of smart scenic spot and its construction technical support

2.1. Concept of smart scenic spot

At present, there is no clear and unified definition of smart scenic spot in China.

The concept of smart scenic spot proposed by the above scholars has the following common points: smart scenic spot is based on technologies such as Internet, Internet of things, cloud computing and mobile communication; Provide better services through science and technology; Promote the sustainable development of scenic spots through intelligent construction management.

Table 1. List of existing smart scenic spot concepts

Author	Publication time	Concept of "smart scenic spot"
Zhang and Deng	2011	"Smart scenic spot" is based on the major background of the transformation from "Digital Earth" to "smart earth", combined with the characteristics of scenic spots, uses the latest achievements of human civilization to build a smart network and realize the intelligent development of scenic spots: highly integrate the latest management concepts with the latest technological achievements (especially the Internet of things)and fully apply them to scenic spot management, so as to more effectively protect tourism resources and provide better services for tourists, Realize the comprehensive, coordinated and sustainable development of environment, society and economy in the scenic spot[2].
Deng and Li	2012	Under the guidance of the overall goal of smart city and smart tourism, smart scenic spot is based on the integration of modern communication and information technologies such as Internet of things, cloud computing, next-generation communication network and high-performance information processing, combined with innovative service and management concepts to activate the stock resources of tourism scenic spot, focusing on the two main lines of tourist perception and scenic spot management, Build an information-based and intelligent service management system for scenic spots centered on interactive experience of tourists and guaranteed by integrated information management[3].
Ge et al.	2012	The essence of smart scenic spots is to use the high integration of smart technology and scientific management theory to replace some traditional tasks requiring manual judgment and decision, achieve the optimization of various work and business, promote the electronic, instantaneous, convenient, systematic, accurate and efficient management and service of scenic spots, and create smart scenic spots with standardized and efficient operation[4].
Liang and Zhang	2013	Smart scenic spot is a change in the effective utilization of various tourism resources in the scenic spot by using new generation information technologies such as Internet of things, cloud computing, mobile terminal equipment and artificial intelligence to meet the personalized needs of tourists, provide intelligent high satisfaction services, promote the sustainable development of the scenic spot[5].
Wang et al.	2014	Smart scenic spot is a scenic spot that establishes visual intelligent management and operation on the basis of comprehensive digitization, including the construction of information and data foundation of the scenic spot, as well as the intelligent management platform and decision support platform established on this basis[6].
Sheng	2014	Smart scenic spot is to actively and intelligently perceive the infrastructure, service facilities and tourist behavior of the scenic spot with the help of modern information technologies such as Internet of things and cloud computing, so as to meet the personalized needs of tourists and achieve comprehensive, timely and sustainable information scenic spot management and service objectives[7].

2.2. Technical support for smart scenic spot construction

The technical support for the construction of smart scenic spots mainly includes: cloud computing,

Internet of things, mobile communication technology, artificial intelligence technology, etc.

Cloud computing

Cloud computing is a network application mode,

which is based on the Internet and shares resources through virtualization, so that computing, storage, network, software and other resources can be provided in the form of services according to the dynamic needs of users[8]. The core idea of cloud computing is the effective allocation of computing, information and other resources. The application of cloud computing in smart scenic spots can improve the data processing level of scenic spots and provide guarantee for tourists' self-service travel.

Internet of things

The Internet of things realizes the interconnection between things, people and things, and people[9] (International Telecommunication Union, ITU). The Internet of things is a network that connects items with the network for information exchange and communication through radio frequency identification (RFID), infrared sensors, global positioning system (GPS), laser scanning and other information sensing equipment according to the agreed protocol, so as to realize intelligent identification, positioning, tracking, monitoring and management Internet of things technology can be applied to the safety management of scenic spots, real-time measurement of passenger flow, research on tourists' consumption behavior, etc.

