Digital Libraries in Nigeria's New Age: Challenges and Prospects

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Abstract

The development of digital libraries has brought about changes in the mode of service delivery and the way library information is accessed and disseminated. However, their operation is influenced by various factors, including emerging technologies, user needs and organizational contexts. This paper, therefore, discussed the concepts of new age and digital libraries, and the requirements for digital library operations in the new age. It also examined the prospects of digital libraries which focused on the expected roles of libraries/librarians, the quality of information resources and services, access to information resources in digital format, users' satisfaction with digital library systems as well as digital preservation of local contents. The challenges affecting the smooth running of digital libraries such as poor funding, lack of digital facilities, inadequate number of librarians with digital technology skills, etc. were highlighted. Suggestions for improvement such as improved funding for libraries, provision of training opportunities for librarians in ICT, acquisition of state-of-the-art facilities, etc. were also provided to ameliorate the situation.

Keywords: Digital Libraries, New Age, Prospects, ICT, Challenges, Electronic Resources

Introduction

The emergence of digital libraries in Nigeria and beyond has brought about remarkable changes in the mode of service delivery and the way libraries operate. The development in digital technology has greatly modified the method of library services as library professionals can now carry out their assigned responsibilities with diligence and dispatch. According to Anuradha (2017), development in digital technology has influenced libraries' overall services for the better. The author maintained that libraries use digital technology to manage user's services, communication facilities, housekeeping operations, standardization and development of library activities. Presently, library professionals make use of new technologies to select, acquire, process, maintain and disseminate information resources and services to their users globally. Consequentially, the advent of digital libraries has transformed the information land scope (Hart, 2018). Digital libraries provide 24/7 access to vast repositories of knowledge, bridging geographical economic divides (kiranKiran, 2020).

In this new age, digital libraries have begun to improve the quality of research and services through the provision of online bibliographic information of library collections. The library now enhances scholarship, research and lifelong learning through the establishment of permanent access to shared digital archival collections and advances the use and usability of a globally distributed network of library resources (Madhumay, Gaurav & Ravi, 2013). Acquiring and providing access to electronic knowledge resources require library professionals to change their roles from traditional librarians to information scientists by learning and applying new skills to understand the evolving technologies to manage and provide quality on-line information services to the patrons of the knowledge society (Thamaraiselvi, 2013). In this regard, librarians are expected to be thorough-bred information professionals who should be capable of organizing, managing and presenting digital information to users. This, therefore, calls for skills acquisition in ICT and other related fields. Digital libraries in Nigeria have come a long way, transforming the way information is accessed and disseminated.

An overview of the evolution and current state:

Early Development

- The growth of digital libraries in Nigeria accelerated in the 1990s with the World Bank's intervention, leading to the automation of library operations in universities.
- The emergence of digital library services in Northwest Nigeria marked a significant milestone in the country's digital library landscape. (Gani and Sani , 2014)

Current State

- Digital libraries in Nigeria offer various services, including online catalogs, digital reference, and access to e-books and digital media.

- Many academic libraries in Nigeria have adopted digital library technologies, improving access to information for students and researchers.

- However, some libraries still lack the requisite skills and infrastructure to fully leverage digital technologies.(Anasi 2012, Okeyi and Mayowa – Adebara 2020)

The establishment and maintenance of digital libraries is no doubt being faced with a lot of challenges. Notwithstanding, the challenges to the actualization of the potentials of a digital library, there is every indication that its development has provided libraries with good ideas of what libraries in the new age should look like. This paper, therefore, provided an insight into the requirements for a digital library, its challenges, as well as the prospects for libraries/librarians, research, scholars and users.

Digital Library

Digital libraries evolved from traditional libraries, integrating technology to store, organize, and disseminate digital content (Chowdhury & Chowdhury, 2017). They comprises digital repositioned databases, and online archives.

