



Emerging technologies in Libraries: Challenges & Opportunities

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Abstract:

This paper highlights the emerging technologies in different areas of libraries; these new technologies have given libraries all over the world fantastic potential to improve user access to library and information services. Libraries in developed countries have been using emerging technologies like Robotics, Cloud Computing, RFID, Big Data, Institutional Repositories, Virtual and Augmented Reality, Book Delivery Drones, and Web 2.0 to provide library and information services. Areas where new technologies applied. For the present study review of literature, personal observation as well as interview method is adopted. Visited some libraries in the near about areas and observe them and talk with their officials. Modern libraries are very rapidly adapted to the new technologies. With the help of web technologies, these can be access from anywhere, any time. Even then these advancements libraries are not properly working and adopting to it, because of many problems like money, unskilled library staff etc. emerging technology in and for libraries through a survey of the literature that is currently available. There have been several benefits stated for integrating emerging technology in libraries, including an increase in patronage, cost and time savings, and brand loyalty. Also mentioned were the difficulties preventing the widespread application of developing technologies in libraries. New technologies have come in the field of library science and are implementing in the different sections.

Keywords: *Emerging Technologies, Libraries, Challenges, Impacts, Opportunities.*

Introduction:

Information and Communication Technology has changed drastically after introduction of computer, internet, and wireless communication etc. that has forced the information control knowledge center's to adopt according to the recent trends. In this article features and services of the library, resources which are available in the information Centre are for the young aspirants. It also provides utilization methods, different types of accessing methods in the libraries and Government initiatives for the higher education and research. Remedial measures to be taken for

the students by the management, head of the institutions, teachers and the librarians.

The rapid growth of ICT (Information and Communication Technology) has put a great impact on libraries. With the effect of it the people have changed the way of think, behave, communicate and work. ICT and globalization has changed the libraries from traditional to digital libraries in which every work is done by computer. So, working of library has totally changed from service oriented to user oriented, in which libraries are maintained according to the need of user. New technologies have been merged in the

library science. So, libraries have been changed to Digital Libraries, Virtual Libraries, Hybrid Libraries, Library without Walls, Library 2.0 etc. Even the working and designation of librarians have also been changed to Information Officer, Information Scientist, Documentation Officer etc. We can see that the libraries have come to our doorsteps. We can use libraries at any time according to our convenience.

Information and Communication Technology (ICT) plays a vital role in higher education teaching and research. Application of web technology is essential part of the library and information center in this current scenario.

Information and Communication Technology has given wonderful opportunity for the librarians and knowledge center. It would be applicable in right manner and in order to reach information at the right time for the right person. There are many commercial and open e resources available in the universe for teaching, learning and research.

Emerging Technologies and Emerging Technologies for Libraries:

Emerging technologies are those technologies that have attained the highest level of acceptance claim (Cervone, 2010). Emerging technologies are those that are still under development, have not yet made a name for themselves in their many fields of application, but have the potential to address issues and provide new opportunities for advancement in those disciplines (Rathna & Divyananda, 2018). Technologies that are still in their infancy yet have the potential to revolutionize how we live and solve some of the world's most serious issues are known as emerging technologies. These technologies offer answers to a range of problems, help with the growth of a range of existing facilities, and offer opportunities to build new ones. Information management and information services trends are being steered

in new ways by a number of contributing factors. Current trends are influenced by a variety of factors, including volatile technologies, tech-savvy hyperactive user behavior, hyper-connected societies, and liberalized access to information, re-defined data security, snowballing digitalization of business and administration at all levels, user-centric and user-driven content and services, and online and collaborative learning environment.

a. Big Data: Due to the extensive impact of information and communication technology (ICT), a tremendous amount of data is being produced globally by everyday people, researchers, scientists, and other stakeholders (Karimi, 2014). Data storage, analysis, retrieval, and dissemination provide substantial challenges for information professionals and data managers. Since they have the requisite expertise and experience to make the most of these enormous data sets, library and information workers can greatly profit from the storing and analysis of large datasets (Princh, 2019).

b. Institutional Repository (IR): An institution's research and intellectual output are stored digitally in an institutional repository (Karimi, 2014). It makes the institution's top-notch scholarship available online to people all over the world. To put it another way, an IR is a service that a research organization offers to the academic and research communities within which it operates for the management and effective distribution of the research output produced by those communities. Leading academic and research institutions utilize it right now to make it easier to obtain research publications.

c. Cloud Computing: Cloud computing is a technology that uses the web (Internet) and centralized remote servers to maintain data, software, and applications. According to Waljat (2018), cloud computing enables users to access their private and professional

files from any internet-connected computer without the need to install any software on their local workstation.

d. Internet of Things (IoT): The internet has had a significant impact on many facets of human existence and activity throughout the current era of information and communication technology. By providing effective services more quickly and easily, the Internet of Things (IoT) is the most cutting-edge developing technology for influencing library patrons. It eliminates the requirement for human interaction by enabling any natural or artificial objects to communicate with one another and transmit data using IP addresses.

e. Robotics: Robotics seems to be amazing at helping people in the smartest way possible. (Harris, 2012). In libraries, robots are used to browse printed materials in real time via a Web interface.

f. RFID: An effective instrument for collection management, RFID (Radio Frequency Identification Device) is a device that assists in the automatic tracking and identification of objects. An RFID system's transponder, often called a tag or microchip, is connected to an antenna. A user can get simple data like an identity number or detailed information (Waljat, 2018).

g. Artificial Intelligence: Artificial intelligence (AI) is becoming pervasive in modern society. In current era of science and technology, artificial intelligence (AI) is the study of mental abilities using computational models.

