

Research on Upgrading of Cultural Tourism Management Information System Based on Data Mining Technology

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Abstract: On the premise of promoting the development of tourism, this paper discusses the application of big data in tourism management. At present, from the perspective of the development of tourism information management, the level of information management in China's tourism industry is still lagging behind, and the traditional information management methods have been unable to meet the needs of tourism development at this stage. Therefore, it is of great significance for the times for the government to apply big data to tourism management by borrowing computer network technology. At the same time, it is also beneficial to the development of various enterprises related to tourism. Firstly, it introduces the big data of the tourism industry, then analyzes the important role of big data in tourism management, so as to grasp the development trend of the industry in the future, and finally expounds the application of big data from three aspects. The system function module is realized. Through data mining, the analysis of tourism interest and shopping consumption trend of all kinds of tourists is realized, and the research needs to be improved is pointed out. It has important application value in the application of tourism informatization.

1. Introduction

At present, tourism has become a new pillar industry in China's economic development. With the popularization, economy and daily development of tourism, people's requirements for travel agencies are getting higher and higher. Applying big data to tourism management is the inevitable trend of information development [1]. At present, big data is widely used in all aspects of tourism management in China, specifically, it is used to analyze and forecast tourism demand, apply to tourism market, apply to tourism planning and macro-control of tourism, and apply to sharing and collaborative tourism management information [2]. After entering the information age, the application of the Internet and big data in the tourism industry has gradually deepened. People began to query the information of tourist attractions through the Internet, search for local accommodation, book hotels, and buy tickets for scenic spots. Commonly used tourism softwares include Ctrip.com and Qunar.com, which provide convenience for people's travel [3]. If travel agencies want to achieve long-term survival and development, they must improve their service level

and quality. Data can objectively tell you the likes and dislikes of customers, and help you to determine what should be the top priority, so that you can quickly take tactical and strategic initiatives [4]. Although digital information circulation can make a company create a borderless organization, it needs a brand-new corporate thinking mode and corporate culture [5].

With China's economic and social development, tourism has become an important industry to promote the transformation of economic growth mode. Tourism is the leading industry of modern service industry, and the analysis, processing and application of tourism information is very important for tourism construction [6]. First, the tourist information is collected, sorted, stored, transmitted and other procedures, and finally, the tourist information is retrieved. These tourist information can be used for tourists' reference, and can also help them make decisions on tourist routes [7]. Compared with the traditional manual office, the application of tourism management information system can effectively improve the work efficiency of travel agencies, reduce costs, and play a very helpful role in improving the service level and quality. The development of tourism needs the support of a large number of tourism data. However, it is difficult to find the value of data by traditional manual processing. Massive tourism data are often not fully utilized, and data mining technology creates conditions and makes it possible for colleges and universities to use tourism data [8]. Based on these requirements, it is required that tourism information must have time, be timely, and new information needs to be updated at any time.

2. Research Status of Tourism Data Mining At Home and Abroad

2.1 The Tourism Industry is on the Track of Internationalization

With the rapid development of China's tourism industry, the tourism industry is moving towards the track of internationalization. The massive data accumulated by traditional tourism industry has not been effectively utilized, and resources have been greatly wasted. It is the general trend to introduce data mining into tourism industry. The application of big data in the tourism industry will give full play to the related functions of big data such as data extraction, storage, search, analysis and processing, provide a brand-new competitive advantage for the tourism industry, and timely solve the problems existing in the past industry development process. Modern tourism management has increasingly adopted information technology to collect tourism data from tourism resources, tourism markets, tourists and other aspects. These data have become an important basis for discovering potential rules and tourism management decision-making knowledge [9]. Most of the research on the application of tourism informatization is focused on the specific application of data mining in the current academic field. The author mainly studies the application of decision tree method in tourism information construction. Therefore, the research on data-based tourism management decision-making method and the establishment of decision support system have become an important problem to be solved in the tourism industry.

2.2 Algorithm Selection of Tourism Data Mining

The basic classification algorithms commonly used in data mining include decision tree, Bayesian, rule-based algorithm and so on. Decision tree is the mainstream classification technology at present and has been successfully applied to data analysis in more industries. In view of the needs of tourism industry management decision-making, researchers at home and abroad have made a large number of multi-level and multi-angle explorations. Scholars have devoted themselves to finding the explanation mode of tourism demand and exploring the behavior rules and patterns of tourism demand through time series model (trend analysis), correlation analysis model, gravity model, potential model, etc., and accumulated a large amount of land selection which will change

constantly due to the influence of many factors [10]. For example, the adjustment of vacation policy, the state of national economic operation, tourism product promotion and media publicity, the Olympic Games and other major activities will have an impact on tourism behavior, resulting in the dynamic changes of tourism data.

