

DIGITAL PRESERVATION OF INFORMATION RESOURCES ON COVID-19 IN LIBRARIES: A THEORETICAL PERSPECTIVE

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ABSTRACT: *The aim of this study was to examine how information resources on COVID-19 can be effectively preserved digitally. The study adopted the exploratory research design. Data was obtained through in-depth review of relevant literature on the subject matter. The findings were analyzed descriptively. Digital Preservation of information resources on COVID-19 requires skilled manpower and adequate knowledge of what digital preservation is all about, the processes and procedures; there are immense benefits in digital preservation of information resource; on COVID-19 requires adequate funding to procure hard and softwares; most organizations do not have the political will to embark on digital preservation of their information resources; There is proliferation of information on covid-19 in both print and electronic media. Digital preservation of information resources on COVID-19 will ensure effective access to information on COVID-19 by both present and future generations. The paper recommended among others that: Institutions and organizations embarking on digital preservation of information resources generally and covid-19 in particular, must ensure that their staff are well trained to acquire the requisite skills in digital preservation; the relevant authorities responsible for digital preservation of information resources should avail themselves of the benefits derivable from digital preservation and develop the political will to accept and embark on digital preservation of their information resources, especially those on covid-19; Institutions and organizations must be willing to provide adequate funds to support the process of the digital preservation of information resources on COVID-19; libraries should monitor, harvest, digitize and channel information on COVID-19 into their digital institutional repositories for present use and the use of posterity.*

KEY WORDS: preservation, digital preservation, information resources; COVID-19, libraries.

INTRODUCTION

The rate at which information is published in both print and electronic formats is compelling libraries to digitally preserve their collections if they are to remain relevant with current developments and be in tune with global best practices in library and information Science. Information and Communication Technology (ICT) has revolutionized the way information resources are preserved in libraries and information centers (Jimada, 2015). Sharma and Mirr

(2018) observed that, “the expansion of computer has led to the explosion in the volume of data, which is stored in hard disks and sent over the internet” and that this growth has led to a need for diagonal presentation and compression. Furthermore, the vagaries of harsh weather and other environmental factors have underscored the need for digital preservation of library information resources.

The novel Corona Virus or COVID-19 pandemic, according to Upasana (2020) originated from human seafood market in Wuhan City, Hubei Province of China in December, 2019 and rapidly infected human beings. This was as a result of frequent sales of live animals such as bats, snakes, frogs, birds, marmots and rabbits at the human seafood market. COVID-19 is now been considered as modern history’s health emergency by most countries in the world; and the manner in which the world is responding to this unexpected global crisis is now making history. The United Nations (UN) laments over this development and states that, “the COVID-19 pandemic is defining global health crisis of our time and this is the greatest challenge we have faced since World War II” (UNDP, 2020). Many institutions such as national archives, libraries, museums, as well as educational and research institutions are already documenting the decisions and actions being made (on covid-19) which will help future generations to understand the extent of the pandemic and its impact on societies (UNESCO, 2020). The need for libraries to digitally preserve information resources on COVID-19 is therefore very important as this would enable present and future generations be aware of this unfortunate calamity that threatened human existence and crippled global economic activities.

Statement of the Problem

Digital Preservation is now considered an indispensable exercise in libraries as they strive to ensure that their users (present and potential) have unlimited access to their information resources. This is because information resources that are preserved in digital format last longer and ensure wider accessibility to users at the same time, regardless of geographical location. Even deserving more attention to do with digital preservation are pandemics on health issues such as COVID-19. Sadly enough, COVI-19 has gone beyond health issues and has devastated and is still causing havoc on the global economy, touching on all sections of human endeavor-Security, humanitarian efforts, employment, commerce and many others (Arigu, 2020; Jaiyeola, 2020). This development is already resulting in the production of immense information on covid-19 and its impact on the society. The need for libraries to document information on COVID-19 in digital format therefore becomes imperative. This is to enable present and future generations benefit from this remarkable and historical event. However, the question that comes to mind is, how can information on COVID-19 be effectively preserved digitally by libraries? What are the challenges of digitally preserving information resources on COVID-19 in libraries? This paper is an attempt to provide answers to these questions and few others.