Mobile communication technology

Mobile communication is one of the object-to-object communication modes, which mainly refers to the wireless communication between mobile devices and between mobile devices and fixed devices, so as to realize the wireless connection of real-time data of devices between systems and remote devices[10]. Mobile communication technology makes the tourism application of information technology develop from the center of personal computer to the center of "people"—tourists carrying mobile communication terminal equipment, which reflects the application direction of information technology with individual customers as the service object. Mobile communication technology in smart tourism reflects the wisdom of meeting the personalized needs of tourists and providing high-quality and high satisfaction services[11].

Artificial intelligence technology

Artificial intelligence (AI) studies the basic theory, method and technology of how to use computer software and hardware to simulate some human intelligent behaviors, involving knowledge representation, automatic reasoning and search methods, machine learning and knowledge acquisition, knowledge processing system, natural language understanding, computer vision, intelligent robot, automatic programming and other research contents. At present, it has been widely used in robots, decision-making systems, control systems and simulation systems.

Artificial intelligence is the key technology used to effectively process and use data, information and knowledge, use computer reasoning technology for decision support and solve problems. In the field of tourism research, artificial intelligence is more used in tourism demand forecasting[12].

The construction of smart scenic spot is the future development trend of the scenic spot and an opportunity for the operation and management of the scenic spot. Smart construction makes the scenic spot obtain new vitality Gulangyu scenic spot in Xiamen is also actively involved in the construction of smart scenic spot. At present, it is in the preliminary stage and there are many imperfections.

3. Construction status of Gulangyu smart scenic spot in Xiamen

3.1. Overview of Gulangyu scenic spot in Xiamen

Gulangyu scenic spot in Xiamen is located at 118° 04′ 04″ east longitude and 24° 26′ 46″ north latitude. It is located in the southwest of Xiamen Island, covering an area of 1.87 km^2. Gulangyu was originally named yuanshazhou or yuanzhouzi, and was renamed Gulangyu in the Ming Dynasty. There are traditional residential buildings in Southern Fujian of China, churches in 19th century European style and buildings integrating China and the West on the island. It is known as the "Museum of architecture of

all nations", and it is also a treasure island full of people and culture. At present, there is the only professional museum in China that specializes in displaying ancient pianos from all over the world. The main tourist attractions include sunlight rock, Shuzhuang garden, Gulangyu Piano Museum, underwater world, etc. On May 8, 2007, Xiamen Gulangyu scenic spot was officially approved as a national 5A scenic spot by the National Tourism Administration. In 2012, Xiamen was selected as one of the first batch of "National Smart tourism pilot cities" in Fujian Province. As one of the representative scenic spots in the province and even in China, Xiamen Gulangyu took the lead in the construction of smart scenic spots.

3.2. Construction status of Gulangyu smart scenic spot in Xiamen

Infrastructure

The construction of smart scenic spots is based on digital promotion, while the digital promotion of smart scenic spots requires the construction and application of emerging information technologies such as Internet of things, ubiquitous network and cloud computing.

Before the intelligent construction of Gulangyu scenic spot, the Internet of things was applied to the identification of the second-generation ID card for ticket purchase. In addition to the application of the Internet of things and the ticket system, it was also used in the e-commerce of intelligent marketing. However, the application of ubiquitous network, cloud computing and other information technologies in scenic spots is not much involved.

Construction status

Since 2012, Gulangyu Scenic Spot has started to build a smart scenic spot with the support of the state and Xiamen Municipal Government. For the development, construction and operation of Xiamen Smart Tourism System, the tourism distribution service center jointly established by Xiamen Tourism Group and Gulangyu Tourism Investment Co., Ltd. is responsible for the construction. The construction

