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Strategy Research of Building Smart Library

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Abstract: *With the wide application of AR, big data and other technologies, the construction of smart library has gradually become the focus of people's attention. Especially under the promotion of the construction and development of the smart city, the library has become the main place to carry the local culture. Compared with traditional libraries, smart library introduces information technology as support in the construction of operation mode and the development of service and management system, and takes the humanized management concept runs through the whole process of library construction, realizing the internal interaction between "people" and "library". This research takes the construction of intelligent library as the research theme, expounds the significance and current situation of building intelligent library, and puts forward the cultivation strategy of building intelligent library, in order to provide reference for the construction of intelligent library.*

Keywords: *smart library; platform construction; strategy research*

1. Introduction

With the rapid development of information technology and network communication, information centers play a role in intelligence, especially in library information systems, digital resource management, radio frequency identification, etc. With the support of advanced technology, libraries have transformed from traditional books and physical databases into multimedia, multi-channel, and diversified service information processing and knowledge dissemination centers [1].

However, smart libraries also face many challenges, including but not limited to poor level of automation, potential network security risks and insufficient information literacy of managers, which need to be solved through systematic and scientific methods. The purpose of this study is to systematically explore the key links and effective strategies in the construction of intelligent library, covering the standardization of machine-reading rules and metadata standardization of resource description and access, quantitative management of key performance indicators and service level agreements, as well as information resource integration and service optimization based on structured query language and data mining. By comprehensively using these advanced ideas and professional technologies, we strive to provide a comprehensive, practical and feasible intelligent library construction strategy guide manual for the library community.

2. The significance of building a smart library

In the modern practice of library informatics, the construction of intelligent library is not only an effective upgrade of information resource management and service mode, but also an inevitable choice to adapt to the reform of digital, networked and personalized information needs. From the perspective of information acquisition and retrieval, intelligent library can optimize the user retrieval process and improve the accuracy and efficiency of information acquisition through the integration of efficient information retrieval system, such as metadata standardization, semantic retrieval and association algorithms. This not only highlights the core values of library science, but also is in line with the development trend of information science in the era of big data. From the perspective of knowledge management, through the use of advanced data mining, machine learning and other technologies, intelligent library can realize the automatic classification, labeling and knowledge map construction of massive literature resources, and further promote the interdisciplinary knowledge integration and innovation [2]. At the same time, the smart library and enterprises interact through the construction of open application interface, library service platform and digital academic resource portal, and actively participates in social and cultural construction and community services. In terms of resource sharing and cooperation, through cloud computing and blockchain technology, the knowledge organization system involved in this process, such as classification numbers, subject words, control words, etc., has

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been further standardized and intelligent. This can not only realize the efficient utilization of internal resources, but also carry out cross-library and cross-regional resource integration and service extension in a broader scope. From the level of user experience, with the help of the Internet of Things, face recognition, self-service borrowing and remote access technologies, smart library can provide more personalized and convenient services. From the level of library management, through big data analysis and intelligent report system, managers can more accurately grasp the library operation status, so as to make more scientific decisions. Smart library is the inevitable trend of the modernization of the library, which can not only meet the diversified and personalized information needs of users, but also effectively promote the internal management and external cooperation of the library, so as to achieve the goal of improving the overall service ability and social value of the library.

3. The status quo of smart library construction

3.1 Poor level of automation service

In the current situation of smart library construction, the poor level of automation service has become a problem that cannot be ignored. One of the poor level of automation service is manifested in the backwardness of the automation system of book circulation. Although some libraries began to try to apply RFID technology to realize self-service borrowing and return, in most cases, these systems have not been significantly improved due to problems such as hardware incompatibility and delayed software updates. In terms of electronic resource management, due to the lack of unified metadata management standards and integrated electronic resource management system, the retrieval of electronic magazines, databases and electronic books is often difficult and the link failure occurs, which greatly reduces the efficiency of user experience and information retrieval. In terms of intelligent information retrieval, existing search engines and knowledge discovery platforms usually lack sufficient support for natural language processing and machine learning algorithms, leading to the failure to effectively identify user needs and the difficulty to provide personalized and accurate retrieval services [3]. However, due to the lack of effective artificial intelligence support, the virtual reference service still relies on the traditional artificial online or offline mode, which not only consumes human resources, but also cannot meet the users' multi-time and multi-channel consultation needs. From the perspective of equipment and space management, although some libraries try to achieve intelligent environment control and space utilization optimization through the Internet of Things technology, the actual operation effect is not ideal due to the difficulties in system integration and inaccurate data analysis. Therefore, there are many deficiencies in the automation service level of intelligent library, and it is urgent to comprehensively optimize and upgrade the library information system architecture, data standardization, intelligent algorithm application and human-computer interaction design.

