

BUILDING INSTITUTIONAL REPOSITORY: KNOWLEDGE MANAGEMENT, CONTENT, UNDERSTANDING OF KEY ISSUES AND THE LIBRARIANS ROLE

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ABSTRACT: *Institutional Repositories (IRs) are increasingly becoming crucial library resources, and more use of digitized material is fundamental in building sustainable IRs. With a series of universities and research sites distributed throughout the continent, a lot of research which requires preservation is obviously carried out in the institutions. However, a majority of the research generated from these institutions ends up in various libraries which are hardly accessed by learners. As such, many African scholars rely greatly on information from developed nations and reduce Africa to just a consumer of information, rather than a source, hence building an accessible IR allows the display of the works of scholars to the broader community and considerably assists in the advancement of an institution and its outreach. The successful establishment of an institutional repository needs careful arrangements and enthusiasm from the entire institutional community such as students, faculty members and academic staff. Critical decisions have to be made before making any designs and redesigns on IRs such as the funds, staff, technology, metadata, content, building operations and successful management and running of the IRs. This paper explores knowledge management in terms of software and the evolution of how knowledge is managed, the inclusion process of content through structured content organization and modular content publishing, issues of IRs in Nigerian Universities, and the roles of the librarian in building institutional repositories.*

KEYWORDS: repository, institution, Nigeria, librarian, academic, digital.

INTRODUCTION

Building Institutional Repository

With the growing contribution of the internet as a medium for exchanging information, the primary roles of scholarly communication can be unbundled. This creates a new path towards knowledge disbursement and fresh prospects for institutions in utilizing their intellectual capital as a greatly effective gauge of academic value. According to Vishala and Bhandi (2007), repositories represent a concise and coordinated storage for research resources, pre-prints and other uncompleted works, books, journals, conference papers, data sets, and manuscripts. IRs are digital collections that capture and preserve the academic output of a community of one or more universities (Yuan, 2011). They are condensed forms of intellectual contributions which have been widened to accommodate scholarly creativity and literary successes. They are also a fresh concept in the digital collection, management, dissemination, and preservation of academic works by the faculty and learners. Nigeria has about 100 accredited universities, as well as several other research centers such as polytechnics and institutes (Funmilola, 2019). These centers take part in various forms of research through their scholarly staff that need to be promoted and retained, and learners who

submit their dissertations as required for educational awards and degrees. Worryingly, the information is stored in libraries that are not accessed by many scholars. Researchers therefore depend on information from developed countries and as much as this information could be accurate, it is not always very relevant to the issues in the region. There is therefore an increasing need to build repositories in Institutions while considering factors such as knowledge management, content, comprehending the key issues and the role of the librarian.

This paper aims at identification and discussion of issues in the building of institutional repositories, and determination of the role of librarians with a keen focus on Nigerian Universities.

Research Objectives

The research aims at achieving the following objectives:

- ✓ To discuss the current state of Nigerian digital institutional repositories.
- ✓ To provide in-depth information on IRs in Nigeria in terms of their purposes
- ✓ To describe the process of building an institutional repository, the software needed, knowledge management, content, and the role of the librarian.
- ✓ To discuss the benefits of building Institutional Repositories and the associated drawbacks.

Study Background

Research by scholars in Nigeria started before the country attained its independence and was facilitated by the need for British colonialists to conduct research on agro-based raw materials for supply to industries all over the world according to Ezema (2011). Today, University libraries in Nigeria have embraced the incorporation of technology into their activities which has served as a route for improving and developing, particularly in cases where attention is paid on scholarly works which need digitization and preservation for use in the future. However, the information is stored in libraries and most times in hard copies that are not easily accessed by many scholars. Researchers therefore depend on information from developed countries, which is in most cases not relevant to the issues in the region. There is therefore an increasing need to build digital repository in institutions while considering factors such as knowledge management, content, issues and the role of the librarian.

