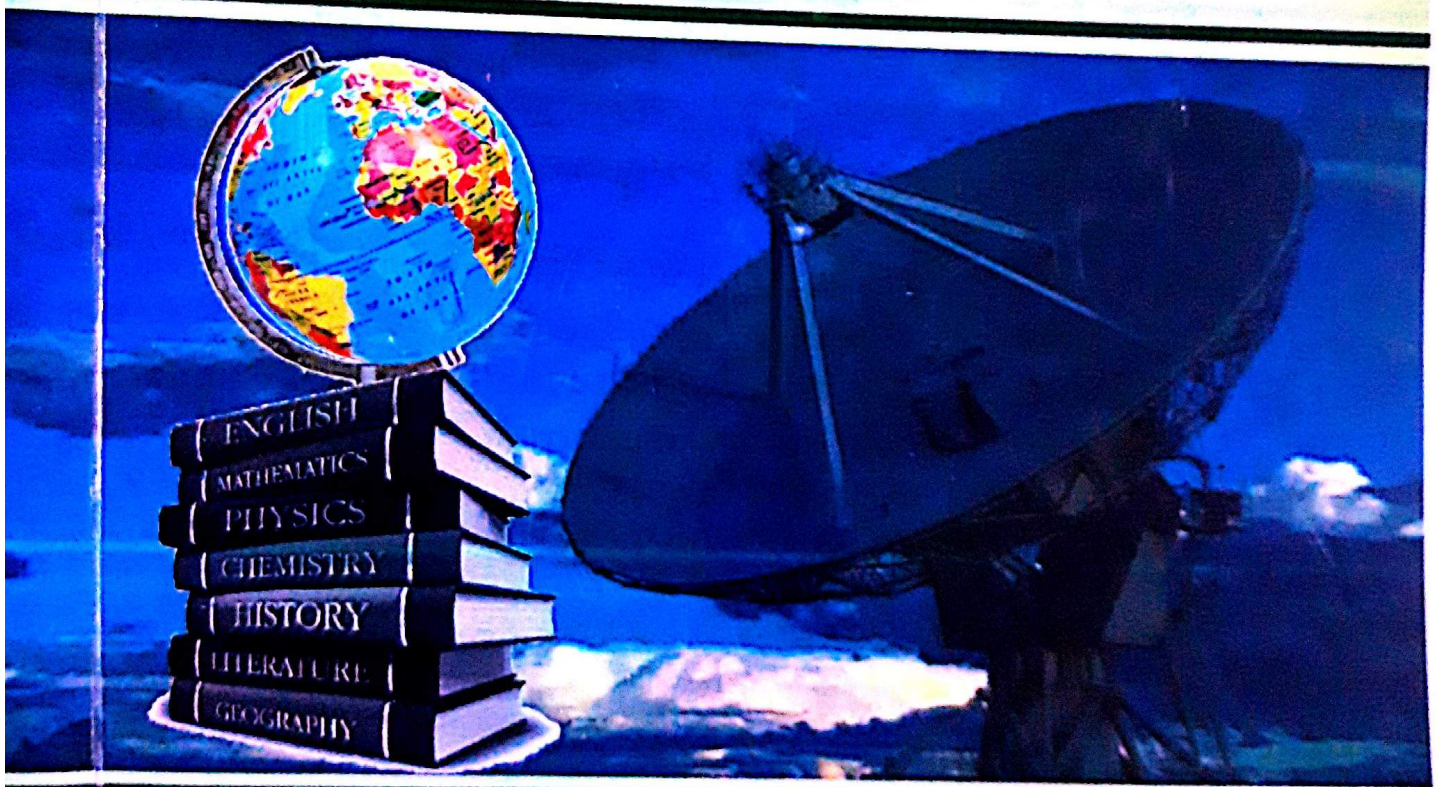


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Editorial Foreword of Global Review of Library and Information Science

Global Review of Library and Information Science (GRELIS) is a journal published bi-annually by the department of Library and Information Science, the University of Nigeria, Nsukka.

