DEVELOPMENT PROSPECT OF NANNING CULTURAL AND TOURISM INDUSTRY IN THE ERA OF DIGITAL ECONOMY

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MASTER OF ARTS IN TOURISM MANAGEMENT

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ชื่อเรื่อง การวิเคราะห์แนวโน้มการพัฒนาอุตสาหกรรมการท่องเที่ยวเชิงวัฒนธรรมในหนานหนิงในยุคเศรษฐกิจดิจิตอล

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บทคัดย่อ

มันเป็นเรื่องเร่งด่วนที่จะใช้เทคโนโลยีสารสนเทศและนวัตกรรมบริการเพื่อส่งเสริมการเปลี่ยนแปลงและการอัพเกรดการท่องเที่ยวแนะนำแนวคิดการจัดการขั้นสูงและวิธีการเพื่อปรับปรุงประสิทธิ ดังนั้นการท่องเที่ยวเชิงปัญญาได้กลายเป็นทางเลือกที่หลีกเลี่ยงไม่ได้สำหรับการพัฒนาที่ยั่งยืนของอุตสาหกรรมการท่องเที่ยวของจีนและการอัพเกรดนวัตกรรม มันเป็นสิ่งสำคัญที่จะแก้ไขปัญหาหลักเช่นความไม่สมดุลของข้อมูลและความไม่สอดคล้องกันของปัจจัยในการพัฒนาการท่องเที่ยวเพื่อเพิ่มระดับการให้บริการการท่องเที่ยวและตระหนักถึงการสร้าง

บนพื้นฐานของการกำหนดแนวคิดของการท่องเที่ยวอัจฉริยะและบริการการท่องเที่ยวอัจฉริยะบทความนี้วิเคราะห์ลักษณะผู้เข้าร่วมและปัจจัยของบริการการท่องเที่ยวอัจฉริยะ นัยลักษณะหน้าที่และโครงสร้างของแพลตฟอร์มเครือข่ายการท่องเที่ยวอัจฉริยะที่ศึกษา ขั้นตอนการพัฒนาของแพลตฟอร์มเครือข่ายการท่องเที่ยวอัจฉริยะที่ชัดเจนและระบบสนับสนุนเทคโนโลยีของแพลตฟอร์มเครือข่ายการท่องเที่ยวอัจฉริยะที่ถูกสร้างข บนพื้นฐานของแพลตฟอร์มเครือข่ายวิวัฒนาการและแรงจูงใจของบริการการท่องเที่ยวอัจฉริยะที่ศึกษา เกมวิวัฒนาการรูปแบบของบริการการท่องเที่ยวอัจฉริยะที่ถูกสร้างขึ้นโดยใช้วิธีการของเกมวิวัฒนาการ กระดาษนี้จะส่งต่อนัยและแนวคิดการออกแบบของโหมดบริการการท่องเที่ยวอัจฉริยะบนพื้นฐานของแพลตฟอร์มเครือข่ายตามขั้นตอนการพัฒนาของแพลตฟอร์มเครือข่ายการท่องเที่ยวอัจฉริยะความต้องการของนักท่องเที่ยวและระดับของการรวมทรัพยากรบริการโครงสร้างโดยรวมของรูปแบบบริการการท่องเที่ยวอัจฉริยะบนพื้นฐานของแพลตฟอร์มเครือข่ายที่ถูกสร้างขึ้น ปัจจัยความร่วมมือบริการรูปแบบและคุณค่าของการสร้างรูปแบบบริการ กระดาษนี้จะส่งต่อนัยลักษณะและการสร้างความคิดของทั้งสามโหมดบริการพื้นฐาน สถาปัตยกรรมเนื้อหาและการประยุกต์ใช้เงื่อนไขของโหมดบริการต่างๆได้รับการออกแบบและกลไกการดำเนินงานและการจัดการกลยุทธ์ที่ได้รับ บทความนี้เป็นการศึกษารูปแบบการให้บริการการท่องเที่ยวอัจฉริยะใน Nanning เมืองบนพื้นฐานของแพลตฟอร์มเครือข่าย บทความนี้วิเคราะห์

ขนาดของอุตสาหกรรมการท่องเที่ยวสภาพทรัพยากรการท่องเที่ยวโครงสร้างพื้นฐานข้อมูลและสถานการณ์ปัจจุบันของบริการการท่องเที่ยวอัจฉริยะใน Nanning City รูปแบบของบริการแลกเปลี่ยนข้อมูลการท่องเที่ยวอัจฉริยะและรูปแบบบริการความร่วมมือปัจจัยได้รับการออกแบบ การสร้างเครือข่ายการท่องเที่ยว Nanning แพลตฟอร์ม กลไกการดำเนินงานร่วมกันของ Nanning ปัญญาการท่องเที่ยวองค์ประกอบได้รับการจัดตั้งขึ้น ผ่านความเข้าใจในการประเมินประสิทธิภาพของแพลตฟอร์มเครือข่ายการท่องเที่ยวอัจฉริยะใน Nanning จุดสำคัญของการจัดการเครือข่ายการท่องเที่ยวอัจฉริยะใน Nanning City จากระบบองค์กรทุนบุคลากรเทคโนโลยีและด้านอื่นๆเพื่อให้แน่ใจว่ากลยุทธ์ของ Nanning บริการท่องเที่ยวภูมิปัญญารูปแบบ

งานวิจัยนี้ได้สร้างแบบจำลองบริการการท่องเที่ยวอัจฉริยะบนพื้นฐานของแพลตฟอร์มเครือข่ายซึ่งจะช่วยเพิ่มระบบทฤษฎีการจัดการบริการการท่องเที่ยวอัจฉริยะ แพลตฟอร์มเครือข่ายเป็นผู้ให้บริการที่สำคัญและวิธีการทางเทคนิคที่สำคัญสำหรับนวัตกรรมรูปแบบการให้บริการการท่องเที่ยวอัจฉริยะและปรับปรุงความสามารถใน มันชี้ให้เห็นทิศทางการพัฒนาขององค์กรการท่องเที่ยวในประเทศจีนและมีทฤษฎีและวิธีการสนับสนุนการตัดสินใจและการอ้างอิงเพื่อเสริมสร้างการจัดการบริการการท่องเที่ยวและการวางแผนพัฒนาการท ในขณะเดียวกันนวัตกรรมบริการการท่องเที่ยวอัจฉริยะให้การสนับสนุนที่มีประสิทธิภาพสำหรับการใช้กลยุทธ์การพัฒนาการท่องเที่ยวทั่วโลก มันมีความสำคัญเชิงกลยุทธ์ที่สำคัญเพื่อส่งเสริมการท่องเที่ยวตระหนักถึงข้อมูลสมมาตรและองค์ประกอบความร่วมมือและส่งเสริมนวัตกรรมไดรฟ์และการพัฒนาที่ยั่งยืนของอุ บทความนี้มีตัวอย่างที่มีประสิทธิภาพสำหรับการพัฒนาการท่องเที่ยวในภูมิภาคและนวัตกรรมรูปแบบบริการผ่านการวิจัยของ Nanning อัจฉริยะการท่องเที่ยวแบบการท่องเที่ยวอัจฉริยะแพลตฟอร์มเครือข่ายกลไกวิวัฒนาการรูปแบบบริการและสร้างมูลค่า

คำสำคัญ : การท่องเที่ยวอัจฉริยะ, แพลตฟอร์มเครือข่าย, กลไกวิวัฒนาการ, รูปแบบการบริการ, การสร้างมูลค่า

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Degree Master of Arts in Tourism Management (International Program)

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ABSTRACT

It is urgent to promote the transformation and upgrading of tourism industry by means of information technology and innovation of service mode, and to introduce advanced management ideas and methods to improve the efficiency of tourism operation and enhance its overall efficiency. It can be seen that intelligence tourism has become an inevitable choice for the sustainable development and innovative upgrading of China's tourism industry. It is of great strategic significance to solve the core issues of tourism development, such as "Information asymmetry and Non-coordination of elements" and to improve the standard of tourism services so as to realize joint creation of tourism enterprises and tourists' value.

In this paper, on the basis of defining the concepts of intelligence tourism and intelligence tourism service, the characteristics, participants and service elements of intelligence tourism service are analyzed, and the process service model of intelligence tourism is constructed; the connotation, characteristics, functions and structure of the intelligent tourism network platform are studied. The development stage of the intelligent tourism network platform is defined and its technical support system is constructed; Based on the network platform, the evolution conditions and motivation of Intelligent tourism Service are studied. The evolutionary game model of Intelligent tourism Service is constructed by using evolutionary game method, and the evolutionary process and law of Intelligent tourism Service are revealed. The connotation and design idea of Intelligent tourism Service model based on network

platform are put forward. According to the stage of the development of intelligent tourism network platform, the state of tourists' demand, the degree of aggregation and integration of service resources, the whole structure of Intelligent tourism Service model based on network platform is constructed, which includes: information interaction service mode, factor cooperation service model and value co-creation service model. The connotation, characteristics and construction ideas of the three basic service modes are put forward respectively. The architecture, content and applicable conditions of various service modes are designed, and their operation mechanism and management strategy are given. The model of intelligent tourism service based on the network platform in Nanning is studied. The scale of tourism industry, the conditions of tourism resources, the conditions of information infrastructure and the status quo of Intelligent tourism Service in Nanning are analyzed. Nanning Intelligent tourism Information Exchange Service Model and Factor Cooperative Service Model are designed. Nanning tourism network platform was constructed. Nanning intelligent tourism elements collaborative service mode operation mechanism has been established. Through understanding the evaluation of its operation effect, the management points of Nanning Intelligent tourism Network Platform are clarified, and the development strategy of Nanning Intelligent tourism Service Module is put forward. The guarantee strategy of Nanning Intelligent tourism Service Model is given from the aspects of system, organization, fund, talent and technology.

The intelligence travel service model based on the network platform constructed in this study is conducive to enriching the theoretical system of intelligence tourism service management. What’s more, the network platform is an important carrier and key technical means for the innovation of Intelligent tourism Service Mode and the improvement of service capability, which points out the direction for the development of tourism enterprises in China and provides theoretical and methodological support and decision-making reference for strengthening tourism service management and formulating national or local tourism development planning. At the same time, the innovation of intelligent tourism

services provides effective service support for the implementation of the global tourism development strategy, and it is of great strategic significance to promote the realization of "Intelligent symmetry of information and coordination of factors" in the tourism industry and to promote the innovation-driven and sustainable development of tourism. Through the study of Intelligent tourism Service Mode in Nanning, this dissertation provides an effective example for regional tourism development and service mode innovation, and it also has important application and promotion value.

Keywords : intelligent tourism, network platform, evolution mechanism, service mode, value co-creation

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Dongyan Yang

TABLE OF CONTENTS

List of Tables

Page

List of Figures

Page

CHAPTER 1

INTRODUCTION

Background of the Study

Intelligent tourism is an advanced stage of the integrated development and collaborative evolution of information technology and tourism industry. Considering that the tourism industry itself is highly information intensive and highly dependent on communication technology, the concept of "intelligent" is gradually applied to the tourism industry, someone pointed out that tourism "intellectualization" is tourism" informatization" (Koo, 2015).

After another great breakthrough, it will become a catalyst to promote the innovation and development of tourism industry and transform and upgrade from traditional tourism to modern service industry (Li, 2016). In recent years, intelligent tourism has been highly valued by the state. In July 2011, the National Tourism Administration proposed to strive to form a group of strong leading role and outstanding demonstration significance in 10 years

In January 2015, the National Tourism Administration issued the guiding opinions on promoting the development of intelligent tourism, and proposed to improve the level of tourism facilitation and industrial operation efficiency as the goal to achieve tourism service and management. Marketing and intelligent experience are the main ways to promote the sustainable and healthy development of intelligent tourism, and further determine the development policy of intelligent tourism.

The definition of intelligent tourism by foreign scholars can be traced back to the beginning of the 21st century (2000), defined intelligent tourism as the use of a long-term, holistic and sustainable approach to design, develop and market tourism products and businesses (Molz, 2012). UNWTO divides intelligent tourism into four levels: clean, green, ethical and high-quality service (Gretzel, 2015). Therefore, in order to emphasize the important impact of information technology on tourism, the British intelligent Tourism Organization (2012) called the phenomenon of using and applying information technology in the tourism sector as "digital tourism" or "intelligent tourism" (Werthner, 2004). We defined intelligent tourism as a comprehensive tourism platform integrated with tourism resources and information communication technology based on the development of mobile communication

technology (such as artificial intelligence, cloud computing and Internet of things), which can provide tourists with clear information and satisfactory services (Hunter, 2015). In addition, in order to highlight the practical support of "intelligent tourism" to "intelligent city", (Buhalis, 2008) defined intelligent tourism as the use of mobile digital connectivity technology to create a more intelligent, meaningful and sustainable relationship between tourists and cities. Based on the research results of previous scholars, (Buhalis, 2014) comprehensively combed the theoretical basis of intelligent tourism, defined intelligent tourism as the comprehensive collection and utilization of data from infrastructure, social relations, government, organizations and individuals at the destination, and combined with advanced information technology, these data were transformed into practical experience and commercial price value of tourism.

Compared with foreign research, the research on intelligent tourism started late in China. Since the "intelligent city" was proposed in 2011, it has gradually attracted the attention and discussion of domestic academic circles for intelligent tourism.(Tu et al., 2014)believe that intelligent tourism is a new tourism form with highly systematic integration and deep development and utilization of tourism physical resources and information resources through the application of various information technologies in tourism experience, industrial development and administrative management. Someone believes that the core of intelligent tourism system is not technology, but a service platform and symbiotic system built by technical means around the personalized needs of tourists.(Morabito,2015) believe that intelligent tourism refers to the ubiquitous tourism information service accepted by tourists in the process of tourism activities.(Sigala,2015) believe that the intelligent tourism system of scenic spots means that tourists can realize independent travel, shopping, entertainment, food, housing and transportation through intelligent phones, iPad, intelligent touch screen and other terminals activity. (Tachizawaet al., 2015) believes that intelligent tourism refers to the use of cloud computing, the Internet of things, artificial intelligence and other technical means, through computers, mobile phones and other intelligent terminals to complete various tourism information services, and to achieve tourism intelligence through the active use of tourism information.

Schmidt (2014) believes that the emergence of intelligent tourism has caused people to rethink the business model and its strategic importance. Therefore, the rise of intelligent tourism will become an important opportunity to promote the innovative development and transformation and upgrading of tourism industry.

Traditional tourism enterprises must redefine the concept of enterprise development and the way of value creation. (Vargo et al., 2008) believes that intelligent tourism has changed all part of the following five market elements: exchange objects, market structure, market institutions, market participants and market practice. Intelligent tourism relies on massive and free tourism information and open technology platform to transform value proposition. At the same time, the infrastructure of intelligent tourism can form new information asymmetry, which is conducive to new commercial development (Gretzel, 2015). However, what is the real intelligent tourism development model? How to deal with a series of problems in the development of intelligent tourism? At present, it is still in the stage of exploration. (Anttiroiko et al., 2014) believes that there are three main development modes of China's new tourism formats: regional agglomeration, online network and professional compound, but there are problems such as the absence of tourism public service function, the confusion of tourism management system, the lack of intelligent information system construction, and the serious violations of Tourism market. (Yoo et al., 2016) analyzed the problems faced by the development of intelligent tourism under the background of big data, and built an intelligent tourism application model based on big data platform. (Huber, 2017) put forward strategies on how to promote the intelligent development of "Internet + tourism" in Guizhou by analyzing the development status of intelligent tourism in Guizhou Province. (Hao, 2017) thinks that the current extensive service mode of scenic spot information service is no longer suitable for the development background of intelligent tourism. Based on the ubiquitous, seamless, instant, accurate and interactive requirements of intelligent tourism for public information service, the framework of intelligent tourism business process and intelligent tourism center construction was constructed.(Kung et al., 2017) comprehensively analyzed the development status of intelligent tourism, and constructed intelligent tourism construction and development strategies including intelligent tourism social support system, information infrastructure system, tourism resource development and management system, and functional application and innovation system.

