

# Research on the Development Strategy of Smart Tourism in Hainan Under the Background of Big Data

Limei Fu\*

Hainan Vocational University of Science and Technology, Haikou 571126, Hainan Province, China

\*Corresponding author: Limei Fu, orange2022155009@163.com

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**Abstract:** Hainan is a major tourist province. It is urgent to promote the transformation and upgrading of Hainan's tourism industry from a traditional service industry to a modern service industry by means of informatization. Smart tourism is a brand-new tourism form and operation mode of tourism transformation and upgrading. Integrating big data technology will make smart tourism more accurate in three aspects: tourism management, tourism service, and tourism marketing, and further enhance the satisfaction of the tourism experience. This paper studies the development status of smart tourism in Hainan, deeply summarizes its existing problems and causes, and puts forward the development strategy of smart tourism in Hainan to promote the healthy development of the tourism industry in Hainan.

**Keywords:** Big data; Smart tourism; Development strategy

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## 1. Introduction

Nowadays, tourism has become an important way for people to improve their happiness in life. However, in the face of dazzling tourism products, it is obvious that a single traditional tourism strategy can no longer provide accurate services for tourists. Relying on the power of modern science and technology can often achieve twice the result with half the effort. In this context, the Hainan tourism industry relies on big data to form a new form of smart tourism. Smart tourism originated from the concept of "Smart Earth" put forward by IBM in 2008, which refers to a systematic and intensive management reform based on the new generation of information technology to meet the individualized needs of tourists, provide high-quality and high-satisfaction services, and realize the sharing and effective utilization of tourism resources and social resources<sup>[1]</sup>. In terms of tourism services, it provides intelligent tourism services; in terms of management, it provides intelligent management means; in marketing and market development, it provides an efficient marketing platform and a broad tourist market.

## 2. Overview of big data and smart tourism

### 2.1. Big data

Big data technology is constantly changing, and the application of big data is gradually maturing. Common applications include search engine business and further development to artificial intelligence. Big data penetrates various industries and business functional fields and constitutes an integral part of production factors. The mining, analysis, and application of massive data often lead to new productivity and consumer surplus. Earlier, “big data” mainly existed in physics, biology, environmental ecology, and other fields, as well as military, financial, communications, and other industries, and attracted much attention due to the rapid development of the Internet and information industry in recent years. The common definition of big data refers to data that takes more than tolerable time to capture, manage, and process with common software tools [2].

### 2.2. Smart tourism

Smart tourism has risen from the primary information exchange and knowledge sharing to a more comprehensive level, that is, it provides panoramic application evolution in all fields for the tourism industry, which is mainly due to the upgrading of its core technologies such as cloud computing, Internet of Things, big data, and artificial intelligence. The Internet of Things technology enables the human world to be connected with the physical world, and then people, machines, and things are connected in all time and space through the Internet and mobile Internet. With the help of the powerful computing power of cloud computing, the data processing and analysis capabilities of big data, and the learning and forecasting capabilities of artificial intelligence, it is possible to apply across organizations and departments in wide-ranging, scene-based real-time applications and large-scale data applications [3]. In Quest Mobile 2023 Smart Travel Report, the monthly activity of travel service apps is nearly 140 million, and digitalization promotes the closed loop of “service-management-marketing.” The monthly activity of Disney is 1.25 million (Figure 1).

