



ICT And Web Technologies In Libraries: A Comprehensive Review

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Abstract:

The rapid progress of information and communication technology (ICT) and web-based applications has led to significant changes in the functions and services of modern libraries. This review is explored to enhance the library operations, improve the user's experience, and facilitate intact access to information resources to the ICT and web technology. This library highlights major areas such as digital libraries, online databases, library automation, cloud computer, social media integration and mobile technology. While discussing the opportunities for innovation in library services, this paper also studies the challenges related to digital literacy, infrastructure, and data security and sustainable. By synthesizing the current research and methods, this review provides a comprehensive understanding of how libraries are operating in the transition of libraries to a dynamic, technology-efficient knowledge centers from traditional stores of ICT and web technology information.

Keywords: *Information and Communication Technology (ICT), Web Technology, Digital Libraries, Library Automation, Information Access*

Introduction:

The libraries have worked as a gateway to the long-term knowledge, preserving and broadcasting information for educational, professional and social development. Due to the arrival of information and communication technology (ICT) and the rapid expansion of the Internet, libraries have changed a model from traditional print-based repository, technology-efficient knowledge centers. The ICT and web technology have revolutionized the method of collecting, manage, archives, recovering and delivering information to users, which have made libraries easier and user-focused.

Modern libraries are increasingly integrating digital devices such as online database, e-jurisdiction, e-books, digital catalogs, institutional repository and cloud-

based services to enhance their reach and efficiency. Web technology with library websites, social media platforms, mobile applications and web 2.0/3.0 tools has increased the participation of users by enabling interactive, personalized and real-time services. This progress not only improves information access, but also the role of librarians as a facilitating knowledge in digital landscape. At the same time, libraries face challenges such as limited infrastructure, high cost of digital resources, data privacy anxiety and constant training in digital literacy for both Employees and users. Though, the integration of ICT and web technology provides huge opportunities for innovation, cooperation and sustainable growth.

Information and Communication Technology (ICT): ICT is the use of digital

tools and technology such as computers, internet and communication networks to collect, store, and share information. In libraries, ICT plays an important role in making information services faster and more efficient. It helps in cataloging, broadcasting, online database, e-resources and virtual services. Not only does the ICT run the libraries, but also changes how and users' access and uses, it also makes knowledge available anytime and anywhere.

Web Technology: Web technology includes all tools and platforms that allow libraries to connect with users through the Internet. These include library websites, blogs, wiki, social media, online discussion forums and cloud services. With web technology, libraries can provide interactive services, support digital references, share updates immediately, and interact with users in real time. It makes the library service more user-flexible, elastic and widely accessible.

Digital Libraries: Digital Libraries are an online collection of information resources such as e-books, e-journals, research letters, dissertations and multimedia content. Like traditional libraries, they do not depend on the physical space or the printed material. Instead, digital libraries provide access to resources through the Internet, which allows users to find, download, and use information from anywhere. They also support remote education, research and cooperation in various institutions.

Library Automation: Library Automation is a regular library like getting books using software and ICT tools, cataloging, circulation, serial management and stock verification. Automated systems save time, reduce mistakes, and make services more efficient. For example, online public access catalog (OPAC) allows users to find books and resources fast without relying on manual

register. Automation also helps to manage large collections and provide easy services to users.

Information Accesses: Information access is the ability to reach, recover, and use the information you need for users in a fast and convenient way. ICT and web technology have made it very easy by enabling online catalogs, digital repository, open access journals and search engines. Information accesses are no longer limited to the walls of the library; Users can now get the resources they need through a mobile device, online database and digital platform remotely. The main objective of modern libraries is to ensure the same and easy access to information.

Review of Literature:

This review provides a broad exploration of ICT and web technology applications, benefits and challenges in the article libraries. This digital transformation knowledge also highlights emerging trends and future possibilities by emphasizing how the libraries are shaped in important centers of information and innovation.