Some scholars have also pointed out that tourism enterprises can adopt the theory of open innovation, service leading logic and service science to identify, integrate and utilize the opportunities and challenges of intelligent tourism, so as to redefine the business model and maintain lasting competitiveness (Geng, 2018). On this basis, (Ando et al., 2018) proposed that it is necessary to build an intelligent tourism service ecosystem which can spontaneously perceive and respond. To a

large extent, the system realizes the loose coupling of social and economic values through the interaction of institution and technology. Therefore, tourism enterprises must cooperate with stakeholders outside the enterprise boundary, share and obtain resources and exchange services in an intelligent service ecosystem, and cooperate with many participants to realize value co-creation. In the intelligent service ecosystem, the labels assigned to the roles of tourists, tourism companies and tourism agents are no longer valid (Loudon, 2016), and any type of stakeholders can become producers, consumers or intermediaries (Atashzar, 2018). It means that to re-examine the relationship between producers and tourists, it is necessary to explore new modes of cooperation in production, delivery and service consumption (Thomas, 2007).

On the issue of how to build an intelligent tourism service ecosystem, (Amrit, 2010) described the means and strategies adopted to build the trip advisor service ecosystem, including identifying different stakeholders, the types of resources involved in the exchange, and the types of value created through these interactions and interactions. At the same time, tourism enterprises should adopt an open business system and service mode, so that they can manage their own intelligent tourism service ecosystem in a dynamic way, and allow participants in the system to acquire, integrate, match, connect and adjust resources in a flexible way according to their own situation, so as to jointly create "situational value" (Acs, 2017). (Kevin, 2010) discussed the ecology, synergy and sustainable development of intelligent tourism, and proposed the development path of intelligent tourism from the perspective of information ecology. However, (Avirit, 2013) pointed out that although the intelligent tourism program seeks to establish a viable intelligent tourism ecosystem worldwide, the complexity of the tourism industry makes it extremely difficult to go beyond the innovation of specific network platforms, technologies or specific services. The systematic, extensive, coordinated, shared and value creative development of tourism data still needs further exploration.

Through many years of research from different angles, intelligent tourism should include the following points: first, intelligent tourism is an important innovation in the tourism industry; second, the innovation path is based on the tourism information platform. Thirdly, the innovation means are Internet, big data, cloud computing and other new generation of information technology applications and business model; finally, the purpose of innovation is to further improve the level of tourism service and tourist satisfaction. Therefore, this paper studies the concept,

characteristics, structure, driving factors, development model, service ecosystem and evaluation of intelligent tourism.

Research Problem

Tourism is the sum of all the phenomena and relationships caused by the short-term stay of people who meet the material and spiritual needs, leave their permanent residence and go to other places without the purpose of employment and settlement. Tourism comes from the basic needs of human beings, relies on certain social and economic conditions, and takes tourism resources, facilities and services as the form of expression. It is the basic right and frequent behavior mode of people in modern society. It contains people's pursuit of aesthetics, the exploration of heterogeneous information and the reflection on the habitual life style. At the same time, the tourism industry generated around the travel of tourists should meet people's all-round needs of "food, housing, transportation, tourism, entertainment and shopping".

From the economic level, the tourism industry has many elements, covers a wide range of industries, strong industrial connectivity, reflecting the complexity. From the relationship between tourism industry and other aspects of society, tourism industry should reflect the regional national characteristics, highlight the historical and cultural accumulation, show the level of regional economic development and humanistic comprehensive quality, and reflect the great comprehensiveness. The superposition of complexity and comprehensiveness is in urgent need of theoretical analysis and prediction of the current operation state and future development trend of tourism industry from a new perspective.

At present, Nanning's tourism industry is in a period of profound changes and rapid development, showing the characteristics of huge macro pressure, micro imbalance of supply and demand, and weak international competitiveness. On the macro level, the tourism industry has become an important part of the current economic transformation with low pollution, high linkage, promotion fees and structural adjustment, which has risen to the national strategic level.

On the micro level, with the rising of the middle class's ability to pay and the taste of demand, the domestic tourism of the bidding group based on sightseeing began to change to the international tourism of individual tourists who took leisure vacation. With the development of the Internet, the aesthetic taste of the young generation has changed from "old and strange" to "cool and cute". With the transition

of tourism media from traditional information media to we media and network platform, intelligent tourism has become the trend in the future, and the tourism object has stridden forward from "ticket economy" of single scenic spot to "whole area tourism".

Although the competitiveness of Nanning's tourism industry has increased since 2010, however, compared with GDP jumping from 3 trillion US dollars to 12 trillion US dollars in the same period, the tourism industry in general has run out of the market. The international competitiveness of Nanning's tourism industry is not commensurate with the development of comprehensive national strength, and there is a great gap compared with the top 14 cities. Facing the problems in the industrial practice, we must do innovative research according to the current social and economic changes.

Nowadays, information technology is highly integrated with the tourism industry. Internet, big data and artificial intelligence have become the hot spots of industrial development. From the perspective of information to examine the complex system of tourism, we can see that the so-called tourism industry is to meet the needs of tourists to obtain information and provide a complete set of various related elements in the whole tourism process, and various independent elements rely on each other. In short, the core of the so-called tourism industry can run in "information symmetry + matching elements", and information is not only the means but also the purpose, the evolution path and the ultimate goal. Therefore, this "Internet + tourism", which can improve the efficiency of tourism industry and increase the overall efficiency of the industry, arises at the historic moment.

Intelligent tourism is the product of the integration and development of information technology, tourism industry and service innovation. It is also the latest achievement of the application of "Internet +", big data and artificial intelligence in the tourism industry. It can solve the structural contradictions of the tourism industry, drive the further upgrading of the tourism industry, avoid the "involution" of the tourism industry and promote its evolution and upgrading. The driving force of intelligent tourism lies in the upgrading of the original industry caused by the change of tourists' behavior pattern and demand. At the same time, the new generation of information technology also plays an important role in guiding and catalyzing. The concept of "network platform" is introduced in this paper, and the evolution mechanism and service mode of intelligent tourism service based on network platform are systematically studied, which provides theoretical guidance for local governments to formulate sustainable development planning of tourism industry.

The implementation of intelligent tourism service mode in Nanning, efficient allocation and integration of regional tourism service resources, continuous improvement of tourism service level and promotion of tourism transformation and upgrading have important strategic significance.

Objective of the Study

This paper makes a systematic study on the evolution mechanism and service mode of intelligent tourism service based on network platform. The main objectives of the study are as follows:

1. Evolution mechanism and model framework of intelligent tourism service based on network platform. The connotation, characteristics, participants and service elements of intelligent tourism services are analyzed, and the service model of intelligent tourism is constructed, and the functions, structures, technical support systems and development stages of the intelligent tourism network platform are studied, the evolutionary power of intelligent tourism is clarified. This paper constructs the game model of intelligent tourism service evolution, reveals the evolution process and law of intelligent tourism service based on network platform. By using the theory of comprehensive advantage, this paper puts forward the design ideas and overall framework of intelligent tourism service mode, namely information interaction service mode, element collaborative service mode and value co-creation service mode.

2. Intelligent tourism information interactive service mode based on the network platform. The design idea and framework of the intelligent tourism information interaction service mode based on the network platform are proposed. The content, applicable conditions and information technology support scheme of the information interaction service mode are designed. The operation mechanism and management strategy of the information interaction service mode of intelligent tourism are given.

3. Collaborative service mode of intelligent tourism elements based on network platform. The service forms of high efficiency collaborative service, precise collaborative service for individual reality demand and intelligent collaborative service for potential demand are designed. The suitable mode of collaborative service is given. This paper puts forward the operation mechanism and management strategy of collaborative service mode of intelligent tourism elements by using conditions and criteria.

4. Value of intelligent tourism based on network platform creates service model. The connotation and characteristics of the model of intelligent tourism value co-creation service are clarified. The framework of the service mode for co-creation of intelligent tourism value based on the network platform is proposed. The content and applicable conditions of the service mode are designed. The operation mechanism and management strategy of the value co-creation service mode based on the network platform are proposed.

5. Nanning intelligent tourism service mode based on network platform. This paper analyzes the current situation of Nanning tourism industry and intelligent tourism service, selects and designs the information interaction and elements collaborative service mode of Nanning tourism, constructs Nanning tourism network platform, provides the operation mechanism of Nanning intelligent tourism elements collaborative service, and puts forward the development and implementation strategy of Nanning intelligent tourism service module.

Expected Result

This paper defines the connotation and characteristics of intelligent tourism, further clarifies the participants, elements, process and demand of intelligent tourism service, and analyzes the function of intelligent tourism network platform. In the stage of capability, structure and development, this paper reveals the evolution mechanism of intelligent tourism service, constructs the intelligent tourism service mode based on network platform, and designs its operation mechanism and management strategy, aiming to establish a set of systematic and scientific theory and method of intelligent tourism service management based on network platform as the carrier and technical support.

Scope of the Study

The current tourism research has been paying attention to "tourism + information". Since the 1960s, the rapid development of information science and information technology has been widely used in various industries, integrating into almost all social life, emerging a large number of new phenomena and new things. Since the beginning of this century, "cloud computing, Internet of things, big data" and other latest information technologies have fully penetrated into the tourism industry, giving new birth to intelligent tourism. This paper comprehensively combs

the concept of intelligent tourism, reveals the evolution mechanism of intelligent tourism based on network platform, constructs the intelligent tourism service mode based on network platform, further improves the relevant theoretical system of intelligent tourism, and provides scientific basis and theoretical support for the formulation of tourism industry development planning in the future.

Intelligent tourism is the development trend of tourism industry in the future, so it is concerned by the investment community and tourism enterprises. This paper introduces the network platform as a tool to realize intelligent tourism, and puts forward the service model of intelligent tourism through the role of various effects of the platform in the evolution of intelligent tourism. The empirical analysis of intelligent tourism in Nanning can also provide decision-making basis for the planning of intelligent tourism in Nanning, and provide important theoretical guidance for the construction of "whole area tourism" and "Intelligent city" in Nanning.

Limitation of the Study

This paper makes a preliminary exploration on the Intelligent tourism service driven by the network platform. The Intelligent tourism platform designed by some methods of machine learning has yet to be commercially verified in practice. At present, due to the isolated island phenomenon of data, the relevant research still stays in the original means such as questionnaire, The leap from model driven collective inference to data-driven individual accurate portrait cannot be completed. The innovation path and design layout of Harbin tourism industry development still need to be tested by market practice.

Definition of Terms

Intelligent tourism means a high-level stage of tourism development, which is the inevitable product of the continuous development of tourism information construction (Koo, 2015). The process of experience is aimed at improving the initiative, independence, intelligence and interaction of tourists in the whole process of tourism, and then realize the intelligent tourism services, tourism management, tourism marketing and tourism experience, and promote the transformation and upgrading of tourism business to comprehensive, integrated and ecological, which is the market demand of tourists with modern information technology, it drives the innovation and development of tourism services (Li, 2016).

Intelligent tourism service means the collection, mining and calculation of tourist data by using big data, Internet of things, cloud computing, artificial intelligence, virtual reality and other information technologies, and actively develops the real needs of tourists through the accumulation of intelligent data and excavates them (Molz, 2012). With the enhancement of the service scope, service depth and specialization degree of intelligent tourism, intelligent tourism will gradually transition to the selection and modification of multiple schemes, and then to the self-design, self-realization, self-evaluation and self-enjoyment state which is dominated by the whole process interactive experience and the goal of value creation (Gretzel, 2015). Intelligent tourism service has obvious characteristics of initiative, individuality and high efficiency integration. Intelligent tourism service pays more attention to interaction with tourists, which is a ubiquitous tourism service for tourists, not groups (Werthner, 2004). It is provided by the whole process, time and space, all-round, terminal and whole organization of tourism activities. Integration, coordination, optimization and promotion, to achieve a subversive tourism service model innovation. On the one hand, intelligent tourism service will promote the reconstruction of tourism information flow, the reorganization of tourism business and the optimization of tourism organization; on the other hand, intelligent tourism service will also affect the behavior and behavior of tourists' information search, and accelerate the change of the rooting nature of tourism marketing and tourism management (Buhalis, 2008).

The service elements of intelligent tourism means scenic spots, tourism resources, tourism facilities, etc. (Buhalis, 2014). Among them, tourism facilities are all kinds of facilities which are invested in people, wealth and materials to attract and receive tourists and obtain economic benefits. Tourism resources are all natural, historical and realistic objective existence which are attractive to tourists [Morabito, 2015]. According to the formation conditions, tourism resources can be divided into two categories: natural resources and human resources (Tachizawaet al., 2015).

The intelligent tourism environment means social and cultural environment, economic and technological environment, legal policy environment and natural ecological environment (Sigala, 2015). The social and cultural environment of intelligent tourism has a very obvious impact on intelligent tourism, which also reflects the open characteristics of intelligent tourism. The influence of social and cultural environment on intelligent tourism is mainly realized through tourism market, which can be achieved in three ways: social group awareness, social group behavior and social cultural events (Schmidt, 2014). The influence of social group

consciousness on intelligent tourism is mainly reflected in tourists' self-consciousness and foresight of travel. Tourists' arrangement of tourism travel is fully satisfied with their own cognitive needs of their own mind. These self-consciousness has led to a large number of individual and characteristic tourism, However, the improvement of tourists' foresight of tourism travel requires the whole tourism to be more intelligent and the tourism process becomes more transparent. The change of social group behavior has a significant impact on tourism, and group behavior is increasingly realized by mobile phones (Vargo et al., 2008). At present, mobile phones have become an important tool for people to live, including the convenience of online shopping and the circle of friends. The interaction of the Internet makes it difficult for modern people, especially the younger generation, to leave the mobile phone. As a network terminal, mobile phones bring convenience to people, but also produce a lot of imprints. These imprints contain commercial laws, which provide conditions for the realization of intelligent tourism (Anttiroikoet al., 2014). Social cultural events refer to some important social activities, such as international experience shows that three to five years after the Olympic Games, the cultural events such as the Olympic Games and the football world cup can usually bring the climax of inbound tourism. After that, sports facilities often become the symbol of cultural tourism, attracting tourists from all over the world, and restoring social cultural events through relevant intelligent technology, making tourism more profound (Yooet al., 2016). The great effect of science and technology on productivity has been proved. Its impact on tourism industry is reflected in various aspects. Besides the necessary information technology for the development of intelligent tourism, other scientific and technological impacts on intelligent tourism mainly lie in tourism infrastructure, attractions exhibition and other aspects, for example, the breakthrough of building materials, virtual technology, intelligent toys with cultural characteristics gradually permeate all aspects of intelligent tourism, which makes people still take away some things after traveling (Huber, 2017). Virtual technology (VR) is more applied to the construction sites and museums with historical and cultural characteristics. The Taipei Palace Museum takes the lead in applying VR technology to tourism perception, so that tourists can travel through the past and realize dialogue with the past (Hao, 2017). The integration of intelligent tourism and various science and technology is reflected in all aspects. The combination of intelligent technology and tourism souvenirs, these intelligent souvenirs are the best proof of the experience.

Intelligent tourism service model means forming DPBS cycle: dream ⟶ plan ⟶ booking ⟶ share. Based on the demand of intelligent tourism, this paper

constructs intelligent tourism service model from two dimensions of vertical service process and horizontal service interaction. Based on the analysis of the demand links of intelligent tourism, the intelligent tourism service model is divided into five stages, namely: tourism service demand mapping ⟶ tourism service resource integration ⟶ tourism service scheme formation ⟶ tourism service scheme selection and implementation ⟶ tourism service evaluation. In the process of intelligent tourism service, information flow, factor flow, service flow and transaction flow will be formed to promote the formation of ecological cycle of intelligent tourism service. The interactive model of intelligent tourism service every link in the process of intelligent tourism service needs the interaction between tourism service providers and tourists (Kung et al., 2017). For example, relying on the network platform to identify or mine the needs of tourists, judge whether it is a real demand or a potential demand, whether it is a common demand or a personalized demand, whether it is a core demand or an attachment demand. After confirming the demand status, attribute, necessity and urgency, it is more conducive to provide accurate, timely and applicable tourism service portfolio.

