

Developing a Smart Library Model in Vietnam Public Library System

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Abstract

The article outlines the development of Science and Technology and the advancement in information and communication opens up new opportunities for the change of public libraries. With the application of advanced achievements of modern technology, libraries have made significant strides in both operation and development scale. Traditional libraries have been replaced by virtual libraries and smart libraries. In order to enhance information resources in an "infinite way", create equality in accessing and exploiting information for all types of users, saving costs and avoiding waste, libraries are tend to link together, share and use the same library resources. Public libraries need to have intelligent library models that are innovative in thinking, technology and operating methods to be able to share invisible information resources to all users around the world without any problems or any barriers.

Key-words: Smart Library, Digital Documents, Public Library, Electronic Library.

JEL: I20, I23, I28

1. Introduction

Modern society with the characteristics of the development of information and communication technology has had a profound impact on all fields and activities, including information and library service activities. With the rapid development of computer technology,

network technology, telecommunications technology and web technology has laid a solid foundation for the digital revolution, also known as Smart Library.

If before, when it comes to libraries, we will refer to buildings with large reading rooms, large archives, the main components are copies of books, newspapers and magazines existing in physical form. Today, the advancement in cloud science, information science and electromagnetic storage technology has made documents that exist in physical form are gradually being replaced by a new format that is electromagnetic. With this format, libraries will no longer need storage space, no need for large buildings, no need for readers to go to the library. They can sit anywhere, at any time and still be able to exploit library resources through electronic devices. The distance in space and time has been erased.

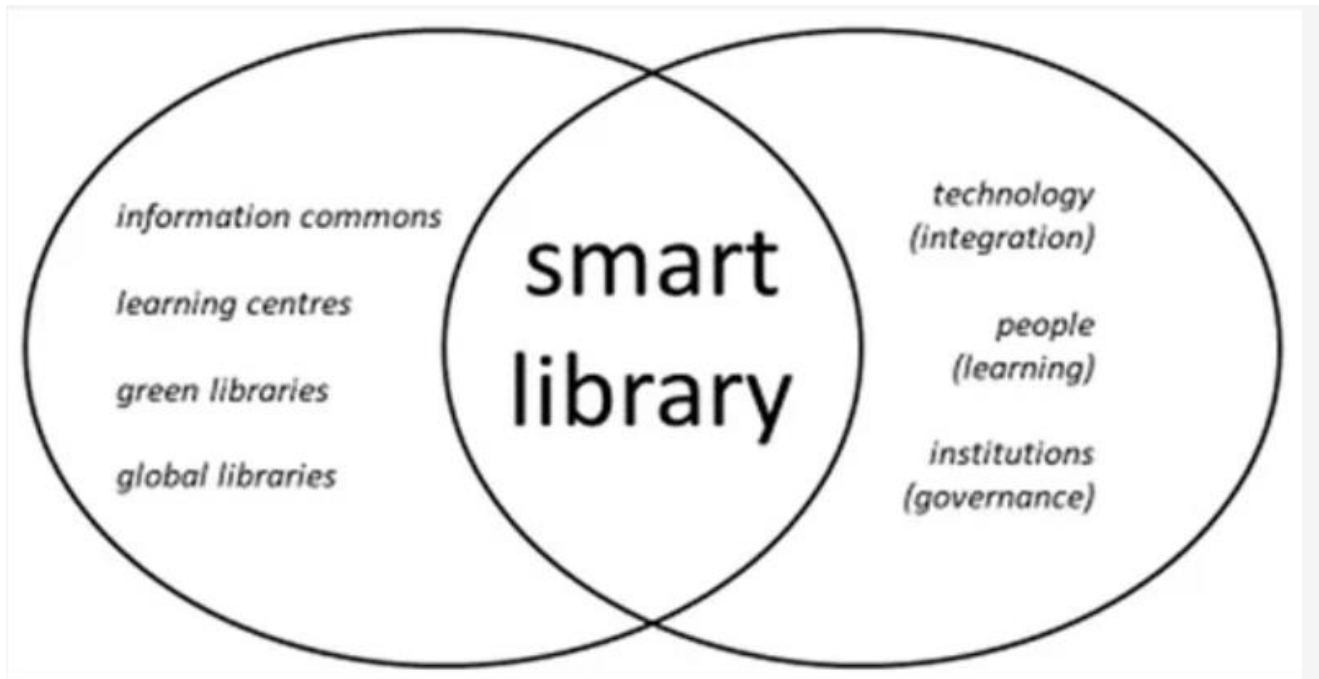
According to the development trend of Science and Technology, information - library services are increasingly diversified and there are changes in the methods of accessing, collecting information as well as communicating with users. service use. Libraries increasingly provide users with many highly convenient services with the effective help of information and communication technology. That's why the Public Library how to meet the increasing needs of readers. Smart library models are an indispensable and important part of building a learning and research foundation for readers in a modern environment. It is also a necessary issue to build a reading culture, arousing a passion for learning, research and self-study for everyone.

