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Management of Local Contents in Institutional Repositories in Libraries in tertiary institutions in Nigeria: A survey.

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Management of Local Contents in Institutional Repositories in Libraries in Tertiary Institutions in Nigeria: A survey.

Abstract

The purpose of this study is to investigate the development and management of local contents in institutional repositories (IR) in tertiary institution libraries in Nigeria. The study adopted a survey research method. Online questionnaire and IR site investigation methods were used to collect data from 20 university libraries in Nigeria. The study revealed that no single College of Education, or Polytechnic library in Nigeria have embraced development of IR. Only 20 university libraries have successfully developed IRs to manage local contents emanating from the universities. The majority of the institutional repositories contain primarily theses and dissertations, journal articles and conference proceedings. DSpace was the most preferred software used in the various IRs to manage local contents, and lack of fund, inadequate facilities, absence of IR policies, and challenge of collecting contents from various contributors were the most mentioned challenges encountered in the development of IRs in Nigeria. The results from the study will provide important data and insight into the development of institutional repositories in tertiary institution libraries in Nigeria, and generate suggestions for librarians, and policy-makers for developing institutional repositories in developing countries. The project will enable university libraries in Nigeria provide world class services by making their local contents visible globally. This will make users access relevant documents in that particular tertiary institution libraries from anywhere in the world.

Keywords – institutional repositories, local contents, tertiary institutions, librarians, Nigeria.

Introduction

The establishment and implementation of Institutional repositories (IRs) has gained momentum globally in recent years. The developed countries have a greater number of institutional repositories compared to the developing countries. This may be observed in different registries of repositories such as the Directory of Open Access Repository (DOAR) and Registry of Open Access Repository (ROAR). Data from those repositories show that most of the African countries are lagging behind in the establishment and implementation of IRs. It is sad to note that only few tertiary

institutions precisely universities from Nigeria have their presence in OpenDOAR (OpenDOAR, 2022). Institutions the African continent have not made their presence in OpenDOAR simply because they lack visibility, many of them have not created institutional repositories to showcase their research power to the world. Potentially one of the greatest changes witnessed is the surge and acceptance of open access to research data, study materials and even, artefacts and special collections is the emergence of IRs. Without the ability to travel to universities, research centres, libraries or anywhere, people have had to almost exclusively turn to the internet to fill research and knowledge gaps. Clark, (2021) stated that the primary use for an institute to own a repository is to enable researchers to archive their research output and thus, improve the visibility, usage and impact of its results and findings. Institutional repository has the potential of increasing the visibility, prestige, ranking and public value of researchers and institutions.

The development of IRs, as expressed by Lynch (2003; p.328) is an indication that the intellectual life and scholarship of universities will increasingly be represented, documented and shared in digital form and that a primary responsibility of our universities is to exercise stewardship over such resources. University repositories are seen as strategic mechanisms to expand diversity and ensure worldwide availability of digital scholarship using opportunities of the networked digital environment to strengthen teaching, learning and research activities. A university can ensure effective exploitation of scholarship by its community as the IR brings together extensive formal and informal scholarly communication in a single archive as determined by the institution's policy (Chan, 2004; Ukwoma & Okafor 2017). The vast amounts of intellectual output which had remained invisible to academics and researchers within the global community, created a serious void in the continuity of research and led to duplication of research projects (Ezema 2011). With IRs, there is an expansion in the range of knowledge being shared. Academics and the research community are encouraged to ensure that the intellectual life and scholarship of universities are increasingly represented, documented and shared in digital form via IRs, while the university's responsibility is to make them available and to preserve them (Lynch, 2003).

Early implementers of IRs experimented by populating their repositories mostly with grey literature such as theses and dissertations, material which does not normally find its way into the various publication channels. Content has since diversified and the current state seems to agree with what Shearer (2003, p.4) predicted that:

In the next ten to twenty years, it is likely that the scholarly communications system will have evolved into some form of unified global archive system, without the current partitioning and access restrictions familiar from the paper medium, for the simple reason that it is the best way to communicate knowledge and hence to create new knowledge.

At global level, as reflected on OpenDOAR (2022), digital materials, such as: journal articles, theses and dissertations, books and book chapters, datasets, multimedia and audio-visual material, learning objects, unpublished reports and papers, conference and workshop papers, patents, software, and bibliographic references, are being populated in IRs. It is the responsibility of every university to ensure that scholarship produced by its research community is discoverable by, and accessible to, the highest number of people possible worldwide (Ezema, 2011). Universities should take a leading role in ensuring dissemination of its knowledge. Lagzian, Abrizah and Wee (2015) emphasized that, for any institution, setting up a repository is a major undertaking requiring the commitment of resources to ensure success in both the establishment and maintenance of the repository.