CHAPTER 2

LITERLATURE REVIEW

Theories and Concepts

Intelligent Tourism Theory

With regard to intelligent tourism, due to the different levels of integration and development of tourism industry and information technology, foreign scholars focus on the early informatization of intelligent tourism, while domestic scholars point out that intelligent tourism should be defined as the advanced stage of the integration of information technology and tourism industry, other than tourism e-government and tourism electricity. The re-packaging of sub-business and digital scenic spots with the concept of "wisdom" can solve the new problems in the tourism development, meet the new needs in the tourism development, and realize the new ideas and ideas in the tourism development. Intelligent tourism is defined by domestic scholars from a specific perspective, such as "technology application wheel" from the perspective of information technology, "management change theory" from the perspective of industrial management, "experience theory" from the perspective of tourists' experience, and "practical operation theory" defined from the perspective of local tourism planning. The extension of tourism concept enriches the theoretical system of intelligent tourism, but it does not reveal the core issues of intelligent tourism, intelligent finance and intelligent transportation. The core of intelligent tourism is the tourism information formed by information technology and the intelligent service mode formed by the effect of intelligent information on tourism industry. Li Yunpeng's "intelligent information" theory reveals the essential attribute of intelligent tourism, which is the common theoretical basis of "intelligent tourism". Due to the different research directions, this study did not do in-depth research on the generation and operation mode of "intelligent information", and could not effectively guide the industrial practice. Domestic scholars in the field of information technology focus on the specific application of information technology, and do not reveal the internal meaning of the system from the perspective of management science and industrial economics, nor explore the service providers of intelligent tourism from the combination of technology and system or simply analyze the core role of tourism information in intelligent tourism from the theoretical point of view, but lack of systematic analysis of the impact on the overall operation of the tourism industry.

Service Mode Theory

Service mode is the focus of service science. There are abundant researches at home and abroad. In the field of tourism industry, some scholars have established the integration mode of tourism service and mobile e-commerce, and some scholars have studied tourism services under the service leading logic, and combined with the concept of value proposition and value creation, but few scholars have studied the evolution mechanism and service mode of intelligent tourism service, especially the systematic research from the perspective of network platform. This paper is based on the revealing of the evolution mechanism of intelligent tourism service, and constructs the intelligent tourism service mode based on the network platform, which can effectively fill the gap of theoretical research and the deficiency of practical application. Especially the focus of current tourism research and practice has turned to the whole area tourism. The integration and co-development of intelligent tourism and global tourism will also become the characteristics of tourism research in the future.

The emergence of information technology and network technology in tourism service mode has created a technical foundation for the emergence of various tourism service modes. (Zha, 2016) proposed that goods and services cannot be completely differentiated, and the value-added realization of enterprises is reflected in the "solution" of the combination of the two. (Martin, 2017) proposed the integration mode of mobile e-commerce for tourism services in ethnic areas, and put forward countermeasures for the development of mobile e-commerce in tourism services. (Khan, 2017) combined with the characteristics of the tourism industry, constructed the tourism experience value co-creation system model, discussed the co creation subject, co-creation process, co-creation results and their mutual relations, and then concluded that the creation of tourism experience value must change the situation of unilateral dominance of tourism enterprises in the past, and tourism should be considered with the increasingly obvious trend of personalized characteristics of tourism demand. It is concluded that tourism experience value is co-created by making full use of the operational resources of tourists. (Finck, 2018) innovated the cooperation mode of tourism supply chain and proposed nyop-mode. (Song, 2018) described the perspective of dynamic capabilities as mediating variables, and then came to the conclusion that service leading logic not only directly affects dynamic capabilities, but also indirectly affects dynamic capabilities through network embeddedness. Neither service leading logic nor network embeddedness directly affect the value co-creation of network platforms, but indirectly through dynamic

capabilities. (Shriver, 2013) put forward that service research has become a hot research issue in the past 40 years. From the development of traditional classic theory, from product led logic to service led logic and value co-creation, the continuous evolution of service mode needs to rely on the development of service science theory, and cannot be divorced from the needs of social development.

Network Platform Theory

Network platform refers to the use of information technology to build a virtual trading space. The Internet and the Internet of things are closely connected with people, people and things, realizing all kinds of state data online. The nodes on the network interact in real time through information technology, and resources are collaborative and shared, resulting in massive data. Different networks are interconnected and superimposed to generate a new complex network. Network platform is the combination of online, data and network technology. Data is generated by complex network, and gathered by platform. The platform uses data for operation, providing decision support for each transaction subject on the platform. This is the difference between a network platform and a traditional platform. Therefore, the foundation of network platform is information technology, which is also the essential attribute of network platform. The technical basis of network platform is data and algorithm. Data is generated by various information networks, and the network has gone through three stages of development. Pc internet is the revolution of underlying information technology, and information transmission is no longer blocked by space. Mobile Internet makes everyone real-time interconnected, and information transmission is no longer blocked by time. These data are gathered in the network platform and become the means of production. The network platform processes these data through algorithms, trains the core model of the platform continuously, makes it intelligent, and can provide decision support for all parties in the transaction, optimize the trading experience and improve the transaction efficiency. Through the reconstruction of traditional process, the network platform forms a brand-new intelligent tourism service value chain with platform as the center and collaborative service ability as the main line. Through artificial intelligence, it creates a cost leading, differentiated and focused competitive strategy.

Network platform is the latest system form of resource allocation under the current internet background. The virtual platform mode in the internet background, namely network platform, has become the third stage of platform research. The core

of this stage is the platform at the market, network and governance structure level. Based on the research context of domestic and foreign scholars, the focus of the first and second stages of platform research is product platform. In the first stage, the reuse of platform and derivatives that may be derived from it are mainly studied. In the second stage, it focuses on how the product platform grows into an ecosystem and platform innovation, the first two stages mainly focus on the static research of products, depict the "production mode" of products, and the key points of network platform research also focus on the new characteristics given to the platform by information technology (Internet and Internet of things). Domestic scholars have carried out a wide range of research on online tourism platform according to the latest achievements of industry practice and platform theory. However, the comprehensive research on the combination of Internet platform and intelligent tourism is rare, especially the research on the evolution mechanism of intelligent tourism service based on network platform is still a theoretical blank. Scholars have a lot of research literature on the actual operation status of online tourism enterprises, but the discussion on the connotation and application of intelligent tourism service mode based on network platform is relatively rare.

Related Research

Sko (2012) pointed out the concept and nature of "Internet +" and "Internet + tourism", and proposed that the Internet is not only a tourism sales and marketing platform, but also a creative source of tourism products, which can become an important means of industrial financing and a component of industrial productivity.(Daugherrty, 2011)pointed out that the oto business model with the mutual needs of consumers and enterprises as the core not only provides consumers with an effective, safe, convenient and friendly consumption experience, but also provides effective, convenient and safe services and precise marketing for businesses, and constructs a tourism e-commerce platform and puts forward relevant optimization suggestions.(Mcintyre, 2017) pointed out that the wide application of Internet of things, communication network, cloud computing and other advanced technologies makes the sustainable development of intelligent tourism possible. Therefore, based on the connotation of big data and intelligent tourism, this paper analyzes the problems faced by the development of intelligent tourism, and constructs the application model of intelligent tourism.

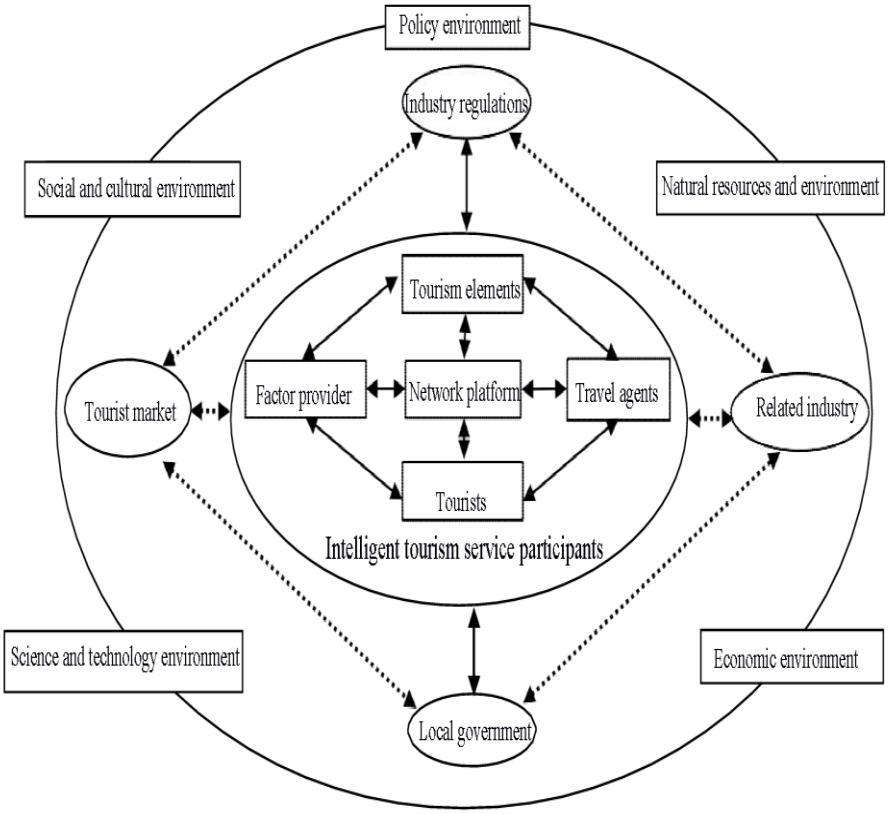
Kane (2015) pointed out that in view of the development of cloud computing and Internet of things technology as well as the popularity of mobile Internet, anintelligent tourism application "enjoy intelligent travel" based on wechat platform was designed to provide strong support and guarantee for improving the intelligent management of scenic spots. Rochet (2014) pointed out that the network tourism platform has brought great opportunities to the development of tourism industry. It is necessary to study the industrial structure and improve the competitiveness of the tourism industry. Therefore, we can use the network data to study the factors affecting the tourism industrial structure, and introduce the principal component analysis (PCA) method to construct the evaluation index system of the regional tourism industrial structure. Kim (2017) pointed out that tourism consumption has gradually become the main consumption hot spot. The urgent task of tourism industry is to accelerate the development process of integration of tourism and information industry, guide tourism consumption and improve the quality of tourism industry.

Lees (2018) points out that the impact of "Internet plus" has brought real-time diversification of tourism products and services to online tourism enterprises, thus promoting the integration of online tourism enterprises. Wang (2018) pointed out the favorable conditions for the development of online tourism and the existing problems, and combined with the theory of competitive strategy, this paper puts forward the implementation measures to enhance the competitiveness of online enterprises. Haenninen (2018) pointed out that the integrated development of rural tourism and e-commerce will greatly promote the sustainable, stable and healthy development of rural tourism, and analyzed the necessity and obstacles of the combination of rural tourism and e-commerce, and put forward strategies for the integrated development of rural tourism and e-commerce. Constantiou (2017) pointed out that with the development of tourism network platform, the construction of tourism evaluation index system is very important, and the tourism evaluation index system is constructed according to the principles of objectivity, systematicness, measurability and comparability. Denardis (2015) pointed out that in the face of increasingly fierce market competition environment, as an important product of the diversified development period of tourism market, online tourism enterprises must constantly innovate business models to meet the personalized needs of domestic and foreign markets for tourism products and services "You" as the research object, select the business model canvas analysis tool to build a complete business model chain of online tourism enterprises, and strive to promote the

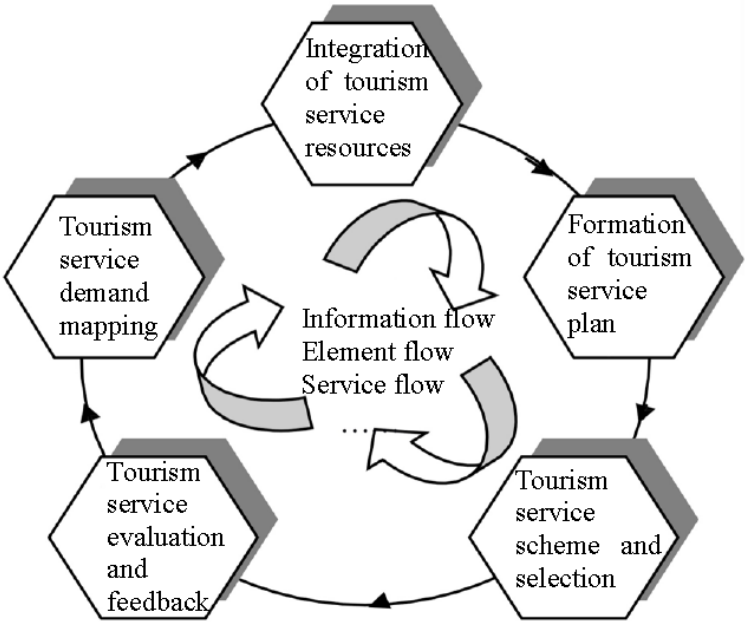
sustainable and healthy development of online tourism enterprises. Miller (2016) pointed out that with the advent of the era of experience economy, the booming self-service travel market and the popularization and application of mobile Internet technology, business model innovation is bound to become a new development direction and value growth point of online tourism.

By combing and summarizing the relevant literature at home and abroad, it is found that intelligent tourism, network platform, tourism service, etc., as the research hotspots of domestic and foreign scholars, have achieved rich research results, which laid an important theoretical foundation for the exploration of intelligent tourism service mode based on network platform, and provided new ideas and methods for reference. However, in the context of the Internet, big data, cloud computing, sharing economy, global tourism and other background and context, the current research still has the deficiencies.

