The impact of digital technologies on academic libraries: challenges and opportunities

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Abstract

Libraries have long been endless sources of information for students - for centuries this involved row after row of books. However, the face of libraries is changing as content is moving toward a digital platform and Internet access is becoming more of a human necessity than a privilege. This article presents an evaluation of the impact of digital technologies in the transformation of academic library services. It begins with a brief overview of the historical development of academic libraries followed by a discussion of current challenges and opportunities for academic libraries. It also discusses innovative technological developments for learning, data management and the impact of these on the academic library sector, including the need for library staff to develop new skills and roles such as "embedded" librarian roles. The article concludes with reflections on future developments and the impact of digital technological utilities. It's clear that the library has been a valuable institution for academic purposes as long as pen has been put to paper. However, the library and its role in academic research are no doubt going through a clear transformation in the 21st century.

Keywords: Academic Libraries, Digital technology, Digital Libraries, Librarians

Introduction

Now, in the 21st century, with the emergence of ICT & Web 2.0 technologies, libraries have a new, more dynamic role in knowledge society and as the individual is affected by ICT, in the same way, the individual can also influence the technology (Bradley, 2010). Libraries began to recognize the presence of the web experience and utilize such services in order to create a *new environment* for libraries' users where interaction plays a basic role. "Interaction means that technology interacts with social world with values and beliefs" (Bradley, 2010, p.184). These services have also reformed academic libraries which face greater demand for access to resources; they should store all kind of material forms; the librarians have to task crucial duties and roles in disseminating and sharing of knowledge and users need to transfer information inside and outside of the walls of a library. Hence, university libraries would be upgraded and becoming digital.

Digital libraries, Institutional repositories and Open Archives are the new trend in the present era, satisfying users' needs for precise information since they have become more information conscious for accessing electronic information compared to different purposes such as academic or research needs. According to Fabunmi, Paris, and Febunmi (2006), Library Digitization has become part of the work of librarians, and most libraries are involved in digitization projects.

Development in Digital Technology has influenced the Academic libraries of India for its overall betterment. Academic libraries use Digital Technology to manage user's services, communication facilities, housekeeping operations, standardization and development of library activities. Academic libraries need to respond to the growing and diversifying information needs of the end-users.

The introduction to the digital era in libraries, created the need to computerize most of the operations. Technology has changed the way traditional librarians used to do work. Nowadays, librarians use technologies to acquire, catalogue, preserve, diffuse, and provide reference services and so on. This doesn't mean that traditional libraries will stop existing. Traditional libraries as buildings will continue to exist for many years and support the digital libraries. Thus, traditional libraries co-exist with digital libraries. This means that librarians play and will continue to play a significant role in libraries. It is important for librarians to keep a balance between their traditional role and the digital role.

Objectives of the study

- To explore how librarians and library users interact with digital material, electronic resources, and online services and review their perceptions towards their benefits and challenges in academic libraries.
- To explore the use and impact of digital technology in Academic Libraries services and operations in India.
- To study the different areas of library operations and services those are performed through Digital technology in academic libraries of India. and operations in digital environment in academic libraries
- To reflect and critically discuss the impact of these on the role and professional practices of academic library staff and,
- Finally, to consider what the future of academic libraries and academic librarianship will be.

Scope of the study: The study covers the development, use and problems of Digital Technology implementation in Academic libraries of India. The present study focuses on the usage of Digital technology products and services by the faculty members and research scholars of Academic libraries of India.

Need for the Study: In the present ever changing information environment, libraries are encountering both opportunities and challenges. Information technology has introduced many changes in the way information is identified, procured, processed and disseminated to library clientele. Furthermore, digital technologies have created a sense of urgency among library users and librarians themselves. Academic Libraries are witnessing new paradigm shifts. These shifts include:

- Transition of information sources and systems from paper to electronic media.
- Complexity in information needs of highly demanding clientele.
- Increase in the cost and quality of information.

It is an accepted fact that the Digital technology has influenced all the components of a library system: information sources, services, human resources and users.

Academic Libraries in Digital Era: In the 21st century, academic libraries have a new role in sharing information. Libraries are not piles of books anymore; the general library environment has been changed from analogue to digital. Library automation systems have helped libraries to provide easy access to their collections through the use of computerized library catalogues (On-line Public Access Catalog – OPAC) which more recently led to digital libraries (IFLA,2013).

Dissemination of knowledge has always been one of academic libraries primary goals as long as they have served as learning institutions, cultural repositories and research centers but in this digital age of knowledge, they have to expand these roles and stop being passive repositories for printed material. To the contrary, academic libraries should upgrade their services and providing education of high quality by storing resources in various forms and maintaining easily accessible for online use among academic community. This would be possible by implementing a digitization project. Hughes (2004) reported to concept of digitization as "the process by which analogue content is converted into sequence of 1s and 0s (these ones and zeros are called bits) and put into a binary code to be readable by a computer" (p.4). So, we could generally say that the digital material is every computer readable material.