LITERATURE REVIEW

In a study by Cullen and Chawner (2010) exploring the factors that affect how IRs are adopted and their success, only one hundred and ninety-three (193) out of five hundred and forty-two (542) tutors from four (4) New Zealand universities had looked up information from the institutional repositories in their universities. Out of the 542, only 131 had made deposits of their academic works in their own IRs. Likewise, a research survey was conducted by Bamigbola (2014) on the utilisation of IRs by scholars in Agricultural related courses in Nigeria's Federal University of Technology. The research found that 7.8% of the scholars had made their submissions of academic works into their IRs, while about 60% had not submitted their works but had searched their institutional repository for the retrieval of academic works (Bamigbola, 2014). This is worrisome as sustaining IRs greatly depends on the generation of content, and hence submitting low numbers of works by lecturers is a critical concern to library stakeholders.

According to Steele and Nicole (2016), institutional repositories can be described institutionally, scholarly, cumulatively and perpetually, and through the open attribute (Steele & Nicole, 2016). From the institutional description, content is restricted to the output of a particular institution as opposed to their subject based precedents. In the development process of IRs in many libraries, it is clear that materials of relevance to the output of one research institution have greater diversity as compared to those aimed at formal peer reviewing. There have been warnings on the risk of transformation from the traditional subject based review process to an institutional one. This means that there is need to define boundaries between scholarly published works and IRs (Steele & Nicole, 2016). The appreciation of content in IRs requires more diversity than that which is required for subject based repositories.

OpenDOAR indicates that out of the 126 Nigerian accredited universities, only five have their own IRs. Based on this directory, these universities are Covenant University, Ahmadu Bello University, The university of Jos, the Federal University of Technology and the University of Nigeria Nsukka. The academicians in these IRs include senior and junior professors.

RESEARCH METHODOLOGY

This paper is literature based and examines the current state of digital institutional repositories in Nigeria's Universities, knowledge management, content and the role of librarians in building institutional repositories. This is achieved through researching on various IRs in Nigeria. This study also used a descriptive survey to gather information on the opinions on IRs from 250 Nigerian academicians in universities with IRs. Online questionnaires were used as tools for collecting data. Out of 300 questionnaires issued, 250 were filled out correctly and utilized in analysis.

Findings

The results indicated that 42% of the respondents agreed that the IRs were used as collaboration platform among colleagues, 10% for preserving resources, 15% for free accessibility to the institution's research outputs, and 33% indicated that they were used to access relevant research material.