The Conceptual Definition of Terms

Preservation

According to Muruganc (2013), “preservation is a branch of library and information science concerned with maintaining or restoring access to artifacts, documents and records through the study, diagnosis, treatment and prevention of decay and damage”. Kennedy (2005) posited that preservation of library resources refers to anything that contributes to the well-being of resources by which records are protected for the use of present and future generations. Put simply, preservation is the process of safeguarding information resources from destruction or damage by human, animal or environmental factors.

Digital Preservation

Digital Preservation is the ability to keep digital documents and files for a time period that transcends technological advances without concern for alteration or loss of readability (Nilesh and Verna, n.d.). A broader conceptualization of digital preservation is that given by Jana, Mondal and Marjit, (2009) who stated that “digital preservation involves a wide range of organized activities designed to prolong the usable life of machine-readable computer files such as digital objects and protect them from media failure, physical loss and obsolescence”. Muruganc (2013) concisely described digital preservation as a series of actions that is meant to ensure continuous access to digital information resources for as long as necessary. Unlike the preservation of paper, or microfilm, digital objects require special equipment for migration, conversion, storage, retrieval and transmission.

Information Resources

Information resources comprise all forms of information carriers that can be used to promote and encourage effective research activities and developmental projects (Chimah and Nwokacha, 2013). Ibrahim (2017, P 8) puts it succinctly that, ‘information resources refer to both print and non-print materials that contain information’. These researchers view information resources as channels through which information is disseminated. These channels include: Print resources-speeches, patents, photographs, books, newspaper articles, journal articles etc; electronic resources - audio tapes, video tapes, CDS, computers, internet etc; and others such as diaries, letters, artifacts (eg. coins, inscriptions, rock art, wall decorations etc).

COVID-19

Corona Virus disease (COVID-19) is an infectious disease caused by a newly discovered corona virus. According to Upasana (2020), “CO” stands for corona, “VI” stands for virus, and “D” for disease. The COVID-19 virus is a new virus linked to some family of viruses as Severe Acute Respiratory Syndrome (SARS) and some type of common cold. The symptoms of COVID-19 include fever, cough and shortness of breath. In more severe cases, infection can cause pneumonia and breathing difficulties. These symptoms are similar to the flu (influenza) or the common cold, which are a lot more common than COVID-19. The virus that causes COVID-19 is mainly transmitted through droplets generated when an infected person coughs, sneezes or exhales. These

droplets are too heavy to hang in the air and therefore fall on floor or surfaces. One can be infected by breathing in the virus if one is within close proximity of someone who has COVID-19, or by touching a contaminated surface or object and then one's eye, nose or mouth (Google information, 2020). Amzata *et al* (2020) opined that COVID-19 is a disease of global health importance which also disturbs the usual norms of physical closeness, since the disease is transmitted through contact with individuals who already contracted the disease. COVID-19 has also deglobalized the world in terms of human migration as most airports were shut, and are reviewing their mode of services (post COVID-19) and social events (sports, festivals and the like) postponed indefinitely.

Library

A library can be conceptualized as a collection of information resources that have been carefully selected, processed and organized in order to meet the information needs of library users. A more elaborate conceptualization is that given by Bot and Mamman (2019) that "a library is a carefully selected and organized collection of information materials in all forms, including printed (hard copy) and electronic or digital (soft copy) formats, with the services of trained staff to provide and facilitate (interpret) such materials in a bid to meet the information, research, educational and recreational needs of its users". Modern day libraries regardless of type (public, special, research or academic) maintain hybrid collections, i.e. print and electronic information resources.

Nature of Digital Preservation

Libraries have always exercised the role of collecting, organizing and disseminating information resources to their patrons. The introduction of Information and Communication Technologies (ICTs) have increased the volume of information that is released. This has also altered the information seeking behavior of library patrons. The resultant effect is the emergence of new technologies such as online Public Access, Catalogues (OPACs), Internet and a host of others. These have added new dimensions to learning, teaching and research by library users (Nilesh and Verma, n.d.).

Digital Preservation aims at "maintaining the ability to display, retrieve and use digital collection in the face of rapidly changing technology and organizational infrastructures and elements" (Nilesh and Verma, n-d.). According to the Authors, digital preservation system is a set of procedures, activities and instruments that help in keeping digital materials alive for the future. The process involves maintaining suitable materials in digital format, including preservation of the 'bit stream' and the ability to display the content presented by the 'bit stream'. In this process, some digital storage media may go bad (bit-rot).