Omeluzor (2014) stated that both institutions and contributors benefit from IR. Institutions benefit from IR as it; serves as tangible indicator of an institution's quality, thus increasing its visibility, prestige, and public value; increases the ranking of an institution both at local and international level; enhances learning, online teaching and research especially in universities; and presents an institution's intellectual capital to a whole lot of scholars. Despite the potential benefits associated with the use of institutional repositories (IRs) by universities, studies have shown that most universities in Africa have not keyed into this laudable innovation. This could be as a result of some factors like low level of awareness and unfavorable perception of IRs on the part of the management of universities, coupled with lack of fund, and lack of policy statements on submissions and restrictions, issues of copyright and preservation. It also appears that the daily research outputs from universities such as research papers, theses and dissertations, projects, and other valuable library information resources from the African continent are not widely communicated to users and researchers all over the world. Therefore, a well-developed institutional repository is the answer to their visibility and accessibility.

In order to make the local contents emanating from tertiary institutions to be visible, it has become imperative for university libraries in Nigeria to embark on the development of institutional repositories to serve as a platform for the visibility of local contents in these universities. Therefore, the present study is set to evaluate the development and management of local contents in institutional repositories in universities in Nigeria.

Research questions

1. How many tertiary institution libraries in Nigeria have developed IRs?
2. What type of local contents are used to develop IRs in the libraries in Nigeria?
3. What type of software are being used to manage content in the IRs?
4. What type of Metadata harvesting protocol is being used in the IRs?
5. What are the challenges encountered in developing institutional repositories?

Literature review

Institutional Repositories in Libraries

Institutional repositories are powerful tools to facilitate global access to intellectual output by members of the institution, particularly in assisting them to preserve and maximize access to their research output globally. Singeh, Abrizah and Karim (2013) reported that for repositories to be successful and sustainable, they must be populated with scholarly works of enduring value. One key criterion that is used to measure the quality of a university is the quality and quantity of research output (Anenene, Alegbeleye & Oyewole, 2017). The situation where the totality of the research output emanating from a particular university cannot be ascertained will make it very difficult to evaluate the university output and could also impede the collation and onward transmission of the researches that can benefit different segments of the society to the parties concerned. This reveals the need for the establishment or development of institutional repositories in universities to make the intellectual output visible globally.

As the support for repositories continues to grow, universities are set to gain more from well-run IRs because they are a hub that provides a permanent record of a full range of research outputs of the institution. Besides, IRs can be seen as advertisement tools for institutions to lure funders, potential new researchers and students (Ibinaiye

et al. 2015). According to Grundy (2017) one of the prominent indicators for university ranking is research productivity. That is, it looks at a university's reputation for research excellence among its peers. Another important criterion is the research influence (citations). The research influence indicator looks at university's role in spreading new knowledge and ideas, i.e. the number of times a university's published work is cited by scholars globally. Adam and Kaur, (2021) analyzed the operational level of institutional repositories in African countries. The analysis showed that the typical performance of institutional repositories remains below average. The study found that open access to research results through institutional repositories in South Africa, Kenya, Nigeria, Algeria, Sudan, and Egypt appeared to be relatively more feasible than other African countries. The study concludes that the widespread implementation of institutional repositories is still very slow paced.

Similarity, Idriss and Al Sarraj (2019) analyzed the growth of institutional repositories in the West African region from the years 2009 to 2019, using OpenDOAR as the main source of data collection. They reported that there were 30 repositories available from West African countries, with Nigeria having the highest number of repositories (21), followed by Ghana (5), Senegal (2) and Cabo Verde (2). They concluded that many institutions are yet to implement institutional repositories in the region.

Contents used to develop IRs

Institutional repositories could contain theses, dissertations, projects, course notes, seminar papers, conference proceedings, administrative documents, learning objects and other forms of grey literature from the institution. When digitized or born-digital materials are put on the web, they tend to increase the library's visibility as the users all over the world access the materials. One major challenge of African scholarship is poor visibility of research findings coming out of the continent (Ezema, 2011). For example, Ezema, (2011); Baro and Otiode, (2014); Bako, (2005) have reported the poor visibility of Nigerian scholarship thereby giving low impact to published works and other valuable information resources coming out from the country. In addition to this, these studies revealed that the quality local contents from the country lack readership outside the country. In Nigeria, for example, research outputs in form of theses and dissertations are completely buried in individual university libraries to the extent that it is only very few researchers in the university community that are aware of the existence of these materials (Ezema & Ugwu, 2013).

