A CRITICAL ASSESSMENT OF DIGITAL LIBRARY: A COLLECTION OF THE MERITS AND CHALLENGES

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ABSTRACT

The purpose of the study was to evaluate the digital library as a computer-based system for acquiring, storing, organizing, searching, and distributing digital materials for end-user access. It is not just a collection of materials in electronic form. Digital libraries are the same as traditional libraries, but the material provided is digital. The successful experiences of digital library projects are being purified on a global scale where some universities in America and Europe have already succeeded in the field of digital libraries at a high level of quality. A digital library is an innovation from conventional libraries that is very closely related to the use of technology. The core of a digital library is library materials that are not physical but digital. The digital library has a seamless provision of services that are responsive to the needs and interests of the communities served. It is clear that the digital library is maintaining an acceptable level of operational service. Digital libraries do not need physical space to build a collection, and it can be accessed from anywhere, at any time. The user can get his/her information on his own computer screen by using the Internet. Actually, it is a network of multimedia systems that provides fingertip access. The study concluded that digital is a library that stores information in digital form or fulfillment of information needs in digital form from external information sources to be distributed to users both registered as certain customers and the community in general. One of the recommendations made in the study was that governments should improve on the power supplies and the Internet Architecture Infrastructures in the Country, to enable Nigerians meet up with the developed Nations of the world technologically in the 21st century, therefore encourage the use of digital library.

KEYWORDS: Digital Library, Anthology, Merits and Challenges

Introduction

The informative revolution era has left remarkable effects on all sectors of society, including libraries. They cannot fall behind the spirit of the age; neither will they move away from their characteristics and attributes because they are one of the scientific, cultural, and educational institutions that are important in contemporary society. Libraries currently have undergone a great quality advancement, which constitutes a significant shift in their services as well as the nature of the information that they provide and their beneficiaries, where these libraries turn from traditional to hybrid ones by combining between the traditional and

modern digital forms, or to digital libraries as concluded in a study by Abdul Hameed (2008). The Digital Library emerged through the initiative of a project for digital libraries funded by NOAA (Space) United States of America in the year (1994), which allocated an amount of $24.4 million to six American universities in order to start a research project to take advantage of the tremendous development of the internet. There has been an adoption of the term known as "Digital Library" by computer specialists as well as librarians (Faraj, 2005). In spite of the widespread use of the internet in the informative age, the pioneers of digital libraries assert that a lot of important human knowledge is still in paper form and see the need to exploit technological opportunities available to be converted into digital format for any digital libraries, and among them was Troy Williams, CEO and founder of the site in question, which is today the largest digital library of a commercial nature in the world (Saracevic, 2001). The digital library offers digital and realistic solutions for many of the problems of the community, which will help to keep up with western civilization and the East as an instrument for economic, social, and scientific research. It is through digital libraries that information services could be provided to remote areas as well as improve the level of services while providing real elements of basic services for daily information or on-going social information (Al-Jowheri & Al-Hazmi, 2008).

Concept of Library

The word "library" is derived from the Latin word "libraria", meaning "a book place". It originates from the term "liber," which means "a book." According to the Oxford Companion to the English Language, "a library is a collection of books, periodicals, and/or other materials, primarily written and printed (MLIS 2016). The word "library" seems to be used in so many different ways now, from the brick-and-mortar public library to the digital library. A library is a collection of resources in a variety of formats that are organized by information professionals or other experts who provide convenient physical, digital, bibliographic, or intellectual access and offer targeted services and programs with the mission of educating, informing, or entertaining a variety of audiences and the goal of stimulating individual learning and advancing society as a whole (ALA, 2010). A library is a collection of materials, books, or media that are easily accessible for use and not just for display purposes. It is responsible for housing updated information in order to meet the user's needs on a daily basis. A library provides physical (hard copy documents) or digital access (soft copies) materials and may be a physical location or a virtual space, or both. A library's collection can include printed materials and other physical resources in many formats, such as DVDs, CDs, and cassettes, as well as access to information, music, or other content held in bibliographic databases. (Wikipedia, 2021) A library, which may vary widely in size, may be organized for use and maintained by a public body such as a government, an institution or school, a corporation, or a private individual. In addition to providing materials, libraries also provide the services of librarians who are trained and experts at finding, selecting, circulating, and organizing information and at interpreting information needs, navigating and analyzing very large amounts of information with a variety of resources. Hence, librarians go an extra mile to meet the user's needs by ensuring that their users are satisfied with the information provided.