The definition of digital library, as has been stated in many literature, evolves as research progresses. In this case, there could be as many definitions for digital libraries as possible. According to Kumar and Kumar (2019), a digital library can be considered as a modern type of information retrieval system. It is usually referred to as a virtual library, library without walls, electronic library and institutional repository among others. Trivedi (2010) defined a digital library as a library in which collections are stored in digital formats (as opposed to print, microform or other media) and accessible through the use of a computer. In other words, a digital library could be said to be the same with as a traditional library, but with a slight difference of the former having its collection in electronic media format. Li and Furht (2014) are of the view that digital libraries are systems that combine the machinery of digital computing storage and communication, in which the content and software needed to produce, emulate and extend that the services of collecting, cataloguing, finding and disseminating information offered by traditional libraries based on the available and other materials. Digital libraries, therefore, are libraries with electronic databases of texts, images, audio, video etc. which are accessible through the use of a computer.

The digital library as a collection of information resources in electronic format can be used to organize, search and retrieve the contents. In a digital library system, the digital contents may be stored and accessed locally and internationally through computer networks (Fabunmi,

Paris & Febunmi cited in Kumar & Kumar, 2019). With the emergence of digital libraries globally, most routine operations of libraries are now handled using computers and other ICT facilities to enhance easy storage and retrieval of documents. The digital library has a collection of resources that are either born-digital or digitized resources that pass through the process of transformation from hard to soft copies. It also includes the digitization of locally produced information resources and the establishment of institution repositories, to provide access to the scholarly materials produced by professional bodies (Gani & Magoi, 2014). (Ash et al, 2018)

The benefits of digital libraries cannot be overemphasized as, they improved information literacy skills fostering critical thinking. (American Library Association, 2020); cost effectiveness, reducing costs associated with physical storage and maintenance. (Chowdhury and Chowdhury 2017); Environmental suitability by drastically reducing paper. (JISC, 2019); and enhanced collaboration among researchers, scholars, and students (Hart, 2018). Okeyi and Mayowa-Adebara (2020) citing Anasi (2012) enumerated the benefits of digital libraries to include; Digital libraries encourage authentic inquiry learning by providing Students access to online resources and such resources permit students to enjoy a flexible Learning arrangement which allows them to pursue their own interests within the bounds of the curriculum, reduction of digital divide, and promotion of collaboration, cooperation, and communication in a networked environment (Anasi 2012).

Furthermore, Anasi (2012). Citing ikpaahinde (2006). enumerated the benefits of digital libraries in higher education to include; free flow of information resources, better access to information resources, maximization of information resources, faster provision of information and literature support to users, avoidance of duplication of effort and reciprocal exchange of local publications.

New Age

The concept 'new age' has been described in various ways. According to Collins English Dictionary (2019), new age is used to describe spiritual or non-scientific activities such as meditation, astrology, and alternative medicine, or people who are connected with such activities. Webster's New World College Dictionary (2010) defined the new age as a contemporary cultural movement characterized by a concern with spiritual consciousness and variously combining belief in reincarnation and astrology with such practices as meditation, vegetarianism and holistic medicine. Eze as cited in Uzoeto (2021) was quoted as saying, "this new age in which we now live is a revolutionary period whose impact is far surpassing those of the agricultural and industrial evolutions" (p. 22). The definitions above, are all pointing to the fact that the new age pertains to a contemporary society characterized by new desires or thoughts for discovery. In library parlance, the concept 'new age' is interchangeably used as digital age, information age, computer age, internet age, etc. New age is, therefore, a period of time characterized by the ability of individuals to transmit knowledge or information freely and to

have instant access to such knowledge without any difficulty. This age epitomizes the changes brought about by technological advancement and globalization that occurred in the 20th century.

The new age has brought about the notion of digital library, which is. Digital library is a non-traditional library whose resources are stored in electronic media formats and accessed electronically. In this age, the library is more than a physical space as its services extend beyond the physical library space to a virtual environment where, in the words of Stewart (2010) traditional ownership of print resources is supplemented with access to electronic resources. Consequently, information professionals now have to work in an atmosphere where they would have to deal with both the print and electronic resources. Kaur and Sharda as cited in Uzoeto (2021) stated that librarians are playing the role of electronic middlemen. Putman (2005) before now had maintained that librarians in the hi-tech era are specialists in using sophisticated online search engines, and are critical about the quality of information sources, and have gone into innovative interaction with the public to explore new meanings that will suit the public desires.