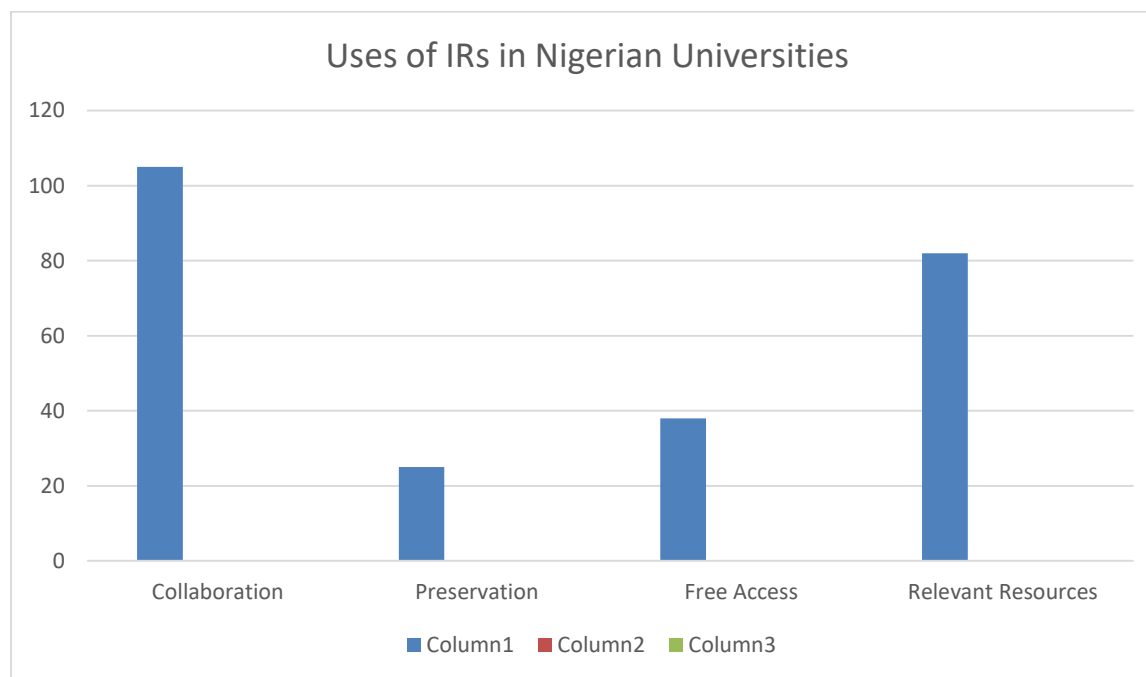


Fig 1.1 Average Responses from Academicians on Uses of IRs in Universities in Nigeria

DISCUSSION

The IR is a form of support to faculty scholarship through open access and archives of the pre and post prints and they are a promotion of the value of the scholar's works and knowledge through archives of dissertations. Moreover, institutional repositories expand global visibility, accessibility, audience and influence (Okafor&Ukwoma, 2017). This is particularly possible through the digital repositories which are open to everyone online. As such, scholars can upload their journals to steady and easily discoverable sites without having to worry about technical problems such as file formats. In Nigeria, the concept of IRs is an ongoing theme in institutions of higher learning that have seen it as a requirement to avail their resources. It is seen as an avenue through which visibility is boosted, while exemplary performance continues to be used as the ranking metric for world universities. Nigerian universities compete among themselves in order to achieve higher web rankings (Musa &Shittu, 2014). This could be seen as a healthy way of competing because universities devise innovative ways of boosting their digital material available to the public. This results to more Nigerian content online, more openness, and capacity to share institutional resources.

Moreover, there is need for mediations while submitting publications in order to decrease the likelihood of errors, and boost faculty buy-in through provision of support services. Moreover, since institutional repositories are home to many works in digital format which have not yet been published, the library could also provide such services such as copyrights management amongst others. The stability of URLs allows users to easily share the links of documents such as resumes. In addition, IRs facilitates showcasing of the university to potential students, stakeholders and financiers.

However, like any other system, there are drawbacks in institutional repositories. IRs have an implication on the sense of balance of institutional supremacy since some departments grow at higher rate as compared to others. There is also reliance on unverified approaches for digitally preserving information in the long term. This could affect the visibility and preservation of the scholarly publications, and expose the authors of the works to potential risks such as loss of publication rights. In addition, initial costs could be very high since contributors identify great risks and duplicate efforts to curb them. An IR is at the risk of falling in case an institution fails to receive financial support, mismanagement, or technical issues. Such hurdles can lead to the disruption of accessibility, and complete permanent loss of resources and information stored in the IR.

The Process of Building an Institutional Repository

An IR should have Outdoor Access Initiative (OAI) facilities to allow the access of information by the user whenever and however required (Yeboah, 2015). In addition, the process involved in registering and submitting the necessary documents should be easy for the researcher as well as the faculty. They should also have strong internet access to facilitate browsing of more information. It is also important for IRs to have sustainability, trustworthiness and data preservation over a long period of time. While the IRs are established by the library, the basic motivation in content growth is the self-archives made by the article creators themselves. Lastly, it is important that IRs offer global resources to their users. This means that researchers not only access local information, but also material from a range of global sources. This facilitates diversity, and scholars are not just restricted to the information in their region.