Preservation of Digital Information Resources on COVID-19

Several countries have already issued orders for scrupulous preservation of official records on COVID-19 pandemic. This does not only underscore the seriousness of the current situation, but also, highlights the importance of memory institutions (especially libraries) in providing the records and information management resources necessary for understanding, contextualizing and

overcoming such crises in the future (UNESCO, 2020). UNESCO, through Memory of the World programme (MOW) declared its willingness to support all member states who wish to preserve official records related to covid-19 within the framework of the UNESCO 2015 recommendations concerning the preservation of and access to documentary heritage, including in digital format. UNESCO further added that audiovisual and public service media are presently busy documenting the pandemic, including how lockdowns are affecting almost every individual, how governments are dealing with this health and economic crises, how the media is reacting to it, as well as how new expressions of solidarity are emerging and contributing to an acceleration in the pace of digitization as a large proportion of the work force and young people in education have to resort to remote working and schooling (UNESCO, 2020).

This apart, according to the UNESCO report, preserving and providing access to such primary source material has the potential to enable public awareness and participation in public health proceedings grounded in historical lessons learned. McCarthy and Kennedy (n.d.) suggested some key points on collection handling and covid-19. These hinge on handling, collection guidance, what we should know about COVID-19, the risks disinfecting methods with adverse effects for collections and provided websites addresses for information on COVID-19.

Institutes, Libraries and Museums have always been the custodians of reliable and quality information, hence with increased disinformation (fake news) about COVID-19 pandemic, memory institutions (such as libraries) can collect, catalogue and disseminate fact-based scientific information on the prevailing responses to COVID-19. This is because it is these memory institutions that would shape the representation of this pandemic (COVID-19) for future generations (UNESCO, 2020).

As a pretty recent pandemic, Ife (2020) these observed that enormous information is being published in both print and electronic media on COVID-19. The social media especially, is overwhelmed with information on COVID-19. This poses a challenge for libraries, globally. Libraries therefore need to harvest online information resources via their websites from various media and channel them into digital information repositories. This will enable effective use of the information by library users presently and ensure future use by subsequent generations.

Factors to consider in Digital Preservation of Information Resources on COVID-19

Memory institutions such as libraries should consider the following factors when embarking on digital preservation (creation of information repository) generally, and in particular: on COVID-19:

- i. Ensure that your organization has effective policies and procedures governing the creation, management (both retention and disposal) and care of digital materials;
- ii. Be attentive to the maintenance of digital materials in your care (e.g. note when it is time to refresh media, track formats in which your holdings are represented to make certain that you migrate before 'integration path ways' for formal disappearance);

- iii. Avoid proprietary standards for representation, encoding, software, hardware and especially for backup services;
- iv. Do not assume that there is a single solution to all your preservation challenges or that if you adopt one approach for a set of digital materials at a given time, you will not in ten years use a different approach;
- v. Act as an active advocate for digital preservation;
- vi. Whatever preservation approaches you apply (e.g. media refreshing, migration, emulation) they must be controlled, monitored, documented, audited and validated (Ross, 2006).

Strategies for Digital Preservation

Digital Preservation of information resources generally and COVID-19 in particular requires the application of strategies. Some of these include:

- ❖ Emulation – This entails the development of new software that performs the functions of obsolete hardware or software.
- ❖ Refreshing – Involves making preservation copies from one storage medium to another storage medium of the same type.
- ❖ Replication – This implies copying a document without loss of the information or to copy in multiple replicates in order to preserve the document.
- ❖ Migration – This is the process of transferring digital information from one hardware and software setting to another or from one computer generation to subsequent generations.
- ❖ Transparency – This entails digital printing of documents without encryption (hiding the contents).
- ❖ Bit Stream Copy – This implies ‘backing up data, which is the process of making an exact duplicate of digital object.
- ❖ Technology preservation – This is based on preserving the technical environment that runs the system, including operating system, original application software, media device, etc. It is also called” computer museum”, Technology preservation is more of disaster recovery strategy for use on digital objects that have not been subjected to a proper digital preservation strategy.
- ❖ Digital Archeology – This includes methods and procedure to rescue content from damaged media or from obsolete or damaged hardware and software environment. It is an emergency recovery strategy and usually involves specialized techniques to recover ‘bit-streams’ from media that has been rendered unreadable (Nilesh and Verma, n.d).

