Application of Big Data Technology in Smart Field Forest Ecotourism

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Abstract:

In recent years, urban people begin to focus on the alpine jungle, which makes the wild jungle tourism develop rapidly. This paper summarizes the connotation of smart tourism and big data, and analyzes the influencing factors of Sipsongpanna smart tourism service platform construction. This paper briefly analyzes the feasibility, advantages, needs and other aspects of the platform construction, and puts forward the model framework of Sipsongpanna smart tourism service platform based on big data. The model builds six tourism application service platforms around three aspects of smart tourism management, marketing and service. The platform has built the application subsystem of thematic tourism big data with different functions, and each subsystem closely relies on big data to fulfill its own responsibilities. This makes big data really applied to smart tourism, and realizes the collection, storage, analysis and application of smart tourism data. The results of data analysis and processing can provide decision-making reference for the government, tourism enterprises, tourists and other stakeholders. Finally, the paper puts forward suggestions on the implementation path and Development Countermeasures of Sipsongpanna smart tourism service platform, aiming at promoting the comprehensive, coordinated and sustainable development of Sipsongpanna smart tourism.

Keywords: *Field Forest Ecotourism, Smart Tourism, Big Data, Service Platform.*

I. INTRODUCTION

In recent years, China's comprehensive national strength is improving day by day, the quality of people's life has changed greatly, and the proportion of tourism consumption in people's living consumption is increasing [1-2]. Tourism market, tourism products and tourism topics are becoming more and more social. Tourism investment, tourism entrepreneurship and tourism employment are becoming more and more popular. The achievements of tourism development have attracted worldwide attention [3]. Tourism has become an important

indicator to measure people's life happiness, life satisfaction and living standard. It has become an important way of life for people to release pressure, cultivate sentiment and broaden their horizons. Tourism has been normalized and life-oriented, and the era of mass tourism has come.

In recent years, Sipsongpanna tourism has entered a period of rapid development. On this basis, Sipsongpanna city strives to build an intelligent tourism service platform. According to the statistics of Sipsongpanna tourism and Service Commission, in 2017, the number of tourists in Sipsongpanna exceeded 22.59 million [4], and the total consumption exceeded 19.9 billion yuan [5], increased by 10.55% and 14.91% respectively compared with 2016 [6]. There are 50 A-level scenic spots in the city, including one 5A scenic spot, 18 star hotels, 64 travel agencies and 286 rural tourist spots [7]. Sipsongpanna municipal Party committee and government took the lead in formulating the "Sipsongpanna smart city work points in 2017", which clearly requires the integration of the city's scenic spots, transportation, catering, accommodation, commerce, leisure and entertainment and other related tourism resources [8]. It is necessary to build Sipsongpanna smart tourism service platform based on big data, innovate tourism service mode and marketing mode, further promote tourism intelligence, provide integrated tourism services for tourists, improve Sipsongpanna tourism service intelligence level, and drive all aspects of tourism industry integration and development.

II. ANALYSIS ON THE CONSTRUCTION OF Sipsongpanna SMART TOURISM SERVICE PLATFORM BASED ON BIG DATA

2.1 General situation of tourism in Sipsongpanna City

Sipsongpanna was designated as a resource exhausted pilot city by the State Council in 2009. The development of cultural tourism is one of the transformation strategies put forward by the municipal Party committee and the municipal government. In recent years, Sipsongpanna City has been known as the city brand of "Daizu water town, canal ancient city" [9]. Taking Dai ancient city and Honghe wetland scenic area as the breakthrough point and "Sipsongpanna two-day tour" as the prying point, Sipsongpanna City has vigorously developed its tourism industry, creating red tourism area, leisure tourism resort area, agricultural ecological tourism area, hydrophilic tourism area and ancient culture tourism area. The latest tourism image is "Lufeng canal, Shanshui Sipsongpanna" [10].

Sipsongpanna is rich in tourism resources. Dai Lake Red River Wetland scenic area, known as "the lotus capital of China", covers a total area of 90 square kilometers, and is the largest lotus viewing place in China. In general, there are 50 tourist attractions in Sipsongpanna, including one 5A scenic spot, 12 4A scenic spots and 286 rural tourist spots.

2.2 Problems of Sipsongpanna smart tourism service platform

More and more attention has been paid to the construction of Sipsongpanna smart tourism service platform, but there are still many problems restricting the development of Sipsongpanna

smart tourism service platform, mainly in the following aspects:

(1) Sipsongpanna smart tourism service platform has not yet achieved three-level interconnection of city, district and enterprise. Smart tourism service platform only publishes data, but does not have the function of data collection. There are deficiencies in data collection, storage, analysis and application. It does not collect data generated by smart tourism. The data of service platforms such as tourism government network, consulting network, wechat, microblog and mobile app are not shared by all departments. See Table 1 for details.

