



SUSTAINING VIRTUAL LIBRARY ARCHIVAL MANAGEMENT SYSTEM IN NIGERIA: CHALLENGES AND PROSPECTS

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ARTICLE



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ABSTRACT

Over the years, the use of physical structures for library has been the norm globally. In recent times, the world is moving from physical library system towards virtual library system. There is a need to sustain the Virtual Library Archival Management system in order to secure the future. The research methodology approach used in this paper is doctrinal. The paper examined the challenges of sustaining a virtual library for the sake of the future and the prospects of sustaining same in view of global cybersecurity challenges. The paper ends with recommendations towards maintaining effective virtual library archival system that can be handed down from one generation to another.

Keywords: Archive, Challenges, Library, Prospects, Virtual.

1.0 Introduction

As oxygen is a necessity for human survival so is the library to research activities in our daily lives. Libraries play three key roles of educational, cultural and informational.¹ Uzuegbu and Mc Albert defined digital library as an organization that provides the resources including the specialized staff to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of and ensure the persistence over time of collections of digital works, so they are readily available for use by a defined community or set of communities.² Despite the sustenance of the physical library setting, virtual library system has been a welcome development in library administration in recent times. However, there is the need to sustain the virtual library archival management system in view of threats to cybersecurity and a number of challenges in the virtual world. The concern of this writer is borne out of the need to preserve both the existing physical library and the growing world of virtual library. This paper will examine the prospects of a growing virtual library management system in a developing country like Nigeria and the challenges of preserving our heritage as a nation

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¹Ogunsola L. A. and Okusaga T. O., (2006) Developing Countries and the Need for Virtual Libraries: Problems and Prospects. *Journal of Social Sciences* Vol. 13 (3) 221

²Uzuegbu, C.P & MC Albert (2012). Digital Librarians and the Challenges of Open Access to Knowledge: The Michael Okpara University of Agriculture Library Experience. *Library Philosophy & Practice*. Available at <https://unilib.unl.edu/LPP/> Accessed on 12 June 2021.

using the virtual library platform. The paper will end with recommendations for the sustenance of virtual library management system in view of current global challenges in the technological world.

2.0 The Concept of Virtual Library Management System

The role of the library in an academic institution is to be an integral and active part of the educational process in supporting teaching, learning and research by providing timely access to quality, authentic and relevant information resources and services.³The rapid potential of what can be achieved in information generation, acquisition, collection, processing, display and dissemination was very exciting and intoxicating, and resulted in futuristic dreams for a paperless world of information distribution.⁴The time gained from the era of storing information through books and other materials in the past has improved greatly when compared to the time gained in collating online materials for the virtual library. In essence, the time gained should be preserved through adequate security of the virtual library management system.

The concept of virtual library management system is a time saver with improved end- user's accessibility to resource materials. One of the scholars who coined the concept of virtual libraries was Nancy Schiller when she defined it in 1992 as 'libraries in which computer and telecommunication technologies make access to a wide range of information resources possible'.⁵ It is often referred to as 'digital library' or 'electronic library', 'community network', or simply, 'library without wall'.⁶ It is called 'virtual' because it is in a good electronic wide area networked library where the user enjoys the euphoria of being able to access collections in distant libraries, without physical movement outside the walls of library. In the words of Kuny and Cleveland, librarians may discover that "libraries-without-walls" are actually only libraries with new walls technologically bounded, legally restricted, and administratively hamstrung.⁷ The "digital library" may be equally impenetrable and as profoundly limiting to their patrons as the physical library which technopundits would suggest digital collections are intended to replace.⁸Gbadamosi is of the view that a basic feature of virtual library is that it emphasizes access to collections which are held on the belief that the whole global information superhighway is a human resource and heritage which all who have the necessary infrastructural capabilities can tap for their own development.⁹

An aspect of modern virtual library management system is cloud computing which has resulted in the concept of cloud library. Cloud computing can be defined as 'a type of parallel and distributed system consisting of a collection of inter-connected and virtualized computers that are dynamically

³Uwakwe, C., Shidi, H., and Abari, G. M. (2016) Perception of Library and Information Science Students on the Use of Virtual Library at the Benue State University Library. *Journal of Advances in Library and Information Science*, 53(1), 89-95.