Bangani (2018) found that institutional repositories in public universities in South Africa mostly contain electronic theses and dissertations, while journal articles and conference proceedings are increasing in number. Other common contents are memorial lectures, discussion papers, library newsletters, university calendars and graduation ceremonies, university management collections, media coverage, events, research data, policy briefs, university communiques and audio collections (Bangani, 2018). Shajitha and Abdul-Majeed (2018) evaluated the content growth of institutional repositories in South India and analyzed the growth of the different types of items available in these institutional repositories. The study found that journal articles were the most common type of content in institutional repositories, followed by theses and dissertations. A further prominent category was conference proceedings, and inaugural lectures also exhibited a high growth rate. The study concludes that Indian institutions are actively engaging in data curation activities, depositing a wide variety of items in their respective repositories.

Software used to manage contents in IRs

The impetus for the growth of IRs has been propelled by the emergence of a variety of enabling online tools developed to support and advance OA practices by advocates of the movement. Open-source software, such as DSpace, Eprints, Fedora, Greenstone, WEKO, Digital Commons are some of the tools that have positively impacted on the growth of IRs worldwide. This rapid growth of IRs became more evident at the beginning of the 21st century when open source software enjoyed a strong uptake particularly in Europe (Shajitha & Abdul-Majeed 2018). Several studies have reported the popular use of DSpace for the management of contents in institutional repositories, as it, by default, represents communities (e.g. university departments) and collections (e.g. papers and dissertations) while offering essential workflow management support for item submission by individuals (Ahammad, 2019; Baro, Godfrey & Eze 2014; Anyaoku et al. 2019). DSpace is also free for anyone to use and open source. Islam et al. (2020) described and analyzed the condition of the digital preservation of institutional publications in the libraries of higher educational institutions, especially in public universities in Bangladesh. The study found that DSpace has been adopted in these university libraries for digital preservation because of its effective, user-friendly modules.

Challenges of developing IRs

In many African countries, the development of institutional repositories have faced serious problems ranging from low Internet connectivity; software and hardware challenges; lack of highly skilled personnel; inadequate power supply; low bandwidth; legal copyright laws; poor funding; lack of organizational infrastructure and policies; project sustainability and many others (Ezeani & Ezema, 2011). Sadiku, Kpakiko and Tsafe (2018) report on the issues around building and sustaining an institutional digital repository and the corresponding challenges for global visibility in Nigeria. They argued that building and sustaining an institutional digital repository project requires a state-of-the-art technological infrastructure, skilled manpower and strong financial backing, as well as a user community with information and communications technology (ICT) skills.

The respondents in Anyaoku et al's (2019) study took the time to write comments on the problems encountered in the development and maintenance of institutional repositories. They mentioned issues such as: the need for dedicated staff to manage the institutional repository; none of the repository staff being professionals but training on the job; not having enough resources (e.g. sufficient random-access memory to cater for the access load and to run backups, and a shortage of staff to maintain and manage the institutional repository, with one person being responsible for everything); a lack of expertise in the use of DSpace; the lack of an annual budget for the institutional repository, limiting how much could be done each year; the cost of Internet services; incessant power cuts; staff feeling reluctant to submit their publications to the institutional repository; legal issues; a lack of expertise on the part of librarians in troubleshooting technical problems; and a lack of awareness among academic staff of the existence of the institutional repository.

Research Methodology

The study covered all the tertiary institution libraries in Nigeria that have adopted and built institutional repository. As December 2022, Nigeria has over 202 universities (NUC, 2022), 95 polytechnics, 63 colleges of education (Oguche, 2016). Data collection for the study was in two parts: first, OpenDOAR website was searched to identify tertiary institutions that have developed IRs and are listed in the

OpenDOAR database. Second, online questionnaire was designed to collect data from the librarian in-charge of the IR in tertiary institution libraries in Nigeria. Among the tertiary institutions (Colleges of Education, Polytechnics, and Universities) investigated on the OpenDOAR database, only 20 universities from Nigeria were identified to have developed IRs and are registered in the OpenDOAR. Therefore, data was collected from the 20 university libraries.

The online questionnaire was designed using Google Form, the link was forwarded to the person in-charge of the IR in each university. Sample of the questionnaire is at the end of the paper (Appendix I). Data collection started from June 2022 and ended October 2022. The data collected was analyzed and results presented in tables and charts.