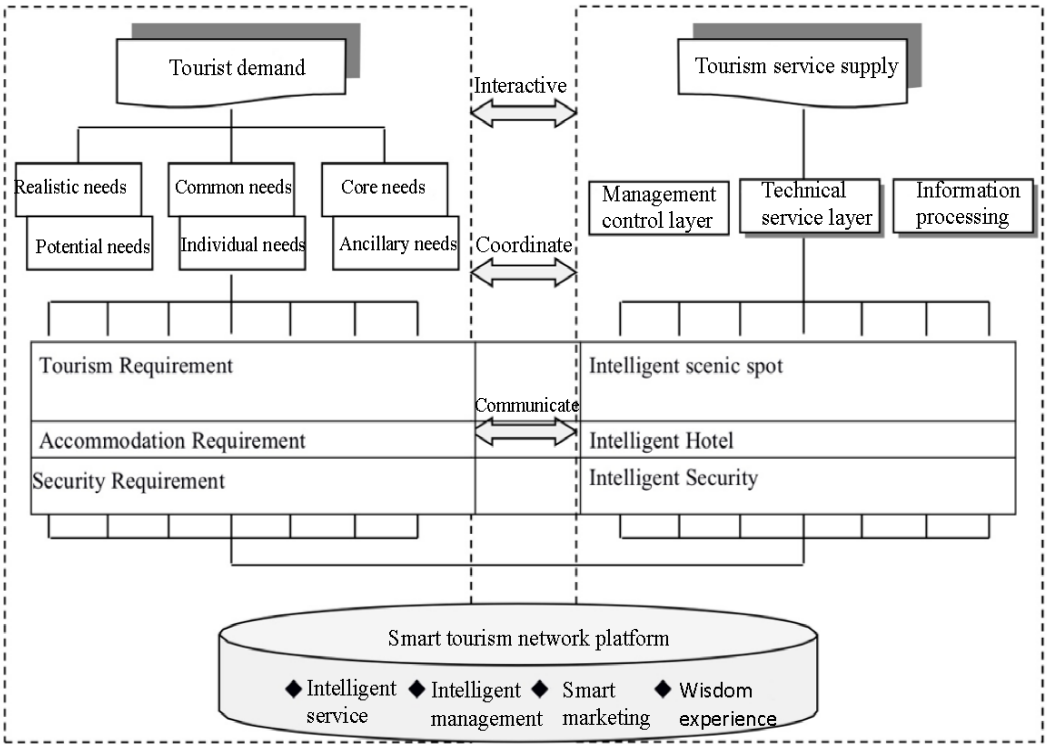
Theoretical Framework



Figures 1 Intelligent tourism service network composition



Figures 2 Service flow model of intelligent tourism



Figures 3 Service interaction model components of intelligent tourist

Theoretical framework for this study composes of:

1. Intelligent tourism service participants
   1.1 Network platform
   1.2 Tourism elements
   1.3 Factor provider
   1.4 Travel agents
   1.5 Tourist
   1.6 Tourist market
   1.7 Industry regulations
   1.8 Natural resources and environment
   1.9 Related industry
   1.10 Local government
2. Service flow model
   2.1 Integration of tourism service resources
   2.2 Formation of tourism service plan
   2.3 Tourism service scheme and selection
   2.4 Tourism service evaluation and feedback
   2.5 Tourism service demand mapping
3. Service interaction model
   3.1 Tourist demand
      3.1.1 Realistic needs
      3.1.2 Common needs
      3.1.3 Core needs
      3.1.4 Potential needs
      3.1.5 Individual needs
      3.1.6 Ancillary needs
   3.2 Tourism service supply
      3.2.1 Management control layer
      3.2.2 Technical service layer
      3.2.3 Information processing

Based on the theory of comprehensive advantage, this paper puts forward the core ideas of cultivating leading advantage, improving the ability of collaborative service and developing comprehensive advantage of intelligent tourism industry according to the strategic main line of "leading advantage ⟶ core competence ⟶ comprehensive advantage". Based on the network platform, the overall framework of Intelligent Tourism Service Mode Based on the network platform is constructed from

three dimensions: the evolution stage of intelligent tourism service, the level of tourists' demand and the degree of service resource aggregation integration, namely, information interaction service mode, element collaborative service mode and price value co creation service mode.

1. Intelligent tourism information interactive service mode. When the intelligent tourism network platform is in the initial stage, it mainly focuses on the tourists' needs and the information interaction services based on point-to-point mapping of tourism enterprises, aiming at solving the problem of information asymmetry and improving the information service ability. That is, to promote the level of tourism service information as the development orientation, relying on the network platform information collection, classification, transmission and docking functions, to achieve the intelligent interaction between tourism supply information and tourism consumption demand information service mode. The model has the characteristics of informatization, value-added, convenience, growth and universality.

2. The collaborative service mode of intelligent tourism elements. When the intelligent tourism network platform is in a rapid growth stage, the tourism service alliance with leading tourism enterprises as the core has initially formed, and at this time, the core enterprises are the main leaders, according to the needs of tourists, the integration of the competitive tourism resources of supporting enterprises and reconstruction of tourism industry chain aims to form the coordination of all the elements and provide the integrated service scheme. That is, all the participating elements gather through the network platform, and carry out collaborative cooperation orderly for tourists' all-round and multi-dimensional tourism demands, so as to realize the integrated, networked and intelligent service mode of resource coordination integration, tourists' collaborative consumption, service collaborative innovation and industrial collaborative development. The model has the characteristics of coordination, efficiency, pertinence, value-added and development.

3. The value of intelligent tourism creates service mode together. When the intelligent tourism network platform is in the stage of sustainable development, based on the service leading logic, tourists participate in the service scheme design and optimization process, and face the needs of tourists, tourism enterprises and all stakeholders, mainly focusing on value co creation services, aiming at determining. Institutionalization, strengthen experience and interaction, promote the co creation of tourism enterprises and tourists' value, so as to maximize the comprehensive advantages. That is, taking the intelligent tourism network platform as the carrier, providing tourism products and services through setting up diversified tourist

experience scenes. The tourism industry mainly involves the main participants and tourists, tourism enterprises, tourism industry and other industries to create value together, so as to realize and constantly improve the process model of tourist experience value and tourism industry service value. The model emphasizes the ecological cycle characteristics of self-design, self-evaluation, self-improvement and self-enjoyment.

The above three types of Intelligent Tourism Service Modes Based on network platform are not isolated from a certain stage of the development of the intelligent tourism network platform. Three links are promoted simultaneously, and three modes exist simultaneously, but at different stages, one service mode is the dominant mode. When the network platform develops to the stage of sustainable development and upgrading, the intelligent tourism service has evolved to the leading stage of experiencing demand. At this time, the value co creation service mode occupies the leading position, while the information interaction service mode and the element collaborative service mode also exist as auxiliary service mode. The intelligent tourism service model involved in this paper belongs to the basic service mode. In a certain regional environment or specific situation, it can also design appropriate specific service mode. The service mode of intelligent tourism has the characteristics of dynamic, expansibility, integration and convertibility.

CHAPTER 3

RESEARCH METRODOLOGY

Locale of the Study

Nanning, as a relatively concentrated area of tourism resources in Nanning, has made some achievements in promoting the implementation of policies, supporting the development of tourism industry and purifying the tourism market environment. The tourism industry has become a strategic industry supporting the development of the whole city, and constantly improving the tourism infrastructure. Sufficient tourism elements gathering and high-level design have laid a solid foundation for the development of intelligent tourism in Nanning. Based on the theory of comprehensive advantages, with the analysis of Nanning's tourism industry scale, intelligent tourism resources and conditions, information infrastructure and intelligent tourism service status, this paper further designs Nanning intelligent tourism service mode based on Nanning Qingxiushan network platform, and puts forward relevant guarantee strategies for enhancing the core competence of Nanning intelligent tourism and realizing the development of comprehensive advantages of intelligent tourism.

Population and Sampling

In order to verify the effectiveness of the algorithm, some experiments are carried out on five benchmark domain transfer learning data sets to evaluate the performance of the proposed method. First, test how the proposed method uses the weights C1, C2 and C3 of different terms. Then, the classification performance of the proposed method is tested by comparing it with different transfer learning methods (in terms of classification accuracy and running time).

1. Travel destination review data set. The data set is a review data set of several tourism destinations, including four European tourism destinations, namely London, Rome, Paris and Venice. For each destination, 200 positive comments and 200 negative comments were collected. Each travel destination was regarded as a domain and each review was regarded as a data point. In the experiment, this paper randomly selects one target as the source domain and another target as the target

domain. In order to extract features from comments, this paper uses word bag feature.

2. 20 newsgroup corpus dataset. The data set is the data set of newspaper documents, including 20 types of documents, which are organized in a hierarchical structure. For a class, it usually has two or more subclasses. For example, there are two sub categories in the category of winter tourism hot destinations, namely skiing and tropical marine vacation. To split this dataset into source and target domains, for a class, we keep one subclass in the source domain and put another subclass in the target domain. We follow the segmentation of source domain and target domain of ng14 dataset. In this dataset, there are six classes, and for each class, one subclass is in the source domain and the other subclass is in the target domain. For each domain, the number of data points is 2400. The word bag feature of each document is used as the original feature.

3. Amazon travel information book review data set. The data set is the data set of product reviews, including three types of product reviews, namely books, tourism image materials and tourism art products. Comments fall into two categories: positive and negative. This experiment takes book reviews as the source domain and tourism image reviews as the target domain. For each domain, this experiment has 2000 positive comments and 2000 negative comments. Similarly, this experiment uses word bag feature as comment feature.

4. Gemep-fera facial expression dataset. The data set is the data of facial video. In this dataset, there are 87 facial videos of 7 people. In this experiment, everyone is regarded as a domain and each video frame is regarded as a data point. In this experiment, one person was randomly selected as the source domain and the other as the target domain. The problem of classification is to classify a given frame into one of seven facial expression classes.

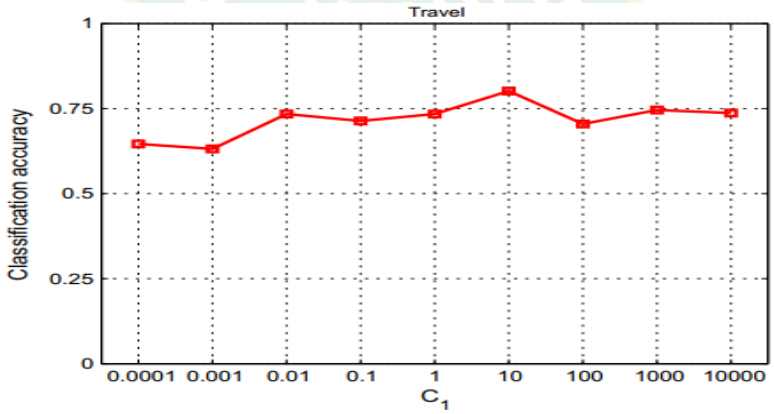
5. Spam dataset. The dataset is a set of emails from different individuals. In this data set, there are three e-mails in different people's inboxes. This experiment regards each person as a domain. In everyone's inbox, there are 2500 e-mails. E-mails are divided into two different categories: normal e-mails and spam. This experiment randomly selects one person as the source domain and the other as the target domain.

Measurement and Instrument

Ten layer cross validation was used in this experiment. Make all source domain data points labeled data points and use them during training. In addition, the target domain set is divided into ten layers. Each layer is used as a test set, and other layers are combined and used as a training set. For the training set, this experiment randomly selects half of the data points and sets them as labeled data points, and leaves the remaining half as unlabeled. In this experiment, the source domain training set and target domain training set are used to train the parameters of our model, and then the trained model is applied to the test set to evaluate the classification performance. For the multi class classification problem, this experiment extends the proposed binary classification model to multi class classification through one-to-one strategy. For data sets with more than two domains, this experiment uses each domain as the target domain in turn, and randomly selects another domain as the source domain. The accuracy of all target domains is averaged and reported as the final result.

Testing of the Instrument

This experiment studies the sensitivity of objective function term weights C1, C2 and C3. For example, this experiment uses a data set of travel destination reviews. The accuracy of the proposed algorithm has different C1 values; C2 and C3 reports are shown in Figure 4.



Figures 4 Sensitivity curve of item weight in travel data set

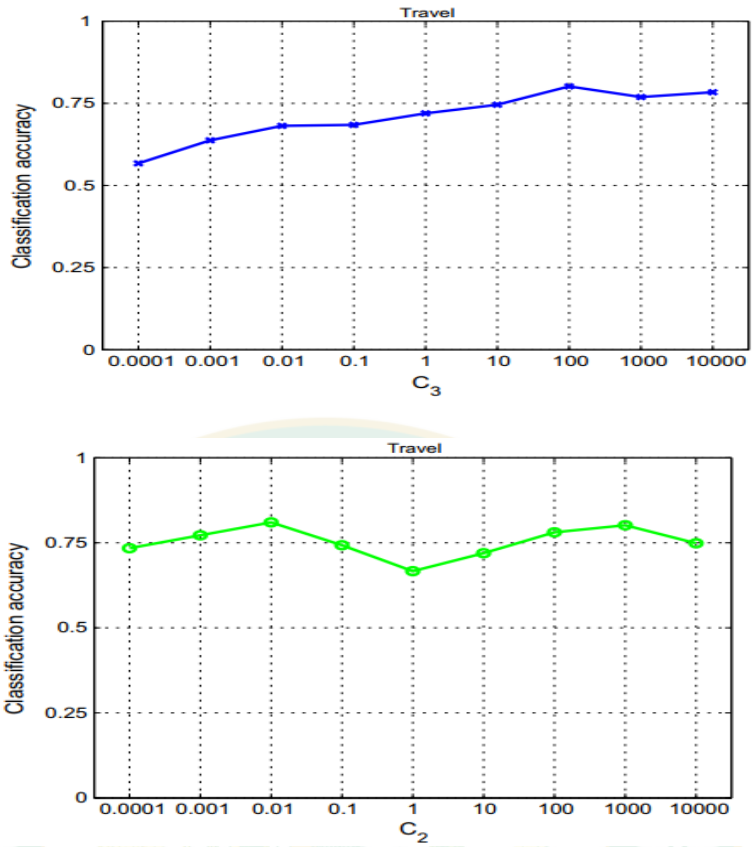


Figure 1 (Continued)

As can be seen from figure 3-4, the method proposed in this paper is stable for weight C1. When C1 is set to 10, the highest accuracy is obtained. For C2, the change of accuracy value is also stable. The accuracy is about 0.75. However, for C3, an obvious trend is that the accuracy increases with the increase of C3.

This experiment will compare the performance of the method proposed in this paper with other transfer learning methods from two aspects of classification accuracy and running time.

1. Classification accuracy. The classification accuracy of each algorithm on five different benchmark data sets is shown in Table 1.

Table 1 Accuracy Comparison between different methods on benchmark data sets

Method	Tourism	20-News Group	Amazon	GEMEP	Junk
Recommendation	0.8015	0.6210	0.7812	0.6450	0.8641
Chen et al.	0.6841	0.5815	0.7621	0.6214	0.8514
Chu et al.	0.7642	0.5471	0.7642	0.6715	0.8354
Ma et al.	0.7435	0.5164	0.7255	0.6358	0.8012
Xiao andGuo	0.7033	0.5236	0.7462	0.6451	0.8294
Li et al.	0.7134	0.5615	0.7134	0.6154	0.8122

It can be seen from Table 1 that the method proposed in this paper outperforms all comparison methods of the four benchmark data sets. The only exception is when the facial expression classification problem exceeds the gamed data set, in which the method of Chu et al. Obtains slightly better performance than the proposed method. However, even in the experiments on gemmed, the performance of the proposed method is still second. In the experiments of travel destination review dataset and 20 newsgroup dataset, the proposed method is obviously superior to other methods.

2. Run time. The running time of each algorithm on five different benchmark data sets is shown in Table 2.

Table 2 Running time comparison between different methods on benchmark data sets

Unit: second

Method	Tourism	20-News	Amazon	GEMEP	Junk
Recommendation	15.51	79.16	60.45	20.16	94.51
Chen et al.	28.45	91.66	86.21	25.18	120.43
Chu et al.	18.41	86.38	65.77	23.64	100.67
Ma et al.	21.83	92.14	71.94	31.68	136.18
Xiao and Guo	19.66	84.16	66.34	26.96	140.57
Li et al.	35.09	100.60	70.14	30.01	134.10

It can be seen from Table 2 that the method proposed in this paper has the least running time. In addition, you can see that the running time is also related to

the size of the dataset. For example, in the two smallest datasets, travel and gamed datasets, the running time is also shorter than that of other datasets.

The learning framework of this paper uses three different loss functions to measure. The classification errors are hinge loss, logarithmic loss and exponential loss. Table 3 shows the methods proposed in this paper.

The classification accuracy of the method under different loss functions. It can be seen from Table 3 that the difference between different loss functions is not significant, which shows that the method proposed in this paper is robust to the selection of loss function.

Table 3 Classification accuracy based on different loss functions

Loss	Tourism	20-News	Amazon	GEMEP	Junk
Hinge loss	0.7954	0.6210	0.7745	0.6731	0.8624
Logarithmi	0.8015	0.6135	0.7812	0.6715	0.8641
Index loss	0.8041	0.6201	0.7801	0.6659	0.8543

Data Collection

This study used APP and network platform to collect user data from tourists in Nanning City.

The collection of intelligent tourism supply information should not only highlight the dominant advantages, but also continuously increase the scale of tourism supply information on the network platform.

1. Collection rules of tourism supply information: first of all, any network platform is not a hodgepodge, but a collection of relevant information around the regional industrial characteristics. For example, the intelligent tourism network platform featured by Qingxiushan tourism in Nanning should highlight the tourism information related to flower sculpture. Secondly, it is required to collect the tourism supply information in format, not only according to the function module of the network platform, but also to be comprehensive and accurate.

2. According to the collection rules, tourism supply information can be collected in various ways to rapidly improve the quantity and quality of information collection.

