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## Information Resources Preservation in Academic Libraries: Challenges and Strategies

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**ABSTRACT:** *Natural disasters, human, chemical, biological and environmental factors were responsible for deterioration of information resources in the university libraries. Photocopying, re-binding, fumigation, microfilming, lamination, air conditioning and digitization techniques were adopted for preservation of information resources and books were mostly borrowed and consulted in the libraries in developing world. Based on literature, the study recommended that management of the universities should acquire a variety of information resources which should not be limited to books, serials, reference sources but to include e-resources with preservation consciousness. Thus, preservation of deteriorating information resources in libraries has become a global phenomenon to which academic libraries must aggressively respond if their mission of providing information needs to their patrons is to be achieved in this era of dwindling budgetary allocation to libraries couple with the present economic recession. It can therefore be said that the aim of information resources preservation programs is to maintain and preserve information materials according to their use and their significance. Thus, preservation of information resources is an important aspect of library and information management*

**KEY WORDS:** information resources, preservation, academic libraries, strategies

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### INTRODUCTION

IFLA, (2010) stated in Ogar (2020) defined preservation of library material in the IFLA Principles for the Care and Handling of Library Material to include all the managerial and financial considerations including storage and accommodation provisions, staffing levels, policies, techniques, and methods involved in preserving library and archival material and the information contained in them. Oluwaseun, Ottong and Ottong (2017) as cited in Ogar (2020) on their part see

preservation as the appropriate housing, protection, care and maintenance of archives, records and manuscripts.

Oluwaseun, Ottong and Ottong (2017) in Ogar (2020) noted that preservation of deteriorating information resources in libraries has become a global phenomenon to which academic libraries must aggressively respond if their mission of providing information needs to their patrons is to be achieved in this era of dwindling budgetary allocation to libraries couple with the present economic recession. It can therefore be said that the aim of information resources preservation programs is to maintain and preserve information materials according to their use and their significance. Thus, preservation of information resources is an important aspect of library and information management (Ogar, 2020).

Akussah, (2006) in Osunride and Adetunla (2016) expressed that almost all library collections are organic in nature, so they are in need of preservation and conservation. Books and other materials suffer damage or deterioration because of several groups of factors, some inherent in the materials and others beyond the control of the library. Each type of paper material, glue, plastic that goes into the manufacturing of a book, recording or optical media has its own combination of physical and chemical properties, and a life span. The other factors include all of the conditions surrounding the processing, storage and use of the materials. The deterioration of information materials is caused by either inherent chemical instability of the materials or the external environmental factors. To avoid these heavy loose of materials in the library, preservation and conservation practices become imperative.

IFLA-PAC China Centre, (2006) in Osunride and Adetunla (2016) noted that preservation and conservation practices are focused at ensuring that significant library and archive materials, published and unpublished, in all formats are preserved in accessible form for as long as possible. Jordan (2003) as cited in Osunride and Adetunla (2016) describes preservation and conservation as an umbrella term for an array of activities, principles, practices, and organizations that ensure the usability, longevity, and accessibility of recorded knowledge. These activities include; general collections repair, reformatting (microfilming, photocopying, and digitization), environmental monitoring and control, care and handling of materials, disaster preparedness and recovery, binding and preservation education and training.

Ngulube, (2003); Ogunmodede & Ebijuwa, (2013) as affirmed in Osunride and Adetunla(2016) observed that in preservation, consideration is given to every element that promotes the protection of the materials including the housing, stable environment, storage system and security against such threats as theft, mutilation, disaster preparedness against floods, fire outbreak, tornadoes, and earthquakes and poor handling. Preservation is, therefore, a more embracing concept than conservation which can be described as the direct physical intervention arresting or slowing down deterioration of library materials which could be characterized as both preventive and interceptive.

Digital preservation combines policies, strategies and actions that ensure access to digital content over time. At present there is as yet no viable long-term strategy to ensure that digital information will be readable in the future. Not only are digital documents vulnerable to loss via media decay and obsolescence, but they become equally inaccessible and unreadable if the software needed to interpret them, or the hardware on which that software runs, is lost or becomes obsolete. The purpose of preservation of information sources is to protect information of enduring value for access by present and future generations. Therefore, digital preservation is a process by which data is preserved in digital form in order to ensure usability, durability and intellectual integrity of the information contained therein (Vij,2017).