Namdev, D. S. (2012) ICT and web technology based innovations in education sector [1] ICT has made real magic and major changes in almost every service sector with higher education and library services. With the help of ICT, the educational environment is moving from traditional class-based education to remote and online education. Web technology and mobile technology have had a major impact on the education system. Open access resources, institutional stores, open archives and e-publications have created new ways of interaction and knowledge sharing for students and researchers. E-learning is becoming more popular every day and students are strongly preferring to use technology in their studies. Today's learners,

called "Students 1.5", are themselves learning, independently looking for independently, fast communicators, publishers and highly motivated people. In India, the number of students using Internet and web tools is increasing rapidly and this has changed their expectations from teachers, libraries and educational institutions.

In developed countries, web 1.5 tools, cloud computing and modern technology are widely used in education and library websites. These provide advanced services like blogs, RSS feeds, instant messaging, social networking, wiki and social tagging applications. Web technology in education brings many benefits, but there are some disadvantages. In short, today's education and library services are based on digital, customized, user-concentrated and internet and web resources. This paper highlights the innovation in the field of education and libraries, the influence of web 3.5 on the students and the changes in the teaching-education process as well as the changes in educational policies. It also looks at the future, where the web 1.5 technologies will play a big role.

Husain, S., & Nazim, M. (2015) Use of different information and communication technologies in Indian academic libraries [2] purpose - the purpose of this paper is to find out how various information and communication technology (ICT) can be used in Indian educational libraries. Function - Data was collected by survey system. A structured questionnaire was sent to the six libraries working in the central university libraries in India with a closed question. Six of these libraries responded.

Conclusion - Studies have found that India's educational libraries are still using traditional ICT tools to manage and recover information, especially to manage and recover

information. Modern ICT devices like web discovering services, blogs, wiki, RSS feeds, social networking and social bookmarks are rarely used. Libraries include the lack of trained staff in the major obstacles to ICT, lack of ICT skills in users, limited awareness of ICT benefits and weak ICT infrastructure. Practical results - Educational libraries in India are still at the early stages of adopting modern ICT. Libraries need to upgrade their libraries and develop staff skills in the fields such as computer programming, website development, hardware maintenance and management of e-resources. This is the first empirical study in India to see how ICT -based knowledge management tools are used in originality/value - educational libraries. It helps to fill up an important cavity, and provides guidelines for librarians, strategies, libraries, libraries, library management and University of India's University Grants (UGC) to promote ICT-related skills in libraries and improve ICT-related skills.

Kumar, N. (2016) Transforming libraries through information and communication technology [3] This paper discusses how libraries can use social networking sites and information and communication technology (ICT) to provide speedy services, even though the budget allocation is decreasing through information and communication technology. The fast technical growth of the 7th century has had a major impact on library services around the world as well as in the society. Social media platforms like Facebook, MySpace, Flickr, YouTube etc are now becoming part of the library business. This shows that libraries should adapt and change to meet the growing needs and expectations of modern users. The purpose of this paper is to examine the latest changes in the library system and find out how the libraries in the digital world can adjust and

maintain themselves while meeting their users' demands.

Okwu, E., Okwu, N. E., & Oladokun, B. D. (2024, May) New Technological trends and application in libraries: An overview [4]. The arrival of a new technology has greatly influenced the libraries on how libraries work and serve their users. This technology has changed the traditional library methods and has introduced modern methods of managing information and services. This paper reviews how the new technical trends affect the performance of the libraries. These trends include information technology, communication tools, automation, artificial intelligence and development of data analysis. Such innovations can change old methods, make library work more efficient, improve user experience and open new opportunities for growth. The main consequences of this technology on libraries are easy access to digital resources, use of online catalogs and discovering systems, remote and virtual library services, digital saving information, good data management, research support, social technology, mobile applications and data-driven decisions. On the other hand, libraries face challenges such as funding, technical skills and lack of infrastructure while adopting this technology. Libraries end this paper by emphasizing the need to adopt new technology to improve their services. An important recommendation is that libraries should regularly train their employees so that they are up to date on the latest tools and how to use them effectively.