3.2 The absence of the reader's privacy and security issues

Although many achievements have been made in information service, resource sharing, book circulation automation and data analysis, the issue of reader privacy security is relatively absent and has not received due attention. It is embodied in several aspects: First, intelligent libraries generally adopt highly integrated library management systems and electronic resource management system for operation, but in the design and implementation of these systems, there is no perfect security protection mechanism for the protection of readers' privacy information. Although many libraries have adopted advanced information technologies, such as data mining, artificial intelligence recommendation systems and face recognition, to improve service quality and management efficiency, the application of these technologies is often without comprehensive privacy impact assessment [4]. Due to the lack of standard specifications and data encryption mechanism for processing personal identification information, user information may be inadvertently leaked or abused. For example, when conducting personalized recommendation and knowledge graph construction, library systems may collect a large number of user retrieval history and behavioral data, but lack effective access control and data minimization principles can easily lead to unauthorized access and data abuse. Second, the wide application of data-driven decisions in library business has made a large number of personal use records, search behavior and borrowing data collected and analyzed, but most libraries are still in a relatively early stage for the encrypted storage and secure transmission of these sensitive data. When libraries cooperate with third parties, such as e-book suppliers and online database service providers, to provide more abundant and personalized information services, the lack of clear data privacy clauses and privacy protection agreements may sometimes lead to improper disclosure of readers' personal

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information. Therefore, while promoting automated services and improving user experience, the current intelligent library often ignores the in-depth research and effective governance of data privacy security and information ethics. In general, the issue of readers' privacy security is a part that can not be ignored in the construction of smart library, which needs to be valued and solved in an all-round and multi-level way.

3.3 Lack of information literacy of managers

In the current construction of smart library, it is faced with the bottleneck of the lack of information literacy of managers. Although libraries have begun to introduce a variety of advanced information technologies, such as big data analysis, cloud computing, artificial intelligence, etc., to optimize library services and management, but managers often lack the comprehensive understanding and application ability of these technologies. For example, in terms of resource description and classification and metadata standards, it is difficult to accurately carry out data standardization and metadata construction, because managers do not receive systematic training, which further affects the data quality and retrieval efficiency of the library information system. In addition, due to the lack of relevant knowledge of data governance and information security, managers often have loopholes and deficiencies when making data integration, data cleaning and privacy protection strategies, which increases the risk of data leakage and unauthorized access. In terms of user experience optimization, due to the unfamiliarity with user experience design and user behavior analysis, it is difficult for managers to accurately conduct user demand survey and service mode innovation. As a result, the self-service and personalized recommendation functions of smart library cannot fully meet the needs of users. In terms of library internal process optimization and knowledge management, due to the lack of information literacy, managers often have the problems of improper operation and insufficient utilization of resources when using project management software and knowledge management system [5].

4. An Effective strategy for building a smart library

4.1 Build a sound and diversified service mechanism

In the field of smart library construction, the construction of a perfect diversified service mechanism is not only the key to improve the user experience, but also the necessary path for the self-adaptation and sustainable development of the library. In this regard, the primary task of the library is to efficiently integrate the library information system and digital resource management, and ensure the seamless operation of transmission protocols such as standard exchange protocol and circulation exchange protocol in the book circulation and electronic resource access. At the same time, the metadata management of electronic resources should be strengthened, and the standard standards of digital object identifier and machine-read cataloging format should be comprehensively applied to improve the retrieval efficiency and user experience. At the same time, the personalized service mechanism is constructed, recommending the introduction of lightweight directory access protocol and single sign-on technology, supplemented by user portrait and data mining, so as to achieve personalized push and service precision. In addition, libraries need to improve their data analysis capabilities, especially by making breakthroughs in the application of business intelligence and artificial intelligence. In the integration of service system, it is necessary to emphasize the seamless connection between library information system and digital resource management, and further optimize the standard exchange protocol and circulation exchange protocol, so as to promote the collaborative work of logistics and information flow. For electronic resources, it is suggested to introduce digital object identifier and machine-read cataloging format standards to improve the metadata management and retrievability of electronic literature. At the same time, considering the personalized needs of different user groups, the lightweight directory access protocol and single sign-on technology are implemented, and the personalized and accurate recommendation of user services are realized through user portrait and data mining. Therefore, libraries need to further improve their data analysis and visualization capabilities, especially in the application of business intelligence and artificial intelligence. In addition to the traditional service field, multimedia resources and virtual reality and other new information services have increasingly become an indispensable part of the library. Therefore, for digital collection and multimedia resources, it is recommended to introduce metadata coding and transmission standards and metadata object description standards for standardized management. Libraries should integrate application programs with third-party platforms to realize resource sharing and business expansion, especially in terms of inter-library loan and Dewey decimal classification, they need to establish a

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closer cooperation mechanism with other libraries and information institutions.