is divided into three phases. The first phase is in May 2015. Construction and operation of the system; in the second phase in May 2016, it will make every effort to make the intelligent level of the scenic spot enter the leading ranks of the province, build a network, ubiquitous, integrated and safe information infrastructure to realize a relatively wide range of intelligent applications. Before the end of the third phase in 2016, Xiamen Scenic Spots will enter the stage of intelligent development, tourism management will be more refined, coordinated and intelligent; tourism services will be more user-friendly, improving tourist satisfaction; e-commerce development will be more stable. At present, the intelligent guide system of the scenic spot has been put into use initially, the ferry ticket has been intelligently managed, and the self-service multi-functional information screen for tourists has also been put into the scenic spot, but it only exists in a few exhibition halls and has not been popularized in the whole island, and the information screen is not connected to the network, so it cannot serve tourists better. The construction of information technology projects on the island is also underway, but it has not yet covered the whole island. For the data construction, the scenic spot data center has not been completed as a whole, and the scenic spot has not related to the government, tourism enterprises and other related industries, and the data cannot be collected, analyzed, summarized and released in a timely manner. The quality of the network and communication is poor, and with the increase in the number of tourists on the island, the network and communication become more congested.

From the above analysis, it can be seen that the construction of Gulangyu smart scenic spot in Xiamen is still in the preliminary construction stage and needs to be further constructed. Therefore, it is necessary to further investigate it in order to deeply understand the intelligent construction of the scenic spot.

4. Investigation on the construction of Gulangyu smart scenic spot in

Xiamen based on tourists' perception

4.1. Survey methods and data sources

The survey on the construction level of Gulangyu smart scenic spot in Xiamen mainly adopts the questionnaire survey method, combined with field investigation and interview to deeply understand the construction status of Gulangyu smart scenic spot in Xiamen and find out the deficiencies in its construction. The questionnaire is divided into two parts, one is the basic personal information of tourists, and the other is the evaluation of tourists' perception of the construction project of Gulangyu smart scenic spot. From the five dimensions of very dissatisfaction, satisfaction, general, dissatisfaction and very dissatisfaction, it is used as the score of the project perception level. Based on the choice of tourists, it is used to judge tourists' feelings about the content of smart construction in the scenic spot and analyze the construction of Gulangyu smart scenic spot.

From September 15 to 17, 2015, 300 questionnaires were randomly distributed in Gulangyu scenic spot, including 212 actually received questionnaires, 127 online collected questionnaires, 34 invalid questionnaires and 305 valid questionnaires, with an effective rate of 89.97%.

4.2. Analysis of demographic factors

Gender and age

Women account for 60.33%, while men account for 39.67%. It can be seen that there are more women tourists on Gulangyu. The age range of tourists is mainly 21-30 and 31-40, accounting for 45.57% and 28.85% respectively Tourists aged 51 to 60 are in the third place, while tourists under the age of 20 are the least.

Education level and occupation distribution

The cultural level of tourists in Gulangyu scenic spot is concentrated at the level of senior high school and undergraduate, with the proportion of 30.82% and 39.34%. The higher the education level, the

stronger the desire to travel. The occupation distribution is relatively scattered, among which white-collar workers rank first, accounting for 26.23%, service personnel account for 11.48%, enterprise managers account for 11.48%, and retirees, students and other occupations account for nearly half.

Income level

The tourist income of Gulangyu scenic spot is divided into four levels: below 1500, 1501-3000, 3001-6000 and above 6001. The tourist income is concentrated in 1500-3000 and 3001-6000, 48.85% and 26.56% respectively Students below 1500 are mainly in school. They have the desire to travel and are the strong potential market of Gulangyu. The stage of 1500-6000 is the main consumer of the scenic spot and the key marketing goal. Therefore, scenic spots should pay attention to their needs in construction and marketing.

Source of tourists

Most tourists of Gulangyu come from Fujian Province, especially Xiamen, Zhangzhou and Quanzhou, followed by Fuzhou, Longyan and Putian. Tourists in the province account for 66.54%, while tourists in Shanghai, Jiangsu, Guangzhou, Hunan and Hubei account for 33.46%.