Preservation is the act of protecting and safeguarding information resources from being deteriorated. Ogunniyi & Adejube, (2014) as cited in Saba, Babalola and Udoudoh (n.d) defined preservation as the art of controlling risk to the intellectual and physical heritage of a community. Preservation techniques are methods used for preservation of information resources in the libraries. Techniques used in preserving print resources such as textbooks, serial publications, government documents and reference materials in libraries include: Cleaning and dusting, photocopying, re-binding, lamination, fumigation, shelving to allow free air flow, air conditioning, etc while techniques used for preservation of non-print resources like electronic and audio-visual resources include: digitization, use of hard disc and flash disc, microfilming, air conditioning, cleaning and dusting, standard shelves, cabinets, boxes, vertical files etc.

### **Information Resources**

Saba, Babalola and Udoudoh (n.d) described information resources as all the library materials found in the library to serve the library users for the purpose of satisfying their information needs. Udoudoh (2012) in Saba, Babalola and Udoudoh (n.d), explained information resources as the summation of all carriers of information of diverse areas/needs which the library provides for her clientele. Use of information resources is the act of library users to exploit library resources. Use of library and its materials are vital factors in ascertaining the effectiveness of services provided by libraries. Use of information resources is concerned with the exploitation of variety of information resources in the academic environment. Such resources include print, non- print and electronic materials such as online books, journals, theses, and dissertations, online newspapers, magazines, indexes/abstracts, online databases, online encyclopedia and dictionaries etc. A better understanding of library use and its materials would enable libraries to improve in acquiring resources and service delivery to its users.

According to Encyclopaedia of Networked and Virtual Organizations (n.d) as cited in (Vij,2017), information resource is an element of infrastructure that enables the transaction of certain selected significant and relevant data, prepared so as to provide content and information services that can be used directly by the user". According to Encyclopaedia of Information Science and Technology

in Vij, (2017), Information resources means, “A collection of valuable information generated by human activities. In a broader sense, it also includes related equipment, personnel, and capital.”

### **Types of Information resources**

Olanlokun and Salisu cited in Udoudoh (2012) as cited in Saba, Babalola and Udoudoh (n.d) grouped information resources into two distinct groups, the printed and non-printed formats.

**Printed Formats:** These are information in the printed format which can be used for study, research, reading, etc. They are textbooks, journals, magazines, newspapers, reference materials, treaties, monographs, government documents, conference papers, manuscripts, pamphlets, past examination question papers in prints etc.

**Non-Printed Formats:** These are carriers of information which are not in printed format. They are product of advanced technology which needs special equipment for their usage. Collectively they are called electronic and audio-visual resources which require both sense of auditory and visual to use them. Electronic information resources are computer based information resources available in the library. Examples of electronic resources are computers, compact disk read-only memory (CD-ROMs), digital video disc (DVDs), electronic books, electronic journals, electronic texts etc. Audio information resources are information resources which require only senses of auditory for their use. Examples of such information resources are sound recordings, audio-tapes, audio cassettes etc. Visual resources are information resources which require only senses of visual for their use. Examples of such information resources are microfilms, microfiche, ultra fiche, micro-card, filmstrip, transparencies, slides, VCD and DVD etc. Audio-visual: These are information resources which require both senses of auditory and visual for their use. Examples of such information resources are tape/slide programmes, videotapes, sound films, video cassettes and video discs etc.

In library perspective, deterioration can be defined as a state in which the efficacy of library information resources is being worsened, declined, weakened and depreciated. The causes of deterioration of library information resources is as old as library itself and it begins immediately as paper was invented and the writing started. Madu and Adeniran (n.d) cited in Olajide (2013) in Saba, Babalola and Udoudoh (n.d), opined that the entire record compilation is decaying at the present, it decay as days gone by and likewise it will continue to decay tomorrow. At the moment, a lot of conditions that make information resources to decay are human, environmental, biological and chemical factors. Deterioration is being caused by some enemies of information resources and this can be grouped into inborn precariousness of the materials/inside variables and external variables.