Results

Designation of respondents

Out of the 20 respondents, 6 indicated that they were institutional repository administrators, 7 were systems librarians, 4 were digital librarians and 3 were digital content creators.

Number of University libraries in Nigeria that have developed an institutional repository

The preliminary survey of the OpenDOAR database revealed that out of the 202 NUC approved universities in Nigeria, only 20 universities in Nigeria have their presence in OpenDOAR (OpenDOAR, 2022). No single College of Education or Polytechnic have developed IR in Nigeria. The list in Table 1 shows the 20 universities in Nigeria that have developed IR and are registered in OpenDOAR.

Table 1: Number of University libraries in Nigeria that have developed an institutional repository.

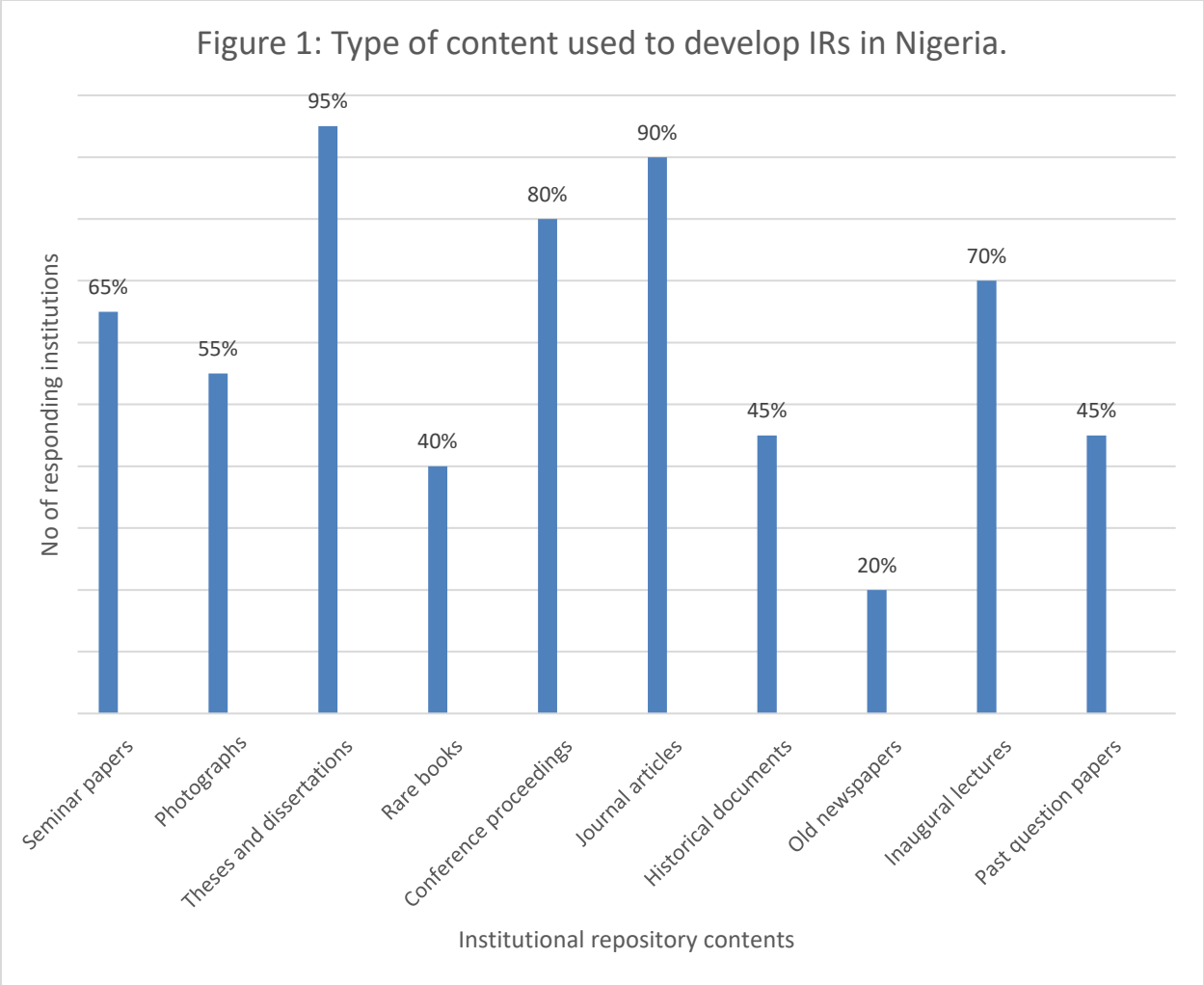
s/n	Universities	Size	Software	Year established	link