Jana, B., Rautaray, B., Swain, C., & Swain, D. K. (2025, May) Navigating the Digital Edge: the Evolving Role and Responsibilities of Library Professionals [5] In today's digital age, people depend on the Internet to achieve full and fast availability of knowledge. Since global internet connectivity

is now widely available, most library resources are slowly going to the online platform. Libraries are digitizing their collections and using automation for activities such as getting books, cataloging and reference services. Open-source software plays an important role in this process, as it reduces costs and makes it easier for libraries to accept new technology. This change saves both time and physical space for librarians, which allows them to focus on new and innovative services. As a result, the role of the librarian is changing. They are no longer seen as the protector of books, but also the provider of information and the guide of knowledge. To provide quality information services to users, library employees should constantly improve their skills and get skills in information and communication technology (ICT). This article highlights how ICT and web technology are changing about how knowledge is shared among libraries, information centers and information.

The role and functioning of modern libraries has completely changed due to the rapid growth of information and communication technology (ICT) and web technology. From traditional print-based services, libraries are now turning to digital, automatic and web-efficient platforms to meet their users' various needs. Libraries have become more interactive, user-concentrated and globally connected due to tools like online catalogs, e-resources, institutional stores, social media, mobile applications and cloud computing. Although these technical changes bring many opportunities such as the rapid availability of information, good resource management and increased user experience, they also face challenges such as limited infrastructure, lack of technical skills, budget limitations and constant training for employees. In order to remain relevant in the

digital age, librarians should adopt innovation, adopt a economical open-source measures, and the skills of library professionals in ICT and emerging technology should be regularly updated. After all, libraries are no longer the protective of books, but are the dynamic knowledge centers that support teaching, education and research. By adapting to technical trends and focusing on user-focused digital services, libraries can maintain their importance and continue to play an important role in the future education and society.

Conclusions:

ICT and web technology have made major changes in education and library services around the world. Many studies have underlined different aspects of this change. Namdev pointed out that the ICT has diverted from education class-based education to online and remote education. Detections such as open access resources, institutional collections, e-publishing and web 3.5 applications have created new opportunities for communication and knowledge sharing. Students are learning themselves and are more technology-driven. In developed countries advanced ICT devices like cloud computing and social media applications have been already integrated into libraries and education systems. Hussein and Nazim studied the use of ICT in Indian educational libraries, and it was found that most libraries still depend on traditional ICT tools to manage tasks such as cataloging and broadcasting. Modern tools like blogs, wiki, RSS feeds and social networking are rarely used. The main obstacles include the lack of trained staff, weak ICT infrastructure and limited awareness of ICT benefits. He recommended that librarians should develop skills in programming, website development and e-resource management so that there are good services. Kumar emphasized that the

libraries need to be used to keep the ICT and social networking sites, especially during the low budget. Platforms like Facebook, YouTube etc. are becoming important for users. The study emphasizes that libraries should adapt to modern changes to meet users' expectations and maintain themselves in the digital world. Okwu, E., et al. explored the impact of new technical trends such as automation, artificial intelligence and data analytics. These tools improve efficiency, provide remote access, increase digital saving and support research. However, there are still challenges such as limited funds, lack of technical skills and weak infrastructure. The authors advised to constantly train staff as a remedy to adapt to emerging technology. Jana, B. et al examined how the role of library professionals is developing in the digital age. Due to the increasing digitization and the use of open-source software, library employees are becoming a provider of knowledge and information from becoming the protector of books. He argues that ICT skills are required for librarians to provide high-quality services and to effectively guide users in the digital environment. These studies underline that ICT and web technology are shaping libraries by improving the availability of information, enabled digital services, and re-defining the role of librarians. At the same time, libraries need to face challenges such as infrastructure, skills and lack of funds to fully take advantage of technical innovation.

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