⁴*Ibid.* (n 2)

⁵ Schiller, Nancy (1992) The Emerging Virtual Library. SPEC Kit 186, ERIC No. ED 356772

⁶*Ibid.*

⁷Kuny T. and Cleveland G., (1998) Digital Libraries: Myths and Challenges. Global Village Research available at <https://journals.sagepub.com>. Access 30 June, 2021, p. 1

⁸*Ibid.*

⁹Gbadamosi B. O., (2008) Virtual Library Development: Concept, Prospects and Challenges in Colleges of Education in Nigeria. *COCLIN Journal of Library and Information Science* Vol. 4 (1) p. 35

provisioned, and presented as one or more unified computing resources based on service – level agreements established through negotiation between the service provider and consumers.¹⁰

In this respect, Cloud libraries include digital data of various libraries, data maintenance and support rests with the cloud space service provider. Digital libraries naturally should be connected to cloud computing to obtain mutual benefits and enhance both perspectives. In this model, storage resources are provided on demand and are paid according to consumption.¹¹ A major advantage of Cloud library is that it transcends geographical limitations as it could be accessed from any part of the globe once a user is equipped with the right login details.

Some of the factors responsible for the increase in the use of digital library are the need for easier and faster access to library resources through the use of electronic devices such as desktops, laptops, inadequate funding of physical libraries, information explosion in the cyberspace, and the need to store information in the virtual world for long term access devoid of physical attacks.¹²

3.0 A Brief Exposition of the Concept of Archival Management System

Archive is a main asset of institution as the memory center in accommodating all the important information.¹³ In other words, an archive is a place where people can go to gather first-hand facts, data, and evidence from letters, reports, notes, memos, court judgments, photographs, and other primary sources. Archives are created and accepted manuscripts or records by government, private and individual organizations concerning an event for a certain purpose in single or group stack and stored systematically to facilitate quick and easy retrieval.¹⁴ Archives are collections of documents or 'records' which have been selected for permanent preservation because of their value as evidence or as a source for historical or other research.¹⁵ Personal archives are simply a collection of material that records important events from your family's history. Both government and private institutions require the existence of data to facilitate the flow of information. Information helps the institutions in decision making. The need for information is further processed in the archive Institutions which are under obligation to carry out archive management according to the genuine procedure. One of the advantages of archive management is the proper protection of past records relating to our

¹⁰Calheiros, Rodrigo N. *et al* (2010). CloudSim: a toolkit for modelling and simulation of Cloud Computing Environments and Evaluation of Resource provisioning Algorithms, Practice and Experience (SPE), Volume 41, No 1, Pg 23-50, Downloaded on (26/06/2021): <http://beloglazov.info/papers/2011-spe-cloudsim.pdf>, DOI :10.1002/spe.995

¹¹ Sosa-Sosa, Victor Jesús; Hernandez-Ramirez, Emigdio M. (2012) A File Storage Service on a Cloud Computing Environment for Digital Libraries, Information Technology And Libraries, Accessed on 26 June 2021 via <http://ejournals.bc.edu/ojs/index.php/ital/article/view/1844> , DOI: 10.6017/ital.v3i1i4.1844

¹²Namita B.Khot and Shri.Yashwant R. Chavan, Digital Libraries: Challenges and Problems. Paper presented at the Two Days Seminar on Emerging Trends in Digital Libraries. Conference Proceedings of August 2015. Also available at https://www.researchgate.net/publication/282183434_digital_libraries_challenges_and_problems. Accessed on 15 July, 2021

¹³ Durinda Puspasari, et al., Effectiveness of Archive Management on Record System in National Zakat Agency in Indonesia. *Advances in Social Science, Education and Humanities Research*, Volume 222, p. 1

¹⁴ Durinda, *Ibid*. p. 2

¹⁵ Archive Principles and Practice: An Introduction to Archives for Non-archivists. A publication of UK National Archives (2016) p. 4

human existence. Archives also contain day to day records of vital societal events. Every state institution is required to manage archives as a center where important documents are collected and empowered. Archives can be analogue and digital. Archive collections are usually unique, and that is why it is so important to take adequate care of them. Data collected for archival purposes need to be carefully stored and managed to protect and preserve them for current and future use. Maintenance of archives requires adequate funding and experienced heritage professionals such as archivists to sustain. It is important to state that archives are useful in conflict resolution through retrieval of true history of past events where the present is to be twisted. Proper archive management require restricted access to destroyers such as fire, water, thieves, and a host of others.