TABLE I. Data service function statistics of smart tourism service platform

Smart Tourism Service Platform	Publish Data or Not	Whether Data Collection	Data Analysis Application
Tourism Administration Network	Yes	Yes	No
Tourism Consulting Network	Yes	Yes	No
Mobile App	Yes	No	No
New Media	Yes	No	No
Video Monitoring Platform	No	No	No
Smart Tourism Touch Screen	Yes	No	No

From the above table, we can easily see that Sipsongpanna smart tourism service platform mainly takes information service as its main function, and the functions of data collection and analysis application are far from meeting the demand.

(2) Although the information infrastructure of Shandong Province has been very perfect, but as far as Sipsongpanna is concerned, the wireless WiFi coverage of tourism resources is still unable to meet the needs of tourists. In particular, the wireless coverage rate of scenic spots above a level is still low, and the mobile app, wechat terminal, QR code and other forms of terminal services used by tourists in the process of tourism all need to install and download data on the smart phone terminal. Or enter the designated web page to download data, which will be restricted by the network and traffic, thus affecting the promotion of smart tourism service platform.

(3) The investment is insufficient. Smart tourism industry, especially the construction of smart tourism public service system, is a long-term construction process. However, in the specific implementation process, most of the smart tourism projects are short of funds, and it is more difficult for key tourism enterprises to form scale effect by self financing. At the same

time, after the completion of the platform construction, it needs certain human, material and financial resources to ensure the operation, and there are deficiencies in these aspects.

(4) The publicity and promotion of smart tourism service platform is not in place, which leads to the low utilization rate of smart tourism service terminal. On the one hand, the main reason is that the platform itself pays too much attention to the large and complete functions, and ignores the problem of occupying the mobile phone memory after downloading the platform. On the other hand, the publicity and promotion of the platform are not in place in the later stage, and many tourists do not understand the app service platform, which leads to the low actual utilization rate of the platform.

2.3 Analysis of related factors of platform construction

Advantage analysis:

Sipsongpanna is located in the middle node of Beijing Shanghai high speed railway, with convenient transportation and natural transportation advantages; As the third primary Internet backbone node city in Shandong Province, it has been recognized as "broadband China demonstration city" by the Ministry of industry and information technology of the people's Republic of China, providing network and hardware infrastructure for the construction of smart tourism platform.

As a major basic core project of big data industry, Lunan data center has settled in Sipsongpanna, which is the largest green and flexible big data center in Shandong Province and even Huaihai economic zone. Sipsongpanna tourism big data is listed as one of the "1616" key projects of Lunan big data center. The construction of Lunan big data center can provide policy, software, publicity, technology and other support for the construction of Sipsongpanna smart tourism service platform based on big data. Generally speaking, Sipsongpanna has a congenital advantage in terms of basic conditions. See Figure 1 below for details.

Fig 1: Tourism map of Sipsongpanna City

Requirement analysis:

(1) The demand of tourism industry development. At present, the development of Sipsongpanna tourism industry has entered a crucial period of transformation and upgrading,

the structural imbalance between supply and demand still exists, and the mode of industrial development and operation is still extensive. Sipsongpanna smart tourism service platform based on big data promotes the innovation of Sipsongpanna tourism big data application mode, realizes the transformation and upgrading and sustainable development of tourism industry, and promotes the transformation of new and old kinetic energy of industry.

(2) Adapt to the "liberalization, diversification, personalized" tourism consumption demand. It is a new demand of tourism consumption to check information at any time and Book Tourism Service at any time, which puts forward an unprecedented high standard demand for the comprehensiveness, vividness and delicacy of tourism public information service. Based on big data, Sipsongpanna smart tourism service platform becomes the best way to solve the above problems.

(3) The need to realize the transformation of service-oriented government functions and improve administrative efficiency. The tourism industry in China basically adopts administrative supervision management. The government plays more roles as rule makers and executors, not as guide, coordinator and service provider. With the deepening of market and the development of modern information technology, this up-down supervision mode can not meet the actual needs of tourism industry development, and can not solve the problems and contradictions in tourism development.

III. CONSTRUCTION OF Sipsongpanna SMART TOURISM SERVICE PLATFORM MODEL BASED ON BIG DATA

3.1 Overall framework

The construction of Sipsongpanna smart tourism service platform based on big data generally adopts the idea of cloud computing architecture, adopts big data technology, builds six service platforms, and constructs multiple thematic application subsystems. Each thematic application subsystem is closely relying on the big data and each other to fulfill its responsibilities, and can integrate the tourism resources related to scenic spots, transportation, catering, accommodation, commerce, leisure and entertainment, collect, store, clean and catalogue tourism data, and realize the functions of data management, sharing, exchange, search and inquiry. At the same time, it can make tourism big data truly applied to smart tourism, effectively classify, process and analyze the smart tourism terminal data, and the results of data analysis and processing can provide decision-making reference for the government, tourism enterprises, tourists and other stakeholders; It can carry out the analysis and application of smart tourism statistics, marketing, management, service, price monitoring, credit and other aspects, improve the standard management level of Sipsongpanna tourism, provide basis support for government decision-making, provide shared information for enterprise operation, provide accurate information services for public travel, improve the smart level of Sipsongpanna

tourism, and promote the transformation of new and old kinetic energy of tourism industry.