Concept of Digital Library

All conventional libraries' basic functions focus on collection, organization, and dissemination of information resources. Traditionally, a library is a place in which books, manuscripts, musical scores, or other literary or artistic materials are kept for use but not for

sale. In effect, it is an institution oriented towards collections and custody, where people may make use of the facilities. A digital library, according to Purwono (2013), is a library that stores information in digital form or fulfilment of information needs in digital form from external information sources to be distributed to users both registered as certain customers and the community in general. The first published use of the term "digital library" in print may have been in a 1988 report to the Corporation for National Research Initiatives. The term "digital libraries" was first popularised by the NSF/DARPA/NASA (National Science Foundation/Defense Advanced Research Projects Agency/National Aeronautics and Space Administration) Digital Libraries Initiative in 1994 (Trivedi, 2010). Many concepts, definitions, and modern titles were set for the digital library, and these names are as follows: electronic library, virtual library, hybrid library, library of future, digital library, library without wall and on-line library (Abdel Hameed, 2008). Additionally, there are other definitions of "digital library" put in place. For example, Warr & Hangsing (2009) defined a digital library as an assemblage of digital computing, storage, and communications machinery together with the content and software needed to reproduce, emulate, and extend the services provided by conventional libraries. Abu Lofah (2005) defined a digital library as one that maintains digital information sources, whether the produced original ones or those that have been transferred to digital form, as their operations are controlled automatically by using a machinery system, whether it is local, expended, or via the internet.

A digital library, in other words, is a computer-based system for acquiring, storing, organizing, searching, and distributing digital materials for end-user access. It is not just a collection of material in electronic form; it includes a browser interface and perhaps a virtual space and society (Warr & Hangsing, 2009). It requires less space, and the data can be made available through communication networks to anyone, anywhere, while facilitating searches with speed. Digital is not a single entity and, as such, is linked to the resources of many such collections. Digital libraries are the same as traditional libraries, but the material provided is digital. The characteristics of digital libraries have been put to the fore. However, these characteristics are further extended on the basis of various authors, and they may be summarised as follows:

- Digital libraries will also include digital materials that exist outside the physical and administrative bounds of any one digital library.
- Digital libraries will serve particular communities or constituencies, as traditional libraries do now, though those communities may be widely dispersed throughout the network.
- Digital libraries will ideally provide a coherent view of all of the information contained within a library, no matter its form or format
- Digital libraries will require both the skills of librarians and well as those of computer scientists to be viable.

  Digital library is an innovation from conventional library that very closely related to the use of technology. The core of a digital library is library materials that are not physical but digital.

Component of Digital Library

According to Arora (2008), the components required for a digital library can broadly be categorized into the following:

***Collection Infrastructure*:** The collection infrastructure typically consists of two components, i.e., metadata and digital objects. The metadata for digital objects contains bibliographic or index information. While digital objects are the primary documents that users are interested in accessing, it is metadata that facilitates their identification and location using a variety of search techniques. The digital library collection can be developed in three ways: (a) from born digital resources, (b) buying access to external digital collections, and (c) by converting existing print media into digital format (digitization).

***Digital Resource Organization*:** Classification schemes, Subject headings List, Thesaurus, and Catalogues are tools for resource organisation in traditional libraries, whereas addressing protocols, metadata scheme development, assigning metadata to digital objects, assigning digital object identifiers (DOl) to the digital objects, linking of objects with associated metadata for searching and browsing capabilities, organising the digital objects with metadata in the database, and building browsing capabilities are tools for resource organisation in digital libraries.

***Access Infrastructure*:** This includes the Search and Browsing Interfaces, which facilitate Simple Search and Advanced Search with Boolean queries, wild cards, phrase searches, and field-specific searches.

***Computer and Network Infrastructure*:** It includes hardware and software requirements. Servers, Nodes, Printers, Scanners, Digital Cameras, Sound Recorders, etc. are the hardware requirements, whereas System Software, Application Software, OCR Software, File Format Converter, Web Server, Database software, Antivirus, Networking software, Image Enhancing, Compressing software are software requirements. Digital Library Software viz. Dspace, E-Print, Greenstone, Fedora, Academic Research in the Netherlands Online (ARNO), CERN Document Server Software (CDSware), I-TOR, MyCoRe, Archimede, etc. is open source software.

***Intellectual Property Rights (IPR) and Digital Rights Management*:** The developers of digital libraries are obliged to get permission for the inclusion of copyrighted material in digital form or develop mechanisms for managing copyright that allow them to provide information without violating copyright. The technologies and processes used to describe digital content and identify the user are referred to as digital rights management (DRM). The primary purpose of DRM is to control access, use, and distribution, and thereby protect the interests of copyright holders in the online environment. The legal context for DRM is copyright law. The United States of America's (USA) copyright and the European Union's (EU) countries each have their own DRM systems derived from the World Intellectual Property Organization (WIPO) Copyright Treaty of 1996 (WCT). Most European countries have private copying provisions in their copyright laws that allow consumers to create copies of legitimately obtained content for their own use or that of family members (Rosenblatt, 2007).