Articles published in this journal are peer-reviewed and are edited scholarly and original contributions to the field of Library and Information science (LIS). It is therefore, with great pleasure that I introduce this issue of the journal which explores timely topics that reflect both the current challenges and exciting innovations within the field. As we continue to navigate an era defined by rapid technological advancements and shifting societal expectations, the role of libraries and information professionals is becoming increasingly critical, and this issue presents a compelling reflection on that evolving landscape.

In this edition, we aim to address several emerging trends shaping the future of libraries, archives, and information services. Articles in this issue span the gamut of the LIS discipline, from the rise of artificial intelligence in managing information resources to the pressing concerns around digital preservation and access, to health informatics and management. The articles featured in this issue offer a rich array of perspectives. Whether you are a researcher, practitioner, or student of LIS, you will find thoughtful analyses that resonate with the multifaceted role of information professionals today. Looking forward, we welcome a bright future of LIS, as we continue to adapt and collaborate in finding answers to some of our plaguing issues. I encourage all readers to consider how they can contribute to the continued growth of our profession through innovative research. Our collective engagement is key to ensuring that libraries remain at the forefront of education, research, and community support.

Finally, I want to express my heartfelt gratitude to the authors, peer reviewers, and the entire editorial team of GRELIS whose hard work and dedication made this issue possible. We hope that this issue will provoke thought, inspire action, and contribute to the ongoing conversation about the future of our field.

Thank you.

Prof. C.N Ezeani .

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Development and Preservation of Institutional Repositories in Academic Libraries in Nigeria: Prospects, Challenges and Strategies

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Abstract

Institutional repository is a technology model for storing information which has created the opportunity for libraries to collect, preserve and communicate university research output/data to the global community. This has become a means of increasing the university's visibility, ranking and reputation among others. Development, implementation and maintenance of an institution's repository is a critical responsibility of the university as a whole and the library in particular. Universities in developing countries are striving to develop their repositories by attracting the required digital facilities to the library. The paper explores the development and preservation of institutional repositories (IRs) within academic libraries in Nigeria. The study adopted a review of views and opinions of related studies on the topic. It delves into the benefits and methods of building IR contents in libraries, enhancing visibility and dissemination of scholarly communications. The paper examines the challenges faced by academic libraries in establishing

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effective institutional repositories, including technology obsolescence, low level of awareness, inadequate ICT facilities, lack of technical know-how, etc. Additionally, the paper outlines strategies for overcoming these challenges. By addressing these issues, academic libraries in Nigeria can maximize the potential of IRs to support research, teaching and learning within the academic community.

Key words: *Institutional repository, research outputs, university, data preservation, data security*

Introduction

Today, universities are increasingly migrating to the digital storage system for intellectual/research outputs generated in their institutions. This has been propelled by the present information environment driven by the World Wide Web and the Internet which provides a veritable platform for development of institutional repositories (IR) for improved wider dissemination of local research findings to peers and colleagues across the globe. Johnson (2002) defines IR as “a digital archive of the intellectual product created by the faculty members, research scholars and students of an institution and made accessible to end-users both within and outside of the institution with few if any barriers to access”. Moreover, IRs are digital systems that collect, preserve, and provide access to scholarly and creative works produced by members of an institution, such as faculty, students, and staff. These outputs/research data increase in value as they build up into a collection and as they become more available for re-use to address new and challenging research questions. Ricky (2013) opined that research data can be viewed as university assets arising from the university’s mission to support quality research. The institution’s repository is vital to the evaluation of any university and determines the position of that university with regard to World University ranking which promotes reputation, recognition and global competitiveness. Institutional repository contents appears in the form of books, book chapters, journal articles, practical research records, project reports, inaugural lectures, theses and dissertations, lecture recordings and papers, evaluation reports, workshop reports, working papers, conference papers, conference proceedings, field trip films and records, inventions and community services of university academics. Some of these contents are not only in text form but include speech recordings in cassettes and other digital resources. Hence universities now place much emphasis on research and publication not only because it determines institutional and national position but because it promotes the teaching and learning processes.