Tourism core enterprises join-in. It is an important way to quickly collect the information of tourism products or services by signing franchise contracts between

tourism enterprises and network platform operators. First of all, by adopting relevant incentive measures, more core tourism enterprises will gather relevant tourism information to the platform through franchise, so as to realize the scale benefit of information supply of platform network. Secondly, it is necessary to clarify the income distribution ratio or franchise expenses between the franchised enterprises and the network platform, so as to reduce the interest conflicts between the two sides; finally, the network platform manages the information of the franchised enterprises in a unified way, and continuously improves the operation efficiency of the network platform and the attraction of other tourism supply enterprises.

Travel agencies gather. The existing travel agencies master more tourism service information, and are also good at formatting, storing and pushing tourism information. Therefore, more tourism agencies should be absorbed into the network platform through publicity, centralized supervision and qualification evaluation to achieve mutual benefit. The specific information collection mode can be in the form of advertising, network information link, database sharing and so on.

The majority of small and medium-sized tourism enterprises operate online. The primary stage of intelligent tourism is still based on the latest information and network technology to improve the information level of the main body of tourism supply. The majority of small and medium-sized tourism enterprises are difficult to keep up with the pace of intelligent tourism development due to the limitation of informatization investment and the lack of talents. Therefore, taking into account the general needs and individual differences of the majority of small-sized and medium-sized tourism enterprises, providing information solutions and online business services through the network platform not only reduces the informatization cost of the majority of small-sized and medium-sized tourism enterprises, but also comprehensively collects their tourism supply information. Specifically, we can provide free information solutions first, and then determine the income distribution with the network platform according to the business performance and scale of the enterprise.

Professional tourism supply service purchase. Intelligent tourism information interaction service also needs some professional supporting services, such as Intelligent navigation service module, which has special institutions with relevant information, and network platforms and tourism companies are not good at carrying out such professional services. They need to purchase some professional data base or supporting services to realize the information supply service function.

Data Analysis

This study used above statistics to analyze the feedback information of tourists who use network platform, and use service flow model and service interaction model to test relationship between:

1. Tourism elements
2. Factor provider
3. Travel agents
4. Tourist
5. Tourist market
6. Industry regulations
7. Natural resources and environment
8. Related industry
9. Local government

The intelligent tourism information interactive service mode composed of participants embodies the "bilateral market" function of the network platform. One side is the tourism supplier, which is usually composed of a large number of small and medium-sized tourism enterprises, and the other is tourists facing market demand. In addition, tourism regulatory authorities can also join the network platform.

From the perspective of tourism suppliers, it will provide all kinds of tourism products or service information according to the information format required by the platform, realize the collection of tourism supply information on network platform, and provide decision support for enterprises to improve tourism products or services and provide decision support for low-cost operation according to various feedback information provided by the network platform and operation functions such as e-commerce. From the perspective of tourists, based on the information integration function of the network platform, the level of tourists' tourism information demand is improved. The personalized or common needs of consumers are integrated through the network information platform. From the perspective of tourism regulatory authorities, the network platform release regulatory rules and carry out the whole process supervision of information intelligent interactive services. Through the network platform, the multi stakeholder information interaction service is realized, and the intelligent tourism information interactive service function based on the network platform mainly includes Intelligent guide, Intelligent navigation, Intelligent shopping guide, evaluation feedback, etc.

CHAPTER 4

SERVICE MODES OF INTELLIGENT TOURISM

By using the comprehensive advantage theory, according to the strategic main line of "leading advantage ⟶ core capability ⟶ comprehensive advantage", this paper puts forward the core ideas of leading advantage cultivation, collaborative service capability improvement and comprehensive advantage development of intelligent tourism industry. Based on the network platform, this paper constructs the overall framework of intelligent tourism service mode based on the network platform from three dimensions: the evolution stage of intelligent tourism service, the level of tourists' demand and the degree of service resource agglomeration and integration, namely, information interaction service mode, element collaboration service mode and value co-creation service mode.

1. Information interaction service mode. When the intelligent tourism network platform was in the initial formation stage, it mainly focused on the needs of tourists and the information interaction services of tourism enterprises based on point-to-point mapping, in order to solve the problem of information asymmetry and improve the ability of information service. That is, the service mode of intelligent interaction between tourism supply information and tourism consumption demand information is realized based on the development orientation of comprehensively improving the informatization level of tourism services and relying on the information collection, classification, transmission and docking functions of the network platform. This model has the characteristics of informatization, value-added, convenience, growth, universality and so on.

2. Elements collaborative service mode. When the intelligent tourism network platform is in the rapid growth stage, the tourism service alliance with leading tourism enterprises as the core has initially taken shape. At this time, it is mainly dominated by core enterprises, integrates the advantageous tourism resources of supporting enterprises according to the needs of tourists, and reconstructs the tourism industry chain, aiming at forming the element collaborative service mode of global element collaboration and providing integrated service scheme. That is, all participating elements gather through the network platform and carry out orderly collaborative cooperation for tourists' all-round and multi-dimensional tourism needs, so as to realize the integrated, networked and intelligent service mode of resource collaborative integration, tourists' collaborative consumption, service collaborative innovation and industrial collaborative

development. The model has the characteristics of synergy, efficiency, pertinence, value-added and development.

3. Value co-creation service model. When the intelligent tourism network platform is in the stage of sustainable development, based on the service leading logic, tourists participate in the service scheme design and optimization process. It is oriented to the needs of tourists, tourism enterprises and all stakeholders. It mainly focuses on value co creation services. It aims to strengthen experience and interaction through customization and promote value co creation between tourism enterprises and tourists, To maximize comprehensive advantages. That is, taking the intelligent tourism network platform as the carrier, the tourism industry provides tourism products and services by setting diversified tourist experience scenes. The tourism industry mainly participates in the joint creation of value between subjects and tourists, tourism enterprises, tourism industry and other industries, so as to realize and continuously improve the process model of tourist experience value and tourism industry service value. The model emphasizes the characteristics of ecological cycle such as self design, self-assessment, self-improvement and self enjoyment.

The above three intelligent tourism service modes based on the network platform are not isolated, corresponding to a certain stage of the development of the intelligent tourism network platform. The three links are improved synchronously, and the three modes exist at the same time, but one service mode is dominant in different stages. When the network platform develops to the stage of sustainable development and upgrading, the intelligent tourism service also evolves to the stage dominated by experiential demand. At this time, the value co creation service mode occupies the dominant position, while the information interaction service mode and factor collaboration service mode also exist at the same time as the auxiliary service mode. The intelligent tourism service model involved in this paper belongs to the basic service model. In a regional environment or specific situation, appropriate specific service models can also be designed. Intelligent tourism service model has the characteristics of dynamic, expansibility, integration and convertibility.

Information interactive service mode

Intelligent query service network platform collects a large number of tourism products or service information, and classifies, sorts, stores and indexes these

information through the network platform, forming a relatively complete tourism service function module with certain characteristics, which supports all possible information needs of tourists in the process of tourism. The network platform usually designs a series of tourism products or service combinations according to the advantages and characteristics of the tourism resources collected, and by mining the common information service needs of the tourists using the platform. Such tourism information and programs constitute the information resource database of intelligent tourism. Tourists using the network platform for service demand query, will form a high matching degree of tourism information or square case. In addition, with the increase of users and frequency of the network platform, a large number of tourism supply and demand information will be collected. Through the classification and statistical analysis of these data, it will become an important decision support for tourism enterprises or regulatory authorities to improve products, services and strengthen monitoring.

The perception and push of personal information with the promotion and using of mobile terminals have horizontally opened up all electronic media. Now it's very easy to get users' real-time physical information, such as geographic location information, through their Intelligent phones. At the same time, we can infer the user's personal preferences and demand characteristics through the user's personal files and community information on the information platform, so as to provide users with the tourism related information they need in a targeted and intelligent way. For example, when a user enters a specific area, the user's geographic information can be detected according to the location function of its Intelligent phone. In addition, from the user's personal files and community interaction, the intelligent generation of user portrait as "a woman who likes watching Qing palace opera" can intelligently push personalized tourism information to users, which not only makes users feel the advantages of personalized customized intelligent service, but also effectively improves the utilization and conversion rate of information.

The customization service of tourism enterprises based on information interaction and the customization capability based on information closed loop not only try to develop to the best state for enterprises, but also realize sustainable development with the help of information. Customized service is a special service mode to meet the personalized needs of customers in the context of customer participation and interaction. It can create personalized experience for customers, bring unforgettable experience and stimulate their potential tourism demand. With the gradual improvement of information closed-loop customization capability, the

synergy degree between information and enterprise capability will also change significantly, and the enterprise customization capability will change dynamically under different information sharing conditions.

The process reengineering of emerging online tourism enterprises is determined by the particularity of tourism products, the industry environment of online tourism enterprises and the demand characteristics of tourists. It is also the internal need of strategic planning of tourism enterprises. Any tourism product has a limited life, and most tourism products will experience a life cycle. The life cycle of each tourism product will be different due to different tourism products. Tourism products will create different profits in different life cycles. Tourism products in different life cycles should adopt different marketing mix strategies. Tourism products must be timely adjusted and updated according to the change of market demand. In order to maintain the sustainable development of tourism, sellers must respond to the market demand and develop new tourism products timely. Therefore, emerging tourism enterprises should constantly sort out their value chain products, timely eliminate and update tourism products. In the context of the development of information technology and Internet technology, the process of carding can quickly respond to the market.

Operation mechanism of information interactive service mode

The greater the number of users using the platform, the greater the value of the platform according to the collection and analysis of the platform operation optimization, enhance platform stickiness, continue to attract new entrants, the more users are attracted to this intelligent platform, the more intelligent the platform will be. The user demand of intelligent tourism information interaction service mode can be divided into core demand and subsidiary demand. The core demand is the strong desire of the platform users for a certain service, which is rigid demand; the subsidiary demand is the other desire generated under the premise of ensuring that the core demand can be met, which is full of demand elasticity. The primary task of information interaction network platform should be to meet the user's core needs, and strive to meet the user's ancillary needs in the process of continuous interaction with users.

For the decomposed service requirements, the information interaction network platform reconstructs the requirements through data integration methods such as horizontal integration, vertical integration and network integration. Horizontal

integration refers to the integration of multiple requirements of a certain link in the service process; vertical integration refers to the integration of multiple links in the service process and even a certain demand of the whole service process; network integration refers to the integration of multiple requirements of multiple links in the service process, and the demand integration is divided into common requirements and individual requirements integration.

1. After the decomposition and integration of tourists' needs on the platform, it is determined that they are common needs in the service process, and these common needs are subdivided and clustered according to the relevance between the needs, and it should be noted that the decomposition, classification and integration of needs do not necessarily correspond to the classification and integration of resources. For the similar needs of users, the information interaction platform should extract the commonness among them, and propose solutions with the help of think that integrate multiple intelligent resources and knowledge technology, so as to meet the service requirements. This not only improves the service efficiency of the information interaction platform, but also realizes the standardization and radiation effect of the information interaction platform.

2. Through the decomposition and integration of tourists' needs on the information interaction platform, the individual needs are determined. In the information interactive service mode, the collection of personalized demand information highlights the diversified needs in the process of tourism consumption. With horizontal integration, vertical integration, and network integration, it can mine various potential needs of tourists, and provide the basis for the design of various tourism supply schemes and the construction of diversified service functions of network platform. With the integration function of the network platform, the mass customization service of tourists is realized.

Elements collaborative service mode

"Food, housing, transportation, tourism, shopping and entertainment" constitute the six core elements of tourism, also known as the supporting elements of tourism. The six elements highly summarize the six most basic links of tourism activities, which is the most concise and appropriate description of traditional tourism. The so-called common practical needs refer to the universal, universal and similar needs of tourists in current tourism activities based on inevitable activities such as accommodation, transportation, diet and sightseeing. The "efficient matching

service of common real demand" is to use the network platform to timely and efficiently complete the scale matching of this kind of demand, which has the characteristics of high efficiency and scale. Therefore, the service provider under this mode is usually played by enterprises with a large number of idle resources or organizations or individuals providing general services. The service content mainly includes the following four aspects:

1. During the peak tourism season, the hot scenic spots, transportation hubs and hotels around the city center generally have the phenomenon that one room is difficult to find and expensive. However, the occupancy rate and price of hotels in other regions are relatively low, that is, the price standard and guest room utilization efficiency of hotels will vary greatly due to their location. Through cooperation with star hotels, chain hotels, express hotels and other hotels of different grades and types, the network platform gathers and publishes a large number of hotel room information on the platform, including basic room information, real-time price and quantity information, real photo information and customer evaluation information, so as to improve room sales through online and offline dual channel marketing, To effectively eliminate the information asymmetry between tourists and hotels. At present, Ctrip, tuniu and other comprehensive tourism platforms as well as many short rent platforms can provide this type of service, so that tourists can make economic and reasonable choices more conveniently and quickly.

2. Travel coordination service in addition to group tours and self driving tours, tourists need to use local means of transportation in tourist destinations, such as taxis, buses and subways. In most cases, tourists are not familiar with the local bus and subway lines, and it is difficult and expensive to take a taxi in rush hours and remote places, which brings a lot of inconvenience to tourists. Today, the online car Hailing service of the travel network platform will become a common choice for tourists in the era of intelligent tourism. The travel network platform not only uses its optimization algorithm to help tourists efficiently match nearby vehicles to travel at any time, place and weather, but also provides "free ride" shared travel services, which greatly saves tourists' monetary and time costs. On the other hand, when it is close to the destination, tourists can rent nearby shared bicycles as temporary means of transportation through platforms such as moBay bicycles, ofo bicycles and harrow bicycles. Compared with the public bicycles set up for local citizens, the code scanning, borrowing and returning and pile free modes of shared bicycles are more convenient and universal, and completely solve the needs of people for "the last kilometer".

3. The situation of food collaborative service is similar to that of the accommodation industry. Most restaurants near the central commercial street, transportation hubs and scenic spots are expensive, and many well-known hotels need to be booked in advance. The reason is that these restaurants can absorb a large number of passengers by virtue of their own location advantages and provide one-time services for guests based on the principles of economy and efficiency, Therefore, it is difficult to satisfy tourists in taste. In fact, there are many characteristic restaurants and snack bars in every city. They are located in the depths of humble streets and markets. The passenger flow is small, but they are rarely known by tourists. At present, meituan, word-of-mouth, public comments and other platforms have absorbed a large number of scattered catering institutions into the platform, classified and integrated according to their types and regions, provided o2o food retrieval, query, reservation and sharing services for tourists, helped tourists find their surrounding high-quality restaurants more efficiently, and realized food information sharing, service and experience synergy.

4. Collaborative services of guidance, shopping and entertainment after China launched the "new deal of tour guide reform" - the liberalization of tour guide practice in 2016, tour guides now no longer have to be affiliated with travel agencies and can become independent freelancers. Tour guide's home, hornet's nest, free fish and other platforms create the possibility for tour guides with free time to receive guests independently. At the same time, the platform can also analyze the regional and seasonal characteristics of tourism activities in different regions, predict the approximate number and time of possible lack of tour guide talents in various regions, release relevant temporary needs in advance within the whole network, and timely allocate idle tour guide talents in other regions to realize cross regional talent flow and sharing. In addition, according to the purchase and entertainment needs of tourists, alternative combination schemes are determined in advance to provide users with more effective combination services.

In order to achieve the efficient matching of the above four services, the network platform will quickly form the clustering effect and network effect of the platform through the open sharing of the platform and the collaborative integration of multiple elements around dominant resources and information. Then, on the basis of realizing the original accumulation of resources, according to the different functions, quality, regions, corresponding tourism links and types of suppliers of resources, the resources are modularized decomposed and reorganized with corresponding rules. Relying on big data processing and agent distribution integration

technology, the platform can intelligently identify and collect inertial information such as tourist retrieval, resource use and service matching, uniformly encapsulate the resources that tourists repeatedly search, browse at high frequency and have certain relevance or universality characteristics, and are equipped with coding and keyword search tags, When tourists apply for common services, the platform can flexibly and quickly link the supporting standard modules to match them at the first time; When the needs of tourists are a complex combination of several common needs, the platform can also combine all relevant standard modules to provide chain package services. At the same time, the platform should also pay real-time attention to the dynamic changes of the needs of tourist groups, network public opinion and external environment, scroll to upgrade the standard module and create the "online Red" module and "online Red" package. In this way, the platform can not only simplify the processing process of resource extraction and combination, save the trouble of repeatedly identifying similar needs, but also greatly reduce the time for tourists to search and wait for service matching, so as to achieve "high efficiency" of services.