Building an IR can be broken into logical stages. The process begins by initiating the project, defining content and the feature set, choosing a tool, building and maintaining a system (Stezano, 2016). Firstly, project initiation involves meeting with stakeholders for the definition of goals, defining the task force and their roles, preparing the documentation as well as the deliverables, forming the project team, and creating a detailed plan of roles and goals. Stakeholders include faculty agents, University Librarian and other Librarians, technical heads of department and representatives from IT (Stezano, 2016). Secondly, the definition of content involves questions on the existence of an uploading mandate, definition of content versions, definition of repository classifications, and connections to digitized assortments. Thirdly, the feature set is defined through conducting stakeholder meetings to define the requirements, identifying the desired functionality and prioritizing features such as discovery modes which include searches, browsing, and geolocation, data sharing, and feedback (Stezano, 2016). Fourthly, the creation of a metadata scheme involves reviewing the existent metadata for targeted artifacts, choosing the scheme on the basis of needs, and defining the base metadata set. Fifthly, the definition of access protocols involves the evaluation of the need for differentiation of access on the basis of user types such as the admin, public and contributor, the user types are defined, permission profiles created, assignment of these permissions to artifact classes, and the creation of location profiles. Sixthly, maintenance is defined through a staffing plan, policies, marketing plan and service level pact. Lastly, tools are chosen through creation of decision criteria, definition of a set of choices, evaluation and stakeholder reviews.

Software available for the development of IRs.

The widely known software includes DSpace, EPrints and Fedora. Firstly, DSpace was created by MIT libraries who collaborated with Hewlett Packard for the establishment of MIT's institutional repository in 2002. The package offers tools for managing digital assets, and is mostly utilized as a foundation for an IR. It is also used as a platform for preserving activities digitally. Secondly, Eprints is a costless open source package for the generation of Open Access IRs (Vishala&Bhandi, 2007). Fedora is a digital asset organization design on which a variety of library structures are established. It is a great solution to institutions that seek a strong and properly designed IR which is appropriate for huge collections that require high technical expertise. These software Programmes provide designed portals through which data is entered for digital materials that lead to semantic connections (Musa &Shittu, 2014). These connections are further enhanced by introducing metadata which is basically data about data. Metadata boosts the direct ability to find resources instead of mere accessibility. The findability of materials is used to denote the arrangement of materials according to their relevance, with synonyms, and with alternatives for media such as images, sounds or motion.

Open access (OA) is a practice providing access, and can take two forms including open access publication, and OA self-archives (Vishala&Bhandi, 2007). It is also a popular database initiative in automating electronic designs. Open Access was developed for the removal of obstacles in research output, and means that academic works can be made digitally available without the obstacles of price and permission (Farida &Jann, 2015).

Knowledge management

Advanced Institutions such as University of Nigeria spend alot of money on maintaining library stock. Institutional repositories involve dynamism and are online pools of research and projects that have been carried out by students and faculty in a university (Nagra, 2014). They are fundamental in creating and maintaining connections between the library and scholars. In Nigeria's universities, the management of knowledge and scholarly publishing of these research works have undergone transformations over time. In the past, information was printed and stored in safes or shelves. However, with the advancing technology levels, digital documents have replaced the printed forms. With the increasing Information Communication Technology involvement in the country and its impact on institutional repositories, more Irs are becoming more accessible (Ukwoma&Okafor, 2017). This is achieved through the manner in which electronically transmitted documents are presented from the academic staff, and students to other researchers. This allows deposit of research works and accessibility to all forms of research by any scholar. Open softwares such as D-Space exist to allow access to any information in anInstitutional repository such as dissertations, research reports, books, manuscripts among others (Nagra, 2012). Knowledge management is therefore key in building IRs through generation, gathering, preservation, application and reclamation of information. Following the digitization efforts of various universities in the world, Nigerian universities have also began embarking on similar projects of local content digitization such as Ahmadu Bello University Zaria which began in July 2005 (Musa &Shittu, 2014). At that time, only the title page and abstract were digitally available on Database of African Theses. In 2008, the University of Jos joined the wave using the DSpace software and other universities followed (Musa &Shittu, 2014).