Development of IR was necessitated by the need to provide access and create global visibility for an institution’s research; as well as to collect, store and preserve other institutional digital assets including unpublished literature. It also provides for standardization and

centralization of all types of institutional output. Therefore, the application of best practices to preserve such assets protects the university's intellectual, financial, human and material investment in research. These applications involve the use of local server/website connected to the internet and or cloud storage/cloud computing; a service where data is remotely maintained, managed and backed up with files stored offline so that they can be accessed from any location via the internet from any location at any time and has proven to be more efficient in the storage and management of both institutional data. By saving important data/files on a non-localized server/cloud, universities can access their data from anywhere in the world as long as there is internet connectivity. Identification of contributors with setting up criteria for determining the collection and authorization of members in the repository is a point to be taken care of. (Okeke, 2008). Development and proper management of IR is a vital point in this regard.

It has been adjudged that Nigeria has performed poorly in the quantity of research outputs generated in the universities which has also reflected in the poor development and management of institutional repositories. Ezema and Eze (2024) reported that with the current number of universities in Nigeria, there ought to be corresponding research outputs over the years considering the number of graduates who would have submitted theses and dissertations, journal and book publications from faculty staff who require them for their promotion; among other forms of research reports. Surprisingly, available bibliometric studies (Ezema and Onyancha, 2019) portray Nigeria and the entire African countries with low research publications compared with other countries of the world which has been attributed to poor dissemination of research outputs from Nigeria. Consequently, it seems that Nigerian universities have continued to perform poorly in visibility and ranking globally because a major criterion for determination of ranking of universities is online availability of research publications. Unfortunately, many universities in Nigeria are yet to explore the opportunities of institutional repositories for increased visibility of institutional based research outputs to the international scholarly community. Ezema and Eze (2024) further stated that the situation in the South-East Nigeria that has twenty-three universities with 6(20.0 %) institutional repositories is not impressive in relation with South-West Nigeria that has 52 universities with 13(43.3 %) repositories and

North-Central with 37 universities and 8(26.6 %) repositories. Though South West and North Central have more universities, but the poor performance of the South East zone is surprising considering its interest in education overtime; a zone hosting the first indigenous university in the country. Akintola, Olagoke and Opawale (2022) further reported that among the 49 federal universities in Nigeria, only twenty-two have established institutional repositories. Despite the numerous advantages and the corollary of institutional repositories in enhancing visibility and web rankings of universities, their growth in Nigeria remain dormant because of inefficient management.

Managing the intellectual assets of the university is a critical responsibility of the university as a whole and the library in particular. The library plays key roles in the development and management of IR. As such, the librarians are involved in its planning, implementation and maintenance through advocacy and building of contents which involves collecting, editing and archiving to the server. Robertson and Borchert (2014) stated that between institutional repositories and hosting journals, many libraries are becoming responsible for scholarly content in new ways. On the other hand, cloud computing has transformed the way libraries deliver their services, providing opportunities to extend their impact. Thus, Mavodza (2013) stated that academic libraries leverage the efficiency, reliability and scalability of cloud computing to improve its efficiency and visibility of its collections and management services thereby increasing their power of cooperation and collaboration. Some studies have shown that many universities in Nigeria appear to be docile in IR development and management for the globalization of their research outputs (Ezema & Okafor, 2016; Mutsvunguma, 2019; Nunda & Elia, 2019). This implies that academic libraries have not performed optimally in the management and preservation of IR for continued sustainability due to a number of challenges.

The heart of every information system is the requirement to protect the confidentiality, integrity and availability of data. But the cloud computing system presents a daunting challenge. This with other challenges of preserving IR has raised a lot of concern to the universities in Nigeria with regards to the ability of their libraries to secure the university's research products stored in various platforms. These challenges demand that institutions which have embraced

cloud storage as a better and more beneficial option to carefully devise an alternative means of securing the universities research products in order to ensure its continuous availability and accessibility, (McCombes,2019). This study is therefore, intended to examine the challenges of developing and preserving institutional repositories in universities libraries in Nigeria with a view to providing recommendations to address the problem.