Operation mechanism of elements collaborative service mode

From the initial germination of tourists' tourism motivation, perception of their own needs and independent selection of the corresponding platform to release the demand, to the network platform to receive the demand, effectively identify the demand, then carry out resource search in the resource library, and then to the final service matching and docking, the acquisition and identification of the demand is the first step in the operation of the platform. Firstly, the platform must investigate and identify the tourism needs of tourists in detail, provide a clear basis and direction for the service scope and resource agglomeration strategy of the platform, and then carry out image building and brand marketing on this basis, and actively guide tourists to release demand information on the platform in combination with online and offline multi-channel. After receiving the demand information, considering that the cognitive differences among tourists, resource providers and the platform will affect the accuracy of service matching, the platform also needs to further describe and identify the attributes and characteristics of the demand, which is a necessary link to concretize, clarify and internalize the demand of tourists and fully ensure the smooth communication and information symmetry between the supplier and the demander, It can reduce the demand perception deviation as much as possible and

lay the foundation for the follow-up customized service docking. The demand description shall not only include the attributes directly related to the current demand such as the type, quantity, time, place, functional characteristics and price range of resources required by tourists, but also include a series of indirect attributes such as tourists' basic information, sharing experience and selection preference, which is conducive to the platform and service providers to comprehensively grasp the needs of tourists, More accurately judge their actual needs and potential needs, common needs and individual needs. When accepting complex demands, the platform also needs to decompose tasks, divide the complex demands into several sub modules according to different links of the tourism service chain, and cooperate with the main elements of the platform to deal with them respectively.

Demand mining with the improvement of China's per capita income and the implementation of vacation policies such as legal holidays and paid holidays, China has entered a popular era of leisure tourism. Under the background of this era, the national tourism demand is increasingly fragmented, complex and dynamic. The network platform should actively introduce advanced intelligent information technology, carry out in-depth data mining around the demand information of tourists, and promote the transformation of platform services from resource led to demand creation. The main ways of demand mining include the following:

1. The mining and analysis network platform can conduct complex data cleaning and data mining based on all trace data generated by tourists' operations on the platform according to tourists' personal consumption preferences and behavior characteristics, and build tourists' personal behavior characteristic model, service demand model and interest preference model, Comprehensively excavate the regularity hidden behind the fuzziness and uncertainty of tourist information, and scientifically predict the potential and future needs of tourists. Then, based on the results of data mining, the platform specifically pushes tourism products and services that may be of interest to tourists at the appropriate time point, and consciously guides tourists to extend their travel itinerary and increase the types of activities, so as to enrich their travel experience.

2. The comprehensive analysis network platform can make full use of its own evaluation mechanism to obtain tourists' satisfaction with the current services and their opinions and suggestions on service improvement according to tourists' messages, scoring and feedback after the completion of the service, so as to grasp the key points and deficiencies of the current service at the first time. These feedback information contains structured, semi-structured and unstructured data,

which is comprehensive. At the same time, the platform uses text mining technology and web crawler technology to form a knowledge view of tourists' needs, timely and efficiently identify tourists' extended needs and supporting needs, so as to deeply analyze the new changes of tourists' needs, Cooperate to improve the depth and breadth of platform services. For example, Xiaozhu (short rent platform) has continuously extended its service chain by analyzing a large amount of tourist evaluation information, and has successively launched diversified value-added services such as car rental, pick-up, morning call, housekeeping cleaning, ticket purchasing and specialty purchasing, so as to continuously improve the service satisfaction of tourists. This one-stop service will further enhance the stickiness of tourists' platform.

3. The intelligent monitoring network platform can pay close attention to the dynamic changes of the current economic hot spots, political diplomacy, technological innovation, cultural and recreational activities and other external environments through intelligent whole network monitoring, so as to judge and predict the evolution trend and direction of tourists' common needs. The introduction of new policies, the birth and application of new technologies, major social activities and emergencies may create opportunities for intelligent tourism to open up a new service field. Therefore, the network platform should actively cooperate with resource providers and intermediary organizations in the platform, identify the latest and hottest tourism hotspots, gather and reserve relevant factor resources in advance, fundamentally develop a new tourism blue ocean market, deeply guide and induce the hidden needs of tourists, and lead the transformation of tourists' consumption consciousness and consumption choice.

The intelligent platform demand perception ability is formed through the demand identification and mining of the platform, which can trigger the intelligent mechanism of the platform through the information identification of individual tourists' demographic attributes, information sources, tourism preferences and consumption levels, and most accurately subdivide group tourists according to value classification, life cycle, group attributes and information categories; Accurately guide the passenger flow according to the total frequency, tourism depth and time length of group tourists. According to the actual customer source, grasp the core customer source and tap the potential customer source.

Value co-creation service mode

The interactive level of value co-creation

The main participants in the value co-creation of intelligent tourism can be divided into: managers of intelligent tourism network platform, members of tourism alliance, tourism enterprises (or individuals, such as B&B), enterprises in other industries (or individuals, such as farmers) and tourists. Tourists include not only people who have consumed, but also people who participate in the design and potential tourists to be developed. All tourists are not only users of tourism products and services, but also designers of tourism products and services. The main interaction of the value co-creation of intelligent tourism can be divided into four levels: first, the value co-creation within the tourism industry, mainly the interaction and integration between tourism enterprises. Secondly, the value co-creation of tourism industry and other industries, such as the combination of tourism industry and agriculture to drive the development of rural tourism and leisure agriculture, the development of local well-known enterprises or enterprise museum tourism projects (such as Cadbury chocolate, whisky, Shandong Zhangyu wine visiting projects in the UK). Thirdly, the value of tourism industry and tourist groups should be created together, all of which take tourist experience as the starting point, and enhance tourist experience value and tourism service value in the process of interaction with tourists and providing tourism products and services. Fourthly, the value co-creation between tourists and tourists. Tourists are not only the demanders of tourism products and services, but also the developers of tourism products and services.

In the main interaction of value co-creation, the internal interaction of tourism industry and the interaction between tourism industry and other industries are the preparation stage of tourism service. The interaction within the tourist group is the stage of service improvement. Only when the tourism industry interacts with the tourist group, can the tourism service and tourist experience value be truly realized.

The logic of value co-creation

The value co-creation of intelligent tourism follows the value co-creation logic of "value proposition interaction collaboration value realization". The value proposition is to gather all subjects and their resources based on the network platform, and all subjects reach a consensus and have the same value proposition, interaction and coordination, that is, based on the common value proposition, participants and their resources achieve organic coordination. Value realization

means that in the process of interaction between tourism industry and tourists, by the continuous innovation of intelligent tourism services (the best match of basic services, derivative services and value-added services), promote value innovation (create new value and maximize value), and finally realize the best tourism industry service value and tourist experience value.

1. Value proposition. value proposition is a process in which the value orientation between tourism industry and other industries. Tourism enterprises, tourism industry and tourists can reach a consensus on the basis of network platform gathering resources, that is, the process in which the service value of tourism industry and the experience value of tourists can reach a resonance. This process is the cultivation process of leading advantages.

2. Interaction and collaboration. There are interactive relationships between tourism industry and other industries, between tourism enterprises, between tourism industry and tourists, and between tourists and tourists. According to the consistent tourism value proposition, all participants share resources, excavate resources and integrate resources through two-way and multi-directional interaction, so as to realize the organic coordination of its resources, this process is the cultivation and promotion of core competence.

3. Value realization. The value created by multi participants of intelligent tourism includes two levels: tourism industry service value and tourist experience value. Value realization is the matching process of tourism industry service value and tourist experience value. This process is the formation and transformation of comprehensive advantages, which effectively promotes service innovation and value innovation.

Platform carrier of value co-creation

Taking the intelligent tourism network platform as the carrier, the platform provides various scenic spot information, reservation and interactive services. At the same time, the platform can integrate third-party tourism platforms, such as comprehensive tourism websites such as Ctrip, Qunar and Tuniu, tourism strategy websites such as Mafengwo and QiongYou, accommodation reservation websites such as Airbnb, Booking and Feizhu, and car rental websites such as Shenzhou car rental, these websites can be linked to the intelligent tourism network platform. Tourists can use the network platform to carry out tourism experience through various forms such as tourism websites, online communities, WeChat official account and APP.

Dimensions of co-creating value

The intelligent tourism value co-creation includes tourism industry service value and tourists experience value. The core of co-creation value is tourists experience value, that is, the perceived value of tourism experience, which is the result of weighing the benefits perceived by tourists through experience and the costs paid by tourists; the service value of tourism industry is reflected in the result of balancing the income from tourism services, including the income from network platform, the income from scenic spots and other participants. Tourism service value is the concomitant value of tourists experience value, that is, tourism service value must be realized in the process of tourists experience activities and the tourists have good experience value. The size and sustainability of tourism service value depend on the size of tourists experience value. The two have synergistic effect and further promote the increase of tourism demand, promote the quantity, type and quality of tourism services, so that tourism services and tourism demand to achieve faster and more accurate docking.

Operation mechanism of value co-creation service mode

Value proposition consistency and value co-creation chain construction

Value proposition is the starting point and core of the value co-creation of intelligent tourism service. Value proposition is the process of reaching an agreement between the value proposition of intelligent tourism service and the value proposition of tourists. On the basis of the agreed value proposition, the value co-creation chain of intelligent tourism service is reconstructed.

1. The value proposition of intelligent tourism service is to determine the tourism service orientation and service value standard oriented by meeting the needs of tourists at a high level. Value proposition is the expression of tourists needs, which is reflected in the concerns or measurement indicators when tourists choose tourism services, including the experience and convenience of tourism. Different tourists needs have different value propositions.

When the value proposition of intelligent tourism service is inconsistent with that of tourists, the intelligent tourism service platform and tourism service subject need to consider the focus of tourists value proposition according to the resources they can integrate and make strategic decisions on whether to adjust the value proposition, mainly including the following situations: firstly, adjust their own value proposition to resonate with tourists value proposition; secondly, in the process of

interaction with tourists, tourists should be encouraged to adjust their value proposition appropriately, and at the same time adjust the value proposition of tourism service, so as to reach an agreement on the value proposition between them. For example, when tourists put forward unique service demands, considering that the cost of realizing tourists demands is too high or the demands cannot be met at all, we can suggest that tourists accept alternative tourism service scheme, and both sides adjust their value proposition until they achieve resonance; thirdly, it does not adjust the value proposition, but it may not be able to meet the needs of tourists and realize the value proposition of tourists.

2. Intelligent tourism service value co-creation chain construction. In order to construct the value co-creation chain of intelligent tourism service, the participants of intelligent tourism service should predict the value proposition of potential tourists, consider the value proposition of peers or competitors, grasp the value orientation of tourists and industry, reasonably determine the value proposition of tourism service, and construct the value co-creation chain around the resonance point of value proposition. The construction and operation process of the value co-creation chain are as follows: firstly, according to the value proposition of tourists and tourism service, tourists needs are decomposed, and the subjects, elements and value activities involved in the service are defined; the second is to carry out value analysis, make clear the core value activities and value-added points, as well as the main points of coordination of the participants and elements, and organically combine the independent value activities based on different tourists experience value.

Network platform resource gathering mode

1. Resource gathering mode based on intelligent tourism website and its APP and WeChat official account.

Relying on the intelligent tourism website and its APP and WeChat official account, we can gather all the participants of the wisdom tourism value creation. This is the best way of resource gathering. Tourists can directly check and order the service independently. All tourism needs of tourists can be realized on the intelligent tourism website and its app. Tourism enterprises and their stakeholders can carry out cooperation and exchange through the intelligent tourism website and jointly create services to realize the collection, classification and integration of tourism resources.

2. Resource gathering mode with tourism online community as the core

The online community module should be set up in the intelligent tourism website, which takes the tourism online community as the core. In particular, it should rely on the network community of third-party tourism strategy websites, such as horse beehive and poor travel, to link them to the online community of the intelligent tourism website, gather tourists and continuously new tourism products/services through the word-of-mouth transmission and interactive exchange feedback of the online community. The online community of intelligent tourism website should have such functions as online comments, publishing tourism strategies, online Q&A and service consultation, and online communication with tourists, so as to provide environmental conditions for the interaction between tourists and tourists, tourists and tourism industry.

3. Taking the third-party platform as the core of resource gathering mode

Considering the current third-party tourism platform in Nanning (comprehensive tourism network, car rental network, accommodation reservation network, air ticket reservation network, etc.) is still the preferred way for tourists to choose tourism products and services. Therefore, relying on these third-party platforms, we first gather tourists to the intelligent tourism website, and gradually keep tourists on the intelligent tourism website by providing good tourist experience scenarios. It is an important orientation for the development of intelligent tourism. In this process, the intelligent tourism website needs to cooperate with the third-party platform. Relying on the existing brand effect and user cluster effect of the third-party platform, the third-party platform shall be linked to the intelligent tourism website. At this time, the revenue can be shared with the third-party platform by a certain proportion of the transaction volume.

Cooperation of participants

1. In order to provide composite services and flexible services, tourism enterprises need to interact and cooperate with each other. There are both competitive symbiosis and cooperative symbiosis between them. By information sharing, rapid combination of tourism products and development of supporting services, they can provide tourists with satisfactory tourism products and services. The cooperation among tourism enterprises includes: the combination of vertical tourism products (one-stop services such as air tickets, accommodation, vehicles and scenic spots), the combination of horizontal tourism products (mainly the

combination of scenic spots), the combination of tourism products and supporting services, and the common construction of tourism experience scene.

2. The online collaborative tourist experience value is realized based on the intelligent tourism network platform. Except for the on-the-spot tourism activities in the scenic spot, all tourists behaviors are realized through the network platform

The interface and functions of the network platform must match the needs, habits and preferences of tourists, that is, the cooperation between the network platform and tourists is reflected in the rapid matching and docking of the network platform services with the needs of tourists.

3. Network platform, o2o collaboration between tourism enterprises and tourists is a combination of online collaboration and offline collaboration. The three not only realize online interaction, experience and transaction, but also realize offline real scene experience and stimulate new online service demand.

4. Online collaboration between tourists mainly occurs in the online community section of tourism website. Online community can provide a place for tourists to exchange and interact, and guide and develop new tourism products or services. There are collaborative relationships between tourists and tourists, such as information transfer, experience sharing, and tourists participation in the design of tourism products and services.

5. The synergy between intelligent tourism website and intelligent tourism website also needs to cooperate with third-party tourism website effectively. The synergy between the two is mainly the synergy of economic interests. The degree of synergy mainly depends on the brand effect and aggregation effect of the third-party tourism website, as well as whether the interest distribution between the intelligent tourism website and the third-party tourism website is reasonable.

Construction of tourist experience scene

According to the evolution mechanism of intelligent tourism, the generation of service products of intelligent tourism can be divided into single product production stage. The whole industry chain production stage and ecosystem value co-creation stage. In the stage of single product production, according to the application of intelligent information and intelligent equipment, it can meet the general needs of people. By coordinating the whole industrial chain production stage of various elements, the data collection and mining of the platform form the ability of information sharing and self-learning, service product form innovation, rich connotation and quality improvement. In the stage of value co-creation, intelligent

algorithm becomes the core of the whole platform ecosystem. It connects many factors builds an ecosystem and forms a closed-loop service. On the platform system, tourists and tourism enterprises negotiate repeatedly, integrate deeply, design and produce tourism products together, and create value together. Any tourism enterprise can establish the comprehensive advantage within the industry and then generate the cross-border competitive advantage through the path evolution of product whole value chain ecosystem. Tourist participation is an important form of value co-creation mode of intelligent tourism.