Publication and Promotion of Local Content

Promoting and publishing local content on an IR facilitates the visibility of a university. Such local content comprises the university's journals and other unique resources. With the quality and content in these materials, it is important that they are well preserved for future generations in order to boost their accessibility and utilization. For example, contents of URs in Nigerian Universities are available on such sites as OpenDOAR. A survey conducted on seven government institutions and 85 librarians in South East Nigeria found that fifteen local content sources were selected as suitable for publication in IRs (Ezema, 2013). Furthermore, a main method of obtaining these local contents is through the encouragement of staff to add their publications in libraries. Providing subject indices to local contents and their digitization are effective modes of material organization for the IRs. In addition, when publications are done on institutional repositories, there is boosted author visibility, the university's global ranking is promoted, and efficiency in disseminating research findings (Ezema, 2013).

A Background on Content in Institutional Repositories

The interest developed in the idea of using institutional repositories as a means of supporting and increasing the visibility of scholarly works has been greatly fed by the consciousness that IRs can serve as an extension of the library's influence in an institution. The focus on building IRs is both technical and structural in terms of concerns associated with selecting software, applying metadata on items positioned in IRs, copyrights in OA landscapes, and the role of IRs in fostering reforms to academic publications through the support of a movement towards OA archives (Schlagen, 2015). The Online Computer Library Center highlighted that technical issues are not really the major concern in creation of IRs. Rather, repository developers are more exposed to challenges associated with institutional politics and culture. Issues related to content are also necessary for the success of the IRs in any institutional setting. Content related matters are mostly associated with the kinds of material that could be considered as appropriate for inclusion in IRs, the people responsible for material selection, and the connection between IR content development and other tasks of selection that the library manages.

Repositories based on subjects were the precedents of IRs. They were initially created as attempts to utilize the power of the internet to offer a substitute and inexpensive way of accessing research literature. Since they required that articles be publications in a peer reviewed source for inclusion, or successfully settled the peer reviewed stages and waiting to be published, subject based repositories have since undergone evolution. This is through their development as archives of publications connected by subjects.

In addition, one of the main supporters of open access archives and IRs has confirmed the rising need for a wider view on any material set for inclusion in repositories. According to Rinehart and Cunningham (2018), IRs are not supposed to be simply duplications of the existent channels of formal academic publications. Conducting surveys on the perceptions of the faculty and authors provides a reflection of their concerns regarding the continuity of traditional academic journal publications. Moreover, they point out the consideration of the faculty on IRs as properly suited for several kinds of gray literature and other unpublished documents. These documents and materials comprise of working papers, dissertations, surveys, conference proceedings, reports on statistics, and status reports to financiers (Jain & Bentley, 2009). All these forms of gray literature

comprise the informal academic communication procedures. In some cases, an item could precede a formal publication. However, this could prove difficult in material identification, accessibility and preservation. In addition, publishing gray literature mostly leads to omission of significant details such as research methods. As such, whereas peer reviewed journals offer major platforms for formal communication within academic settings, gray literature plays a valued complementary role.

Furthermore, some researchers are of the argument that repositories should be comprehended and developed as a fresh form of academic publications. There is therefore a high need for libraries to use IRs for digitally capturing and preserving a majority of the campus occurrences such as lecture sessions, and performances (Rinehart & Cunningham, 2017). There is substantial sense in the calls to widen the content of IRs to the extent of inclusion of a variety of texts that are not included in the categories earlier mentioned. Among the main adjustments made to scholarly communication provoked by the global acceptance of ICT in supporting research and publications, is the stable erosion of the difference between formal and informal academic communication. While this difference continues to be of less relevance to researchers, libraries have the prospect of enhancing their role in the research through expansion of the content range which they manage.

