Enhancing Tourist Experience with Smart Tourism—
A Case Study of Hangzhou

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Keywords: Smart tourism; Tourist experience; Tourism marketing; Hangzhou.

Abstract. The explosive growth of tourism requires destinations to redefine their role in the progress of value co-creation. Smart tourism destination (STD) came up as an efficient solution for enhancing tourism experiences and tourist satisfaction. However, bring smartness into tourism requires dynamic interaction among stakeholders in tourism ecosystems. This paper expounds the connotation of smart tourism, and provides insights for destination managers and policy makers on how they should use innovative technologies in STDs to improve the experience co-creation through a case study of Hangzhou.

Introduction

Tourism has become one of the fastest growing business throughout China. By the report of the State Information Center (SIC) the number of domestic tourist has reached 5 billion for the year 2018. By the forecast of SIC, the number of tourist is expected to increase by 10%, and the tourism revenue will run up to 5.07 trillion Yuan in the upcoming future. Considering the leading role of tourism in many service industries, it has become the new engine of economic growth and a new driving force for upgrading and expanding the industrial system.

The rapid growth of tourism industry also brings great challenge to the local government. Destination need strategy that covers the entire range of tourism activity, from tourist experience to security problem as well as market promotion and sensitivity to local culture. Under this context, a new typology of destination has come to light, namely the smart tourism destination (STD). In STD, all the stockholders in tourism industry are engaged in a dynamic use of platform, which works as a neural system[8]. Through the smart approach, tourists were encouraged to have interaction with service suppliers, and co-create their personalized tourism experience[2].

Despite the recognized positive influence of smart tourism, only few researchers have investigated the route of create STD to promote tourists’ participant and overall experience[1] [3]. In order to fill this gap, this paper investigates Hangzhou as the best practice of STD in China. Through the case study of Hangzhou, the connotation, strategies, and concrete measure about STD as well as personalized service are indicated.

Literature Review

The recent advancement of information and communication technologies (ICTs) have dramatically changed and transformed the patterns of tourism industries. Meanwhile, the practices of the internet of things, multidimensional dataset of 'big data' and other digital revolutions, have made smart tourism recognized as a fashionable strand of tourism and travel research. The concept of smart tourism emerges from the development of smart cities. It is defined as a tourism platform,
which integrates tourism sources and aforementioned ICTs, provides satisfactory tourism information and services, based on the application of innovative mobile communication technology[10].

Smart tourism is characterized by intensive information sharing and value co-creations[6]. In Chinese context, smart tourism is emphasize as an individual tourist support system within the context of information services and an all-encompassing technology[7]. The service-dominant logic was suggested as an alternative perspective to explain the development of smart tourism development in China.

Technological innovations have become the key elements for tourism destinations. Consequently, smart destinations are obtained increasing recognition in tourism research as an upgraded supplement for tourism destinations. The salient competitiveness of smart destinations is their ability to create synergies between stakeholders and different types of ICTs, and generate a more informed decision-making[2]. Additionally, the extensive data acquisition capacity assists tourism destination in producing insightful understanding of tourists’ needs and preference, thereby, managers could take real-time and context-aware initiatives to tailor their service[3] [9]. As for smart destinations, information technology readiness plays a key role in achieving high international tourist arrivals regardless of the level of tourism and environmental factors. Encompassing different stakeholders’ views, Femenia-Serra and Baidal[5] study demonstrated that destination marketing organizations’ decisions, particularly regarding smart solutions, have a direct impact on tourist experiences in smart destinations.

In contemporary era, the applications of smart techniques and smart devices in tourism have significantly changed tourists’ behavior and preferences. Based on tourists’ perspective, smart technologies aid tourism business in creating, managing and delivering intelligent touristic services/experiences[6]. In despite of a plethora of research has presented enquiries into the operations of smart tourism, a main objectives of smart tourism, namely enhancing tourists’ experiences through appropriate destinations management, still remains in its infancy.

Strategy of STD Digital Revolution Developing

Satisfying Information Service Demand

From the perspective of smart tourism development, the administrative departments and enterprises involved in tourism should be encouraged to improve Omni-directional tourism information service including basic tourism resource, festival events, and expense discount. To realize the positive impact on tourism decision-making and tourism experience of tourists, it is necessary to push relevant information to the potential visitors.

Enrich the Image of Tourism Products

New technologies such as virtual reality and gamification have been a boomer in many business fields. However, tourism enterprises were relatively backward in creating their own tourism characteristics through informationization, meanwhile the credible media for scenic spots is still lacking. It is necessary to encourage and guide traditional scenic spots to innovate tourism core attractions, enrich experience levels and respond to tourists’ personalized needs by means of information technology.

Promoting the Innovation of Tourism Products

The integration of culture and tourism is considered as the main trend of the future tourism. Information technology would be very efficient in developing traditional cultural resources into sustainable tourism resources, promoting innovation of cultural tourism products, and enriching the core attractions of urban tourism.

Enriching the Means of Tourism Marketing

Under the background of the internationalization of tourism, it is necessary to make full use of information technology and big data to screen the suitable marketing channels and content for
tourists in the spatial market. An information platform which contains information about the public service facilities will also help tourists to experience the glamour of the city. In addition to presenting the urban tourism characteristics, marketing content should also establish the explicit and unique city image.