2. Literature Review

Next, Schopfel (2018) said that: Can the smart city provide a new perspective for public and academic libraries? How does the smart city impact the libraries as cultural and scientific assets? And how can libraries contribute to the development of the smart city? An overview of recent library models, like the learning center or the green library, reveals affinities with the concept of the smart city, especially regarding the central role of information and the integration of technology, people, and institutions. author gave a new concept of the smart library, which can be described in four dimensions, i.e., smart services, smart people, smart place, and smart governance.

A smart library model by Schopfel is shown:

Figure 1 - Smart Library Model



According to Baryshev Ruslan Aleksandrovich and Babina Olga Ivanovna (2016): A smart library is a hardware and software complex with a wide range of opportunities to find and provide necessary information to virtual users on demand and demanding. their. Smart libraries are libraries that provide interactive, innovative, informative, practical, ever-changing and international services.

Then, Sayogo et al (2020) mentioned critically analyzes the determinants affecting the readiness of public libraries in Indonesia to adopt a smart library from the perspectives of technology, organizational, and policy. The study conducted in-depth interviews with nine public officials from the department of library and information services and also the department of information and communication in the regency of Bojonegoro, Indonesia. Findings indicate expensive investment in cutting-edge ICTs does not necessarily result in the achievement of the smart library. The results demonstrate that data awareness, organizational issues, insufficient policies and regulations, and public concerns as more significant challenges to the adoption of a smart library than technological capability and infrastructure in the nation.

3. Methodology

In this study, authors mainly use qualitative analysis, synthesis and inductive methods, combined with explanatory and dialectical materialism methods.

3.1. A Model of Smart Library

Concepts

The concept of Smart Library is not yet unified. We can understand Smart Library as the link between documents and documents, documents with readers and readers anywhere and anytime under the support of smart technology., digitization, networking and intelligence are the technical foundations of smart libraries.

Thus, a Smart Library is a library that provides services, which are interactive, creative, informative, practical, changeable and global.

A smart library is also defined as an "intellectual library", where the term "smart" means "flexible, adaptive, extensible, recognised, and human".

Smart library is a type of service developed on the basis of technology and operated creatively and automatically to meet the information needs of users. The goal of smart library services in the university library environment is to meet the information needs of readers and support research and training activities of the university library. The main purpose of a smart library service is to provide information to satisfy the information needs of users.

Based on the trend of structuring libraries according to functions, Smart Libraries are libraries in which services and users hold the main position, rather than facilities, human resources, finance, etc. ... as before. From a library service perspective, a Smart Library is defined as a collection of electronic resources, accompanied by specialized library services, provided by the use of information and communication technology.

Thus, we can understand Smart Library as a type of library in which hardware, software, services and the Internet are used to change the quality of interaction between information users - employees. library, allowing the creation of new effects to better serve users.

The main purpose of a smart library is to use modern technology to "satisfy" maximum information requirements of users.

4. Main Results

4.1. Innovations and Developments of Public Libraries

Along with all professions in society, libraries have entered the era of the industrial revolution 4.0, characterized by smart manufacturing developed on three main pillars: Digital, Technology

Biology and Physics. The activities of the above fields take place through a newly emerging complex: systems of interaction and movement between entities and their images in digital space, which today people call Cyber. - Physical Systems (CPS). The information transmission environment that plays the role of a cyclic system of the above activities is the Internet of Things (IoT).