An online information (OI) resource is an integral part of education of students globally. Information and education are inseparable. To be an educated person, it is expected you are information literate. As such libraries grant access to both electronic and printed information,

which provide key to education through many courses offered in learning institutions. Thus, library is information reserve for education. Libraries are an important resource for academic activities such as study, teaching and research which encourage students and faculty to go beyond the classroom learning and laboratory experiments serve as marketplace of ideas which is the hallmark of higher education. Since much of the learning in higher education institutions takes place outside the classroom, libraries can be one important venue for such learning. And the library can play a critical role in learning directly related to courses, such as writing a paper, and processes related to lifelong learning. Libraries provide collections, organized information, systems that promote access to information, in-person and virtual assistance to encourage students to pursue their education beyond the classroom (Lippincott, 2017).

In this information age, there is a general shift from using print sources of information towards gathering, analyzing and sharing online source information from the web, such as grey literature, journal articles, unpublished papers, theses and dissertations, personal websites and blogs. According to Lamb (1995), Online Information resources are collections of indexed electronic databases with supporting distribution services.

Along with rapid change in the information environment, there is the notion that younger generations that can be called Google generation, now view and search for information in a different way. As a generalization, the Google generation tends to have a hypertext mindset. They like to 'power browse' - scan pages quickly, click on hyperlinks and read out sequence. For students, Google provides immediate results and sets the standard for quick and seamless access to information (Costa, 2009). The nature of online information is different and varies with the application of ICTs. According to Ajuwon (2015), a great variety of information resources are now available and accessible online. These include among others search engines (Google, Yahoo, Alta Vista, Lycos, Mama, etc), databases (MEDLINE/PubMed, Scopus, Web Knowledge, EMBASE, and African Index Medicus), portals, gateways, digital archives, libraries and institutional repositories. Lee, Paik and Joo (2012) also listed online information resources as search engines, individual Web pages, Organizational Web pages, Institutional repository, Digital libraries, Wikipedia or online encyclopedia, Online news and magazines, Scholarly online databases, Google scholar, College student report sharing site, Social Question & Answer services, online lectures, etc. In addition, Akpojotor (2016) indicated online information resources as E-journals, E-books, E-databases, E-magazines, E-serials, E-dissertations and theses, World Wide Web, E-mails, CD-ROMs, Online Public Access Catalogues (OPAC), Reference Databases, E-Images, E- audio visual resources and so on.

Internet and online resources provide access to a variety of information ranging from primary to tertiary sources. The advancement in the information and communication technologies (ICTs) introduced new dimensions in the generation, acquisition, organization, processing, and dissemination of the information in the virtual environment. ICTs help users in searching,

accessing and using the information by crossing the barriers like time, distance, geography, size, and language. Thus, it brings information to the fingertips of information seekers (Kattimani, 2010). Taking a consideration of the use of information, Hughes (2005) reported in a study carried out that most participants approached library staff for assistance with their online information use. Users also frequently asked and assisted their friends. Several had also consulted their lecturers, one of whom referred the students back to the library. On this note, online information resources provide services supporting users to perform intense academic work that requires complex interaction activities with the various components of its resources in which library serves as a hub for the resources which need to be preserved (Odede 2015).