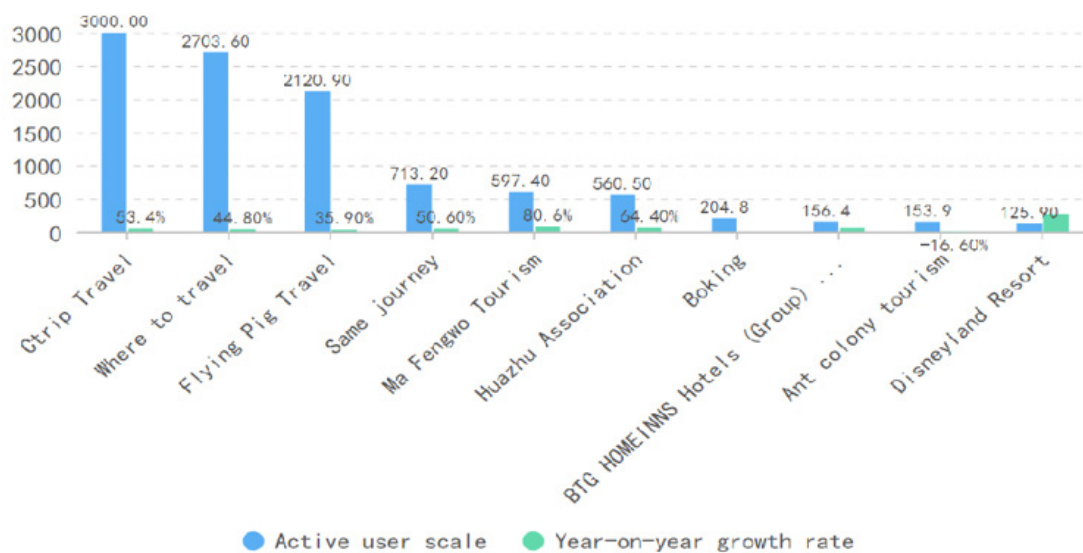


Figure 1. Top 10 active users of tourism service apps in March 2023

## 3. Research on the development status of smart tourism in Hainan

According to the information released by the Hainan Provincial Department of Tourism, Culture, Radio, Film, and Sports, Hainan actively promotes the construction of smart tourism, and strives to realize the innovative tourism mode of “one phone in hand, smart travel to Hainan, and public services are everywhere.” In the later

stage, we will make full use of emerging scientific and technological means such as big data, the Internet of Things, data security, and artificial intelligence, and combine with mobile clients to fully demonstrate the new experience that smart tourism brings to tourists under the effective maintenance of the tourism supervision service platform.

### **3.1. Diverse forms of smart tourism**

Smart tourism in Hainan is in full swing, and many scenic spots use high technology to improve the management level of scenic spots, and at the same time bring tourists a good sense of experience. Taking Atlantis in Sanya as an example, Atlantis in Sanya is a newly-built tourist attraction in online celebrity, and most of its visitors are young people. Catering to the preferences of young people and their ability to accept new things, the scenic spot has opened a 5G smart tour. From swiping your face to check in at scenic spots to experiencing the scene of Atlantis sinking to the bottom of the sea, every step is guided by “scientific wisdom” to enhance travel happiness. In addition, Hainan Yanoda Rainforest Cultural Tourism Zone also incorporates smart ideas, such as providing artificial intelligence translators to allow foreign tourists to communicate without barriers. At the same time, an interpreter guide is provided, which can not only automatically perceive the culture of scenic spots but also effectively guide tourists.

### **3.2. Online and offline combination**

With the support of big data technology, smart tourism has opened an effective way to combine online and offline, such as building a tourism cloud work platform, upgrading the 12301 tourism service hotline, and launching a handheld travel app. Taking Qionghai City, Hainan as an example, Qionghai has opened an official flagship store for tourism on Tmall, which has four sections, namely, travel, accommodation, eating, and playing. The first batch of online products includes many projects, such as sea-surfing, rafting, hot springs, delicious food, and country tours<sup>[4]</sup>.

## **4. Existing problems of smart tourism in Hainan**

First of all, although most scenic spots have smart tourism systems, the carrying capacity of scenic spots is announced in real time to realize the effective diversion of tourists during peak hours. But even so, it is still crowded at the peak of holiday tourism, with tourists having a poor tourism experience. This is mainly related to the maximum carrying capacity of scenic spots. The setting of data does not consider the more comfortable experience of tourists, but gives priority to the income of scenic spots, resulting in a poor number of “repeat customers.”

Secondly, smart tourism is not detailed enough. The age levels of tourists corresponding to different tourist attractions in Hainan are different. For example, the Nanshan Scenic Area in Sanya accounts for the majority of the elderly. In this regard, big data technology should be integrated to set up smart tourism for the elderly, which is slow and more humane. The Sanya Duty-Free Shop area is basically a holy place for young people, and the corresponding smart tourism can integrate the elements of young people, such as cool augmented reality and virtual reality technology, convenient and fast product experience, queuing, and payment methods.

Lastly, Hainan’s smart tourism construction is fragmented, forming an “information island.” Hainan’s tourism informatization has the phenomenon of unbalanced regional development and even isolation, and the online service penetration rate is low. Through comprehensive consideration, Hainan smart tourism is still in its infancy. The application of big data is not fully reflected, which leads to information asymmetry between scenic spots, which is inconducive to diversion, and tourists cannot receive real-time travel information, affecting the

formulation of tourist travel strategies.