The appearance of extremely large volumes of data - Big Data ensures that the above activities can be performed. Nowadays, coming to the library is no longer a book but a paradise for the young generation, with a relaxed atmosphere. Libraries provide readers with a place to play, study and enjoy a variety of creative, interactive space programs, thereby opening a door to the future for the younger generation and eliminating this concept of libraries. is outdated and irrelevant. There have appeared automatic book return stations that will help library users to return books at any time regardless of the Library's operating hours. When a user puts a book into the return station, based on the data identification mechanism of the RFID tag on the document, the system can identify whether the document belongs to the library or not, and whether it is in a valid state. borrow or not. If the conditions are met, the return machine's conveyor belt will bring the books inside and pass through the document sorter. And also at that moment. Traditional library-information services gradually give way to modern and intelligent services that can interact with users and better meet users' needs.

4.2. Application of e-library Services on Smart Technology Devices

Advances in technology, especially digital technology, have posed a number of challenges in managing intellectual property. Libraries, and especially digital libraries, are looking for the best way to comply with intellectual property rights and achieve their mandate of providing access to information. Digital technology makes it easy for users to infringe intellectual property rights such as copyright because it is easy to download, copy, share and modify a digital object. Access to information in digital libraries is limited by laws, licenses, and technologies applied by intellectual property owners. Digital libraries that have adopted open access allow reading, copying, downloading and sharing of digital content as long as the creator of the work is cited, acknowledged and provided access to the technical works numbers produced under a collaborative creative license.

In the current conditions before the COVID-19 pandemic, Libraries need to quickly support the community in academic activities, develop the use of social networks/internet, disseminate information and knowledge in social groups, provide electronic document content, link to exchange information, search for information according to user needs, advise the community on how to work remotely and exchange information remotely, focus on advocacy books, updating digital platforms in

the world. The digital library is a further step in library automation, converting traditional documents into electronic resources, creating digital collections that are accessible online. Building and developing digital libraries is one of the core of the 4.0 era, creating for readers to use information anytime, anywhere through smart devices with internet connection.

Digital resources, especially online resources, are a basic feature in libraries today, becoming a necessity in the internet environment. Digital libraries use a system of devices with functions of processing, storing, connecting and transmitting data to develop activities and provide information services, including the most typical devices today. For readers, mobile devices and wifi-connected networks in general: Smartphones, Iphones, Ipads... Only with a handheld device connected to the internet, readers can read documents including documents of other websites. Online publisher in the world. Application of digital library management system and digital document reader application installed on personal devices, helping to interact, connect, manage, provide digital documents and e-books to readers quickly, convenient, easy to use while still complying with copyright, the application can download and read digital documents on personal devices, mobile devices with internet connection, allowing to borrow and return digital documents anytime, anywhere. support real-time online loan repayment tracking and reporting and maintain the same electronic document circulation policy as paper documents. Readers can borrow, return and read digital books or digital documents of the library right on their personal devices with software installed without having to go to the library.

In addition, there are many open source digital library software developed by the user community with outstanding features such as support for all digital formats, Fast growing data, especially digital data. also a problem for future libraries. The terms "Big Data", "cloud services", open source also appear. Big data is a huge data set, stored, managed or analyzed by software devices, databases. Technology is based not only on software and approaches, but also on context. Massive data sources, many queries and repetitions lead to library information service systems that can analyze, "talk", "exchange" and "discussion" with scholars as a peer. Karma.

4.3. Building a Centralized Smart Library Model

The development of science and technology has affected all areas of social life, including the field of information - libraries. Digital information storage technology and communication technology have changed the concept of a library, from a traditional library to an electronic library, then a digital library, and a smart library. With the benefits of smart libraries such as all library activities are automated, information resources are stored in digital form and provided to users

through online services, the development of a digital library system within a country, a region or a system or in other words a centralized intelligent library needs to be established to best serve the needs of users. This smart library is built on the basis of a centralized model. Instead of each library supplementing its own information resources, operating individually, all information resources of the country will be gathered and stored in a central library. The remaining libraries in the country will operate as base libraries. They are connected to the Centralized Smart Library via the Internet or a private network.

In order to exploit information from the Centralized Smart Library, member libraries need to be equipped with electronic reading systems to be able to query any information requested by users. Thus, member libraries will become "paperless" systems. Information users can access any electronic information resources such as e-books, e-newspapers, e-magazines, etc. through searching in the electronic archives of the Information Library. smart focus. Building such a centralized smart library will help libraries reduce document storage space, make searching and accessing electronic databases simpler and more convenient. Library operation and maintenance costs are significantly reduced.