4.0 The Scope of Virtual Library Management System in Nigeria

The need to manage a Nigerian documentary heritage is very imperative at this period of globalization and electronic revolution. Archives ensure that appraisal, processing, and description should be documented and made available to researchers. In addition, the archival management system adopted by a nation, government or an organisation must be user centered and embrace opportunities to use technology to share collections, interact with users, and improved for future use. Theimer opined that archivists should be active in their communities rather than passive, engaged with the interpretation of their collections rather than neutral custodians, and serve as effective advocates for their archival programme.¹⁶

The goal of the virtual library information system is to provide good quality access to a wide range and deep information about our heritage, and we are committed to use advanced information architecture and technology to achieve it. User focus is fundamental. Virtual library management system in Nigeria's aim is to meet the expectations of Nigerians across our vast geographical territory, with its widely dispersed ethnic nationalities, by offering multichannel services, reaching people where they live through virtual reference, digital content, and digitization on demand. Virtual library management system in Nigeria will develop innovative programs to promote and interpret our heritage and foster lifelong learning.

In furtherance of the above, Markus opined that the main issue presently in the digital age is not technologies usage in our university libraries system, but management of these technologies to achieve the real goal of the parent institutions.¹⁷This is because management is a dynamic and not a static process.¹⁸ Therefore, use of virtual libraries enables the user to copy by either down loading or on-line/off-line printing from a master file.¹⁹However, for virtual library management system to be sustained in Nigeria, adequate funding and training of library personnel are critical factors for sustainability. The model digital library for Nigeria must basically be a network system which makes use of existing network technology. Digital library requires computers acting as a server and a network, as a basic hardware requirement. Along with computer system, cables are essential

¹⁶Theimer K., What is the Meaning of Archives 2.0? *The American Archivist* Spring/Summer 2011, Vol. 74, No. 1.P. 60.

¹⁷ Markus G., Management of University Libraries in Digital Environment: Problems and Prospects in Taraba State University, Jalingo, Nigeria. *Research Journal of Library and Information Science*, Volume 4, Issue 1, 2020, p. 1.

¹⁸*Ibid.*

¹⁹*Ibid.* Khot (n 5)

connectors of the library's infrastructure.²⁰ These are the critical elements without which the digital library could not function. Electrical wiring and telecommunication cables are fundamental components necessary to connect the user – computers (which have no wireless facilities) in the local network. The digital library also require printers, digital cameras or system with webcam facility for capturing images as well as scanners and digitizing equipment for conversion of content from physical to digital form.²¹

5.0 Challenges of Archival Virtual Library Management system in Nigeria

5.1 Social Conflict and Wars as Threats to Virtual Library Management System

Recent trends in Nigeria where security of lives and properties are being endangered are major threat to effective library management system and sustainability of virtual library in Nigeria. The recent conflict between Israel and Palestine in May 2021 is an eye – opener because the use of bombs, missiles and other dangerous weapons were engaged in the conflict. Nigeria at the moment is currently undergoing high level of insurgency and destructive terrorist activities in different parts of the country. The resultant effect of this social conflict is that public infrastructure is endangered. Specifically, a situation where a library is bombed or destroyed by terrorist activities endangers the information and other resources stored in the library. There is a need to devise other alternative storage and retrieval system in order to sustain the continuous use of the virtual library management and its archival operations.

5.2 Problem of Cyberattacks and Insecurity

Shank posited that disruptive innovations (e.g., new computing technologies) now emerge with even faster speed and power to transform the academic library and the role of the academic librarian. This is the central challenge academic librarians confront as they examine their current and future roles in higher education. Malwares and other dangerous viruses are being manufactured to threaten storage and retrieval of resources online.

5.3 The Negative Impact of Social Media on the Reading Public

In recent times, there seems to be a geometric increase in the number of people engaged by the different social media platforms when compared to the number of people interested in the use of the library. Although, this does not reduce the impact of library on national development, the increased use of social media discourages the potential for further use of the virtual library system in Nigeria. The increased attention given social media cumulatively makes the use of virtual library uninteresting to the information – seeking world.²²

5.4 Problem of Inadequate Funding

²⁰Madhumay S., Gaurav K. J., & Ravi R., (2013) Evolution of Digital Libraries, Problems and Prospects, www.ijltemas.in Volume II, Issue III, p. 13

²¹*Ibid.*

²² Muhammad Rafiq, Dr-Muhammad Tufail Khan and Dr Muhammad Arif (2020) on The Effects of Social Media on Reading Habits available in <https://www.researchgate.net/publication/338658981> The Effects of Social Media on Reading Habits the Authors studied the on the effect of Social Media on Reading Habits

Technological acquisitions and innovations come at very huge costs to managers of academic Institutions and other allied organisations. Therefore, financial commitments is a necessary tool for sustaining virtual library system in order to benefit maximally from its end – product. Funding is critical and has remained a challenge to maintaining a modern library. Ogunsola and Okusaga opined that Library budget will now include provisions for servers, Internet access, wireless campus-wide network, structured cabling systems design of the campus, Intranet design and web site design to interface with the outside world. In addition to the library automation systems (hardware and software) that will make everything work. The management of developing countries' universities such as the National Universities Commission (NUC) as it is the case with Nigeria has a full task in planning and implementing such a system with the assistance of knowledgeable and proficient IT companies.