### **Preservation of Information Resources**

Vij (2017) opined that preservation of information resources has always been and will continue to be a source of concern to libraries. The philosophy and practice of preservation has roots in many earlier traditions. In general preservation, as a formal profession in libraries and archives dates from the twentieth century. In 1933, William Barrow introduces the field of conservation to paper de-acidification when he publishes a paper on the acid paper problem. In 1966, the flood of the River Arno in Florence, Italy damaged or destroyed millions of rare books and led to the development of restoration laboratories and new methods in conservation. Paul N. Banks (1934–2000) published regularly on bookbinding, book and paper conservation, and problems related to conservation. Ellen R. (1983) edited *The Brown Book: A Directory of Preservation Information*. McCrady 2002-2008 – edited and published the "Abbey Newsletter", covering important information for preservation professionals. Paul Conway 2005 – Conway is an associate professor in the University of Michigan School of Information. His research and educational work focuses primarily on digital preservation and electronic media (Vij 2017). Walter Henry 2007 – Henry, a conservator at the Stanford University Libraries and Academic Information Resources, is the creator of Conservation on Line and the Conservation DistList. Janet Gertz 2008 – Director for Preservation, Columbia University Libraries has been chair of Association for Library Collection and Technical Services (ALCTS)' Preservation and Reformatting Section (PARS) (Vij, 2017).

Preservation of information resources is the act of protecting and safeguarding information resources from been deteriorated. Ogunniyi & Adejube, (2014) in Saba, Babalola and Udoudoh (n.d) described preservation as the art of controlling risk to the intellectual and physical heritage of a community. Preservation techniques are methods used for preservation of information resources in the libraries. Techniques used in preserving print resources such as textbooks, serial publications, government documents and reference materials in libraries include: Cleaning and dusting, photocopying, re-binding, lamination, fumigation, shelving to allow free air flow, air conditioning, etc while techniques used for preservation of non-print resources like electronic and audio-visual resources include: digitization, use of hard disc and flash disc, microfilming, air conditioning, cleaning and dusting, standard shelves, cabinets, boxes, vertical files etc. According to Lee, Slattery, Tang and McCarry (2002) as cited in Ogar (2020) techniques for the preservation

of digital information include technology preservation, preservation emulation, information migration, and encapsulation. Digital resources can be stored on any medium that can represent their binary digits or bits, such as a CD-ROM or a DVD.

Nworie (2019) observed that digital materials, unlike the texts of print media, are subject to inadvertent destruction of the physical medium on which they exist and the information that are contained in them. Electronic texts are so easy to edit, manipulate, revise and improve and can lose their assurance of permanence especially if they are not properly locked or cared for. Many types of accidental changes may occur. A document may be damaged accidentally or as a result of the nature of the electronic resource. More so, the problem of technological obsolescence is inevitable. Digital media have continued to evolve over the years. The equipment to use them change from time to time thereby creating problems in retrieving the information content. For example, there have been transitions of digital storage devices from 8-inch floppy disks to 5.25-inch floppies, to 3-inch diskettes, to flash drives, CDs, CD-ROMs, VCDs, DVDs, external hard disks among others. These storage devices become obsolete very quickly and today it is very difficult to find one drive for all storage devices. Additionally, there is the problem of inconsistency in the existing preservation strategies of many institutions. A study by Atanda (2017) as stated Nworie (2019) discovered that libraries in Nigeria are faced with the major challenge of lack of consistent strategies in the preservation of their digital materials. Digital libraries are being set up in university libraries in Nigeria today and most of them hoist their information in various websites, servers, hard disks and other storage media. If proper preservation guidance and care are not taken, any disaster can wipe out the entire works and the library will be left with little or nothing. Thus, UNESCO (2003) in Nworie (2019) expressed that in order to keep digital materials in the library accessible and usable, there is need for university librarians to apply the preservation guidelines as stated. The preservation strategies stated by UNESCO in their charter (2003) in Nworie (2019), for preservation of digital materials in data carriers/ storage media are:

- a. Let the institution, government, organization, individual etc decide on the format that will be accepted for preservation. If possibly, negotiate with producers to use widely accepted standards and to provide adequate documentation
- b. Store media / data carriers in appropriate conditions
- c. Copy data to more stable media and make back-up copies, using good quality media
- d. Store data securely, including offsite storage for backup if possible
- e. Check data for errors regularly
- f. Establish a data refresh regime suited to the life of the media
- g. Record information that will be needed to provide short term access – the identity of the material, access requirements, passwords etc
- h. Retain necessary access equipment and software, maintaining hardware and protecting software within license arrangements

- i. Plan to pass the digital materials to another suitable care taker, that is, liaising with other institutions who have similar interest or responsibilities or experience in preserving or managing the kind of materials that you are interested in and seek guidance and mentoring
- j. Alternatively, find ways to adequately reflect the material in a stable non digital form (such as printing out).