The analysis and pattern discovery of various tourism data are helpful to tourism management decision-making, but according to the development of various intelligent decision support technologies, they can not complete all the qualitative and quantitative analysis alone, let alone the decision support of complex events. Therefore, it is necessary to integrate a variety of intelligent decision support technologies to realize the data-based decision-making process. The process is divided into four stages: problem proposal, data acquisition and model selection, data analysis, evaluation and decision-making, as shown in Figure 1.

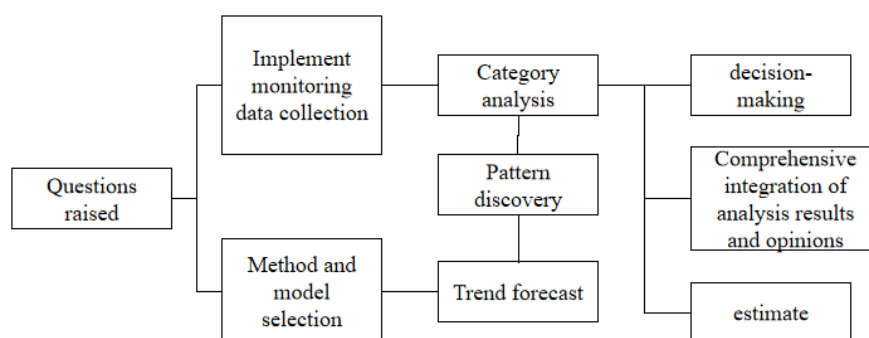


Fig.1 Data-Based Decision-Making Process

In the research of association rule mining, the most important one is Apriori algorithm, which later became the basis of most association rule classification. Clustering algorithm is also an extremely important part of data mining technology. Tourism industry, as a part of China's economic growth, is bound to have a lot of data, and these data can be accurately calculated only by feasible methods, which fully solves the problems of time-consuming and inaccurate results of traditional calculation methods.

3. The Important Role of Big Data in the Tourism Industry

3.1 Expand the Number of Users

After entering the information age, the application of big data in people's work and life is gradually increasing. Using the Internet to realize the rapid dissemination of information, combining various lifestyles, extending people's cognitive category and encouraging people to actively explore the outside world. Applying big data to tourism management will help the government to further understand the tourism demand, so as to build tourist attractions and facilities that better meet the needs of the public. At the same time, it also gives direction to the development of various industries related to tourism. Generally speaking, tourist facilities and services are the needs of tourists. When estimating the demand for tourism services, the relevant enterprises providing services need to estimate the service demand according to the current actual situation and various factors. This is because if it does not estimate according to the actual situation, when it estimates incorrectly and prepares too many services, it will lead to higher service costs of relevant enterprises, which is not conducive to the development of enterprises. When too little service is prepared, the interests of tourists will be damaged. After entering the 21st century, the continuous

development of computer information technology. The combination of traditional tourism and information technology is both an opportunity and a challenge for the tourism industry.

3.2 Implementation of Tourism Data Mining System

Tourism information management system includes two sub-modules of tourist information management and tourist information analysis. Maintain the system in time according to the problems in the daily operation of the system, such as adding or deleting a certain module function, and making the whole system run faster. First, by understanding the different needs of users, the system is designed according to these needs. At the same time, after the design of these systems is completed, the different needs of these users become the most important basis for final acceptance. Usually, the forecast of tourism demand is the key basis for government departments to make relevant decisions. Using the conclusions of tourism demand forecast, the effective cooperation of various supply chains can be realized. The data of tourists' personal characteristics and preferences are not only complex, but also difficult to obtain. Only when we can analyze and synthesize various types of massive data from multiple angles can we provide basis for correct tourism management decision-making. Tourists are very concerned about the tourism management information system, because these tourists need to understand the tourism information through such a platform to make early decision or planning for the whole tourism. Therefore, before departure, tourists need to know the relevant information or service information of the tourism destination.

4. Conclusions

Big tourism data itself is forward-looking and can predict the future development trend of tourism market and consumer demand. Making tourism planning through big data can provide more sufficient data for the current scale of tourist attractions and optimize the tourism scheme. Tourism data mining algorithm system needs to be further improved: the booking system needs to be improved. Interface beautification needs further improvement. The structural relationship between data tables needs to be optimized to improve the data processing ability and efficiency. In the information age, government departments and tourism enterprises must pay attention to big data and give full play to its advantages. Building a tourism big data system can not only provide reference for enterprises to make decisions through data collection and analysis, but also explore value-added services and improve the economic benefits of the tourism industry. Recognizing the limitations of existing decision-making methods, the system comprehensively adopts data mining, group decision-making and other methods to improve adaptability and support ability for dynamic data. The specific functions of the tourism management system are integrated and utilized to the greatest extent with the advanced computer technology, so as to effectively promote the development of tourism.

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