Role of Librarians in the management of Institutional Repositories

Librarians play outstanding roles in the development and management of institutional repositories (IRs). As the gatekeepers of scholarly communication, librarians are required to have the knowledge, skills, and expertise necessary to ensure the success and sustainability of IRs. The library in its role is charged with the responsibility of collecting, classifying, cataloguing, curating, preserving and providing access to digital content of its institution's repository. They are also responsible for selecting and acquiring content for the repository, creating metadata to describe the content, and ensuring that the content is accessible and preserved over time. Tanaji and Rahul (2018) outlined these roles into several areas as follows:

1. **Collection Development:** Librarians are responsible for selecting, acquiring, and managing the content of the IR. They work with faculty, researchers, and other stakeholders to identify important works and ensure that they are added to the repository.
2. **Metadata Creation:** Metadata is a critical component of an IR because it allows users to find and retrieve content. Librarians are responsible for creating and managing metadata for the works in the repository. This involves creating descriptive metadata that accurately represents the content of the work and assigning appropriate subject headings and keywords.
3. **Preservation:** Librarians are also responsible for ensuring the long-term preservation of the content in the repository. They work to develop preservation policies and practices.

- including backup and disaster recovery plans, to ensure that the content is protected and accessible for future generations.
4. Outreach and Education: Librarians play an important role in promoting the use of the IR by educating users on how to find and use the content. They provide training sessions or workshops on searching and accessing the repository, as well as work to promote the repository through outreach efforts such as social media, newsletters, and other communication channels.
 5. Advocacy: Librarians can serve as advocates for the IR within the institution and beyond. They can work to raise awareness of the value of the repository and its contents, as well as promote the use of open access publishing and other strategies for increasing the visibility and impact of scholarly and creative works.
 6. Copyright and Licensing: Librarians are responsible for ensuring that the digital materials deposited in the IR comply with copyright and licensing requirements. They work with content creators to secure necessary permissions and licenses, and they help ensure that the materials are properly labeled with copyright and licensing information.
 7. Technical Support: Librarians provide technical support to ensure the functionality and usability of the IR. They work with IT staff to maintain the hardware and software systems that support the IR, and they troubleshoot any technical issues that arise.
 8. Training and Support: Librarians provide training and support to faculty, staff, and students on how to use the IR effectively. They create instructional materials, conduct workshops, and provide one-on-one consultations to ensure that users understand how to deposit, access, and use the materials in the IR.
 9. To provide guidance and support: One of the key roles of librarians in IRs is to provide guidance and support to faculty, staff, and students in depositing their scholarly work. This can include helping them to understand the benefits of depositing their work in an IR, providing guidance on copyright and intellectual property issues, and assisting with the technical aspects of depositing content. Librarians may also work with faculty to identify and collect relevant research outputs to add to the repository.

10. Developing policies and procedures: Librarians collaborate with the institution in developing policies and procedures for depositing, managing, and accessing content in the IR. These policies can help ensure that the IR adheres to best practices and that the content is of high quality.
11. Assessment and reporting: Librarians can analyze usage statistics and other data to assess the impact of the IR and identify areas for improvement. They can also create reports for stakeholders, such as university administrators or funding agencies, to demonstrate the value of the IR.
12. Marketing and Promotion: Librarians can help to promote the institutional repository through various channels, including social media, newsletters, brochures, fliers, campus wide announcement, press release, word of mouth, campus newspaper and radio announcement, bookmarking, workshops, seminars and conferences and other communications. They can also work with other departments or units within the institution to promote the repository and its content to a wider audience.
13. Understanding User Needs: Librarians need to understand the information needs of their users and be able to develop effective search strategies to retrieve the most relevant information. They should be able to ask the right questions to clarify users' needs and guide them in selecting the most appropriate search terms and databases.
14. Search Techniques: Librarians need to have a good understanding of different search techniques, including Boolean operators, proximity operators, wildcards, truncation, and phrase searching. They should also be aware of the strengths and weaknesses of different search engines and databases.
15. Information Access: Librarians need to ensure that users have access to the information they need. This includes maintaining up-to-date collections, negotiating access to electronic resources, and providing instruction on how to use these resources.