4.3. Analysis of survey results on the construction of Gulangyu smart scenic spot in Xiamen based on tourists' perception

Network ticketing system

Since the beginning of the construction of Gulangyu smart scenic spot in Xiamen, we have focused on online ticket purchase to simplify the ticket purchase procedures and facilitate tourists' satisfaction with this system accounts for 55.08%, of which 13.11% are very satisfied, 41.97% are satisfied, and 37.05% are general options from these data, it can be concluded that tourists are satisfied with the online ticket purchase system.

Communication and network system

With the promotion of smart phones, communication and network have become the basic needs of

people going out. In the construction of Gulangyu smart scenic spot, the degree of satisfaction with communication is higher than that with network. However, it can be seen from the cross analysis that with the improvement of tourists' educational level, the demand for the strength of communication and network is also increasing. According to the survey on the basic information of tourists in Gulangyu, Xiamen, the cultural level of the main tourists in the scenic spot is concentrated in senior high school and undergraduate, with the proportion of 30.82% and 39.34%, that is to say, the smoother the network and communication in the scenic spot, the more they can meet their needs (see **Table 2** and **Table 3**)

Table 4 Satisfaction of smart construction projects in the scenic spot is reflected in the perception of 14 projects in the smart construction of Gulangyu scenic spot LED information release, mobile client "self guided tour" system and "private customization", smart Bracelet "voice navigation" system, 3D

real scene display and digital map of the scenic spot are several items that tourists are satisfied with Other projects need to be strengthened, especially the control of passenger flow in the scenic spot. The dissatisfaction rate is 32.13%, and the very dissatisfaction rate is 22.63%.

Emergency response satisfaction

In the scenic area, 3.28% of them encountered emergencies, while 96.72% did not encounter emergencies. In case of emergency, 70.59% of them sought help from the scenic spot and received immediate response. However, the tourists seeking help are not satisfied with the service personnel and service attitude of the scenic spot, which is 76.47% in general, dissatisfied and very dissatisfied. Therefore, the scenic spot should strengthen the training of service personnel.

Table 2. Education level—communication satisfaction†

X\Y	Very satisfied	Satisfied	Commonly	Dissatisfied	Very dissatisfied	Subtotal
Primary school	1(4.55%)	12(54.55%)	4(18.18%)	4(18.18%)	1(4.55%)	22
Junior high school	2(3.13%)	30(46.88%)	20(31.25%)	6(9.38%)	6(9.38%)	64
High school	4(4.26%)	21(22.34%)	46(48.94%)	16(17.02%)	7(7.45%)	94
Undergraduate	2(1.67%)	38(31.67%)	57(47.5%)	11(9.17%)	12(10%)	120
Bachelor degree or above	0(0%)	3(60%)	0(0%)	0(0%)	2(40%)	5

† "X" stands for educational level and "Y" stands for communication satisfaction

Table 3. Education level—Internet satisfaction†

X\Y	Very satisfied	Satisfied	Commonly	Dissatisfied	Very dissatisfied	Subtotal
Primary school	1(4.55%)	6(27.27%)	10(45.45%)	4(18.18%)	1(4.55%)	22
Junior high school	2(3.13%)	13(20.31%)	23(35.94%)	19(29.69%)	7(10.94%)	64
High school	4(4.26%)	14(14.89%)	43(45.74%)	22(23.4%)	11(11.7%)	94
Undergraduate	4(3.33%)	30(25%)	55(45.83%)	17(14.17%)	14(11.67%)	120
Bachelor degree or above	0(0%)	3(60%)	0(0%)	0(0%)	2(40%)	5