Majority of the libraries have set out to acknowledge the value of informal academic communication. This is evident in the plentiful subject gateways that are now part of the library's information services. These repeatedly comprise guides to informal and formal sources of data and information. Likewise, IRs do not have to be designed as a stand-in form of distributing formal scholarships. Instead, their potential could be maximized if only they are allowed to grow in a hybrid form used to disseminate both formal and non-formal academic communication. Content in IRs can be organized into the following categories:

Structured Content Organization

Structured content organization results to in-depth revelations of resource features and interconnections (Chenying & Han, 2011). The organization of institutional repositories' content on the basis of its role in the institution leads to better expression of targets and orderly procedures of organizing content. Subsequently, it is easier and more efficient to catalogue metadata. This can be achieved through such principles as resource unit minimization, diversifying taxonomy, and standardizing attribute indexing for the achievement of high efficiency content build-up.

Modular Content Publishing

IRs are less appealing when they have low content of complex works and varieties. The achievement of high utilization is instrumental in the sustenance of growth in institutional repositories (Chenying & Han, 2011). The modular publishing system includes many logical modules with each as an independent unit, while all modules operate collectively as a complete system. Techniques such as themed publishing's and combinations of metadata are included. The modular content publishing strengthens content publication and facilitates the improvement of service workability.

The Role of the Librarian in Building an Institutional Repository

Bearing in mind the increasing benefits of IRs, it is clear that the establishment of IRs is the next significant development in any library environment. As such, librarians will have a major role in

the establishment of these institutional repositories. Librarians have over time been involved in the management of collections from their institutions, gathered a lot of proficiency in collection assessment, organization and development (Vishala & Bhandi, 2007). Their roles and engagements with the wider vision of the institution are becoming interconnected with those of other institutional participants such as the administration, as well as other departments. A majority of the faculty does not have enough time to keep up with the changing technology levels, and hence end up considering self-archives as just additional organizational work (Allard & Mark, 2005). The role of the librarian therefore comes in as diffuse, which means that they are growing into a more cohesive section of the community through the infusion of library proficiency into research, teaching, and other functions. The significance and distinguish ability of the librarians to the faculty as well as the entire institution will be boosted through increased support during their digital publication activities (Vishala & Bhandi, 2007). In addition, the librarians can be involved in the development of IRs through serving as collaborators in researching, training and learning. Furthermore, the librarian's role includes the education of faculty on the significance of open access in sharing scholarships with improved global professional conspicuousness for both the scholar and the institution (Allard & Mark, 2005). The librarian is also expected to negotiate with publishers on the faculty's behalf or encouragement of the faculty in retaining the publication rights in institutional repositories and academic publications (Vishala & Bhandi, 2007). The deposit of materials and resources in the institutional repositories for the researchers, and formatting and converting files can be done by the librarians. Moreover, these IRs allow librarians to offer direct access to academic resources rather than through a chain of serial's vendors. While the greatest challenge could come from the generation of content, it is important that librarians take the relevant steps in the promotion of institutional repository resources. This means that the librarians should play a marketing role for the popularization of their IRs (Vishala & Bhandi, 2007). In addition, the management and participation in the evolution of the academic communication process is a fresh challenge for the librarian (Kamraninia & Abrizah, 2010). Commitment to an IR needs the librarians to prudently consider the repercussions of migrating from custodial responsibilities to active contributions to the progression of academic communication: a paradigm shifts from the old roles to a greatly practical and augmented institutional environment.

CONCLUSION

The entire concept of institutional repositories is bound to present a number of trials and prospects for the libraries and the institutions. The success of the IRs is an elevation of global, national, and institutional visibility of authors and their scholarly works. Visibility is key in the institution's capacity of response to the future wants for a greater dynamic communication services. As such, there is need for libraries to build IRs in accordance to knowledge management principles, evaluating content for inclusion and defining the roles of the librarian in the process. Nigerian universities have widely invested in the establishment of institutional repositories in a bid to increase the amount of their content available online. The librarians play an essential role in the transmission of content from the scholar and faculty to other researchers. The management of knowledge is achieved through such software as Eprints which are platforms on which institutional repositories are established. This paper therefore explores the fundamental dynamics involved in

the establishment of institutional repositories that can effectively promote the visibility and accessibility of scholarly works to global researchers, as well as preservation of these works for future use.

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