Benefits of an Institutional Repository

Institutional repositories have undergone dramatic changes over the past three decades. Initially, when these initiatives started gaining popularity in the late '90s and early '00s, the focus was primarily on preservation and archival. Now, its role has evolved beyond that; institutions are now using it to host, manage, showcase, and distribute their research output. An institutional repository generally increases the visibility, ranking, reputation and recognition of an institution. Thus, Sucheth (2021) identified the benefits of modern institutional repositories for universities and academic libraries as follows:

1. Collates Research Outputs Fragmented Across Departments and Disciplines

Every educational or research institution produces a great deal of scholarly work every year. Typically, these documents are stored in different places — central libraries, department libraries, department websites, journals, subject-specific repositories, the author's personal website or hard disk, etc. Making the content open access will be a challenge. For starters, it will be hard to locate and categorize everything. Moreover, readers are likely to encounter problems with access privileges and inconsistent file formats. Insiders may know what to do or where to search for, but it will be a poor and time-consuming experience for the rest. In this scenario, universities and academic libraries benefit from having an institutional repository. It lets them host all the content, both grey and black literature from different departments in one central location and allows them to organize and showcase it effectively. Most of these repositories support advanced search functions, enabling readers to find what they are looking for in seconds.

2. Increase the visibility of one's institution

Most open-access institutional repositories function as massive online content, hosting considerable amounts of authoritative, relevant, and original content pieces. Interested parties and students will be able to access these documents by simply visiting the website instead of physically coming to the institution. Therefore, more people are likely to read or watch or listen to contents. Once these pages are indexed by search engines such as Google, they will start appearing among top results for relevant search queries. Consequently, the number of interested readers visiting the website increases exponentially. In simple terms, greater traffic means more

visibility and more awareness around the institution worldwide. It offers numerous advantages to the institution:

- Increase in the number of applications for different courses, including research programs
- Easier to market the institution to potential students and faculty
- Improved social media presence and content sharing
- Greater signups for online courses
- Easier to attract corporate sponsors for events and conferences
- More chances to collaborate with industry and subject experts from across the world
- Steady rise in file downloads and citation count

3. Builds intellectual leadership and credibility

When an institution's research output is accessed and consumed widely, one can expect more people to cite, share, link, and talk about it. Thus, it will help the institution become an intellectual leader and luminary in multiple disciplines. Hence, these benefits an institution in the following ways:

- Citations per faculty are an essential aspect of university ranking methodologies, so increasing citations will definitely help boost rankings.
- The ranking of institutions/universities will improve, making it easier to attract grant funders, faculty, and students of caliber.
- The impact of scholarly work will be more far-reaching, inspiring further research, contributing to existing studies, and insights gleaned being utilized for practical and commercial purposes.
- One will gain more back links to the institution's website, which is excellent for improving the search rankings of the institution.
- The institution will be able to establish a global presence, leading to more international students and funding opportunities.

4. Preservation of Scholarly Work

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Preserving scholarly work gets much easier with an online open-access institutional repository. It ensures that the institution does not think about maintaining delicate decades of old manuscripts or keep up with embargo periods of different papers.

Methods of Building Institutional Repository Contents in the Library

Institutional repository is built and managed using suitable software such as Archimeole, Artudis, DAITSS, Eprints, Dspace, Fedora, Greenstone e.t.c However, Dspace has been widely used by academic institutions because of some advantages over other software. These include getting research results out quickly to a worldwide Audience, Storing reusable teaching materials that can be used with course management systems, Showcasing students thesis and dissertations, Keeping track of one's publications/bibliography, Having a persistent network identifier for works that never changes or breaks. Moreover, Dspace facilitate easy access to the materials both by browsing and searching and also facilitate the capture and ingest of materials including metadata about the materials. Open access is also driven by Dspace; a system whereby readers are given a free and unrestricted access to online literature however and whenever needed (Yeboah 2015). The IR of an institution can be used for marketing all the activities of the institution, showcasing research quality and output, archiving for posterity, enhancing visibility, web ranking of such institution and collaboration with other academics.