***Digital Library Services*:** The major digital library services include: OPAC to web PAC; Digital Reference Service; Library Chat Rooms; Electronic Delivery Services; Virtual Library Tours; Ask-A-Librarian; Real Time Services; Bulletin Boards; Web-based User

Education Web Forms; Frequently Asked Questions (FAQ); Selective Dissemination of Information in Digital Libraries: Delivering Customized Contents, and RSS Feeds (Kude, 2013).

The Merits of Digital Library

Traditional libraries are limited by storage space, but digital libraries have the potential to store much more information simply because digital information requires very little physical space to contain it. As such, the cost of maintaining a digital library is much lower than that of a traditional library. Digital libraries have certain characteristics that make them different from traditional libraries. It has an expansive and accurate system of searching with large volumes of text, images, and audio-video resources. Digital libraries do not need physical space to build a collection, and it can be accessed from anywhere, at any time. The user can get his/her information on his own computer screen by using the Internet. Actually, it is a network of multimedia systems that provides fingertip access. Akpokurerie & Nina-Okpousung (2009) noted the following advantages of digital libraries:

- Ubiquity is one clear edge: a single electronic copy can be accessed from a great many locations, and to many simultaneous users. Copies can be delivered with electronic speed, and it may be possible to reformat the material to the convenience of the reader (e.g. in larger type size for those with limited sight, or in order to fit a smaller screen).

- Preservation: Digital information can be copied without error. As a result, preservation in a digital world does not depend on having a permanent object and keeping it under guard, but on the ability to make multiple copies, assuming that at least one will survive. The major risk to digital objects is usually not physical deterioration but technological obsolescence of the devices to read them.

- Storage: Digital storage also permits libraries to expand the range of material they can provide to their users. For example, both audio cassette tapes and vinyl records pose problems to libraries; neither will stand a large number of playing without deterioration.

- Digital material can also permit access to fragile photographs, video tapes, and to the new kinds of multimedia materials that are created only on computers and simply have no equivalent in any traditional format.

- Information retrieval: Digital libraries provide better retrieval and faster communication.

- Multiple accesses: User from many locations can access simple electronic information, can copy, print and preserve at his location or wherever he desires.

The Challenges of Digital Library

The problems and issues associated with digital information like "acceptability, accuracy, accountability, authenticity, readability, standardization, copyright, and pricing have been global (Moorthi and Karisiddappa, 2008). Khot & Chavan (2015) noted the following important problems and challenges associated with digital libraries, including:

- ***Information Accuracy*:** Most of the digital library projects implement Optical Character Recognition (O C R), which is only 95% accurate (Kumar, 2002). and it is true that near about 5% error may remain, raising the problem of information accuracy. Copying without distorting or losing information is difficult.

- ***Reliability of Information*:** It is observed that many times the information uploaded on various web sites, and social medias like blogs, twits, wikis, facebook etc. is not authentic, which is also available in digital formats.

- ***Compatibility of Hardware/Software*:** Use of digital collection for accessing and retrieving information will pose compatibility problem. Breath-taking innovations in the field of computer hardware and softwares, creates the problem of compatibility in the implementation of modern technology with the ICT infrastructure available in the library, although backward compatibility is ensured by manufacturing firm.

- ***IPR Issues*:** Protection of intellectual property rights is not fully feasible in digital media. Difficulties are still persisting regarding the copyright protection of the authors and publisher etc. of e-resources.

- ***Data Security*:** Data security is about keeping data safe. There are key threats to data stored in digital media, such as system crash, faulty disks, power failure, accidently deleting or overwriting the files, computer virus, hacking, natural disasters, and money making.

- ***Convenience of usage*:** Reading the information stored in the digital form is not as comfortable, fast and effective as reading a printed book, periodicals etc. It also puts more strain on the eyes.

- ***Needs Technology*:** In order to retrieve the information stored in digital media, use of the devices such as Computers, CD players, CD-ROM players, Disk drives etc. become the part and parcel of the information retrieval systems.

Mitigating Strategies to Digital Library Challenges

***Expand services*:** DL is added to expand the repertoire of the pre-existing library services or to complement existing ones. It is also creating new services for a new or changing market. DL has a seamless provision of services that are responsive to the needs and interests of the communities served. It is clear that the DL is maintaining an acceptable level of operational service. Effective authentication is the key to the delivery of personalised services. There are significant opportunities for products and services emerging from digital libraries to expand their markets beyond the boundaries of time and geographical location to achieve additional wide benefits.