Requirements for Digital Libraries in New Age

The planning, development, implementation and management of digital libraries are mainly based on three requirements namely; human skills, hardware and software requirements. However, there may be other requirements which could be useful in developing and managing digital library projects and services.

Skills Requirements: Librarians/library staff require computer/ICT skills and competencies to effectively operate in a digital library environment. The acquisition of digital skills and knowledge at this point has become very important in order to understand the challenges of managing digital library projects. This, therefore, underscores the need for training of librarians in information technologies and networking. There is also a need for skills in managing web servers, web publishing, web access and information retrieval, conversion processes, data management systems and multimedia systems. Librarians should be exposed to project management skills as this would entail the knowledge of selling and justifying such projects to management. Librarians must know how to write digital library project proposals, not only for donor funding but also for funding coming from their own institutions (Chiware, 2007). Effective implementation and management of digital libraries by librarians require skills that can enable them to know and determine hardware capacity for digital collections. Also of paramount importance for librarians are the skills and competencies required to access open open-source software for libraries and adapt it to their local environments.

Hardware Requirements: Computers are important factors in the development and implementation of digital libraries. A digital library is a network system which makes use of a computer and its facilities. Madhumay, Gaurav and Ravi (2013) asserted that a digital library requires a computer acting as a server and a network as well as a basic hardware requirement. Digital libraries also require other hardware technologies such as computer monitors, laser printers, and floppy disk drives, digital cameras with webcam facilities for capturing images,

internal modern and scanners which can be used to scan and convert print resources into electronic format. Telecommunication cables and wires are also vital components required for the effective functioning of a digital library.

Software Requirements: A software is an essential component of the computer without which the computer cannot carry out any task. Therefore, the development and implementation of a digital library require a variety of software to run a system, and store, manage, access and retrieve its resources. According to Madhumay, Gaurav and Ravi (2013) developing a digital library requires a high-capacity operating system with the capability of installing and operating different software needed. The operating systems considered suitable for the development of a digital library include server, windows, and Linus among others. Web servers are Warperver 2000, OpenDlip, Microsoft SQL server, etc. Which can be used to save and maintain documents/files and also link users to the services of the library (Madhumay, Gaurav & Ravi, 2013). The type of software to be used for the digital library implementation may be developed by libraries or purchased from the market. In doing so, the two options should be thoroughly weighed to determine their advantages and disadvantages.

Challenges of Digital Libraries

1) Funding Issues: The successful planning, development and execution of any laudable project be it a digital library or any other project is heavily dependent on the availability of funds and the level of financial commitment towards such project by the management. The establishment and management of digital libraries are capital-intensive. Funds are required to procure digital facilities, take care of the installation of such facilities, and the overall maintenance of the digital library. This, unfortunately, is not usually the case in libraries in many developing countries. (Johnson, 2019).

2) Lack of Digital Facilities: Lack of digital facilities is one of the major challenges hindering the creation of digital libraries in Nigeria. According to Gbaje (2007) building and sustaining a digital/virtual library requires the proper technological infrastructure which includes telecommunication, servers, application platforms and software applications. This, when not available, adversely affects the creation and running of a digital library.

3) Inadequate Number of Librarians with Digital Technology Skills: To design, develop, implement and manage any digital project in the library requires librarians with skills in digital technology. For this to be realized, librarians must have some degree of expertise in the digitization process, web publishing, web access and information retrieval, database management systems, multimedia systems and managing web servers. More importantly, librarians must be able to know how to prepare digital library project proposals. Regrettably, these personnel may not be found in Nigerian libraries today (Nwosu and Obiano, 2021).