Nevertheless the following are the practical methods of building institutional repository:

- *Digitization / Scanning of all non born digital materials*: Digitization has been variously defined by many authorities in the field. Gbaje (2009) defined digitization as all the steps involved in the process of making collections of printed information materials available online. Adogbeji and Akporhonor (2021) expressed that digitizing materials like texts, images, and card is mainly through capturing such documents using a scanner and converting them into formats like Hypertext Markup Language (HTML) files. Digitization implies that all the information that is locked up in print or physical paper are transformed electronically and transmitted onto a network or institutional repository, which allows access to anyone connected to the network, however remote. Anike and

Igwenagu (2017) opined that it can be illustrated as taking digital pictures of the pages of books, theses, conference papers, journal articles, university newsletter or any information materials using a digital camera or a scanner, and later uploaded to the internet and then looking at (accessing) the pictures using the internet. Digitization involves adequate planning and budgeting, use of state of the art information communication technologies, scanners and skilled librarians. The essence of digitizing these materials is to enhance access to all available information resources and to preserve and conserve such materials for posterity.

- *Self Archiving*: This is a process whereby the author upload or deposit a free soft copy of his or her scholarly published articles in the World Wide Web or IR in order to provide open access to users (Abel, Bwalya, and Lubinga, 2020). Self archiving of quality intellectual work of scholars and academics increases citation counts of researchers, global recognition and visibility of not just the researcher but the library and the university at large. Self archiving is not an alternative to publishing but a follow up after due acceptance and publication of an article and researchers should make self archiving an integral part of their academic life without waiting for librarians to do it for them. Ibinaiye, Esew, Atukwase and Carte (2015) opined that Libraries and librarians at this point become crucial in providing the appropriate metadata to authors in order to facilitate self archiving and free access to the archived contents of institutional repository. Self archiving ensures sustainability of the institutional repository and creating awareness of journals that support self archiving and open access will help researchers publish more in those journals. No wonder Ukwoma and Dike (2017) advised that permission from publishers to archive their publications in the university institutional repository should also be granted to authors.
- *Submission of student's projects, dissertations and theses*: This is another method of populating the contents of the institutional repository of a university library. "A project or thesis submitted in partial fulfillment of the requirements for the award of doctor of philosophy or M.L.S" is indicative of the fact that every student is expected to submit copies of their research work before graduation to both the department and the college

of post graduate studies as the case may be. Submission of students' research work should in a great major be encouraged in both hard and soft copy. Special attention should be paid to the soft copy to ensure proper copying and transfer of the student's complete work in the compact disc (CD) or whatever storage device that is used. Anyaoku (2019) opined that it will be a welcoming development if the university library should be included in the distribution list of submissions of the CDs and soft copies for enhanced editing, archiving or upload to the university IR.

- *Reaping of the submitted CDs from the department and school of post graduate studies by the librarians.* The librarians have a major role of harvesting the soft copies and (CDs) from the college of post graduate studies and sorting them according to faculties and departments. Next is to read through each work and sieve out the bibliographic details like the authors name, title, keywords, abstract, year, type, language, and other authors affiliations and pointer to the article to enable free access and easy retrieval of the uploaded information materials from the institutional repository. (Tanaij, S.M. and Deshmukh R.R. (2022).

The issue of copyright cannot be overemphasized in the building and management of institutional repository. Okeke (2008) reported that institutional repositories deal with copyright issues in two ways: Collecting Content and Distributing Content. In order to populate the repositories, the institutions collect content usually from faculty members and students or researchers. In doing so, they encounter some copyright issues which requires them to get consent from the copyright owners before the contents are added to the repository. Otherwise, they will be infringing on copyright. There has to be a well written institutional repositories' policy. Some universities mandate faculty members to deposit any research carried out while working with them. Most universities are requiring their students to submit electronic theses and dissertations to be included in the institutional repositories. Some universities make it compulsory for students to comply with while other universities allow the students to decide whether they will like to include theirs to the repositories (Okeke, 2008).