The motivation of tourists to participate in tourism experience activities includes sharing fun, economic benefits, value realization, etc. At this time, there are both active and passive participation of tourists. When constructing the tourist experience scene, the platform can prejudge according to the previous massive data and build several tourist experience scenes in advance. Secondly, the existing experience scene can be improved and optimized or reconstructed according to the real-time information feedback in the interaction with tourists. The construction of the above tourist experience scenes is based on big data for scene prediction and real-time update.

Intelligent tourism network platform should be based on the existing behavior data of tourists, namely big data. Through the acquisition, analysis and prediction of these big data, the corresponding tourism products should be designed and the tourists experience scenes should be established in advance. For example, the platform can make the prediction of tourists consumption demand and behavior in advance according to the consumption mode, evaluation and preference of massive tourists in the past, so as to build a variety of different tourist experience scenarios in advance to meet the expected needs of tourists. The behavior data of tourists can be collected by the platform, and the behavior model of tourists can be established through the data mining of cloud computing technology. With the continuous optimization and improvement iteration of intelligent algorithm, the model can accurately depict the consumption behavior of tourists, in order to accurately reflect their preferences, it can also reveal the internal law of the overall demand of tourists through the aggregation of individual behavior of massive tourists.

Tourist experience scene includes several intelligent, digital and virtual dynamic experience scenes, such as digital travel, destination (scenic spot) experience, parking experience, accommodation experience, shopping experience, intelligent tour guide, etc. In addition, according to the needs of customers,

intelligent experience scenes can be provided in the aspects of tourists travel, admission, check-in, consumption guidance, settlement, etc.

According to the real-time communication and feedback information, the platform can continuously establish new tourist experience scenarios or improve existing tourist experience scenarios. By mining tourists experience feedback information on products or services, it can accurately obtain tourists personalized needs, tourism feedback and other information, so as to immediately improve tourism products and services, or build new experience scenarios, meet the personalized needs of tourism.

The rapid construction of tourist experience scene requires high technical support for the platform and high experience value of tourists. Therefore, the service charge price is correspondingly high. Usually, the scene is generated based on the rapid response needs of tourists or the interactive feedback of online community.

Based on the idea of "platform online data - Online tourist experience scene - downstream of tourist line - feedback online data-Online docking", with the collection and decision-making of online platform big data, a number of tourist experience scenes are constructed, and then tourists online experience and downstream are combined to continuously generate new demands. The online platform integrates new elements according to the new demands of tourists, build a new tourist experience scene to meet the dynamic needs of tourists and realize the value creation.

CHAPTER 5

SERVICE MODEL OF NANNING INTELLIGENT TOURISM

Nanning Tourism Industry and intelligent tourism service

The current situation of Nanning tourism industry and intelligent tourism service includes the scale of tourism industry, tourism resource conditions, information infrastructure and intelligent tourism service. As the leading advantages of developing intelligent tourism service, these elements lay the foundation for improving the core competence of Nanning intelligent tourism service. With the overall analysis of the current situation, it is conducive to determine the appropriate intelligent tourism service mode.

Scale of tourism industry

Tourism industry has a strong industrial driving effect and has the foundation to become a pillar industry. Nanning, as the capital city of Nanning province, plays an extremely important role in the construction of transportation network, the concentration of natural resources and human factors. According to the statistical data of Nanning province tourism industry, the development of the whole tourism industry in Nanning province showed a good growth trend from 2015 to 2019. Nanning has a certain advantage in the number of visitors. Its convenient transportation network, rich tourism resources, perfect tourism facilities and the strong promotion of the government have promoted the development of the whole industry. The tourism data of Nanning Province is shown in Table 4.

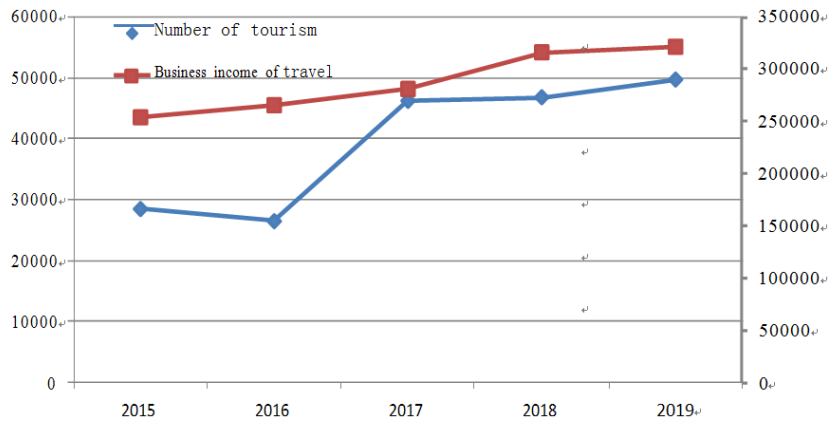
Table 4 Tourism statistics of Nanning

year	Total reception		Number of star hotels	Total number of travel agencies	Business income of travel agency(k)	Number of employees in tourism
	whole province	Nanning				
2019	957038	217552	411	672	321538.19	49727
2018	834716	210835	206	672	316229.20	46832

Table 4 (Continued)

year	Total reception		Number of star hotels	Total number of travel agencies	Business income of travel agency(k)	Number of employees in tourism
	whole province	Nanning				
2017	1417227	205870	203	663	281096.91	46240
2016	1528554	210571	223	664	265520.90	26464
2015	2076165	241134	236	654	253952.40	28476

Star hotels, travel agencies, tourism industry practitioners as key tourism elements, can show the development momentum and potential of the tourism industry. Figure 5 shows the number of tourism practitioners and the operating income of travel agencies in Nanning province from 2015 to 2019. It should be seen that the number of tourism practitioners and the number of travel agencies in Nanning is on the rise. According to the Nanning tourism development report 2019, Nanning has won the title of "top ten tourism cities in 2019". Nanning province has also launched a series of measures to encourage the development of tourism industry. In the future, there will be more space for tourism development.



Figures 5 Development trend of tourism industry in Nanning from 2015 to 2019

Tourism resource conditions

Nanning natural resources enrich the types of tourism resources and provide the possibility of multi-directional development for Nanning tourism. From the perspective of climatic conditions, Nanning has a mid temperate continental

monsoon climate with long summer and short winter. As the capital city with the highest latitude and the lowest temperature in Nanning, Nanning has obvious advantages in summer tourism. The rich animal and plant resources provide resource advantages for the development of eco-tourism.

According to the classification method of tourism resources in the national standard "classification, investigation and evaluation of tourism resources" (GBT 18972-2003), Nanning has obvious advantages in architecture and implementation, biological landscape and ruins from the perspective of resource types and proportion. The number of basic types in the country accounts for 55.1%, 27.3% and 25% respectively, Table 5 shows the quantity and proportion of various resources.

Table 5 Comparison of natural resources in Nanning

Resource type	Number of basic types in Guagnxi	Nanning			
		Number of basic types	Proportion of the whole country	Number of monomer	Proportion of the whole city
Geographical landscape	37	4	10.8	22	7.7
Water scenery	15	3	20.0	11	3.9
Biological landscape	11	3	27.3	20	7.0
Astronomical phenomena and climate landscape	8	1	12.5	1	0.4
Ruins	12	3	25.0	17	6.0
Architecture and Implementation	49	27	55.1	152	53.5

Information infrastructure conditions

Information infrastructure is the basis for the development of intelligent tourism. Since there is no authoritative statistics on Nanning information infrastructure, it is approximately expressed by the main telecommunication and communication capacity, service level and Internet indicators of Nanning province from 2017 to 2019 in China Statistical Yearbook, as shown in Table 6 to Table 8. It can be seen that the conditions of information technology facilities in Nanning province continue to improve, especially the continuous increase of Internet access and mobile Internet users, which has laid the technical foundation for Nanning intelligent tourism.

Table 6 Main telecommunication capacity of Nanning from 2017 to 2019

year	Capacity of mobile telephone exchange (k)	Mobile phone base station (k)	Length of optical fiber line (km)	Long distance optical fiber line length (km)
2019	8850.9	13.2	1083490	53800
2018	8546.9	11.4	615654	50222
2017	7318.7	10.0	550690	46513

Table 7 Telecommunications communication service level in Nanning from 2017 to 2019

year	Telephone penetration (Department/ 100 persons)	Penetration rate of fixed line telephone (Department / 100 persons)	Urban fixed line telephone And rate (Department / 100 persons)	Mobile phone penetration (Department/ 100 persons)
2019	107.88	11.36	16.75	96.53
2018	103.79	13.09	19.15	90.69
2017	107.59	12.92	18.33	94.66

Table 8 The Main indicators of Internet in Nanning from 2017 to 2019

year	Number of IPv4 addresses	Internet wide access ports (k)	Mobile Internet users (k)	Internet user (k)
2019	409.8	1937.2	2858.7	664.6
2018	125.4	1964.9	2510.9	485.5
2017	125.4	1308.8	2009.0	519.5

Current situation of intelligent tourism service

1. The status quo of network platform. Nanning Qingxiushan has built an information display network platform. At the same time, Nanning tourism agencies have carried out extensive marketing activities in Ctrip, Qunar and other third-party tourism service platforms. The third-party tourism platform has basically solved the

tourists information service needs with the help of extensive flow advantages and strong resource integration ability, however, due to the inadequacy of the self built network platform and the third-party tourism platform in global tourism resource elements mining and related service supply, tourists have no access to complete tourism service solutions, which affects the tourism brand construction and industrial development of Nanning.

2. The current situation of tourism demand. According to the national report on big data of tourism consumption 2018-2019 issued by China Tourism Research Institute and Ctrip big data joint laboratory, the number of tourists in Nanning has reached 19 million, and it is estimated that by 2021-2022, the number of tourists in Nanning will reach 34 million. Nanning, as a traditional tourist destination, has attracted great attention from domestic and foreign tourists, moreover, with the increase of domestic economic income, tourist demand is more diverse and personalized, and related industries such as characteristic towns, exhibitions, cultural and creative industries emerge in an endless stream.

3. Tourism service capacity. Nanning has a number of medium and high-end service institutions providing tourism services, and has formed certain industry norms and standards in the aspect of element integration. In 2017, Nanning crown tourism alliance was founded by Nanning Qingxiushan Co., Ltd., integrating a number of tourism enterprises and relevant units in the province, and formed a series of tourism services in terms of hotel, transportation, accommodation, tourism scenic spots and a complete service chain.

Based on the above analysis, it can be seen that Nanning has a good foundation and conditions for the development of tourism industry, unique natural and cultural resources, and relatively perfect information infrastructure construction. At the same time, tourism in Nanning has inherent convenience, and the development of intelligent tourism has become the breakthrough of intelligent tourism in Nanning. The tourism alliance has the ability to integrate the whole region tourism and related resources in Nanning. It can be seen that relying on the existing foundation of Nanning Qingxiushan network platform, combined with the current situation of Nanning intelligent tourism service, Nanning intelligent tourism information interaction service mode is designed to realize the cultivation of Nanning intelligent tourism service leading advantages, and the collaborative service mode of Nanning intelligent tourism elements is mainly designed to enhance the core competence of Nanning tourism service. Finally, it lays a foundation for the development of Nanning comprehensive advantages of intelligent tourism.

Information interactive service mode of Nanning intelligent tourism

Construction of Nanning tourism network platform

Nanning Qingxiu mountain is a unique tourism landscape. Based on the existing foundation of Nanning Qingxiushan network platform, Nanning tourism network platform is constructed. According to the intelligent tourism information interaction service mode architecture, Nanning tourism platform architecture is initially formed. The whole platform includes portal layer, platform application layer, platform information processing layer, platform service layer, platform data layer and infrastructure layer. The portal layer is the consumer entrance layer, which is composed of Wechat, app, microblog, website and other forms. It plays an important role in publicity and promotion, especially for Nanning tourism network platform, under the background of vigorously promoting tourism in the whole province, combined with the application of modern Internet, it is very important to promote Nanning tourism resources. The platform application layer is a tourism related application provided by various types of tourism service providers, including Intelligent scenic spot application, Intelligent weather application, Intelligent navigation application, Intelligent transportation application, etc. the application layer provides opportunities for other service providers to join the tourism platform, and can form a wider tourism service network. It should be noted that as an entrance, Nanning tourism platform can not only provide relevant service schemes for tourism, but also expand and transplant to business tourism, summer tourism, theme tourism and other tourism formats. The formation of ubiquitous intelligent tourism information mainly includes:

1. Global information of intelligent tourism. With the rapid development of the Internet, the transformation and upgrading of the tourism industry needs to be realized. As an important tourism destination, tourism city carries a large number of tourists. The intelligent scenic area provides destination information through its own platform or a third-party platform, and the intelligent information provided by the network platform helps tourists make decisions, accurately measure the passenger flow, and carry out accurate control within the scenic area. Through the interaction of intelligent information between tourists and destinations, tourism destinations can make tourists and profits grow together, optimize the utilization of scenic resources and maximize the protection of ecological environment. The scenic spot can also give the scenic spot surreal information content through AR (augmented reality) and

VA (virtual reality) technology, and give the tourists unconventional information experience.

2. Intelligent intermediary information. As a traditional travel information and intermediary service provider, travel agency promotes service iteration through technology update, and realizes people intelligent perception and convenient utilization of travel information. The new model helps tourists save time, provide clear travel guidance and services, and push customers directly to suppliers. It not only provides multi language and multi currency services, but also helps consumers to solve the problem of information overload. The whole design takes the convenience of customers as the primary consideration. Intelligent travel agencies can adapt to market demand in multiple modes, according to different users and different markets. Intelligent travel agency can not only make it easy for tourists to obtain information, but also actively push information for users, provide personalized solutions, and obtain more stakeholder connections for the hub nodes of the tourism industry chain.

3. Intelligent hotel information. Based on communication and computer technology, Internet and Internet of things, Intelligent hotel integrates big data, cloud computing and artificial intelligence into the whole process of hotel design, management, operation and decision-making, Intelligent hotel can provide customers with all-round information of hotel accommodation, sports, entertainment and catering, as well as external information of the area where the hotel is located, so as to provide convenient, college and personalized experience and service for the guests.

Intelligent hotel provides hotel managers with timely and accurate information on the operation of each link of the hotel, and carries out integrated marketing through accurate analysis of customer information. Use intelligent information to improve management efficiency, form core competitiveness, and provide sustainable space for the development of the hotel industry. Intelligent hotels directly provide customers with information services and personalized services. Intelligent hotel is the application of intelligent technology in the hotel industry. It can expand customers and increase market share through personalized and diversified services, and then establish an efficient and intelligent market image of the hotel, enhance the core competitiveness, and constantly stimulate the innovation of hotel management mode.

4. Intelligent tourism public service information. Intelligent tourism public service system is an important part of urban public service system, and its optimal

supply mechanism is to guide social capital investment through urban financial investment, so as to form the effective operation of the overall intelligent tourism public service system of government enterprise cooperation. For the services that can be realized through market operation, the government will issue relevant policies and implement support supervision. With the system platform of Intelligent city, the network platform realizes the comprehensive optimization of city service information, so as to provide fast, accurate and comprehensive information services for tourists.

The information processing layer of the platform relies more on various algorithms, big data mining analysis technology and database management technology. The service layer of the platform includes all kinds of tourism related standard modules and service schemes composed of various standard modules. Using RFID anti-collision algorithm to design Nanning tourism platform, the algorithm changes the major shortcomings of the previous RFID intelligent single target recognition wireless technology. It greatly improves the recognition efficiency and accuracy in many aspects, such as scenic spot diversion, automatic recognition of electronic ticketless queue and so on. The platform algorithm greatly alleviates the phenomenon of tourist attractions overcrowding, and realizes the advanced functions such as self-service ticket purchase, vehicle diversion and tourist diversion. The formula of RFID anti-collision algorithm has been optimized by many scholars.

