

Research on Smart Service Innovation of University Libraries in the "Internet plus" Environment

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Abstract. In the "Internet plus" era, the rapid development and popularization of information technology have brought unprecedented opportunities and challenges to libraries. The construction of university libraries, as an important support for teaching and research in universities, faces the problem of how to better utilize internet technology to provide smart library services. The traditional library service can no longer meet the needs of users, so it is necessary to improve the service quality and efficiency of university libraries with the help of intelligent services under the "Internet plus" environment. I hope to improve the quality of university education, promote teaching reform and innovation, cultivate students' comprehensive qualities, enhance the core competitiveness of university libraries, and enhance the comprehensive strength of universities through research and practice of intelligent services in university libraries.

Keywords: "Internet plus"; University Library; Smart Services.

1. An Analysis of the Current Situation of the Development of University Libraries under the "Internet plus" Environment

1.1 The Influence of "Internet plus" Environment on University Libraries

1.1.1 Resource acquisition

The Internet provides a wider range of resource acquisition channels for university libraries. Students and teachers can obtain various academic, professional and reference materials through Search engine, online databases and electronic journals. This makes the library's collection scope more extensive and meets the diverse information needs of users.

1.1.2 Digital transformation

The development of the Internet has promoted the Digital transformation of university libraries. Libraries can now digitize paper literature and establish digital libraries and online catalogs, facilitating remote access and retrieval by users. Digital transformation can also provide e-books, online courses and learning resources, further expanding the channels of learning and research.

1.1.3 Collaboration and Sharing

The internet environment promotes cooperation and sharing among university libraries. Libraries can share resources, experiences, and best practices through internet alliances, collaborative projects, and sharing platforms. This cooperation can improve the quality of library services, reduce duplicate resource purchases, and provide more comprehensive support to users.[1]

1.1.4 Social media and engagement

The internet environment makes it easier for university libraries to interact and participate with users. Libraries can communicate, answer questions, and share information with users through social media platforms, online forums, and blogs. This interaction can increase user engagement and loyalty to the library, while also providing a broader learning and communication platform. The internet environment promotes cooperation and sharing among university libraries. Libraries can share resources, experiences, and best practices through internet alliances, collaborative projects, and sharing platforms. This cooperation can improve the quality of library services, reduce duplicate resource purchases, and provide more comprehensive support to users.

1.1.5 Data management and analysis

The internet environment enables university libraries to better manage and analyze data. Through network systems and software tools, libraries can track user borrowing behavior, subject preferences, and usage habits, providing personalized services and resource recommendations.[2]In addition, data analysis can also assist libraries in performance evaluation and decision-making. Although the internet environment has brought great opportunities to university libraries, it has also brought some challenges. For example, information overload may make it difficult for users to filter and evaluate the reliability of information; [3]The copyright management of digital resources needs to be stricter; User privacy and data security also need to be taken seriously. Therefore, university libraries need to adapt to the changes in the internet environment and adopt corresponding strategies.

1.2 The Demand for Smart Services in University Libraries

The demand for smart services in university libraries can include the following aspects.

1.2.1 Information query and retrieval

Provide convenient and fast book information query and retrieval functions, which can help users quickly find the books and related materials they need.

1.2.2 Online booking and renewal

Users can book and renew their borrowing period online through the smart service system, making it convenient for users to manage their own book borrowing.

1.2.3 Warning and reminder service

The system can remind users of important information such as the expiration date of borrowing and the return time of books through SMS, email, etc., to avoid overdue payments.

1.2.4 Electronic resource acquisition:

Obtain electronic resources from the library through digital channels, including e-books, journals, databases, etc., and provide online reading and download services.

1.2.5 Self borrowing and returning service

Provide self borrowing and returning equipment, allowing users to borrow and return books through the self-service equipment, reducing labor costs.

1.2.6 Personalized recommendation

Based on the user's borrowing history and interest preferences, the system can recommend relevant books and materials to enhance the user's reading experience.

1.2.7 Space management and reservation

Support online reservation and management of library venues and equipment, making it convenient for users to view and make appointments for self-study rooms, conference rooms, and other uses.

1.2.8 Data analysis and statistics

Analyze user borrowing behavior, reading preferences, traffic statistics, and other data through smart service systems to provide decision-making references for library operations.[4]

1.3 The Challenge of Smart Services in University Libraries

1.3.1 Technical updates and upgrades

With the continuous development of technology and the emergence of new technologies and platforms, libraries need to continuously follow up and upgrade their smart service systems to adapt to the needs and changes of users.