5.5 Problem of Technical Know – how and Inadequate Training of end–users

According to Kuny and Cleveland, the development of an infrastructure for the networked resource discovery and retrieval of highly distributed, autonomously created, and diverse electronic information is required.²³ The technical know – how of end – users is critical to sustainable virtual library management system. This is because new softwares and hardwares evolve in the global world periodically. The learning pace in Nigeria cannot be said to cope with the global speed in the harvest of modern technologies and technological revolution. This digital infrastructure will need to be managed by professionals who understand information needs and uses. Trained personnel in the use of Information and Communication Technology tools and skills are necessary in the sustenance of virtual library management system in Nigeria.

5.6 Problem of Data Distortion and Restrictive Access to the Digital World

According to Kumar, “Most of the digital library projects implement Optical Character Recognition (OCR), which is only 95% accurate” and it is true that about 5 % error may remain, raising the problem of information accuracy.²⁴ Copying without distorting or losing information is difficult.²⁵ The challenge of data distortion requires proper data management expertise. The challenges of future copyright and licensing regimes, as well as prohibitive costs for digitization and support of technical infrastructure are part of the evolving bottlenecks to the sustenance of digital library system.

The digital library has the potential for universal usage subject to some restrictive terms and conditions. However, equitable access is currently limited due to the fact that the Internet is not as ubiquitous as the computing press would have us believe. There are relatively few connections outside the more populated centers, the costs of access can remain high, and for the vast majority of the world's population in developing countries, having widespread Internet access may be the equivalent of walking on the moon. Furthermore, the connections that do exist for most people are slow but can be made better with better technological innovations and subscription. For a digital library to provide equitable access to information, it is imperative that the same potential for

²³ Ibid. Kuny and Cleveland (n 7)

²⁴ Kumar, P.S.G. (2002) A Student`s Manual of Library and Information Science, Delhi: B. R. Publishing Corporation, 953-59.

²⁵ Ibid.

universal availability is sustained, maintained and expanded. These challenges do not erode the need for capacity building in usage and expansion.

5.7 Issues of Copyright Infringement

Issues such as mass copyright violations would evolve and should be tackled in order to encourage digital scholarship and accuracy of generated information. On the issue of copyright, Ringeera noted that libraries do not own the copyright of the material they hold and as such cannot freely digitize and provide access to the copyrighted materials in their collections. In the same vein, most of the library employees do not have adequate knowledge of ICT.²⁶ Other problems highlighted by Ringeera in this respect, are attitude of users towards digitization, connectivity problems, lack of awareness of modern trends in digitization and system design issues, management policies and poor knowledge of the use of information systems. Suqri opined that information privacy, copyrights and information security are some of the challenging issues faced by the libraries in the digital age.²⁷ This writer is of the view that copyright violation is a threat to the management of digital library resources for research and development.

6.0 Prospects of Effective Virtual Library Archival System in Nigeria

Sustaining virtual library management system will expose our reading public and especially students to international best practices in terms of knowledge acquisition and preservation. It enhances research skills in terms of accurate data collation and data analysis due to the avalanche of information available per time and real time. This will assist the next generation of learner to work with history and develop our world better than they met it.

Secondly, sustaining virtual library management system will preserve our cultural heritage and enrich our historical values. This is because our historical data and heritage will be preserved virtually and will be made accessible from one generation to another. It will help in guiding our societal values and set the right precedents in view of geometric erosion of our cultural values due to the infiltration of our value system by western culture and other vices such as cybercrimes, phishing, and money laundering among others.

In furtherance of the above, when compared to physical libraries, digital libraries have higher storage capacity and require less physical space for the storage of digital contents. The cost of setting up and maintaining a digital library is less than that of a traditional library on account of the fact that lot of money is involved in erecting building, buying books and payment of staff emoluments.²⁸ This is significant in view of the increasing student population without corresponding support facilities such as classroom and other physical facilities. In essence, virtual library networking will help capture access to library use from the geometric student population explosion across various institutions.

²⁶Ringeera, L.K (2007) A Survey of the Challenges facing the use of Digital Libraries in Kenya. Available from e – repository. Uonbi.ac.ke > Accessed on 13 June, 2021

²⁷Suqri R., M.A (2014) Digital age: challenge for Libraries. Accessed on <https://www.Researchgate.net/publications> Accessed on 11 May, 2021.