4.2 Improve the library network information security construction

Within the framework of the strategy research of building smart library, it is particularly important to improve the construction of library network information security according to the effective strategy of smart library construction. First, strengthening the identity authentication mechanism and access control strategy is the basic work. With multi-factor authentication and fine-grained access control lists, only authorized access to sensitive information and critical systems. At the same time, the security measures between library information system and digital resource management should be strengthened to ensure the wide application of security encryption protocol of secure socket layer / transmission layer, and reduce the risk of middleman attack and data theft. For the access control of electronic resources, it is recommended to use open authorization 2.0 or security assertion standard language 2.0 standard for authentication and authorization to achieve single sign-on and seamless access. Secondly, to enhance the security of data transmission and storage, advanced encryption standards and secure socket layers are adopted to ensure the security of information during transmission and storage. Thirdly, establish a comprehensive security information event management system to monitor and analyze network activities in real-time, and timely detect and respond to various security threats.In addition, regular security audits and risk assessments are carried out to identify security defects and potential risks in the system through specialized vulnerability scanning tools and penetration testing. For the licensing and copyright management of electronic resources, a digital rights management system is adopted to ensure that only legally licensed users can access and use specific electronic resources. There should also be close partnerships with external information security agencies and experts to provide timely and effective support for more complex and professional cyber security issues. In terms of staff training and education, regular information security awareness training is carried out, so that all library staff have basic network security knowledge and protection skills. Finally, in collaboration with regulatory authorities and relevant organizations, establish industry standards and best practices for library information security to enhance the overall level of network security in the industry.

Through this series of measures and countermeasures, it can not only effectively improve the network information security level of smart library, but also provide users with a more secure and credible information service environment, so as to further promote the comprehensive development of smart library in providing high-quality, high efficiency and high availability services [6].

4.3 Strengthen the information literacy training of management personnel

In the research track of building smart library, it is of special strategic importance to strengthen the information literacy training of managers. It is the basic work to formulate a comprehensive information literacy curriculum system, which should cover information retrieval, information analysis, information management, information ethics and other aspects, so as to adapt to the multi-level and multi-field information needs involved in the operation of smart library. In addition, information literacy research activities should be organized regularly, in the form of online or offline seminars and training courses, or cooperation with higher education institutions and information science research organizations to introduce authoritative lecturers and professional courses. For the key core software such as library information system and electronic resource management system, in-depth operation training and application case analysis should be carried out. A modular information literacy training can be implemented for specific management levels and responsibilities. For example, for the management and classification system, for the user service leader, it is necessary to deepen the application ability of artificial intelligence and machine learning algorithms in information retrieval and knowledge recommendation. In addition, training managers in data analysis and visualization tools based on data-driven decisions, which includes not only basic data analysis software, but also complex big data analysis and data mining technologies. Evaluation and feedback mechanisms are also an indispensable part of the training system. By setting up information literacy test, simulated operating environment and practical work evaluation, the improvement of management information literacy is quantified, and the course content and training methods are continuously optimized accordingly. To attach great importance to and constantly improve the information literacy training of managers is not only the key to improve the service quality and efficiency of smart library, but also an important support to realize the strategic goal of sustainable development of library. Through this series of comprehensive, hierarchical and targeted training measures, managers will be more skilled in the use of information technology and information resources, so as to effectively promote the construction of smart library and

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service innovation [7].

5. Conclusion

To sum up, smart library is not only the inevitable result of the development of library digitalization and information technology, but also the advanced form of knowledge management, knowledge innovation and life cycle information service under the background of information society. To achieve this goal, it is necessary to build and optimize the intelligent library from multiple dimensions and the full cycle. Therefore, it is necessary to rely on a sound information system architecture, standardized data exchange formats, advanced natural language processing and machine learning algorithms, as well as comprehensive human-computer interaction design infrastructure and technology, so that smart libraries can better realize their social value and cultural mission, build a knowledge society, promote comprehensive social development, and make greater contributions.

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