In Nigeria, most universities have embarked on the digitization of theses and dissertations and are requiring students to submit electronic copy. This is in compliance with the Database of African Theses and Dissertations project (DATAD). The institutions having secured the consent from the owners have to make sure that the contents do not infringe on third party rights. Third party rights issues occur when the copyright owners use other people's contents in their work without seeking permission from the right owners or not acknowledging them. Okeke (2021) stated that copyright issues are so complex that most institutions are afraid of building their own repositories. Adbulsalami and Kuchma; Pappalardo and Fitzgerald, (n.d) gave some considerations in building and populating IRs: Institutions have to develop a Repository Deposit Licence which ensures that depositors own copyright in the materials they are depositing or having permission from the copyright owner to deposit; and grants to the repository the necessary rights to make the material available to end-users.

Challenges of Developing and Preserving Institutional Repository in Academic Libraries in Nigeria

- *Problem of inadequate ICT infrastructure and insufficient internet bandwidth*

Digital preservation of institutional repository content is one of the issues facing most administrators. Digital Preservation according to list of Digital preservation coalition (2024) is the series of managed activities necessary to ensure continued access to digital materials for as long as necessary, also it is all of the actions required to maintain access to digital materials beyond the limits of media failure or technological and organizational change. However, there is far more to preservation than merely adding it to the institutional repository. The challenge of digital preservation is not just the volume of data but it is also related to the hardware and software used to store and access digital information that are constantly upgraded and obsolete. Technology obsolescence is the challenge that needs to be given more attention by developers to ensure continued access to digital materials. These challenges have generally been attributed to poor funding.

- *Lack of Institutional Repository Policy*

Lack of a formal documented policy on IR is a hindrance. The entire existing institutional repository in Nigeria has no policy that guides their operation. Such IR policy document should cover such matters as what to accept/ not to accept, copyright issues, self or mediated archiving, submission and withdrawal policies, types of materials to accept and any other issue necessary to govern the operation of the institutional repositories for implementation. The study conducted by Ukwoma and Ngulube (2019) on challenges of preserving digital contents of IR discovered that lack of institutional policy on digital preservation, lack of awareness of the challenges surrounding digital preservation and lack of technical know-how were the major challenges with the preservation of IR contents.

- *Lack of Expertise and Skills*

Lack of skills has been a major challenge in the management and preservation of institutional repository. Ezeani and Ezema (2017) reported that digital preservation librarians lack the totality of skills needed to perform the task. The study identified such skills to include mainly skills to execute trouble-shooting, characterization of scanned documents and book marking. Fayomi, Arowolo, and Atanda (2023) observed that the rapid growth of electronic information resources presents libraries with the challenge of keeping adequate skilled personnel needed to conduct digital preservation. Sambo, Urhefe and Ejitagha (2017) identified Nigerian digital preservation obstacles to include low staff development, poor library development initiatives, inadequate funding, absence of managerial assistance and sound rules and regulations guiding digital preservation. Sambo, Urhefe and Ejitagha also revealed that digital preservation in Nigerian libraries is mainly faced by absence of personnel development, digital preservation guidelines, standards, secondary storage equipment, financial resources and legal authority to carry out digital preservation, software/hardware obsolescence and carefree disposition of library personnel towards the process. Masenya in Friday and Eze also identified absence of competence, personnel development and knowledge about digital preservation among library personnel in institutions of higher learning as digital preservation challenges in those institutions.

