

## Research on Library Personalized Push System Based on Big Data Decision

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**Abstract.** Big Data is the product of the rapid development and application of information technology, and it is also the inevitable trend of the development and application of intelligent technology. In the environment of big data, by giving full play to the advantages of big data decision-making system and actively constructing library personalized push system, we will break the foundation of Library Service Space and time, fully guarantee the information system and service ability of the library. In the process of operation, libraries should make full use of big data resources and accurately identify the service demand, reading behavior and individual characteristics of library users, innovate the Information Mode and personalized service method, continuously improve the user's reading experience, improve the user relationship, thus form the accurate, personalized and intelligent book information service system.

**Keywords:** Big Data, Decision making, Library, Personalization, Push system

Big data is a kind of data set, which can be acquired, stored and managed by commonly used software tools. In addition, the processing time of large data exceeds the tolerable time of conventional data processing, which is not only huge but also growing rapidly. Big data is a kind of valuable information asset. There are rich information contents in the data. The library users in the information website, shopping platform, social network and other information platforms, a large amount of data is produced and left behind. This kind of big data information includes multimedia information such as picture, sound, video, and so on.

### 1 BACKGROUND OF LIBRARY PERSONALIZED PUSH SYSTEM BASED ON BIG DATA DECISION

In the process of providing personalized information push service, users should first input their own identity information and preferences in the library personalized information system, in order to make the personalized system to the user input related information can be analyzed and sorted out to build the corresponding user needs information model. Then, the system will combine the actual situation of the user's information demand, in the library information database or other resources on the network, retrieve the information resources that meet the user's information demand, and classify and arrange the information, finally, the information resource is pushed to the user.

Library personalized information push service has its own characteristics, mainly manifested in the following three aspects: Service has pertinence. Personalized information push service mainly from the perspective of the needs of readers, for different readers push different information, give them more accurate information resources, improve the user experience while saving the reader time. In the process of personalized information push, libraries can design different user interfaces, manage readers' personal lending resources, make information push more targeted, and maximize readers' satisfaction with push information, make it actively participate in the information push activities of the library, in order to save its borrowing cost.

The personalized information push service depends on the network information system, therefore, when the library carries out the personalized information push service, it should strengthen the digital construction in the library, and digitize more books resources, to give readers a personalized reading service experience, so that readers feel the respect of the library for them. Through the service network, managers can also timely understand the reading needs of readers, combined with their needs to achieve personalized information push. The service is more personal. Personalized information push service is more human, because in this service, the library management personnel will more respect the

reader's demand, they will adopt the "reader-centered" management service idea, more information resources will be integrated into the information push system, and the information will be classified and pushed, so that readers find their own reading information, so that they feel the humanization of services.

The traditional library service is mainly passive service, the librarians process the information of the Book Resources, and through the collection, storage, integration and sharing of the information resources, the information products are pushed to the users. This information flow is a one-way flow process centered on the administrator. The user is in a passive acceptance state, and it is difficult to transfer their needs back to the library. The appearance of Big Data is helpful for the library to change to the active service, establish the Information Service Mode which takes the user demand as the center, and provide the personalized information service for the user. For example: the library extracts the users' actual needs, reading habits and reading frequency based on the analysis of the big data such as user comments and satisfaction feedback survey, and feeds them back to the administrator, then the information resources are collected, stored, integrated and shared by the administrator to form the information products that meet the user's personalized needs.

## **2 APPLICATION ADVANTAGE OF LIBRARY PERSONALIZED PUSH SYSTEM BASED ON BIG DATA DECISION**

### **2.1 Optimizing the layout of library collections and providing accurate information services**

The collection evaluation of the library is to evaluate and test the collection resources and documents of the library by using the standardized evaluation system, and to assist the library in formulating the collection resources development policy in the future, in order to strengthen the library collection quality and the construction, provides the scientific objective data basis. Through the data collection and analysis of the readers' borrowing and using of the documents, the basic data of the readers' Evaluation of the library collection resources are obtained. Through the analysis of the big data of reader behavior, we can not only get the effective evaluation of the existing collection structure, but also help the library to realize the reasonable distribution of the collection resources. We should actively carry out the reasonable adjustment of the structure of the collection resources and the work of taking in the new and discarding the old so as to maximize the utilization rate of the collection. In order to carry out the accurate information service based on the big data of readers' behavior, the Library should master the readers' behavior characteristics and optimize the service strategy. For example, during the peak time of readers entering the library, we can provide the readers with the service of understanding the resources, promote the digital resources of the library effectively, and improve the utilization ratio of the digital resources.

### **2.2 Expanding the procurement of electronic resources**

Libraries should exploit the electronic resources service market by means of modern network platform, and make scientific analysis based on big data of readers' behavior, sum up the types of electronic resources with high utilization rate, the types of electronic resources with high access, and the benefits and costs of using electronic resources. Make effective statistics on the utilization of various electronic resources. According to the use of electronic resources, the access law of readers, and the operation cost of the resource pool, the paper develops the procurement of electronic resources precisely, and formulates scientific rules for the management and maintenance of electronic resources, promoting the maximization of the benefits of electronic resources.

