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Constructing a New Mechanism of Library and Information Service under Big Data Environment

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Abstract. In the first ten years of the 21st century, the rapid development of Internet technology has changed people's daily study and life, and also provided abundant resources for scholar's research. The data resources become the important part of scholars' research. Knowledge economy has produced a lot of scientific research results and the extensive application of computer technology has played an important role in promoting the research into the field of library and information. To build a new mechanism of library and information service under big data environment and to study its theoretical and technical applications will help improve the utilization of library and information service.

Big data is another major breakthrough in the information technology revolution following the cloud computing, Internet of things. The direction of research on big data is gradually shifted from theory to application, in order to find the value big data really contain.

I. The Status Quo of Big Data Research in Library and Information Circles in China

1. Big data is the needs of the times

Reports on big data can be traced back to 2011 when the major domestic newspapers and portals had a large number of related reports. Domestic academic research on big data has begun since then. The domestic library and information agencies have held academic meetings in succession to discuss the big data.

Nowadays, it is the most common way to carry out data research on existing data models. As data applications become more extensive, data management and resource sharing are concerned by more and more industries. However, because data citation and evaluation mechanism is not perfect, book resource sharing has not been fully explored, to a certain extent, leaving in-depth promotion of the field of library and information lagging behind. On the current development trend, China's library and information research in relation to the specific data sources mainly focuses on CNKI (that is, China Academic Journal Network Publishing Database) as the main source of data.

The data reference mainly includes the reference information such as the title, the author of the data, and so on. The reader of the related literature can obtain the needed data further by retrieving the information quoted by the data to realize the sharing of resources. On the other hand, the data in some respects can be used as the reference standard for the staff of the evaluation institution, which can increase the approval degree of data sharing and storage organization and to some extent, stimulate the data sharing. Finally, by querying the data sources, the results of scientific research can be in depth demonstrated on the basis of the research process and then be verified. To a certain extent, data can be tracked to reduce the risk of plagiarism.

2. The Promotion of Big Data to Smart Library

The smart library is a new concept put forward by the library circle after the smart city. At present, the academic research on the library is relatively focused on its connotation, elements and other basic level and China has not built a smart library in its real sense. Internet of Things achieves a comprehensive perception between items through the technical means and can provide new ideas for smart library construction with integration of mobile technology, virtual reality technology, data mining and other big data technology under big data environment. Data mining comes from knowledge, a process to identify effective, innovative and useful information from a vast amount of data, which has made more fruitful results in the field of library and information, including the construction of shared resources in the library, applications of a wide range of information services and customer satisfaction survey, etc. In the big data environment, the data generated by the library and information institution are not only huge in number but also complex in type. To use the potential value of data through data mining technology is an effective way of data analysis.

3. Big Data help enterprises competition

Under the environment of big data, data is an important intangible asset of enterprises. It is very important for the survival and competition of enterprises to make full use of the large amount of data generated in the past and nowadays and to process and store these precious resources and to identify the valuable information from them. Competition among enterprises, in addition to product quality, the most important thing is to master market information. And the market is changing rapidly and the enterprise competitive intelligence is through the data analysis to obtain competitors' information for enterprise decision-making to provide a reliable basis. The continuous change of big data technology will inevitably bring about profound changes in the competitive intelligence of enterprises. On the data itself, comprehensive data with real-time dissemination in the big data is conducive to enhance the authenticity and timeliness of competitive intelligence, but in such aspects as intelligence analysis, intelligence security, big data also brings challenges for intelligence competition in large enterprises.

4. Big data brings new opportunities for the development of efficient library

How to use the big data technology to construct and develop the university library is also an important topic in the field of library and information research and the research is extensive and wide. Most scholars believe that big data technology for the development of university libraries has brought both opportunities and challenges. On the one hand, big data technology can help the library with respect to classification management of various types of knowledge services to reduce the pay of manual labor and help to conduct user access and value analysis, and to predict possible failures. With the development of science and culture, complex and lengthy data replacing simple data will appear in large amount and we can use big data processing to obtain complete data information and to solve the problem of talent and technology with mutual cooperation by means of automated equipment. Discover readers accurately and provide personalized service. On the other hand, in the face of complex data, the library will be challenged in the data storage, data processing, data analysis and other aspects. The data generated every day are not only from different industries, and subject to different groups; the demands to express are not the same. In the absence of uniform screening criteria, facts not matching the situation inevitably come out. For example, praise for shops on a certain C2C online shopping platform. There was once a popular career of appraiser in the community corresponding to such situation which not only brought high economic returns but no risks. Not to mention to a certain extent, that will mislead consumers and the data analysis alone is not easy.

5. Big data promotes the level of knowledge services

Knowledge is power in the era of knowledge economy. According to the type of users' needs for knowledge, library and information institutions shall extract knowledge from a variety of corresponding social resources to solve user's problems. The explosive growth of data and the rapid development of advanced technology in the era of big data greatly has enriched the resources of library and information institutions and enhanced the scientificity of data analysis, providing more choices for the knowledge service. For example, through scenario simulation users' information can be introduced into the filtering process and scenario-based knowledge service in big data can be achieved with the use of cloud computing.