4) Unsteady Power Supply: Many libraries rely on electricity to power their computers and other telecommunication facilities, and where the supply of this power becomes erratic, it means

that digital library operations would be affected. Madhumay, Gaurav and Ravi (2013) stated that most libraries experience epileptic power supply and the cost of running generation plants is exorbitant. This according to the authors hampers the effective functioning of digital libraries (Ogunleye, 2020).

5) Problem Associated with Digitization: Digitization is a process of converting analogue materials, locally generated knowledge, etc. from their traditional forms into electronic media formats. Most library materials have become too old hence digitizing such materials becomes a difficult task. In some cases, when such materials are digitized, the quality of the digital materials is usually affected.

6) Digital divide: Inequitable access to technology and internet connectivity persist (kiranKiran, 2020), According to ITU, (2022). 37% of the global population lack internet access. This may be as a result of social socioeconomic status, income, education, occupation, or geographical location. (Adeyinka, 2015)

Other challenges include digital preservation strategies/ policies to ensure long term conservation of digital materials Okella-Obura (2017); Emerging Technologies such as AI, block chain, and IoT, present both opportunities and challenges for digital libraries (Tapscott & Tapscott, 2016; Kumar et al., 2019); and cyber security threats as they can compromise the integrity of digital collection and put user's personal data at risk (Adeyemi, 2020)

7) Copyright and licensing Issues: Digital libraries faces copyright and licensing challenges (Hart, 2018). Copyright issues includes; Infringement, Fair Use and licensing issues such as E-book and database licensing and open open-access publication management.

Prospects of Digital Libraries

Before the advent of digital libraries, libraries were mainly confined to the traditional roles of acquiring, organizing and providing services to users within their vicinity. However, with the evolution of digital libraries, librarians now employ various methods of providing resources and services beyond the library's physical boundaries, and users are taking advantage of this great innovation in the library to access quality information resources and services from anywhere and at any time. This is an indication of a good omen for libraries/librarians and users. Hence, the digital library offers the following prospects for libraries in Nigeria.

1) Expected Roles of Libraries/Librarians: Before now, librarians were custodians of library collection and environment, as they could only provide services to users within the locality. All these have changed as librarians are beginning to experience a paradigm shift in their professional responsibilities. This is transforming them from armchair librarians to consummate information professionals capable of providing information services to users in different locations. In this new age, libraries are being fully automated making it possible for librarians to be involved in the design and implementation of any digital library programmes. With the availability of digital facilities, librarians/information professionals will be able to delve into

contemporary issues such as globalization, ethnic conflicts, gender issues, HIV/AIDS, political upheavals, war, divorce, birth control etc., and proffer reasonable solutions to all of them. They will be able to handle all these because of the available information and digital facilities at their disposal (Kaur, 2015). In this new age also, librarians will begin to consider the need to teach and guide library users on how to use digital materials, such as OPAC (Online Public Access Catalogue) of the library to search and retrieve online information resources.

2) Quality of Information Resources and Services: With the advent of digital libraries the quality of information resources and services rendered to users will be greatly improved. Online information resources and services are the most vital ingredients of a digital library. These information resources and services will be made available to users to enable them to conduct research within and outside the library anywhere and anytime as they need. Online reference services in a digital library system will be used to provide quick responses to online reference queries from library users. This, no doubt, will go a long way in helping the users obtain with dispatch the required quality information resources from the Internet.

3) Global Access to Information Resources in Digital Format: In a digital library environment, library materials in analogue form such as books, journals, manuscripts, photographs, projects, theses, dissertations etc. are digitized, thus enhancing their accessibility globally and overcoming physical limitation (Kiran, 2020). With this development, access to information will no longer be restricted to the local contents of individual libraries. This will have a positive impact on researchers and consumers of research information as well as change the situation of libraries and users for the better.

4) Users' Satisfaction with Digital Library System: At present, the user of digital libraries have increased tremendously to support users in their research activities. A variety of digital resources are being made available for all types of library users. This will positively change users' academic lifestyles and their attitude towards research. One of the advantages of a digital library is its one-step search interface which enables the user to search many information repositories from a single search interface. This will reduce the time and effort users spend searching for information using conventional search engines, thus leading to user satisfaction with the digital library system.