At the same time, the demand for the number of staff working in the library is not much. Centralized smart libraries blur the lines between independent libraries. All individuals and organizations have equality in accessing and exploiting information resources. Through electronic devices, they can upload or download the documents they need without any distinction of qualifications, gender, occupation, location, region. Depending on the size and nature of the library's services, the investment funding can come from the state budget or through the collection of user fees from users or member libraries.

The centralized smart library model helps to increase the efficiency of libraries by making the most of information resources, exploiting the utilities of modern technology, and all services aimed at users.

4.4. Application of Rfid Technology to Modernize Management in Public Libraries

The development of the library is closely related to the development of technology, we know about the "library generations", of course, through the Library stages, we must go to Library 4.0. From there, we propose a modern public library model and make sure that the 4.0 generation library is an intelligent library, based on the Internet of Thing platform, symbiotic websites, connecting people through the 3D virtual world., with big data sources, representing human states through

artificial intelligence, facial expressions, emotions, changes in real time, as well as support from open source software , content technology, cloud computing services, presentation of scientific works in the form of fine art, visual art... is the library of the future.

Further research and discussion on technologies for a modern library should continue to best serve users and the community. RFID is a technology that uses radio waves to identify objects. An RFID system consists of two main components: an RFID tag containing a chip that helps to emit radio waves and a reader with an antenna to receive radio waves emitted from the tag and read the information on the chip'. The advantage of Rfid is that there is no need for direct physical contact with the book. Automated management RFID technology allows codes to be scanned at long distances from a few meters to several tens of meters. Safe data identification, high security.

With barcode technology, each stamp only allows identification of document information. If you want to prevent theft, users must use additional tags of the EAS security system. Meanwhile, RFID technology for library automation management allows the implementation of both factors at the same time. Borrow/return multiple books at once. In the way of library management with barcode technology, you will have to scan the code for each book in turn when you want to borrow or return. But with RFID you can scan multiple codes at once. Automated management of RFID technology saves a lot of time in management. RFID tags are durable. RFID tags are more durable than barcode stamps. RFID card manufacturers promise that after affixing the tag on the book, it can be used up to 100,000 times of borrowing/returning before failure.

After being put into the library, copies of books will be tagged with RFID tags, then sent for programming. The relevant information will be loaded when the book is ready for loan. Readers can choose to borrow/return books in two ways: Borrowing through the service station. Here, the waiter. will check the book code through the RFID reader and confirm the book loan. At this time, the chip in the RFID tag will be deactivated. When you bring the book through the security gate, the alarm will not ring. Borrow at self-borrowing/returning books. Here, borrowers can borrow/return books themselves through the instructions on the touch screen. The tasks performed are similar to borrowing/returning at the librarian station. Books after "check out" will have no problem going through the security gate. Finally, after the book is returned, the librarian or the auto loan/return station will reactivate the RFID card for the next loan/return cycle. Up to now, RFID technology for library automation management is still the most optimal method.

5. Discussion and Conclusion

It is hoped that libraries in Vietnam will be more and more developed and properly invested in order to bring the best experiences to readers. 100% of documents have RFID chips, mainly using and accessing the library via mobile, mobile and handheld devices. Search for document information through voice commands to support software. Web 4.0 features are also thoroughly applied by the 4.0 Library. The library's information resources are mainly digital information and the trend of the library connecting to Twitter, LinkedIn, Facebook, Zalo3... is common. Libraries of the same group/field of training, research and service will link together to maximize efficiency of information resources and services. Verification of readers through facial, voice, and fingerprint recognition is widely applied. Users trust freely to libraries, regardless of audience or educational level. The physical library adopts Library 4.0 features to transform academic and storage spaces into spaces for exchange, collaboration, and creativity. The keywords for Library 4.0 will be smart library, big data, parallel research environment, open source, cloud computing,...

Advances in information and communication technology have opened up new opportunities for change in today's university libraries. With the application of advanced achievements of modern technology, libraries have made significant strides in both operation and development scale. Libraries built with solid bricks and mortar, occupying a lot of space as before, have now been replaced by "invisible" libraries, smart libraries. With just a click, users can easily access and exploit the library's information resources anywhere, anytime through electronic devices with network connection.

Today, in order to enhance information resources in an "infinite way", create equality in accessing and exploiting information for all types of users, saving costs, avoiding waste, messages, etc. Libraries are tending to link together, share and use common library resources. The centralized smart library model is expected to be an innovation in thinking, technology and operating methods to be able to share invisible information resources to all users around the world without having any information. any barriers.

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