## **5. Development strategy of smart tourism in Hainan**

“Smart Hainan Plan” puts forward improving the system structure of smart Hainan, promoting industrial innovation and upgrading, “smart empowerment free port,” and “digital twin first province”<sup>[5]</sup>. It shows Hainan’s determination to promote economic development through today’s science and technology, which also provides clear policy support for smart tourism. Tourism is a pillar industry in Hainan. “Big Data + Wisdom” empowers and injects new vitality into the tourism industry. The construction of smart tourism is a heavy project, which needs to grasp the construction of information infrastructure, management, and marketing, and should also distinguish between primary and secondary, adjust measures to local conditions, highlight local characteristics, promote the transformation and upgrading of Hainan’s tourism industry, and enhance economic benefits. Based on the previous analysis of the status quo and existing problems, the following suggestions are put forward.

### **5.1. Creating a “Big Data + Wisdom” tourism model and improving the information platform**

In order to avoid the phenomenon of an “information island,” it is necessary to make full use of modern information means to improve the application platform. Big data technology can effectively guarantee the construction of the platform and smooth the tourism information of the whole island. Based on big data technology and the development of the tourism industry at this stage, a perfect smart tourism mechanism is built to meet the diversified needs of tourism customers and help strengthen the tourism experience<sup>[6]</sup>.

### **5.2. Highlighting the key points of smart tourism construction and refining the improvement of tourism service quality**

The construction of smart tourism is a big project, and Hainan’s smart tourism needs to be promoted in an orderly manner with key points and priorities. Firstly, it is necessary to pay attention to the quality of tourist service. The significance of smart tourism is to improve the service quality, enhance the core competitiveness of the local tourism industry, and promote the rapid and healthy development of the tourism economy in scenic spots by integrating modern science and technology. Therefore, it is necessary to expand the pilot coverage of upgrading the quality of tourism services and give priority to covering the more influential tourist attractions on the whole island. In the later stage, more enterprises will be involved in the activities of improving the quality of tourism services, and the scoring standards of customer satisfaction, industry influence, and other indicators will be further refined. The second step is “smart” marketing. We need to use the electronic service platform to create an online and offline combination of travel, accommodation, shopping, food, entertainment, and travel, and at the same time use intelligent and information means to get through the optimal combination of tourism products in the whole island to promote the development of the tourism industry. The third step is to improve the level of government management. In the era of big data, the effective integration of information resources is closely related to the government’s management level. Improving the government’s business ability can effectively promote the construction of smart tourism.

### **5.3. Ensuring the orderly progress of smart tourism construction**

The construction of smart tourism requires corresponding policies, standards, systems, funds, and designs. In terms of policy, the government needs to strengthen guidance and improve supporting facilities and laws and

regulations. In terms of standard setting, it is necessary to update tourism information in real time and establish a unified standard for all services of smart tourism. In terms of system construction, smart tourism, as an organic part of smart Hainan, seamlessly connects to other structures of smart Hainan. In terms of funds, it is necessary to set up a special support fund and expand financing channels. In this aspect of smart tourism design, it involves a wide range of departments, such as information departments, governments, tourism enterprises, etc. Therefore, it is necessary to equip a professional team of smart tourism experts to provide intellectual support for the planning and evaluation of smart tourism in Hainan.

#### **5.4. Integrated development of smart tourism and smart city**

Smart tourism and the development of smart cities complement each other. Smart tourism promotes the development of smart cities, and smart cities provide protection for smart tourism. Therefore, smart tourism should actively integrate smart cities, highlight the advantages of cities, provide quality services for tourists, enhance tourists' sense of identity with smart tourism, and promote the construction of smart tourism<sup>[7]</sup>. Smart tourism in Hainan, a single development scenic spot, is easily out of touch with other regions, which is "out of place" and is inconducive to sustainable development. For Hainan Province, in the process of building a smart city, we should not pursue the big and comprehensive construction methods but should clarify the key points of construction, seriously study the experience of building smart cities at home and abroad, and take smart tourism, tourism big data, and ecological islands as the construction goals to promote the unified development of smart city construction and Hainan Free Trade Zone port construction<sup>[8]</sup>.

### **6. Summary**

In recent years, tourism has become a popular activity, and even under the influence of the epidemic, travel is still going on in an orderly manner. As a tourist destination, Hainan is rich in tourism resources and is favored by tourists from all over the country. With people's increasingly affluent lives, their cultural tastes and spiritual pursuits are also improved, and they pay more attention to the service quality of tourism. The traditional tourism model can no longer meet the needs of contemporary tourists, and the tourism industry is facing transformation and upgrading. The rise of new technologies such as Internet+, big data, cloud computing, and the Internet of Things has provided support and guarantee for the construction of smart tourism. The development of smart tourism in Hainan can effectively integrate the island's tourism resources, optimize tourism management, improve the quality of tourism services, and increase the economic benefits of tourism.

### **Disclosure statement**

The author declares no conflict of interest.

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