### **2.3 Improve data statistics and promote management innovation**

Libraries can use the Internet of things technology of intelligent sensing to integrate into the innovation of Precision Service and management. The document resources on shelves and the corresponding terminal identification information are connected into the large database of the library, and the automatic service terminal is used to realize the management and positioning of the collection resources, and to sense the position of the readers, it is convenient for readers to obtain the position information of documents accurately and quickly, so as to perfect the data statistic work of the library. It can also recommend the distance-based collection resources navigation service to readers, help readers obtain the literature resources quickly and so on, realize the library's accurate service, and improve the decision-making efficiency. Using the interconnection of internal and external data, such as positioning push service and electronic resources providing service, to help the library understand readers' reading habits in all directions, and to transform the data into the basis and strategy support for the establishment of accurate service of the library, thus, the direction of library precise service and management innovation is determined. Based on the principle of enhancing readers' Reading experience, this paper explores the brand-new relationship between library precise service and readers, and makes optimized service decision and management innovation mode according to readers' behavior data and resources, then promote the service work of the library to get a comprehensive and detailed reasonable evaluation, promote scientific and standardized management innovation system, improve the efficiency of the library operation.

## **3 LIBRARY PERSONALIZED PUSH SYSTEM BASED ON BIG DATA DECISION**

### **3.1 User management subsystem**

User management subsystem is an important part of the system, and is one of the key links to realize personalized and active information service. It is the user access to information push service entry, connecting the lower two subsystems. In short, the user management subsystem is a user Agent, or intelligent user interface, which helps users to get rid of complex operations, convenient and fast to submit requirements. The main functions of the user management subsystem include effective address collection, as well as the acquisition and analysis of user requirements. Taking the information push system as an example, the system adopts B/s structure. The user management subsystem is seamlessly integrated with the OPAC of the library. The legitimate users of the system can login the system directly with the browser on any computer connected to the network without installing additional client programs or registering. The user voluntarily submits an effective way to receive the information and establishes a connection between the request and the information push. The system will refresh the page in real time, showing the address submitted by the user. Group users can collectively submit the address list through the background program batch import. Another important function of the subsystem is to provide a trigger environment for user demand behavior and report all user behavior to the processing subsystem. The system trigger environment is represented by different system controls with personalized service function. These controls are implemented by the corresponding application in the background of the system. All programs can be customized to meet the system administrator of dynamic calls through background parameters.

### **3.2 Background processing subsystem**

This module is mainly responsible for the user address validity screening, the establishment of user characteristic database, and the classification of user requirements to the service subsystem. Through the filter procedure, the addresses submitted by the readers are automatically filtered, and the blank or illegal address fields are filtered to form the list of users with valid and valid addresses, and the user characteristic database is established. Then, when a legitimate user in

the above address list submits a request in the digital library system, or his or her behavior triggers a push condition, the background processing system makes a conditional judgment about his or her behavior, a different list of service requests is generated and these tasks are sent to the corresponding program module of the service subsystem for execution.

### **3.3 Service subsystem**

The service subsystem is responsible for processing tasks handed over from the previous subsystem. The system consists of different program modules, each module according to different definitions to respond to deal with the tasks handed over by the subsystem. The interface program checks the file of the message content to be pushed and the address list file of the object to be sent by the SHELL script, according to JOB's definition, send the corresponding information to the valid address list submitted by the user periodically at the time of day when the system load is light.

### **3.4 Pusher system**

The Pusher system requests a custom list to read the custom, then the custom list requests a summary customization to the reader summary table, and then the reader summary table requests the reader information table to read the reader information, the reader information table sends change reader information to the reader summary table, and the reader summary table requests read without sending the reader type table, do not send readertype table to readersummary table send filter do not send readertype, readersummary table tells itself to filter out unsent readers, custom list to custom summary table request to generate custom summary table, the custom summary table requests the resource content comparison table from the resource comparison table, the custom list sends the data table to the server on the same day, and finally the data table sends the data to the server on the same day.

### **3.5 System advantages**

The information push system needs to have the explicit demand analysis and the massive backstage technology processing, its realization can not complete overnight, but the realization and operation of the system function will promote the service and management of the digital library from many aspects. First of all, can greatly reduce the university user group's study burden. It can realize the convenient and quick information push service such as one-week advance recall of expired books, booking of books to the library, and the timely delivery of new books. According to the different information needs of undergraduate students, teachers or researchers, the automatic push of classification and batch can be realized. Thirdly, librarians can be liberated from a lot of repetitive work, in the end, a full fledged push system is also a liberation for system administrator, making many transactional, ad hoc systems routine and automated. Not only can the system push workload statistics and other information to the relevant people, but also for the system administrator this particular user, can also push real-time log and other system security-related information. To sum up, the information push system deepens the work of digital library from all levels.

## **4 CONCLUSION**

In the process of providing personalized service, university libraries should use data mining technology to track the information behavior of users in real time and comprehensively, and analyze and screen the relevant data, only in this way can we master the users' information needs and improve the quality of personalized service. At the same time, in the process of obtaining users' information, the privacy and security of users will be threatened to a certain extent. Therefore, university libraries should strengthen the construction of security system to avoid the occurrence of users' privacy

leakage, to form a good trust relationship between users and libraries is more conducive to the development of personalized service in university libraries.

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