According to Pandey&Mishra (2014), "Academic libraries are digitizing materials because they know the continuing value of library resources for learning, teaching, research, scholarship, documentation, and public accountability."(p.137).

Academic Libraries are an important part of the National Educational System as long as they serve as information centers fulfilling basic library users needs;

efficiency, effectiveness, and utility. Evaluation plays a key role in the improvement of information services. Digital era has produced many changes in the society such as expansion of the served community; products and services; the need to break the space-time barrier in communication and further expectations from library users for high-quality and user-friendly online services. Therefore, the library manager has to impartially evaluate qualitative and quantitative value of the library resources and plan services for better functionality in order of making the invisible to be visible.

Academic libraries have gradually been completed many criteria for their development of better products and services which are the follows:

a. **Effectiveness:** to well operate the digital library system.
b. **Efficiency:** at what cost does it operate? (costs can be either financial, temporal or related to effort)
c. **Usability:** services & products utilization
d. **Accessibility:** characteristics of the digital system (technology performance, speed, time, error rate)
e. **Quality:** qualitative material
f. **User's satisfaction:** users interact with the digital library system.

The methodology for digitization in academic libraries changes according to policies of each educational institution. Different institutions have different views of the material to be digitized depending upon the mission and vision of the parent institution. Brindley (2009) pointed out that academic libraries serving digital duties should position their role as strategic guides upon formal learning settings, academic programmes and research by providing teachers and learners with broader, faster and better information as they noted the heart of the entire educational institution and the only root of knowledge. She also emphasizes the need for planning, vision, and strategy.

Librarians in the Digital Era: Academic librarians are supposed to have various technological skills in order to provide services to students. We will present the most important skills that librarians need to have according to us.

But in the new digital era when we talk about information literacy we mean teaching skills that include computer skills. According to Kulkarni "there is a need for the library professionals to play significant role in promoting information literacy in digital environment." (2014, p. 199)

Information literacy in the digital environment means:

- "The ability to use digital technology, communication tools or networks to locate, evaluate, use and create information.
- The ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers. (Kulkarni, 2014, p. 198)

Users can have access to the digital material inside and outside the library. Nowadays, academic libraries

offer the opportunity to have access to the electronic resources from anyplace at anytime. This means that users can visit the library alone even from their home. Nowadays, students make extensive use of the web so as to find the information they need. The internet provides them the latest digital material for usage. According to Chen and Lin "digital technologies enable ultra-rapid access to the richest sources, wherever they are located in the world's collection" (2011, p.399).

Librarians by having the appropriate knowledge and technology skills concerning the digital material can guide library users on how to use the information in the right way. Librarians can teach users on how to use the OPAC catalog of the library, the e-journals, e-books and generally to direct them with the use of the digital material, to facilitate them with the searching, evaluation and retrieval of the electronic material even when they are at distance (i.e. from their houses, from a cafeteria). Moreover, librarians can teach them to acknowledge if the retrieved information is the appropriate for them and show them how they can make the right decisions concerning the information.

Challenges for Academic libraries in Digital Era
The following are the Challenges for Academic libraries in Digital Era
1. **Making services engaging to researchers and students**: Google is not the answer to everything. As a result, the librarian fully absorbs the needs and wants of students and researchers to make a substantial and engaging difference in their work moving forward.
2. **Handling research data management tools**: Libraries should be the place on campus for data curation and research management. Librarians need the support of their faculty and administrators to make this happen, but librarians also have to keep themselves well-versed in the advancements of data management so research doesn't become stale.
3. **Demonstrating the value of Librarian**: Academic libraries are always on a budget. This means that month after month, year after year, libraries have to come up with compelling examples of how valuable their work is - often with a looming bottom line. However, according to the American Library Association, research has proven a connection between student grade point averages and library material usage. Staff needs to communicate this connection and demonstrate why libraries require more attention and public engagement.
4. **Preserving material on a digital scale**: Not only are there excellent products available that can help libraries achieve this - even with the biggest of collections - it's becoming the norm.
5. **A growing and diverse spectrum of customers**: The 20th century underwent a massive shift in technological innovation that impacted people of all ages. On any given day, a librarian might have to help customers from six different generations, from baby boomers to millennial, according to 21st Century Library.
6. **Nailing down library policies**: With the increased usage of online tools, there are many questions that might need to address to the administration. For instance, if the university should be purchasing e-books alongside traditional print sources. Or, as many modern academic research centers are discovering, there may not be a need for purchasing textbooks at all. These are just some examples of library policies that staff and the administration need to pinpoint moving forward.
7. **Role development**: Open Access has required librarians to become knowledgeable in a growing number of subjects on an astounding scale. While no institution is going to process information at the pace of a computer, it might feel that way sometimes. Adding budgeting and resource constraints can contribute to this problem as well.
8. **Digital licensing**: Although every academic research facility is different, College and 1 which means that digital licensing agreements should become more sustainable and easier to understand.
9. **Subject-matter expertise**: With so much information pouring into libraries at a fast pace, academic institutions need to take an active role the management of libraries. There have already been great strides taken on a national scale, such as National digital Library of India.
10. **Becoming familiar with a wide range of digital content**: By clearly seeing what kinds of articles, published works and e-books are being used the most by students and researchers, librarians can fully digest what types of content they need to become familiar with in a global, digital world while still providing high quality sources.