† "X" stands for education level and "Y" stands for network satisfaction

Table 4. Satisfaction of smart construction projects in scenic spots†

X\Y	Percentage				
	Very satisfied	Satisfied	Commonly	Dissatisfied	Very dissatisfied
Xiaojiu Wi-Fi	4.92	29.18	45.25	16.07	4.59
LED information release	10.49	44.26	38.69	5.25	1.31
Timeliness of scenic spot information release	6.23	31.15	53.11	8.2	1.31
"Self guide and self travel" system of sub machine client	15.08	48.2	34.43	1.64	0.66
Sub client "private customization" system	17.05	43.61	35.08	3.61	0.66
Smart sub ring "voice navigation" system	24.59	45.57	27.21	1.97	0.66
Smart sub ring store recommendation function	7.21	31.15	43.61	12.79	5.25
Virtual experience scenic spot	11.8	36.39	42.62	8.52	0.66
3D live display of scenic spot	22.62	43.61	29.84	3.28	0.66
Sub machine online order system	9.84	31.48	51.48	5.9	1.31
Balanced monitoring of the number of people in the scenic spot	3.28	12.13	29.84	32.13	22.63
Positioning system	4.26	29.18	60.33	5.25	0.98
Digital electronic map	12.46	46.56	36.39	3.61	0.98
Convenience service attitude of 11 public service points	8.52	38.03	42.62	7.54	3.28

† "X" refers to the construction project of the smart scenic spot, and "Y" refers to the satisfaction of tourists with the smart construction project of the scenic spot

5. Countermeasures for the construction of Gulangyu smart scenic spot in Xiamen

According to the relevant theories of smart scenic spot construction, combined with questionnaire analysis and field interview, this paper puts forward corresponding construction countermeasures for the problems existing in the construction of Gulangyu smart scenic spot.

5.1. Strengthening infrastructure construction

Construction of communication and network system

At the end of 2014, Gao Rui published an article entitled "Chinese people have reached the level of one-step mobile phone", pointing out that mobile phones have become daily necessities and an indispensable part of life in China. China has achieved that communication and network are the basis for the normal use or maximum efficiency of mobile phone functions. The importance of communication and network system construction is reflected in two aspects. First, the smoothness of communication and network can affect the psychological mood of tourists. Therefore, when establishing intelligent scenic spots, we should pay attention to this construction to meet the basic needs of tourists. Second, the system office, online service and information release of the scenic spot all depend on the communication and network system. In May 2014, Xiamen Tourism Administration completed the installation and commissioning of phase I project covering the whole island Wi-Fi of Gulangyu. Turn on Wi-Fi on the mobile phone, search the nearby wireless, select Wi-Fi starting with "x9", and then log in to the Internet step by step according to the page prompt after connection. However, due to the large

number of tourists, the communication and Internet speed become crowded, which makes many tourists dissatisfied, especially the high school and undergraduate tourists aged 21 to 40. Therefore, during the construction of smart scenic spot, the construction of communication and network system must be strengthened to ensure smooth communication and network, meet the needs of tourists and residents in the scenic spot, and ensure the normal operation of the office system in the scenic spot.

Data center construction

The data center contains many application systems and the basic information collection system of the Internet of things. The data generated include RS (remote sensing) data, GIS (geographic information)data, GPS data, video multimedia and business information data of various business departments. Data center construction means that the scenic spot collects, stores and analyzes the relevant information of hotels, tourism enterprises, governments and tourists by establishing a data center and formulating certain standards. The establishment of a data center in the scenic spot is conducive to summarizing information and publishing information at the same time. At present, the data center of Xiamen Gulangyu smart scenic spot is only limited to the scenic spot, which is used to collect, summarize and publish information in the scenic spot. During the second phase of construction, Gulangyu smart scenic spot needs to connect the data center of the scenic spot with the government, tourism enterprises, hotels, etc. To comprehensively collect information, so as to better grasp the dynamics of the government and the development trend of the whole industry and related industries, better meet the needs of tourists and promote the smart construction of the scenic spot.