From the above calculation, the RFID conflict avoidance algorithm based on the structural formula of Nanning tourism platform can be found that during the process of decoding the basic information of tourists, data collection and RFID reader transmission include RFID number, name, visitor ID number and current location light. Then the data information is filtered, encapsulated and sent to the management center. After receiving the data sent by the RFID intermediate device, the management center analyzes the data and visualizes it. Nanning tourism platform based on RFID anti-collision algorithm can be used for the management of Nanning scenic spots, and realize the intelligent management of tourists, scenic spots, tourism agencies, tour guides and other different elements.

Taking a 5A scenic spot in Nanning as an example, this paper further tests the application of RFID technology, and tests a large number of actual data. The test results are shown in Table 9.

Table 9 Reliability and RFID accuracy evaluation scale of intelligent tourism platform

	reliability	RFID accuracy
Accurate ticket system management	87	98
Environmental monitoring management	98	67
Traffic management in scenic spots	76	56
Entertainment management of scenic spots	65	98
Scenic Area Office Management	43	98
Tourist management of scenic spots	76	87

From the reliability and RFID accuracy of the intelligent tourism platform in the rating table, the test values of these two indicators are within the design scope in the scenic spot ticket system management, environmental monitoring, scenic spot traffic management, scenic spot entertainment management, scenic spot office management and tourist management, which fully meet the expectations. In particular, ticket system management, traffic management and tourist management are far higher than the two indexes. Explain that the three main management systems ensure the reliability of the above indicators, and then test the RFID anti-collision algorithm. In order to describe the advantages of RFID anti-collision algorithm, use the basic binary tree algorithm, dynamic binary tree algorithm and reverse algorithm as the control group.

Information interactive service content of Nanning tourism

Based on Nanning tourism network platform, it can realize intelligent query and personalized information push service.

1. Intelligent query service. The platform integrates all kinds of Nanning tourism resources, including tourism routes, maps, travel agencies, weather and other resource owners. Based on the accurate push and matching technology of the network platform, it realizes the information needs of different types of tourists in Nanning tourism network platform, and meets all the information needs of tourists for "food, accommodation, transportation, travel, shopping and entertainment" in the process of tourism, recommendation algorithm of network platform plays an important role in intelligent recommendation for tourists needs. At the same time, tourists can rely on mobile APP, public address, portal website and other multi-source data entrance, and get the comprehensive information service solution through the official account processing center of the network platform.

2. Perception and push of personality information. Based on the user portraits of tourists, on the basis of mastering tourists travel preferences, the personalized information perception of tourists is realized. By using the in-depth mining of tourists tourism consumption big data, personalized recommendation is made in the aspects of tourism routes, food push, accommodation, scenic spots and other information. Specifically, for the tourists who are keen on sports, it is necessary to push information about the ski resorts around Nanning sports activities, sports community and knowledge are personalized information. For first-time tourists, they focus on their needs for characteristic cultural products, landscapes and various experience activities, and focus on pushing the demand information that may be transformed into actual consumption.

In a word, Nanning tourism information interactive service is based on the data analysis and processing ability of the network platform, through the accurate analysis of all kinds of tourists, to achieve accurate information service.

Elements collaborative service model of Nanning intelligent tourism

According to the applicable conditions of intelligent tourism service mode, the dominant advantages of Nanning tourism service and the development stage of tourism industry, Nanning tourism platform is selected as the entrance of consumer tourism to realize the construction of intelligent tourism service based on network platform, and the collaborative service mode of Nanning intelligent tourism elements is designed to cultivate and consolidate the dominant advantages of Nanning intelligent tourism.

Nanning tourism platform, as a consumer entrance, can provide a series of services such as resource-based Intelligent travel, Intelligent map, Intelligent weather, Intelligent food, Intelligent hotel and so on. The platform has a certain ability to integrate tourism elements, and can provide standard element services including six elements of "food, housing, travel, shopping and entertainment", as well as precise recommendation services and customized services according to the tourism needs of consumers.

Nanning tourism elements collaborative service content

1. Common reality needs efficient collaboration. Aiming at the common needs of tourists, in the three elements of tourism subject, object and media, Nanning tourism platform integrates Nanning tourism related elements such as travel

agency, scenic spot and ski resort, as well as different stakeholders such as bus, special line and railway. As the entrance of consumers, the tourism platform can provide all services in the tourism chain for consumers, these services are presented on the tourism platform with standardized service modules, which are completed by different service providers. These service providers include local travel agencies, tour guides, scenic spots, B&B operators, hotels, hotels, etc. At the same time, according to the consumer demand for different tourism industry prices. Taking the travel needs of consumers as an example, Nanning network platform can integrate the latest online car hailing, taxis, free rides, etc. for consumers, and provide intelligent navigation and other services according to the maps embedded in the platform, which saves time and economic costs.

2. Individual reality needs precise coordination. Mainly for the individual needs of tourists, relying on the push algorithm of the tourism platform, the automatic matching of consumer needs and platform resources is completed. This push service can not only meet the needs of consumers for standard service modules such as food, housing and transportation, but also meet the precise push of composite services. Of course, Nanning tourism platform, as an entrance of Nanning global tourism, has carried out digital integration of Nanning global tourism resources, data and information, and established different types of resource pools. From the perspective of the types of tourism elements, Nanning tourism platform should be the platform with the richest tourism resources and the most tourism elements. According to the development law of the network platform, when all kinds of tourism elements enter the platform, the network externality effect can promote the continuous expansion of the scale of Nanning tourism platform. Tourists can directly receive the integrated service scheme provided by the platform through retrieval, query, reservation and sharing. It mainly includes the following contents: (1) Life service docking, including providing consumers with tourism related food, theme hotel, life health care services, as well as a series of related short-term leasing, shared consumption, long-term leasing and other different types of services. (2) Knowledge and skill sharing services, the development of tourism related knowledge modules, according to the heterogeneity of consumer demand, provide accurate services. (3) Potential demand intelligent collaboration. Nanning tourism has a certain influence all over the world, and its potential market demand is huge. It needs to use modern information technology to dig out the potential demand, make full use of various portal platforms and third-party platforms, and use various social software such as Microblog, Wechat and QQ.

To expand the influence of Nanning tourism platform, it mainly includes the following contents: (1) Hot information push service, which can push the latest tourism consultation, preferential activities, hot routes and other information to potential consumers in real time through Nanning tourism platform. These potential consumers include people with different consumption ability at home and abroad, especially those who are keen on tourism. In addition, modern data mining technology is used to integrate the retrieval, browsing and trading behavior data of potential consumers, so as to identify the latest and most popular tourism hot spot information, and then package and push it to potential consumers together with the corresponding service scheme. And make good use of online marketing channels such as platform message reminder, web pop-up window, SMS, e-mail and associated app advertising to actively and timely realize batch push. (2) Interest mining push service uses new generation information technologies such as big data, deep learning and cloud storage to process various kinds of information, browsing history, evaluation information, transaction log and other "trace data" of consumers on Nanning tourism platform, and to draw pictures for each potential consumer, and to build personal behavior feature model, service demand model and interest preference model, Nanning tourism platform needs to push the results based on data mining to consumers, local travel agencies and intermediary organizations at any time. Interest mining push service must be based on a large amount of data accumulation of Nanning tourism platform and in-depth mining of potential consumer demand.

Elements collaborative service mode operation mechanism of Nanning intelligent tourism

Based on different demand types, Nanning tourism platform is taken as the entrance to promote the operation of Nanning intelligent tourism elements collaborative service mode through demand identification and mining, resource agglomeration and optimization, supply and demand matching and tracking, service feedback and innovation mechanism. Nanning tourism network platform is based on Nanning global tourism elements, resources and scenic spot system, which comprehensively identifies and processes the needs and consumption status of consumers participating in tourism, and makes rational use of the platform service scope, tourism resources agglomeration and service application development decision-making. Secondly, carry out platform brand marketing, combine online and offline multi-channel, actively guide all kinds of consumers to release relevant

demand information on the tourism platform, and expand the influence of Nanning tourism platform. Thirdly, design a variety of demand collection entrance at the entrance of Nanning tourism platform, to provide a comprehensive guarantee for consumers to put forward and refine their needs. In particular, the entrance design should fully reflect the humanized characteristics, such as developing various types of projects, increasing consumers choice, and providing a choice space for high, middle and low prices, to meet the needs of consumers with different consumption power. Fourthly, the demand identification of Nanning tourism network platform must be able to guide consumers to specify, clarify and digitize their needs, and further complete the demand identification of consumers based on the big data of different sub platforms in the tourism service network.

Demand mining mainly relies on all kinds of consumer data accumulated by Nanning tourism platform, using the network connection between tourism platform and travel application, food application, tourism knowledge application and other service providers,

In terms of data sharing and sharing, we have reached an agreement to draw portraits for each consumer and potential consumers with the permission of users, and use various data prediction technologies to comprehensively analyze and predict the tourism preferences of consumers in Nanning and related cities, so as to achieve accurate push of potential demand.

Evaluation on the operation effect of Nanning intelligent tourism elements collaborative mode

According to the designed evaluation index system of coordination degree among tourists, tourism elements and supply and demand docking, the relevant index values cannot be obtained through quantitative data. Therefore, the 1-9 Likert expert scoring method is used for evaluation, in which 1 means that the description of the item is very unrealistic, and 9 means that the description of the item is very realistic. A total of 10 people engaged in tourism management, research and tourism industry were invited to score the degree of collaboration among the three dimensions, Table 10 shows the original data of expert scoring.

Table 10 The initial value of expert scoring

	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Expert 9	Expert 10
X11	2	3	3	4	2	3	3	2	3	4
X12	5	6	6	5	5	5	6	5	5	6
X13	7	5	6	5	6	7	5	7	7	6
X14	2	2	4	3	4	3	2	2	4	4
X15	5	4	5	4	5	5	5	6	4	5
X21	5	5	4	6	4	4	5	6	6	5
X22	3	4	5	5	4	3	3	3	5	4
X23	5	5	4	5	6	4	5	5	5	3
X24	8	7	6	6	8	7	8	8	6	7
X25	6	6	7	5	5	6	6	6	5	6
X31	6	5	6	4	5	6	4	6	4	4
X32	5	5	6	5	4	5	6	4	5	6
X33	5	6	6	6	4	4	5	5	5	7
X34	6	4	5	4	3	6	5	6	6	5
X35	6	6	5	4	4	6	5	4	6	5
X36	7	8	5	6	5	7	7	5	5	7
X37	5	6	7	6	5	5	6	5	6	5
X38	3	4	4	3	3	3	4	3	3	3
X39	5	5	4	6	5	6	5	4	4	5

According to the calculation steps of coordination degree, the coordination degree of composite system is calculated in turn. The entropy value and difference coefficient of each index are shown in Table 11.

Table 11 Entropy value and difference coefficient of each indicator

index	X11	X12	X13	X14	X15	X21	X22	X23	X24	X25
h	0.82	0.60	0.82	0.76	0.83	0.82	0.75	0.93	0.82	0.83
ai	0.18	0.40	0.18	0.24	0.17	0.18	0.25	0.07	0.18	0.17
index	X31	X32	X33	X34	X35	X36	X37	X38	X39	
h	0.76	0.88	0.86	0.92	0.82	0.76	0.68	0.48	0.82	
ai	0.24	0.12	0.14	0.08	0.18	0.24	0.32	0.52	0.18	

The order degree among the three dimensions of tourists, tourism elements and supply and demand docking is shown in Table 12. It can be seen that the order degree of tourists participation and coordination is the largest, indicating that the effect of tourists participation in Nanning intelligent tourism is higher, but the order degree of supply and demand docking is lower.

Table 12 Subsystem score

Component dimension	Order degree
Tourist	0.451
Tourism elements	0.481
Supply and demand docking	0.409

Finally, according to the collaborative degree of the composite system, the collaborative degree of the network platform composite system is 0.446, which is in a moderate collaborative state as a whole, especially in the aspect of supply and demand docking, which needs to be further strengthened, including the docking degree of the platform and the collaborative services provided by tourism agents. For example, Nanning tourism service agency should strengthen the management and collaboration. At present, the direct business collaboration of various travel agencies, service agencies and grounding organizations needs to be further improved.

It should be noted that due to the influence of network technology, the degree of element collaboration and the degree of tourism resource agglomeration, the value co-creation service mode in Nanning has not yet been put into practice, and the information interaction and element collaboration service mode is the main service mode of intelligent tourism in Nanning, which has not been accompanied by the development of artificial intelligence, Internet of things, virtual reality and other information technologies, the role of network platform in resource aggregation, element integration and service innovation is further highlighted, and the value of all kinds of tourism participants will be created together.

Summary and Discussion

The implementation of Nanning intelligent tourism service mode needs network platform, service module development and related security strategies. The specific strategies are as follows:

Nanning tourism network platform management points

Nanning tourism network platform relies on a specific enterprise or a tourism enterprise for management. The platform manager accepts the direct supervision of the government, and forms a huge light tourism intelligent service network around the tourism network platform. The operation and flow of different elements, subjects and resources in the network need strong management. It is mainly carried out from the following aspects: (1) Strategic collaborative management. Nanning tourism network platform, as the core of the whole service network, needs to reach a consensus with the main bodies participating in tourism services at the strategic level. The process of strategic collaborative management is manifested in the integration and collaboration among tourism agencies, scenic spots and different subjects for their respective strategic objectives, strategic plans and related measures, only under the unified strategic framework of tourism platform can it help each tourism participant to provide high-quality services. (2) According to the standardization and modularization of the tourism process, Nanning tourism platform needs to process the position of each participant in the service chain, and clarify the positioning of scenic spots, tourism agencies, tour guides and relevant stakeholders in providing services. (3) Information collaboration, the original intention of Nanning tourism platform is to solve the problem of tourism information asymmetry. Information collaboration requires all kinds of tourism elements to achieve real-time update and exchange of information through the platform, which can be well realized through the platform in the network environment. There are many ways of information collaboration, which can open the data interface and build the database according to the unified standard, agreements can also be signed between different tourism entities.

Nanning intelligent tourism service module development strategy

Modularization of tourism service is the key to the upgrading and transformation of Nanning intelligent tourism service mode. Combined with the existing tourism elements, it is urgent to further develop more tourism service modules to meet the overall coordination of Nanning intelligent tourism elements and characteristic customized service mode.

1. Increase the concentration of tourism elements. Make full use of Nanning natural advantages in tourism, take intelligent tourism as the source, give play to the leading role of Nanning tourism industry alliance, further integrate equipment production, personnel training, culture and other resources, and form a tourism

resource highland covering the whole region. We will vigorously introduce Wanda, country garden and other leading enterprises with the ability of tourism design and planning, support them to jointly develop tourism projects with local enterprises, and provide financial and intellectual support for the development and construction of tourism projects in Nanning.

2. Speed up the development of characteristic services. Relying on the historical opportunity of system and mechanism innovation in Nanning new area, we should vigorously introduce enterprise groups with service development experience to form a complete industrial chain and service chain in competitions, sports, performances, etc., so as to promote Nanning economic development; support Nanning industry alliance in the development of Qingxiushan, the holding of events, brand building and other aspects, especially encourage and recommend tourism enterprises to develop tourism products and services with Nanning cultural heritage.

3. Accelerate the application of information technology. Increase investment in the research and development of Nanning tourism network platform, increase investment in the application of virtual reality technology, Internet of things technology, big data technology and other related technologies, establish a typical Nanning intelligent tourism enterprise, encourage tourism service enterprises to increase investment in information technology, and form more tourism services with high technology content, good experience and high added value.

4. Absorb advanced regional tourism service experience. Strengthen exchanges and cooperation with international famous tourism cities such as Sweden, Finland and Norway, learn advanced concepts and ideas of tourism and economic development, apply information technology and new concepts to the development of Nanning tourism industry, innovate the forms and contents of tourism services, form replicable and promotable tourism service modules, and promote Nanning summer tourism, red tourism, business tourism and other forms of tourism development.

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