1.3.2 Resource integration and sharing

University libraries are faced with the situation of numerous and scattered information resources. They need to integrate and share the books and materials inside and outside each school through the intelligent service System integration to provide more comprehensive resource services. With the continuous development of technology and the emergence of new technologies and platforms, libraries need to continuously follow up and upgrade their smart service systems to adapt to the needs and changes of users.

1.3.3 Security and privacy protection

With the development of smart service systems, libraries need to strengthen information security and privacy protection in order to collect, store, and use user information, and ensure that user personal information is not leaked. With the continuous development of technology and the emergence of new technologies and platforms, libraries need to continuously follow up and upgrade their smart service systems to adapt to the needs and changes of users.

1.3.4 Cross departmental cooperation and communication

The smart services of university libraries require close cooperation with other departments, involving multiple aspects such as teaching, scientific research, and administration. It is necessary to strengthen cross departmental communication and cooperation.

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1.3.6 User literacy and acceptance ability

The era of "Internet plus" has put forward higher requirements for users' use ability. Some users may have certain obstacles to the use and operation of intelligent services. Libraries need to provide training and guidance for different user groups. With the continuous development of technology and the emergence of new technologies and platforms, libraries need to continuously follow up and upgrade their smart service systems to adapt to the needs and changes of users.

Therefore, the needs and challenges faced by smart services in university libraries require the support of advanced information technology and resources, as well as close cooperation between libraries and users to jointly promote the development of smart services.

2. Research on the Smart Service Model of University Library

The smart service model of university libraries refers to the use of advanced information technology to provide library services in an intelligent and automated manner to meet the needs of users. Exploring the smart service model of university libraries can be carried out from the following aspects.

2.1 Development direction

2.1.1 Construction of digital book resources

University libraries can carry out Digital transformation of physical libraries through digital construction, digitize and network collection resources, manage and provide them in a unified way through digital libraries, and realize the sharing and utilization of book resources. At the same time, based on the characteristics and subject needs of higher education, appropriate digital resources should be selected for purchase and collection to meet the needs of teaching and student research.

2.1.2 Intelligent borrowing and returning system

University libraries can introduce intelligent borrowing and returning systems, which can achieve self-service borrowing, automatic return, and renewal functions through self-service borrowing and returning machines, RFID (Radio Frequency Identification) technology, and other means, improving borrowing efficiency and user experience. During the borrowing process, the system can provide corresponding recommendation services, recommending relevant book resources based on the user's borrowing history and interest preferences.

2.1.3 Online reservation and consultation services

University libraries can provide 24-hour online consultation and appointment services by establishing an online reservation and consultation system. Users can book and borrow equipment and other resources through the library website or mobile client, while providing online consultation services to answer users' questions and needs.

2.1.4 Data mining and analysis

University libraries can use data mining and analysis techniques to collect and analyze data on users' borrowing and reading behaviors, in order to understand their needs and preferences and provide personalized services to users. By analyzing the results of data analysis, libraries can also optimize and manage their collection resources, and timely purchase and adjust library collections.^[5]

2.1.5 Virtual laboratory and simulation resources

University libraries can provide practical teaching support for students by establishing virtual laboratories and providing relevant simulation resources. By utilizing virtual laboratories, students can conduct experiments and simulation operations in the library, improving their practical and application abilities.

3. Analysis of Innovative Strategies for Smart Services in University Libraries

The analysis of innovative strategies for smart services in university libraries can be carried out from the following aspects:

3.1 User demand research

Firstly, conducting user demand research is an important step in smart service innovation. Collect users' needs and expectations for library services through questionnaires, interviews, and other methods to understand the problems and pain points they encounter when using library services, as well as their expectations for smart services. Based on the analysis of user needs, determine the direction and focus of innovation.

3.2 Technological innovation application

The core of smart services is to innovate traditional library services through advanced information technology means. For example, RFID (Radio Frequency Identification) technology, intelligent borrowing and returning machines, data mining, and artificial intelligence can be introduced to achieve functions such as self-service book borrowing and returning, intelligent recommendation, and personalized services. At the same time, more convenient and diverse library services can also be provided by establishing mobile clients, developing virtual laboratories, and other means.

3.3 Cooperation and sharing

Innovation in smart services requires the support of external resources and partners. University libraries can collaborate with teaching departments, research institutions, enterprises, etc. in universities, establish cooperation and sharing mechanisms, and jointly develop and share resources and technologies for smart services. Through cross-border cooperation, the advantages of all parties can be shared, and the quality and influence of smart services can be improved.