II. Opportunities brought about by the era of big data for the field of books and intelligence

1. Access to big data technology in the field of books and intelligence

Big data can divide the whole society-wide data into big data projects, big data technology, big data applications and other fields. At present, the research on big data is mainly concentrated in the latter two fields, that is, the research mainly based on the acquisition and use of big data resources. Because the ability to quickly access and analyze valuable information from a variety of different types of data is big data technology, which is the main reason why people are attracted to big data, and is exactly needed for the literature retrieval capability of books and information. Therefore, big data technology has brought unprecedented opportunities for development of library and information fields. We can not only use big data in respective fields to build literature information resources, but also can integrate literature resources such as books, information and archives to share, which bring comprehensive literature database obtaining information resources by big data technology.

2. Application of big data in library and information

To facilitate the acquisition of data in the field of library and information, but also for the practical application of data to provide a viable means. The relationship of information service, the sharing of resources and technology of library and information institutions is inseparable. In fact, library and information services will inevitably turn to the primary literature data services in the future. And to achieve this change, there is no doubt about the need to improve the level of professionals of literature information management. The main role of library and information institutions in this environment is how to quickly access the data related to literature information, as well as the ability to quickly process information, master the appropriate technology and efficient serve users.

3. Integration and sharing of library and information resources

The ultimate goal of integration of library and information resources is to provide users with needed service. Because of their common characteristics in the literature, they can closely connect the rich data provided by big data, and use technical means to screen professional information classified and filed under the established rules. It is advantageous to carry out the integration of document information resources, and reflect the obvious characteristics of modern information technology services. Such integration is also the requirement of the development of big data technology.

Library and information institutions can also use the existing resources to carry out customization services with respect to information resources for different individual and business users. For book and document resources, open access to online book resources for online reading and downloading and access to value-added services can be granted to users according to their different needs; for information resources, we can carry out the topic-specific tracking services,

specific information services, document service for professional research report, information service for professional academic conference, professional market quotation service, etc.

Some new literature services can also be carried out in library and information, of which Internet of things is closely linked. Internet of Things, through equipment processed by some specific information technology, connects actual items with the Internet according to the agreement for exchange and communication between the goods and the actual user and through large data analysis to realize remote identification, location, monitoring and management. It is an extension of the Internet to remote management.

III. Measures to construct a mechanism of library and information service under big data environment

1. Service mode integrating sharing of library information resources and privacy protection

In an era of information explosion, we can receive information from different sources each day while issuing all the information needed. In the enjoyment of convenient information consumption, the protection of private information has gradually become a problem that cannot be ignored. Control of sensitive information access, anonymity protection of privacy information and active defense mechanism are used for library information Web site to construct new mechanism of information services. At present, to carry out network resource sharing and privacy protection simultaneously is innovational and practical requirement of library and information.

2. To build an integrated service system with the data analysis engine of library and information resources as the core

Use data association technology to build information integration service platform libraries of greater discipline with libraries and intelligence agencies as the center. Use auxiliary information collection, data mining, classification and other technologies to establish a blog on the library and information network station and other information exchange platform and to build a new information service system. At present, it is necessary to strengthen the public access to big data analysis engine in order to facilitate the discovery of the internal links between various elements of books and information exchange and promote the comprehensive exchange of information to achieve the full sharing of resources and promote users' network communication and mutual experience. Building the information integration service is the best way to realize the mechanism of integration service of digital technology.

3. General idea for constructing a new mechanism of library and information service under big data environment

Big data as a technological change has far-reaching impacts on each industry in society. Under this background, to discuss the new mechanism of library and information service must start with the theory and break the previous understanding to find ways and methods for the extensive use of technology and to stimulate the research and development of the technology. And then integrate and promote the method. Herein, it should make clear that big data is not only a huge amount of data, but also the value of the data is priceless. Finally, analyze the big data technology to realize the storage and processing of dynamic and complex data and to extract the simple data resources. The data mining aims at discovering potentially valuable information.

With the coverage of 4G network and the rise of 5G network, the use of smart phones and other mobile terminals, the scale of big data generated by the mobile terminal continues to expand, which has a great challenge on computing, storage capacity of mobile phones. Data processing technology along with constant update of different hardware devices surges in demand. Data processing capabilities of mobile devices cannot be ignored on the one hand.

In summary, as data application technology is increasingly deepening and extensive, data development, mining, analysis and use have become indispensable parts of the development of all walks of life. At this stage, in the data processing, there are still many problems. Irregular data application is predominant specifically in the process of data reference where many researchers do not give a clear source of information, which means that the literature does not quote the corresponding argument. Although most of the academic journals have strict rules and formats in citing literatures, there are few requirements for data citation, and the normative knowledge of data is not enough. In addition, the data reference format is not uniform, resulting in incomplete data entry characteristics, casual sources of data indexing bringing difficulties in referring to original data for readers. And the data reference in the field of library and information is lack of standardization on the whole and the proportion of the number of citations to the total is less, and the factors restraining data reference are more. Therefore, in order to improve the quality of data reference in the field of library and information, it is necessary to establish relatively stable and reliable rules related to quotation format and to reduce the non-standard reference.

In this paper, we analyze the existing problems of the lack of enough information resource mining, the lack of pertinence of information timeliness and service, etc. and do some preliminary exploration on the knowledge integration of the library and information, hoping to promote the development of library information work towards a more stable and reliable model.

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