5.2. Improve the construction of supervision system

Construction of electronic navigation system

The electronic guide aims to serve the tourists in the scenic spot, improve the intelligent level of the scenic spot and facilitate the tourists. It is a system formed by connecting the electronic navigation equipment with the established data center. It publishes the relevant information in the scenic spot and displays the content of the scenic spot to tourists in the form of broadcast voice and video[13]. In addition to information release and content display of the scenic spot, this system also has one of the most important functions, which is to guide diversion, that is, through the electronic navigation system, tourists can know in advance and in real time which sections of the scenic spot are crowded with traffic and have a large number of people, so that tourists can actively choose to avoid the congested location. In Gulangyu scenic area, the cruise information, weather conditions and the number of people can be reported in real time, so that tourists can understand the real-time information. When playing, it can explain the whole process for tourists all the way through the use of mobile client or smart bracelet, and "private customization" can be made for tourist tour routes according to tourists' preferences to meet customers' personalized needs. However, there are multimedia touch screens of some scenic spots in the scenic spot. Although they can show and exhibit the content of scenic spots for everyone, they are not connected to the network and can not better meet the needs of tourists. Therefore, Gulangyu scenic spot should further improve the corresponding electronic navigation facilities.

Construction of integrated dispatching system

The construction of comprehensive dispatching system is not only to serve tourists, but also to improve the intelligent management level of the scenic spot. It means that by connecting the corresponding facilities and equipment with the established data center, and collecting information in the smart center through relevant technologies, it can monitor the scenic spot in real time, and monitor, command and dispatch the target people and vehicles in the scenic spot Gulangyu Island is a pedestrian island. Therefore, the construction of integrated dispatching system focuses on the control of pedestrian flow. However, since the construction of Gulangyu smart scenic spot is still in its infancy and the flow of people cannot be

well controlled, there is still a large flow of people on the island, and some scenic spots are crowded, making tourists feel not leisure but crowded on the island. Through the operation of the integrated dispatching system, the scenic spot can be well monitored in real time, and the corresponding problems can be arranged and solved in time, which can not only meet the needs of tourists, but also reduce the difficulty and cost of scenic spot management.

5.3. Pay attention to the construction of smart service and smart marketing in scenic spots

Smart Services

Smart service in scenic spots is one of the major projects in the construction of smart scenic spots, including intelligent construction and service personnel training. The tourist service of the scenic spot includes hardware construction and software construction. In terms of hardware, focus on the construction of virtual experience and 3D live display in the scenic spot. In the survey, some tourists are not very satisfied and think it is lack of authenticity, but with the construction of smart scenic spot, it will be gradually improved to let tourists immerse themselves. The software construction is mainly completed by the scenic spot service personnel. For serving tourists, it refers to improving the service ability of scenic spot service personnel through intelligent management of scenic spot, meeting the personalized and diversified needs of tourists, improving the image of scenic spot in the eyes of tourists and promoting the long-term development of scenic spot[14]. For community residents' service, it refers to the inclusion of community participation in the construction planning, maintaining residents' living environment and respecting residents' cultural customs, and making residents profit from the protection of scenic spots and community development. The negative attitude of community residents will greatly affect the satisfaction of tourists. Therefore, the service of the scenic spot to local residents is also an indirect service to tourists. The construction of Gulangyu smart scenic spot should include the construction of community residents in the planning. By making community residents become the managers and supervisors of the scenic spot, the dissatisfaction of tourists on the island can be eliminated, so as to improve the overall customer service of the scenic spot and create a good and enthusiastic environment. Train the service attitude and skills of the service personnel in the scenic spot, improve the service quality of the scenic spot and improve the satisfaction of tourists to the scenic spot.

Smart marketing

Smart marketing of scenic spots refers to the online display of various resources of scenic spots through the combination with the Internet and the advantages of the Internet. Customers can browse on the web page and use the functions of ordering, payment and application for after-sales service to realize commodity trading[15]. Although the Island Shopping Center has been planned in Gulangyu scenic area, there are still many small vendors selling goods beside the road and in the cave tunnel, which affects the landscape and traffic smoothness of the scenic area. Since the construction of the smart scenic spot, the manpower and number of patrols in the scenic spot have been gradually increased, but small vendors still exist, which has seriously affected the smooth roads and the landscape of the scenic spot. Therefore, through the construction of smart marketing, we can carry out centralized training for small vendors who lack corresponding online sales knowledge and skills at a certain time of each year, so as to provide a platform for these small vendors to trade directly online, facilitate tourists and vendors, and improve the sales environment and level of the whole scenic spot.