3.2 Security architecture

Security architecture is one of the technical forces, which mainly guarantees data security and prevents data loss, error and attack. It mainly deals with data security threats from three aspects: storage, application and management of tourism big data. See Figure 2 for details.
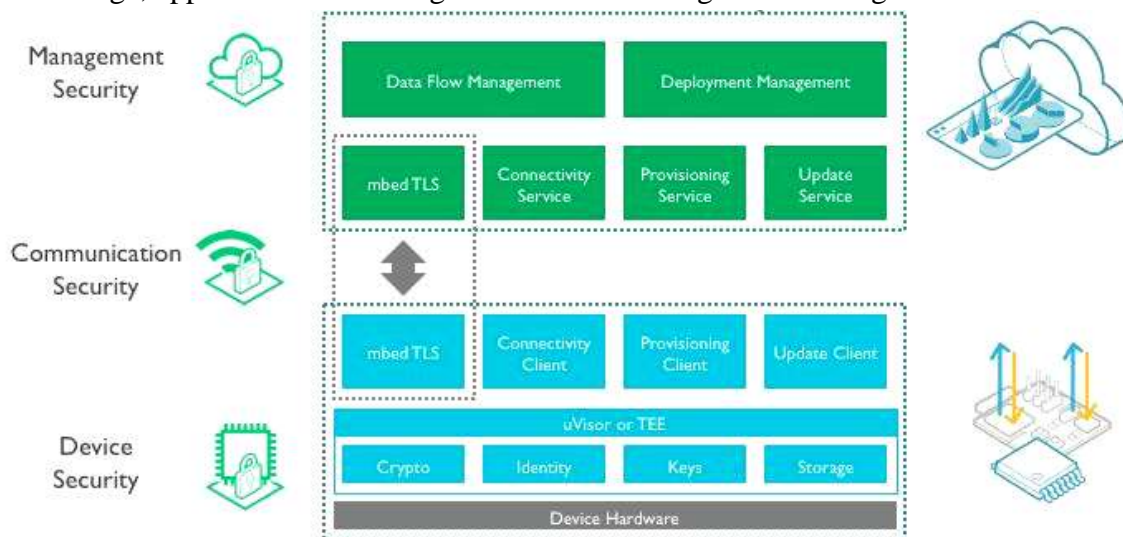

Fig 2: Platform security architecture

(1) Data storage layer: data storage is the basic condition layer, which mainly realizes the functions of data encryption, key separation, filter, data backup and index to prevent data leakage.

(2) Data application layer: the data application layer is mainly to install some data security software, from the prevention of apt attacks, user access control, integration tools and processes for management, to achieve system security and ensure data security.

(3) Data management layer: the main task is to establish data standard system, security system, operation system, open system and authorization management system to ensure the security from the perspective of macro system.

3.3 Technical framework

The technical architecture is constructed according to the standard system of smart tourism service platform, which consists of five parts: basic service, data transmission, data storage, data analysis and processing, and data display.

(1) The basic services include unified resource management services based on distributed computing framework, coordination services in distributed environment, full-text retrieval capabilities and restful service publishing capabilities.

(2) Data transmission mainly includes sorting out all kinds of relational data, realizing data exchange between big data storage components and relational databases, and collecting application system logs.

(3) Data storage: structured database (storing relational data), unstructured database, distributed file system (storing semi-structured and structured data), distributed message storage (storing events, messages, pictures, videos, etc.), time series database (storing sequential data) are classified and stored.

(4) Data analysis and processing: it mainly includes providing SQL analysis and processing ability of big data, providing distributed file processing, providing machine learning algorithm library, supporting data mining and other services.

(5) Data display: provide visualization for analysis results, including big data visualization, mobile phone, LED large screen, etc.

3.3 Tourism big data center

Because data collection involves different units and departments, a big data center should be established in Sipsongpanna tourism distribution center. The leading group shall be set up in the big data center for tourism, which shall be responsible for the top-level involving and unified standardization and coordination, integrating the data resources of tourism departments, realizing data docking, sharing and inquiry among cities, regions and tourism related enterprises, and providing data reference and basis for decision analysis. Secondly, set up the relevant standards of data acquisition, define the data collection index, and establish the data index system. Meanwhile, the software and hardware facilities of the platform shall be planned and constructed, the planning plan shall be provided, the government policies and financial support shall be provided, and the staff shall be trained; Finally, by combing and summarizing all aspects of tourism data resources, tourism is classified and stored to achieve unified data collection, unified management and data security.

IV. CONCLUSION

The construction of Sipsongpanna smart tourism service platform can better serve the development of Sipsongpanna's tourism industry. Tourists can learn about Sipsongpanna's tourism big data through website, mobile phone, touch screen and other ways. Through each tourism service terminal, the tourism department can gather the data of tourist information, scenic spot information, traffic information and so on to the intelligent tourism service platform, which is convenient for the tourism department to quickly, effectively and comprehensively understand the relevant information, so as to make the correct decision and deployment, which is of great significance to realize the intelligent management, marketing and service of tourism.

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