The Operation of Hangzhou Smart Tourism

Consolidate Foundation of Smart Tourism

Back in 2012, Hangzhou has become the first free WIFI city in China, covering 220 square kilometers of the main urban area. In 2017, the bus in Hangzhou's main urban area will be fully covered by WIFI. With the promotion of people's livelihood projects, Hangzhou is expected to cover 615 villages with free WIFI in 2018, extending network resources to the countryside.

Against this backdrop, Hangzhou is known as the city of mobile payment, the proportion of mobile payment has reached 84% in 2017. Public transportation in Hangzhou main urban area like buses and subway have been fully covered by Alipay scan code, more than 98% taxis of taxis are carrying equipment for mobile payment. Supermarket, convenience stores and gift shops, even the Government Office Hall in Hangzhou also support mobile payment. Benefiting from mobile payment to accumulate credit, Hangzhou citizen's total excess credit deposit was close to 1.5 billion Yuan in 2017, which accumulated massive data for the development of the national credit system.

Encouragement policies of information technology and digital economic development help to form such situation. Energize information technology suppliers joining the tourism market, satisfying intelligent construction needs for travel-related enterprises, and present achievements and experience of Hangzhou smart tourism construction as well. Establish the Information technology sharing mechanism; strengthen the technology and knowledge fundament of Hangzhou's tourism-related enterprises, and promoting the transformation of research achievements of science enterprises in tourism industry.

Omni-directional Tourism Marketing

The maturity of several high-technologies helps tourism marketer display the image of destination in an unprecedented way. In 2017, six tourism VR advertising videos have been launched in Hangzhou, introduce the tea culture, silk, cuisine and country scenery of the city. Among them, the one named "one day in Hangzhou" was especially outstanding. Shooting a day in Hangzhou from the tourist's version, this firm covers elements such as food, housing, travel, shopping and entertainment, fully reflects the delicate urban environment, beautiful natural scenery, profound cultural background of Hangzhou, which represents the unique charm of Hangzhou. Such form not only makes Hangzhou more concrete in tourists' eyes, but also transforms from passive viewing to active experience, so that customers can truly feel Hangzhou's charm with high sense of presence and immersion.

Innovation of Traditional Tourism Resources

Smart tourism can help scenic spots to make full use of their advantageous resources and provide tourists with a more comprehensive experience through creative ways of visiting. Based on data from digital elevation model (DEM) and the help from geographic information system technology, it is possible to build the three-dimensional model of tourist destination scenery. Mixed with virtual reality technology, traditional scenic spot can re-packaging its core attractions with efficient methods. Traditional tourist attractions can also draw support from Internet platform and self-Media platform, eliminate the time and space obstacles of traditional tourist experience through network, deepen tourists' understanding of tourism products before travel, supporting tourism decision-making and enrich tourism experience.

For example, Xixi Wetland is one of the earliest scenic spots which started the construction of Intelligent Tourism in China. Tourists can get a virtual experience of the destination through 3D Panoramic Map by clicking on the official website of Xixi national wetland park, Hongyuan. They
can even get customization recommendation based on their interest to customize their own personalized tour route through the virtual tourist map, and get audio guide when they were visiting the park.

Another example is Zhejiang Museum. Using high-technologies such as virtual reality, indoor high-precision positioning, big data, i-Beacon indoor positioning technology, Zhejiang Museum created a mobile museum on smart mobile terminal and other wearable interactive device, provide tourist with location based scenic spot navigation, visiting route recommendation, and cultural value explanation. In the upcoming future, augmented reality technology can reproduce the cultural relics and historical scenes on mobile devices, improving the overall experience of tourists.

**Improvement of Public Information Service Experience**

Hangzhou is using Information Technology Sharing Platform to provide the avenue for better value co-creation between tourists and enterprise. For example, the "i-xihu" intelligent service APP developed by Hangzhou West Lake Scenic Spot realizes the functions of pre-ordering mobile products, issuing authoritative information, information service, tour guide and visitor interaction. Tourists can get one-stop service through mobile phones, search relevant information of scenic spots at any time, get voice tour guide service based on location information, or get access to public services.

Another valuable improvement is the intelligent navigation of toilets. During the Hangzhou Toilet Revolution, 1627 public toilets and 19985 latrines were classified and upgraded. A "10-minute toilet circle" has been formed in the main urban area. Meanwhile, 480 public toilets in social institutions have been opened for free, available for all citizens and tourists. The “Intimate Urban Management” APP and "Gould Map" APP allowed users to check the position of all available toilets, and guide them to the nearest one based on user's location.

Develop scenerized product such as online video, internet celebrity broadcasting, and real-time image can transform tourists' passive process of information acceptance into interactive experience. It also encourage tourists to produce dissemination content related to scenic spots in post-trip stage, enrich the real experience display of scenic spots on UGC platform, and improve other tourists' pre-tour letter to tourist destinations.

**Conclusion**

To sum up, smart tourism destination are essential on offering personalized service to their tourist in each stage of their travel experience. In the pre-trip stage, the Omni-directional and interactive marketing content support potential tourists' decision making progress with more detailed information. During the trip, the real-time updated tourism information assist tourist in exploring the destination, personalized services allow the tourists to get a better understanding of the destination. After the trip, feedback system will encourage tourists to share their memory on UGC platform.

Applying smartness concepts within destination management has proved its potential in increasing tourists’ willingness to travel, enhancing overall-experience, and advancing customer service satisfaction. The case of Hangzhou introduced how the government, scenic spots, and tourism related enterprise promoting management ability and service quality through smart tourism.

**References**