5) Digital Preservation of Local Contents: Digital preservation of local contents in the library means the conservation of locally generated knowledge by converting them from their print forms into electronic formats. Local contents in libraries are scholarly research materials such as books, project reports, theses and dissertations, practical research records, inaugural lecture materials, journal articles, conference papers and proceedings, inventions, working reports, workshop reports, and technical reports among others (Uzoegbu, 2012). With the establishment of digital libraries, this locally generated knowledge will be digitally preserved to ensure that it lasts in perpetuity. The local content database will be designed/created by digital librarians to

help researcher's access research information from local resources such as project reports, theses and dissertations from specific subject areas, research reports, articles, etc.

Conclusion

The creation of digital libraries around the globe, no doubt, has brought remarkable technological developments in libraries and allied institutions. This could be seen from the mode of service delivery which is CIT-driven. Libraries are now offering online services to individuals irrespective of their locations and also providing easy access to such services. It is, therefore, expected that librarians as information professionals should begin to change their roles from the traditional method to a non-conventional one driven by information and communication technology. In this regard, librarians are required to have some degree of expertise in ICT to be able to manage a digital library and its projects. In this new age, librarians must be prepared to face new challenges and find solutions of to how to overcome them. The management on their part should help to tackle some of the challenges hampering the full realization of digital library projects. Notwithstanding the challenges to the development and management of digital libraries, there is every indication that it has provided librarians/information professionals with a vision of what libraries should look like in this new age.

Suggestions

Given the challenges bedeviling the creation and management of digital libraries, the following suggestions are provided to ameliorate the situation:

Q1) the issue of funding for libraries should be prioritized by the authorities concerned. This would help to ensure the successful planning and execution of any digital projects embarked upon by libraries. Besides, developing innovative funding model, such as, public – private partnerships or crowd funding, can help secure funding for development and maintenance of digital libraries in Nigeria. (Johnson, 2019).

2) Libraries should procure more state-of-the-art digital facilities that complies with global standards to provide effective and efficient digital services. This will be realized through improved funding.AI-powered digital libraries require additional infrastructure to support emerging technologies for flexibility and adaptability to changing technological landscapes.

3) Training of library personnel in ICT and other related areas should be made compulsory to enable them to have some degree of expertise in the digitization process, web publishing, information storage and retrieval, database management systems, hardware and software maintenance, etc.Therefore, Librarians need training and development opportunities to learn about emerging technologies (lankes, 2018) and encouraging collaboration with technology experts to stay up-to-date trends (Borgan 2019)

4) Libraries should stop relying solely on electricity investing in alternative power sources such as solar energy or generators for digital libraries to remain operational during power outages.

5) In order to bridge the digital divide, infrastructure development should be put in place to expanding broadband connectivity, educate users and librarians on digital skills; provide low low-cost devices, address socioeconomic disparities through inclusive policies and implement disability disability-friendly mobile networks or satellite internet , can help improve access to digital libraries in rural areas.(Adeyinka,2015).

6) An Artificial Intelligence Powered Digital library should be put in place to facilitate search functionality and personalized learning. (Liu, 2020). Developing policies and guidelines for it use and establishing clear protocols for managing and maintenance of emerging technologies.(Gaintz and Reinsel, 2018)

7) Clear policies and guidelines should be developed for copyright and licensing compliance and educating users about requirements while continuously monitoring and updating those policies and procedures. Reforming copyright and Intellectual property laws to make them flexible and user-friendly can help increase access to digital content in Nigeria.(Smith, 2017).National digital policies should be put in place to ensure the long-term conservation of digital materials.(Okella-Obura,2017)

8). Implementing robust cyber security measures, such as firewalls, antivirus software, and encryption, can help protect digital libraries from Cyber threats. Adeyemi, (2020).

Reforming copyright and intellectual property laws to make them more flexible and user-friendly can help increase access to digital content in Nigeria. (Smith, 2017).

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