For data on web pages (websites, online databases, emails, correspondences, web blogs, etc), these are the guidelines noted by UNESCO (2003) in Nworie (2019)

- a. Allocate responsibility to a skilled and trained staff to manage the data
- b. Protect data by using third party service providers to continue to maintain access online
- c. Plan to continue to provide access to users in case the service providers services are no longer available
- d. Copy data out to a more secure storage media for adequate back up
- e. Transfer data to a new or refreshed carrier without loss.

### **Challenges and Strategies to Preservation of Library Information Resources**

Ogar (2020) expressed that degradation of information resources is a challenge in most academic libraries. In most Nigerian libraries today, preservation is not taken seriously until most information resources starts showing traces of degradation. According to Reed-Scott (2000) in Ogar (2020), preservation problems are pushing collection managers into a more activist role, in which they must make crucial preservation decisions thus growing awareness in the past decade of the magnitude of preservation problems which has resulted in a steady increase of preservation programs within research, academic, and public libraries. Therefore, Maravilla (2008) in Ogar (2020) opined that efforts must be made by librarians to ensure that these valuable resources are well preserved for future generations to avoid extinction.

Maravilla (2008) in Ogar (2020) asserted that regardless of the chemical constituents, all information resources will decay since the organic matter of which most library materials are made of, decay with time. Degradation of information resources is essentially the deterioration of cellulose of which most of the materials are composed of namely paper, parchment, palm leaves, birch bark, leather and adhesive used in book binding and others. The problem of degradation has several inter-related causes. Muhammad (2006) as stated in Ogar (2020) identified four factors to include: Inherent chemical instability of the component of the information resource; unstable environmental conditions in areas where collections are stored; inappropriate storage and handling practices; and disasters. Aina (2004) as identified in Ogar (2020) on his part observed that there are many causes of information resources degradation or damage, which he said many be classified into four factors to include: environmental factors, biological factors, human factors and other factors. The result of the analysis revealed that paper was the major form of resources stocked in the libraries. This meant that the library encountered some preservation problems. The results also revealed that rodents, insects, gaseous pollutants and many more were some of the preservation



problems encountered in the libraries. The libraries were not insured against these disasters (Oluwaseun, Ottong and Ottong, 2017).

Other constraint against effective preservation of information resources includes low paper quality and ink, lack of preservation and conservation policy and unfavourable government economic policies. The economic policies of most African governments do not favour library and archival services, so preservation and conservation activities are not given the priority attention they deserved. Such economic policies include those concerning high duties and tariffs charged on imports of preservation and conservation equipment (Ogar 2020). However, Muhammad (2006) in Ogar (2020) study identified the following as preservation and conservation practices of information resources: Environment control and monitoring practices; care and handling practices (Good housekeeping, storage, handling and usage, dusting, and shelving of materials); security of the information resources practices; microfilming/reformatting practices; digitization practices; photocopying practices; de-acidification practices; library binding and book repairing practices; encapsulation and lamination practices; and disaster preservation and mitigation practices.

Paper, (2008) in Kavishe and Dulle (2016) observed that managing electronic information is very vital within any given library but it is becoming more and more challenging of the duration over which information is needed to be preserved. This means that Electronic Information Resources (EIRs) will only survive for the period not beyond the supported life of the application device used to preserve them. Furthermore, Moloji and Mutula (2007), Gbaje, (2011) as stated in Kavishe and Dulle (2016) identified that information centres in the third world countries are faced with issues in preserving EIRs information. Production of complex EIRs, rapid change in technologies as well as lack of expertise in the personnel preserving EIRs are among the challenges that have made EIRs preservation a difficult task. As the EIRs continue to develop exponentially, libraries are faced with the challenge of sustaining adequate skilled staff in EIRs preservation issues. This challenge is in fact increasing because most of the libraries in developing countries do not have active management and intervention. Poor management of EIRs is bound to be the outcome in the gaps. Therefore, libraries and other information centers must adopt long term preservation strategies to preserve information resources.