5.4. Attach importance to environmental and resource protection

The environment and resources of the scenic spot are the basis for its survival and development. The destruction of environment and resources can be divided into natural factors and human factors. For natural factors, not all upcoming events can be avoided by human and scientific and technological forces. What we can do is to minimize the degree of destruction and minimize the loss. However, human

factors are controllable and one of the most damaging factors to the environment. The destruction of environment and resources not only affects the overall impression and perception of tourists on the scenic spot, but also may form a vicious reputation and damage the image of the scenic spot. Pay attention to this hidden danger in the construction of smart scenic spots, incorporate the protection of environment and resources into the planning and construction of smart scenic spots, protect the environment and resources throughout the scenic spots, and use the voice guide of information technology and multi-functional information screen combined with the data center to publicize and prompt, so as to form an atmosphere of environmental protection. From the questionnaire survey and field survey, it is learned that there are a lot of tourists to the island every day, not only the tourists on the ferry are crowded, but also people all over the island. Too many people will inevitably lead to the increase of garbage in the scenic spot, the reuse of intelligent infrastructure and the inability to maintain, resulting in the shortening of the service life of intelligent infrastructure and the gradual decline of environmental purification capacity, which will be damaged. Therefore, in order to protect the environment and resources and create a beautiful and intelligent scenic spot environment, it is necessary to limit the number of tourists on the island through the infrastructure construction of the intelligent scenic spot, the construction of information technology and voice guidance, and remind and guide tourists to

protect the environment and resources on the island with voice broadcasting and brochures. Through the application of Internet of things and information technology, the emerging scenic spots should be better protected and managed on the basis of Pan environment and intelligent resources.

The construction of smart scenic spots also needs a correct construction mode. The construction of smart scenic spots needs the support of the government. On the basis of following the market law and with our own efforts, we can realize the intelligent construction of scenic spots.

6. Construction mode of Gulangyu smart scenic spot in Xiamen

The construction of smart scenic spot grows under the tree of smart city and smart tourism. It requires the national government to organize relevant departments of local governments at all levels to coordinate various resources such as human, material and financial resources to promote the construction of smart scenic spot through unified arrangement and planning. At the same time, the construction and development of smart scenic spots should follow the market law. Therefore, the construction of smart scenic spots can adopt the compound construction mode of "government first, market-oriented and smart construction management of scenic spots" (see **Figure 1**).
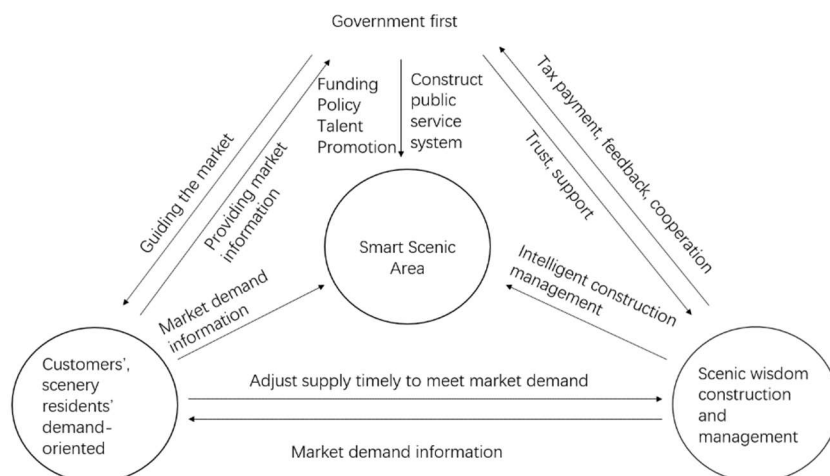

Figure 1. Construction mode of Gulangyu smart scenic spot in Xiamen.