***Promote Collections*:** Promoting the more widespread use of unique collections is one common aim of DL. The collection is one of the rarest and most expensive materials in the library. It includes collections created as digital (i.e., e-books, e-journals, e-databases) or digitised rare books, manuscripts, pictures, and fragile material. Digitization of collections depends on utility, rarity, and value. Because digitization is a time-consuming and expensive process, it should be performed by a professional who is aware of the collection's preservation and security needs. The digital collection has greater visibility and global accessibility with features for searching, browsing, and cross-reference linking.

***Knowledge management/content management*:** The digital library has a wider prospective working towards managing and accessing work practices, internal information assets, and intellectual assets, which are to improve the creativity of the people, the sharing of knowledge, and to achieve the objectives of an organization.

***Scholarly communication*:** Digital libraries support scholarly communication in the fields of education, research and development through e-journals, e-prints, e-books, data sets, e-learning, and e-transformation.

***Archiving and preservation*:** It allows archiving and preserving documents/ digital objects of education, Cultural, heritage, historical & special, museums and biodiversity for long term continued accessibility of the document contents through time and changing technology and reproduce a suitable facsimile of the original document.

***E-governance*:** Digital libraries offer improved access to government policies, plans, procedures, rules, and regulations so that the general population of the country can access important information on their desktop. It fulfils the needs of the right to information act. E-governance also helps to manage various activities related to the government and its people.

***Generate revenue*:** DL can sell the information services to the internal and external users of various organizations. It can provide consultancy services and advertising facilities for the creation of revenue.

Conclusion

The study concluded that digital is a library that stores information in digital form or fulfilment of information needs in digital form from external information sources to be distributed to users both registered as certain customers and the community in general. And also, that traditional library is limited by storage space but digital libraries have the potential to store much more information, simply because digital information requires very little physical space to contain it. As such, the cost of maintaining a digital library is much lower than that of a traditional library. Digital library has certain characteristics, which make them different from traditional library. It has expansive and accurate system of searching with large volumes of text, image and audio-video resources.

Recommendations

1. Governments should improve on the power supplies and the Internet Architecture Infrastructures in the Country, to enable Nigerians meet up with the developed Nations of the world technologically in the 21st century, therefore encourage the use of digital library.

2. Government should encourage libraries to collaborate with other cultural and scientific heritage institutions to provide rich and diverse digital resources that support education and research, tourism and the creative industries.3

3. Employer of librarians in digital library should consider those applicants who are computer literate first to avoid misguiding of the library users.

REFERENCES

Abdul Hameed, I. (2008). Digital libraries: A revolution in era of technology. *Informatics Magazine*, 25, 20-25.

Abu Lofah, A. (2005). Transition to the digital library in banking institutions: A case study of reality of Central Bank of Libya library. *Cyprarians journal*, Vol 5.

Akpokurerie, A. O. & Nina-Okpousung, M. (2019). Economic Significance of Digital Libraries: A Structured Review. *Information Impact: Journal of Information and Knowledge Management*, 10(2), 167-175

ALA (2010). *Definition of a Library*: General Definition. Available at https://libguides.ala.org/library-definition

Arora, J. (2008). Building Digital Libraries: An Overview. *DESIDOC Journal of Library & Information Technology*, 21(1), 3-24

Khot, N. & Chavan, Y. (2015). *Digital Libraries*: Challenges and Problems. In the proceedings of the Two Days National Seminar on Emerging Trends in Library Technology, At: Shri Shahaji Chatrapati Mahavidyalaya, Kolhapur.

Kude, N. (2013). Digital Library: Components and Management. *International Journal of Innovative Research & Development*, 2(12), 277-280.

Kumar, P. S. G. (2002). *A Student`s Manual of Library and Information Science*, Delhi: B. R. Publishing Corporation, 953-959.

MLIS (2016). *Library and information centre*: concept and role in society. Available at https://nios.ac.in/media/documents/SrSecLibrary

Moorthy, L. A. & Karisiddappa, C. R. (2008). *Transformation to virtual libraries*: Real or Virtual? Society for Information Science. University of Hyderabad, Annual Conference (17).

Purwono (2013). *Profesi pustakawan menghadapi tantangan perubahan*. Yogyakarta: Graha Ilmu.

Rosenblatt, B. (2007). DRM, law and technology: An American perspective. *Online Information Review*, 31(1), 73-84.

Trivedi, M. (2010). Digital Libraries: Functionality, Usability, and Accessibility. *Library Philosophy and Practice (e-journal).* 381.

Warr, H. & Hangsing, P. (2009). *Open source digital library software*: a literature review. In the proceedings of the National Seminar on "Preservation and Conservation of Information Resources in Knowledge Society: Issues, Challenges and Trends" held on March 3-4, at Manipur University, Canchipur, Imphal, Pages 238-258.

Wikipedia (2021). *Library*. Wikipedia, The Free Encyclopedia. Available at https://en.wikipedia.org/wiki/Library