²⁸Madhumay S., Gaurav K. J., & Ravi R., (2013) Evolution of Digital Libraries, Problems and Prospects, *www.ijltemas.in* Volume II, Issue III, p. 10

In addition, evolution of cloud library is the new trend which helps to secure our library resources for accurate and easier retrieval beyond the realm of physical assemblage of hardware materials. Nigeria needs this innovation in view of recent insecurity challenges bedeviling the nation at the moment. In situations of terrorist attacks by Boko Haram or Islamic State for West Africa (ISWAP) and other terrorist organisations on any of our library facilities, cloud computing will enable us to properly archive and retrieve our data despite the physical loss.

According to Gbadamosi, implementation of virtual library project can provide an alternative system which is relatively cost-effective and cheap to maintain and which provides access to current and latest materials.²⁹ He further opined that this type of electronic library resources can be shared by all colleges at a fraction of the total cost required to support all physical libraries within the colleges of education system. Digital library aids research and networking between libraries as it is a value – added to any institution which prioritizes its use. In this wise, the prospects of effective management and sustenance of digital library cannot be overemphasized.

7.0 Recommendations

7.1 Use of Cloud Computing Storage System

Cloud computing is therefore, a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.³⁰It is recommended that Libraries across the nooks and crannies of Nigeria should make adequate budgetary provisions for cloud library.

7.2 Proper Capacity Building in Virtual Library Management

Flowing from the problem of inadequate knowledge of the technological world in virtual library management is the need to properly train librarians and workers in this sector. The subject of training in global best practices for modern library management cannot be over emphasized in Nigeria. It is a notorious fact that schools have come under attacks such as mass kidnapping of staff and students. Therefore, it is apposite to preserve our heritage through proper training and curriculum development for cloud computing across our schools.

7.3 Provision of Adequate Security for Schools and Libraries across Nigeria

It is not news that Nigeria currently face insecurity as a nation as of the time of writing this paper. Therefore, it is recommended that use of drones and other counter terrorism measures be adequately deployed to foil terrorist attacks on our library facilities across Nigeria. Library Staff and students should be trained and exposed to intelligence gathering and sharing while encouraging community policing. The nation's security apparatus ought to be trained in modern counter terrorism techniques, drone development, use and management.

²⁹ Ibid. (n 10) Gbadamosi

³⁰Mell, Peter; Grance, Timothy (2011) The NIST Definition Of Cloud Computing, NIST Special Publication 800-145, retrieved (7/13/2014) <http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf> accessed on 7 July 2021

7.4 Provision of Adequate Back – up Knowledge, Technical Skills and Manpower

System updates, upgrades and back – up knowledge are essential tools in preserving virtual library management system. There is the need to train librarians on how to update, upgrade and properly safeguard virtual resources and back – up for resources from the operations of hackers and cyberstalking agents. Students should be trained on measures to counter cyberbullying and reportage.

7.5 The need to link our Virtual Libraries to the National Museum

One of the prospects of sustaining a virtual library management system is the need to link our Museums to the National Library. This will ensure that retrieval of vital information per time is secured. However, this will require proper funding of the library architecture, the National Archives and Museums. This will in turn promote tourism and boost economic development through additional income generated from this suggestion.

8.0 Conclusion

This paper has brought to the fore the challenges and prospects of sustaining virtual library management system in Nigeria. In the light of this, it is unifying to conclude with the opinion of Doucet that the National Library and the National Archives should be convinced that what archives and library professions had in common with one another was greater and more important than what distinguished them.³¹ Doucet reiterated further that the situation had become one where, to paraphrase the former Director of the Institute of Museum and Library Services in the United States, Robert Martin, ‘the boundaries had blurred to the point where they were no longer justifiable to our end – users, or to the institutions themselves’. In essence, preserving the virtual evolution in our library management system is the way to go in order to secure our future as a nation. Adequate technological initiatives through sustainable funding are a necessity for sustaining the virtual library management system in Nigeria. If librarians and information professionals are going to progress into the 21st century then a clear and effective "digital library" model for library services and development will be increasingly important. Therefore, sustaining virtual library management system in the face of insecurity and other national challenges will help preserve our values, cultures and social development for Trans – generational impact and economic growth.

³¹Doucet M., Library and Archives Canada: A Case Study of a National Library, Archives, and Museum Merger. *Journal of Rare Books, Manuscripts, and Cultural Heritage*