The compound construction mode of "government first, market-oriented and intelligent construction management of scenic spots" means that the government should focus on intelligent construction in future planning and construction. Under the leadership of the central government, all government departments across the country devote themselves to intelligent construction, actively publicize relevant knowledge of intelligent construction, and concentrate various resources to take the lead in intelligent construction. In the process of intelligent construction of the scenic spot, pay attention to the market dynamics, especially the needs of customers and residents of the scenic spot. The government and scenic spot managers carry out intelligent construction and management of scenic spots according to market demand.

The government provides various preferential policies for the construction of smart scenic spots, actively publicizes and increases investment to build smart scenic spots. The government guides and supervises the market, maintains the normal market order and ensures the construction and operation environment of smart scenic spots; Through the function of feedback, the market reflects the changes of customer demand, and provides information and basis for government decision-making on the construction and management of smart scenic spots, as well as the change of smart management scheme and supply place of scenic spots. The scenic spot strives to win the trust and support of the government, so as to provide various preferential policies for the intelligent construction of the scenic spot. At the same time, obtain customer demand information through the market to meet customer demand.

6.1. Government first, market-oriented

"Government first" means to formulate development plans and policies in line with intelligent development in the national future planning, and include them in the focus of functional services. Combine national construction with intelligent construction to provide a convenient way for intelligent construction "Government first" is not only reflected

in the priority of national and urban intelligent construction planning, but also in its four functions. The government creates a harmonious and stable social, political and economic environment for the construction of smart scenic spots through its four functions: social management, public services, economic regulation and market supervision. The government actively publicizes intelligent knowledge, improves the people's understanding of smart construction sites, focuses on building smart cities and smart tourism, provides good hardware and software facilities for the construction of smart scenic spots, and provides support in terms of policies, funds and talents, especially in the construction of tourism public information service system[16,17].

Of course, the construction of Gulangyu smart scenic spot cannot ignore the market, and its construction, operation and management should follow the market law "Market orientation" mainly refers to actively adjusting the strength and Countermeasures of intelligent construction and management of the scenic spot according to the needs of tourists and residents of the scenic spot. At the same time, the market makes a practical test of Gulangyu smart scenic spot, feeds back the information to the scenic spot, promotes the "intelligent" construction of the scenic spot, and can spur the scenic spot to continuously improve its operation, strengthen innovation, and build a smart scenic spot that meets the market demand.

6.2. Focus on intelligent construction and management of scenic spots

"Focus on smart construction and management of scenic spots" mainly means that the scenic spot management pays attention to the software and hardware construction and management of smart scenic spots. Software construction and management mainly refers to the shared service system, including system maintenance, user management, security management, information access and exchange, application request service, etc.; business application system, including resource protection, business management, tourism operation, public service and other application systems; decision support system,

including comprehensive evaluation, scenario analysis, prediction simulation and other auxiliary decisions. Hardware construction and management mainly refers to the network information infrastructure system, including network communication management, network security management, etc.; data acquisition, data transmission and management, including[18].

7. Conclusion

The construction of smart scenic spot is to establish an intelligent system and operation platform under the support of high-tech information technology to continuously meet the needs of tourists and realize the sustainable development of the scenic spot Gulangyu smart scenic spot in Xiamen is in the primary stage of construction. It needs to strengthen the construction in terms of infrastructure construction, supervision system construction, smart service and smart marketing. At the same time, the scenic spot needs to follow the correct construction mode and actively build and improve it through the forces of the government, customers, scenic spot residents and scenic spot management, so as to complete the construction of Gulangyu smart scenic spot as soon as possible and promote the sustainable development of the scenic spot.

Conflict of interest

The author declares no conflict of interest.

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