## **CONCLUSION**

Natural disasters, human, chemical, biological and environmental factors were responsible for deterioration of information resources in the university libraries. Photocopying, re-binding, fumigation, microfilming, lamination, air conditioning and digitization techniques were adopted for preservation of information resources and books were mostly borrowed and consulted in the libraries. Based on the literature, the study recommended that management of the universities should acquire a variety of information resources which should not be limited to books, serials,

reference sources but to include e-resources with preservation consciousness (Saba, Babalola and Udoudoh, n.d).

## REFERENCES

- Ajuwon, G.A. (2015). Internet Accessibility and Use of Online Health Information Resources by Doctors in Training Healthcare Institutions in Nigeria. Available at: <http://digitalcommons.unl.edu/libphilprac/1258>
- Akpojotor, L.O. (2016). Awareness and usage of electronic information resources among postgraduate students of library and information science in southern Nigeria. Available at: <http://digitalcommons.unl.edu/libphilprac/1408>
- Costa, C. (2009). Use of Online Information Resources by Rmit University Economics, Finance, and Marketing Students Participating in a Cooperative Education Program. Available at: <http://www.tandfonline.com/loi/uarl20>
- Hughes, H. (2005). Actions and Reactions: Exploring International Students' Use of Online Information Resources. *Australian Academic and Research Libraries*, 36(4).
- Kattimani, P.S. (2010). Quality awareness of online information resources: A study. *International Journal of Library and Information Science* Vol. 1(2) pp. 031-034. Available at: <http://www.academicjournals.org/ijlis>
- Kavishe, G.F. and Dulle, F. (2016). Preservation Skills and Strategies of Electronic Information Resources in Digital Era: Case of University of Kwazulu-Natal Libraries. *Library Philosophy and Practice* (e-journal). Available at: <http://digitalcommons.unl.edu/libphilprac/1451>
- Lamb, R. (1995). Using Online Information Resources. Available at: [www.csdl.tamu.edu/./lamb.html](http://www.csdl.tamu.edu/./lamb.html)
- Lippincott, J.K. (2017). Net Generation Students and Libraries. *EDUCAUSE*. Available at: [www.educause.edu/ecar](http://www.educause.edu/ecar).
- Nworie, J. C. (2019). Assessment of current preservation strategies of digital materials in university libraries in South East, Nigeria. *Library Philosophy and Practice* (e-journal). Available at: <https://digitalcommons.unl.edu/libphilprac/2272>
- Odede, I. (2015). Undergraduates' Computer Skills and the Use of Online Information Resources: A Case Study of Library and Information Science Students of Delta State University, Nigeria. *Journal of Library & Information Science* 5 (4)
- Ogar, F.O. (2020). Degradation and preservation practices of information resources in academic libraries in Cross River State, Nigeria. *Journal of Library Services and Technologies*, 2(2), 57-69, Available at: DOI: 10.47524/jlst.v2i2.6
- Oluwaseun, A., Ottong, E. J., and Ottong, U. J. (2017). Preservation of Library Resources in Nigeria Universities: a Study of Collections in Cross River State Universities, *Communications of the IIMA*, 15 (3). Available at: <https://scholarworks.lib.csusb.edu/ciima/vol15/iss3/4>

---

Publication of the European Centre for Research Training and Development -UK

- Osunride, A.A. and Adetunla, B.O.G. (2016). Preservation and Conservation of Library Materials in University Libraries in South-West, Nigeria. *International Journal of Online and Distance Learning*, 1(1) No.1, 12 – 25.
- Saba, A.M., Babalola, G.A. and Udoudoh, S.J. (). Evaluative study of preservation and use of information Resources in university libraries in Niger state, Nigeria. Available at: <http://staff.futminna.edu.ng/LIT/content/journal/PF0816/2.pdf>
- Vij, R. (2017). Digital Preservation of Information Resources: Issues and Strategies. *International Journal of Research in Humanities & Soc. Sciences*, 5(5), 1-9