Opportunities of Using Emerging Technology in Libraries:

The following are some of the advantages of emerging technologies for libraries, according to Neogi and Partap(2019);

- i. Emerging technologies boost libraries' capability to provide better and faster services.

- ii. It has an impact on librarians' and the library's creativity, problem-solving skills, and self-image.
- iii. It helps to process innovations and bring value to existing products and services.
- iv. It strengthened library knowledge and opportunities for the future.
- v. Quick service is simple to deliver.
- vi. It saves time.

Despite the multiple issues confronting Nigerian academic libraries, there are opportunities to find and deploy new and emerging technologies to provide library services while remaining relevant to society. One of the major elements that will save libraries is the availability of Open-Source Emerging Technologies (OSET). Savard and Dione (2007) in Bichi (2021), agreed that managing automated library systems and other technologies related to information management in developing countries is difficult due to a lack of resources that allow them to access technological tools as efficiently as those found in developed countries. The authors concluded that, if properly addressed, open-source software could be a solution to these issues. Libraries currently use a variety of technologies to support the services they provide, due to the advent of information and communication technology. Every day, new technology advancements have an impact on how information services are delivered to the public. As a result, libraries get the benefits of these emerging technologies in all parts of their operations, from information selection to distribution (Bichi, 2021).

Challenges the Use of Emerging Technologies in Libraries:

Although modern technologies have many advantages for libraries, various barriers prevent libraries from using these resources effectively and efficiently. According to Krubu & Asowaru (2011) and

Bichi (2021), the main barriers to the effective use of technology resources in Nigerian libraries include a lack of search skills, inadequate budget, epileptic power supplies, and insufficient management training and staff retraining. Adoption of new technologies has been hampered by insufficient funding, a lack of capacity, and erratic power supplies. According to Lubanga and Mumba (2021), there are a number of obstacles that prevent libraries from implementing high-end technologies, including a lack of well-established centers for research and innovation, the unpredictable nature of technological advancement in the twenty-first century, and university cultures that discourage research and innovation. According to Saibakumo (2021), the largest barriers to adopting new technology are a lack of funding, a shortage of power, and inadequate maintenance. Both information costs and quality are increasing. Fiscal restraints, insufficient maintenance and cultural updating, and a problem with record conversion can be linked to infrastructure problems, a lack of informatics/learning, and a lack of government assistance. Due to the current digital revolution, Nigeria and other developing nations are dealing with a number of problems (Ajie, 2019). Due to institutional restrictions, a lack of employee training, restricted funding, and a lack of staff time, new technology has not been fully implemented in libraries (Golz, 2014). Time consumption and worries about privacy violations are two major issues brought on by the use of Web2.0 technologies in library services (Hussain and Jan 2018). The main obstacles to implementing the newest technology in academic libraries have been identified as inadequate money for the library, a lack of competent library staff or a user education program on improving library technology, and frequent power outages (Jan and Sheikh, 2014). The difficulties of implementing and utilizing merging

technologies in libraries have been identified by oghenetega, Umeji, & Oboe in2014; Okojie and Okiyin2019; these difficulties include lack of funding, an unstable power supply, a lack of trained staff, and government policies, among others. Makori and Mauti (2016) also listed a lack of knowledge, ICT infrastructure, information resources, social computers, weak institution a land physical structures, and a lack of skills and competence as factors that hinder the use of digital technology.

Conclusion and Recommendation:

New technologies have recognized itself in libraries as a transformation in the deliveries of information services; there is rapid transition from hard to soft and print to digital as the case may be. The necessity for library users is also changing literally mimicking the changing global environment all climate just to buttress the point that this change is almost uncontrolled by evident factors like management-system of libraries. The study carefully appearance into emerging technologies and emerging technologies for libraries, which include Robotic, Artificial Intelligence, Radio Frequency Identification (RFID), Internet of Things (IoT), and many more, the used emerging technologies for service delivery in libraries, opportunities of using emerging technologies in libraries; to include, it has an influence on librarians' and the library's creativity, problem-solving skills, and self-image, it helps to process innovations and bring value to existing products and services, it supported library knowledge and opportunities for the future, and the challenges limiting the use of these technologies were as well discussed.

It is recommended that full implementation of policies concerning the establishment and incorporation of modern technologies in libraries. Increased funding of libraries and constant training and retraining of librarians on how best to

manipulate emerging technologies to be assumed in libraries.

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