Benefits of Digital Preservation

There are advantages in digital preservation of information resources. Some of these, according to Muruganc (2013), Lakshminarasimhappa and Veena (2014) and Saminu (2016) include:

- i. Remote accessibility - People are connected globally by providing continuous free online access;
- ii. Multiple accessibility - Digitization allows multiple access to documents. For example, a document in print format can only be accessed by one person at a time, but a document in digital format allows several users access at the same time;

- iii. Preservation and Conservation of document - Digitization addresses heritage loss due to environment, ignorance and destruction;
- iv. Dissemination and Promotion of document - Digitization saves invaluable treasure by enriching the present and enlightening the future. It allows for dissemination of knowledge and culture through the internet, which is a 21st century phenomenon;
- v. Digitization ensures the development of a Digital Preservation Policy and Strategy – These have to be in place in order to enable an effective digitization process.
- vi. Digitization ensures integrated online resources sharing-Information resources are shared easily among libraries, due to online accessibility.
- vii. Digitization enables unlimited duplicating opportunities of files or documents therein-

There is no limitation on reproduction of information resources by libraries or individuals.

Challenges of Preservation of Digital Information Resources

There are numerous challenges deriving from the preservation of digital information resources (including COVID-19). Some of these include:

- i. Inadequate knowledge of digitization as well as slows the acceptability of digitization by libraries;
- i. Digitization involves millions of documents, especially if it retrospectively carried out by organizations, universities and private individuals;
- ii. Digitization takes long to accomplish; It is a continuous process;
- iii. Intensive and extensive awareness is required in educating information professionals on the benefits of digitization and preservation of archival records to enable usage by posterity;
- iv. Outdated media – The digital media may go out of date after some time. Data stored on redundant media becomes effectively useless if the appropriate hardware is not available to read it;
- v. Intentional attacks – Information preserved in digital format may be destroyed by people that have access to them; this is especially true with open access repositories via the internet;
- vi. Digitization involves huge amount of money and this can be discouraging to those willing to digitize their documents, especially libraries in developing countries.
- vii. Organizational failure – Failure of an organization to sustain the digital preservation process can be a huge blow to the whole exercise;
- viii. Outdated formats, applications and system - As hardware becomes redundant, so do file formats and the software which interpret them. This creates problems for long term storage. The way out of this dilemma is to preserve a copy of appropriate software and make it available whenever data is stored or transfer data to an acceptable format (Sharma and Mirr, 2018; Lakshiminarasimhappa and Veena, 2014).

Summary of Key Findings

The summary of major findings from this study are as follows:

- i. Digital preservation of information resources on COVID-19 requires skilled manpower and adequate knowledge of what digital preservation is all about, the processes and procedures;
- ii. There are immense benefits in digital preservation of information resources;
- iii. Digital Preservation of information resources on COVID-19 requires adequate funding to procure hard and soft wares;
- iv. Most Institutions and organizations (especially in developing countries) do not have the political will to embark on digital preservation of their information resources;
- v. There is proliferation of information on COVID-19 in both print and electronic media.

Recommendation

In view of the findings in this study, the following strategies are proffered for enhancing digital preservation of information resources on COVID-19 in libraries:

- i. Institutions and organizations embarking on digital preservation of information resources generally and COVID-19 in particular must ensure that their staff are well trained to acquire the requisite skills in digital preservation.
- ii. The relevant authorities responsible for digital preservation of information resources should avail themselves of the benefits derivable from digital preservation and develop the political will (especially those in developing countries) to accept and embark on digital preservation of their information resources, including those on COVID-19.
- iii. Institutions and organizations must be willing to provide adequate funds to support the process of digital preservation of information resources on COVID-19.
- iv. Libraries should monitor, harvest, digitize and channel information on COVID-19 into their institutional repositories for present use and for the use of posterity.

CONCLUSION

This paper has attempted to discuss digital preservation of information resources in libraries, generally. Attempt was also made to examine how information resources on the COVID-19 pandemic can be digitally preserved for present use and also for use by future generations. The benefits and challenges of preserving digital information resources (including those on COVID-19) were highlighted. The study proffered strategies for enhancing digital preservation of information resources generally and on covid-19 in particular. As maintained by several scholars, the problem of digital preservation is not static, and will continue to emerge with technological developments. It can therefore be confidently stated that digital revolution has indisputably changed the face of libraries in the 21st century and libraries universally, have no option but to key into this phenomenon.