With academic libraries, the challenges of role development, digital licensing and research tools are shaping the way that librarians provide quality content to students and researchers.

Opportunities in digital era
1. **Expanded access through information sharing:** Digital Libraries provide robust interaction between information and users – democratizing the global dissemination of information. The United Nations Educational, Scientific and Cultural Organization's (UNESCO) "Information for All Programme" (IFAP) embodies the modern importance of public information by providing access and is equipped with on-line connections to a worldwide network of libraries. The new opportunities of the digital age in order to create equal societies through better access to information. This is a powerful goal. Information sharing has the power to bolster educational equality across the world.
2. **Libraries are becoming technology hubs:** As the Internet becomes the main vehicle for people to get

information, the tradition of a building stuffed with books is less relevant to our modern lives. As a result, libraries are transforming themselves into technological spaces. When looking at technology use in libraries, the Pew Research Internet Project found that patrons are increasingly thinking of libraries as community spaces that allow access to technology and as a source of digital literacy for various demographics.

3. **Libraries are being shaped by budget cuts:** Budgetary constraints continue to plague libraries and limit their ability to evolve and adapt, even as libraries see increased usage from the public.

4. **Libraries have a strong role in local communities:** The libraries offer resources that give "everyone a chance to succeed," that libraries are important in the promotion of literacy, and that academic libraries improve quality of life in institutions. Libraries offer spaces to the number of e-book users is growing, but not to the extent to have replaced print books. While the percentage of users who are reading e-books is growing, simultaneously, print book reading is also spend time and access information.

5. **Printed books still dominate reading, despite the growth of e-books:** The number of e-book uses in growing, but not to the extent that electronic books have replaced printed versions. While the percentage of users who are reading e-books is growing, simultaneously, print book reading is also growing. The popularity of e-books is rising, but print remains the foundation of many people's reading habits. This trend is expected to change as-reader ownership expands.

Technological expansion and the changing way individuals gain access to information have deeply impacted the structure of libraries – physically as well as conceptually. Despite the modernization of libraries and their adaption to the digital age, the spaces still hold a critical role within community. Academic Libraries are doing well in changing with the needs of students, faculty and research community, continuing to be beacons of information sharing, learning, and entertainment even amidst tight fiscal times.

Conclusion

The rapid development of technology has changed the way librarians work and interact with library users. Various researches have been conducted on academic libraries about digital technologies (including digital material) and the interactions between librarians and library users. Nowadays, most of the libraries blend traditional and digital library. Academic libraries are modernized with the usage of digital technologies. Most of the librarians work by using the digital technologies. Librarians teach library users on how to use the digital material in a proper way. But as we can see from the literature review the digital technologies have affected the way librarians and library users interact.

This study attempts to explore the benefits of these new digital technologies in academic libraries and what kind of challenges librarians and library users face in a daily basis by using them through their personal experiences.

Nowadays, there is a growing quantity of digital information as several sectors creating digital material. As the Internet becomes part of our lives, people navigate online sources (i.e., e-resources) for seeking information. New ICT technologies have also changed the current situation of libraries and the attitude of their users. Given that the information users need is available on the Internet, they have new demands and great expectations anymore.

Digital libraries are components of traditional libraries and service such as their extension. Traditional libraries put emphasis on users' needs as well as digital libraries do. There are many reasons for creating digital libraries in academic institutions; the most important is the free and open access to information within academic community. Academic digital libraries are to provide access to scholarly information and making students' ideas more achievable.

Technology has integrated in academic libraries and it is part of librarians' job. Academic librarians should adapt to the new technologies and develop their technology skills so as to serve users in the best way. Providing the adequate education to librarians in new technologies is a very good solution in order to develop their skills with success and get rid of possible stress that the new technologies might create to them. Many libraries preserve digital material and are responsible for its preservation. But librarians many times face problems and weaknesses with the usage of technologies or the preservation because of serious economic problems. This means the academic libraries do not have the adequate budgets to recruit new staff, buy new equipment, subscribe in e-resources, as a result, quality of the provided services being affected in an ugly way. Moreover, education is crucial for users. If users are educated properly, they acquire important knowledge so as to learn how make use of the library in a right way. For the purpose of users' education being achieved, Librarians should educate them and faculty members should motivate them on using the library. The roles of Libraries and Librarians define the user's interaction with them and with knowledge in general. The digital library must be usable and used not only by the end users (i.e., students, researchers, readers) but also by the real users (i.e., librarians, engineers, and library administrators).

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