- *Insufficient advocacy and support for institutional Repositories*

One of the finest methods to encourage the growth of IR in emerging nations like Nigeria is through advocacy and support for institutional repositories. In order for such awareness raising to be successful, all institutional repository stakeholders, including lecturers, researchers, librarians, and students, must be involved. Advocacy draws contributors and stakeholders together. Unfortunately, a high percentage of stakeholders in Nigeria have little or no knowledge of what IR is about to be able to act as advocates. Effective advocacy pre-supposes that the advocates or stakeholders are very familiar with the concept. This has created apathy in the scientific/research community. Hence, very few understand the concept and are willing to donate

- *Problem of shared network*

A major challenge of shared network is that of high risk of physical theft of the device and unauthorized access to information while on local storage, a computer virus can easily cripple a drive and all the data it contains. There is also the risk of fire incidences, leaking roofs, insect attack on materials stored on the shelves as well as easy damage of CD ROMS due to changes in weather and high cost of regular maintenance of storage devices. Steiner (2012) stated that as more data moves from centrally located server storage to the cloud, the university loses control of the online data/information while the potential for personal and institutional data to be compromised increases. There is also knowledge retention and insecurity of sensitive information.

Strategies for Preserving Institutional Repository in the Library

The need to ensure maximum preservation of the institutional repository contents has been of bigger concern to academic librarians because of the challenges it poses. In order to overcome these challenges in academic libraries, some of these strategies must be maintained. For optimal preservation of IR content in academic libraries, digital preservation policy must be developed. Developing preservation policies should be the first step to guarantee preservation actions. This is so because all the strategies for preserving IR content and the decisions about what content requires short, medium, or long term preservation are embedded in preservation policies. Other strategies for preserving institutional repositories in library include but not limited to:

- *Backup and redundancy measures:* Data loss is inevitable in the digital age, and this can be very devastating and disastrous to either an individual or an organization. Data backup is the practice of copying data from primary location to a secondary location to protect institutions from losing such due to hardware or system failure, human error, theft/ hackers, virus or corrupt system. Backup is an effective strategy against data loss. Redundancy on the other hand is all about maintaining continuous availability which reduces the risk of disruption or interruption. For example, power supply can be maintained using interruptible power supply (UPS), generators and renewable energy sources like solar panels.
- *Investing in modern technology and infrastructure:* Robust storage is indeed essential and fundamental in preserving IR against data loss. Libraries should at intervals evaluate and upgrade their technological equipment to accommodate the evolving digital format of the time in order to guarantee the long life of the digital assets. Also adherence to standards and global best practices in digital preservation methods should be strictly maintained.
- *File format migration strategies:* will identify and give a red flag to potential risk of obsolescence or out-datedness thereby prompting libraries to migrate contents to newer formats to ensure posterity, continued access and readability.
- *Periodic Audits and assessment:* Libraries should at interval review, evaluate, renew, upgrade and assess their preservation policies, strategies, strengths and weaknesses to ensure that the life span of their digital local scholarly contents are elongated and preserved.
- *User education and outreach:* This has been one of the core duties of libraries and librarians. They do this through organizing workshops, training conferences and seminars to educate researchers, librarians and other users of IR on the dos and don'ts of Institutional repository to enhance longevity of the digital contents.

Conclusion

The paper has shown that IR sustainability is highly beneficial, especially at increasing the visibility of the institutions and staff, sharing of scholarly content, improving webometrics of institutions and others. Despite these benefits, there are challenges faced by institutions and libraries in sustaining the IR. It is a practical, cost- effective, and strategic means for universities

to advance scholarly communication and provide long time preservation of research outputs. It is however unfortunate that this impressive technology is still relatively in the development and implementation stages in Nigeria as a result of many challenges that have been identified in the paper. These include lack of awareness of institutional repository, inadequate information and communication infrastructure, lack of funding as well as, poor advocacy for institutional repository and copyright management. As a result no meaningful progress has been made towards having creditable institutional repositories in the Nigerian universities sector. Addressing these challenges requires careful planning, investment in infrastructure and resources, ongoing monitoring and evaluation, and collaboration with stakeholders across the institution and beyond. Since institutional repository has become one of the leading global trends in library operations, there is a need for academic libraries to examine these strategies and apply them where necessary to ensure effective long-term preservation of its contents for future use. By proactively identifying and mitigating potential risks and obstacles, institutions can enhance the resilience and sustainability of their institutional repository preservation efforts.

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