3.4 User experience optimization

Innovative smart services need to focus on optimizing user experience. By designing user interfaces, improving functionality, and simplifying operations, we aim to improve user satisfaction and stickiness. At the same time, pay attention to user feedback, promptly correct and improve the shortcomings of smart services, and ensure the quality and availability of services.

3.5 Continuous improvement and innovation

Smart services are a process of continuous development and improvement, and university libraries should maintain a continuous spirit of innovation. By monitoring the development of new technologies in the industry, paying attention to changes in user needs, and promptly following up and introducing new technologies and service models, we maintain the leading position of smart services in the industry. In summary, the innovative strategies for smart services in university libraries include user demand research, technological innovation applications, cooperation and sharing, user experience optimization, and continuous improvement and innovation. Through the comprehensive application of these strategies, university libraries can continuously improve the quality and influence of smart services, and better meet the needs of users.

4. Practical Application of Intelligent Service Innovation in University Libraries

The practical application of intelligent service innovation in university libraries can be carried out from the following aspects.

4.1 Construction of digital book resources

University libraries can introduce intelligent borrowing and returning systems, which can achieve functions such as self-service borrowing and returning, automatic return, and renewal of books through self-service borrowing and returning machines and RFID (Radio Frequency Identification) technology. This can improve borrowing efficiency and user experience.

4.2 Establishing a digital library

University libraries can carry out Digital transformation of physical libraries, digitize and network the collection resources, and manage and provide them in a unified way through digital libraries. This can achieve the sharing and utilization of library resources.

4.3 Promote online appointment and consultation services

University libraries can establish online reservation and consultation systems to provide users with 24-hour online consultation and reservation services. Users can make book reservations and borrowing device reservations through the library website or mobile client, improving the convenience and response speed of the service.

4.4 Data mining and analysis

University libraries can use data mining and analysis techniques to collect and analyze data on users' borrowing and reading behaviors, in order to understand their needs and preferences. Based on the results of data analysis, libraries can optimize and manage their collection resources, timely purchase and adjust library collections.

4.5 Innovative teaching support

University libraries can provide practical teaching support for students by establishing virtual laboratories and providing relevant simulation resources. Through virtual laboratories, students can conduct experiments and simulation operations in the library, improving their practical and application abilities.

In summary, the practical application of intelligent service innovation in university libraries can be carried out from aspects such as intelligent borrowing and returning systems, digital libraries, online reservation and consultation services, data mining and analysis, innovative teaching support, personalized service recommendations, etc. These practical applications can improve borrowing efficiency and resource utilization, provide a convenient service experience, meet the personalized needs of users, and promote the development of smart services in university libraries.

5. Summary

The future development of university libraries can be achieved based on intelligent service innovation. With the continuous progress of technology and the development of society, smart services have become an important trend in the development of libraries. The following are several aspects of the future development prospects of university libraries: 1. Intelligent library management: By introducing intelligent technology, university libraries can achieve automated book borrowing, return, and tracking. Using artificial intelligence and Big data technology, libraries can provide personalized recommendation services and learning resources to meet the needs of different readers. 2. Virtual Library: With the increase of digital resources, university libraries can create virtual libraries that provide online reading and download services. Through the digital library platform, readers can access library resources anytime and anywhere, facilitating learning and research. 3. Innovative service model: University libraries can provide readers with diverse learning support and consulting services through innovative service models. For example, setting up maker spaces and digital media studios to encourage readers to engage in innovative practices and digital media production. At the same time, libraries can also collaborate with businesses and communities to carry out skills training and community education activities. 4. Sharing of educational resources: University libraries can establish partnerships with other universities and educational institutions to achieve the sharing of educational resources. By sharing resources and collaborating in office work, university libraries can improve their service levels and provide readers with richer learning resources and training opportunities. 5. Technology driven learning environment: University libraries can build advanced learning environments and provide a variety of learning tools and equipment. For example, utilizing virtual reality technology and augmented reality technology to provide readers with an immersive learning experience; Introducing intelligent devices and wireless networks to provide readers with a convenient learning environment. In short, based on intelligent service innovation, university libraries can provide higher quality services and learning resources, meet the needs of readers, and assist schools in teaching and research work. you follow the “checklist” your paper will conform to the requirements of the publisher and facilitate a problem-free publication process.

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