References

- Amzat, J., Kafayat, A., Victor, I.K., Ayodele, A.A. Janet, A.O. & Maryam, C.D. (2020) Corona Virus Outbreak in Nigeria: Burden and Sociological Response During the First 100 Days, *International Journal of Infectious Diseases*, Retrieved from <https://doi.org/10.1016/ijd.2020.06.067>. Accessed on 17th July, 2020.
- Arigu, M. (2020), Repositioning the Nigerian Power Sector for Growth and Economic Prosperity, Lecture Presented to Participants of Senior Executive Course (SEC) 42 (via ZOOM) at the National Institute Auditorium on 9th September, 2020.
- Bot, E.D. and Mamman, E.S. (2019), Libraries as Instruments for Youth Productivity and National Development in Nigeria, *Journal of Applied Information Science and Technology*, 12(2), 156.
- Chimah, J.N and Nwokocha, U. (2013), Information Resources, Retrieval and Utilization for Effective Research in Tertiary and Research Institutions, *Asian Journal of Humanities and Social Sciences*, 1(3).
- Ibrahim, A.B. (2017), *Provision and Use of Information Resources and Service in Libraries for Legislation Centre States, Nigeria*. Unpublished Masters Dissertation, Ahmadu Bello University, Zaria
- Ife, K. (2020), Policy Imperative for Post COVID-19 Economic Recovery and Growth, Lecture Delivered (via zoom video conferencing) to Participants of Senior Executive Course (SEC) 42, at the National Institute Auditorium on 9th September, 2020
- Jaiyeola, L. (2020), Empowering the Private Sector for Growth and Long-Term Prosperity, Lecture Presented (via zoom video conferencing) to Participants of Senior Executive Course (SEC) 42 at the National Institute Auditorium on the 9th September, 2020
- Jimada, A. (2020), *Preservation of Digital Information Resources in the Federal University Libraries in the North Western States of Nigeria*, Unpublished Masters Dissertation, Ahmadu Bello University (A.B.U), Zaria.
- Jana, S, Mondal, M.K and Marjit, U (2009), Digital Preservation with Special Reference to the Open Archival Information System (OAIS) Reference Model: An Overview, 7th International CALIBER, Puducherry University Puducherry, February 25-27, INFLIBNE Centre, Ahmed inbad.
- Kennedy, M.R. (2005), *Reformatting Presentation Departments: The Effect of Digitization of Workflow Load and Staff College Research Libraries*.
- Lakshminarasimhappa, M.C. and Veena, M.R (2014), Digital Preservation in libraries – why and how? *International Journal of Digital Library Services*, 4(4), 91-97
- Mc Carthy, C. and Kenedy, T. (n.d.), *Collections Handling and COVID-19*, VateYul: Emergency Operations Groups.

- Muruganc, V. (2013), Digital Preservation Issues and Challenges on Libraries and Information Resource Centre in India, *E-Library Science Research Journal*, 1(8), 1-8
- Nilesh, S and Verna, S. (n.d.), *Digital Preservation, Issues and their strategies for libraries: A Modern Era*. Web DA (World Wide Distribute Authoring and Versioning)
- Ross, S. (2006), Approaching Digital Preservation Holistically, in A Tough and M. Moss (eds), *Information Management and Preservation*, Oxford: Chandos Press.
- Saminu, A (2016), Digital Preservation of Information Resources in Academic libraries in Nigeria, *International Journal of Scientific Necessary Research*, 7(5):810-814
- Sharma, V and Mir, R.N. (2018), Digital Preservation and Data Compression, *IJEST*, 9(2), 37-43. www.ijest.com
- UNDP (2020), Policy Imperatives for Nigeria's Post COVID-19 Economic Recovery and Growth, Lecture delivered (via zoom video conferencing) to Participants of Senior Executive Course (SEC) 42, at the National Institute, Auditorium on 9th September, 2020
- UNESCO (2020), *Turning the Threat of COVID-19 into an opportunity for greater support to documentary heritage*
- Upasana, U. (2020), 'COVID-19: Concepts and Stigma'. Retrieved from https://www.researchgate.net/publication/241491035_COVID-19_concept_and_stigma. Accessed on 12th July 2020.