1	University of Ibadan	4221	DSpace	2019	http://ir.library.ui.edu.ng/
2	Obafemi Awolowo University, Ile-Ife	1689	DSpace	2018	https://ir.oauife.edu.ng/handle/12345689/20
3	Federal University of Technology, Akure	2346	DSpace	2012	http://dspace.futa.edu.ng:8080/jspui/
4	Covenant University, Ota.	8789	EPrint	2011	http://eprints.covenantuniversity.edu.ng/
5	University of Lagos, Yaba	3110	DSpace	2014	https://ir.unilag.edu.ng/
6	Federal University, Dutsin-ma	1216	DSpace	2019	http://dspace.fudutsinma.edu.ng/jspui/
7	Landmark University, Omuaran	2317	EPrint	2014	http://eprints.lmu.edu.ng/
8	University of Nigeria, Nsukka	9876	DSpace	2010	http://www.repository.unn.edu.ng
9	Amadu Bello University, Zaria	8970	DSpace	2013	http://kubanni.abu.edu.ng/jspui/
10	University of Jos	1568	DSpace	2009	http://irepos.unijos.edu.ng/jspui
11	American University of Nigeria, Yola	1038	DSpace	2017	http://digitallibrary.aun.edu.ng:8080/xmlui/
12	University of Ilorin	6959	DSpace	2020	http://uilspace.unilorin.edu.ng:8081/jspui
13	Ambrose Alli University, Ekpoma	2133	DSpace	2020	http://154.68.224.61:8080/
14	Federal University of Technology, Minna	4454	DSpace	2016	http://dspace.futminna.edu.ng/jspui/
15	Federal University, Oye-Ekiti	2145	DSpace	2014	http://www.repository.fuoye.edu.ng/
16	Ebonyi State University, Abakaliki	1112	DSpace	2016	http://ir.ebsu.edu.ng:8080/xmlui/
17	Federal University Lokoja	89	DSpace	2016	http://repository.fulokoja.edu.ng/
18	Federal University Ndufu-Alike Ikwo	256	DSpace	2015	http://dspace.funai.edu.ng/
19	Elizade University, Ilara-Mokin	276	DSpace	2019	http://repository.elizadeuniversity.edu.ng

20	Afe Babalola University, Ado-Ekiti	454	EPrint	2017	http://eprints.abuad.edu.ng/
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Type of local content used to develop IRs in the university libraries in Nigeria.

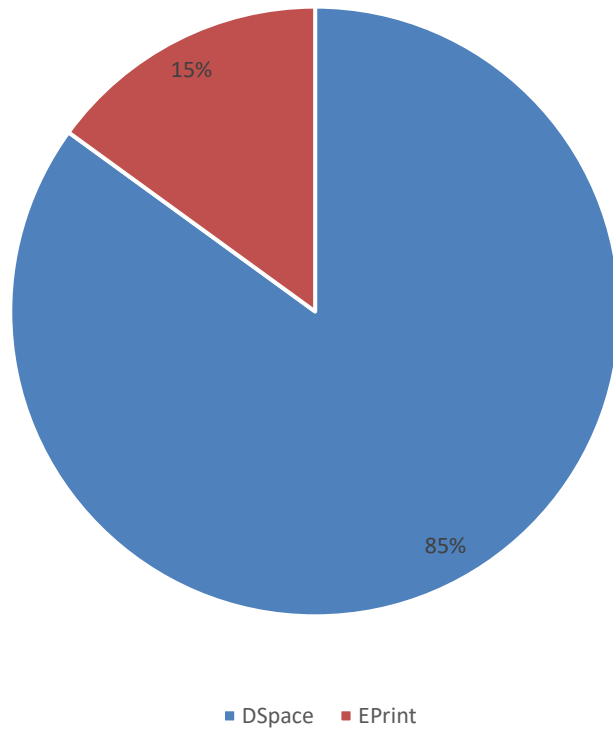
Respondents were asked to indicate the contents collected to develop their IR, out of the 20 IRs investigated, theses and dissertations being the highest is hosted by nearly all the IRs (19: 95%), closely followed by journal articles (18: 90%), conference proceedings (16: 80%), and inaugural lectures (14: 70%). Others are: seminar papers (13: 65%), photographs (11: 55%), past question papers (9: 45%), historical documents (9: 45%), old newspapers (4: 20%), and rare books (8: 40%) (Figure 1).



Type of software used to manage content in the IRs.

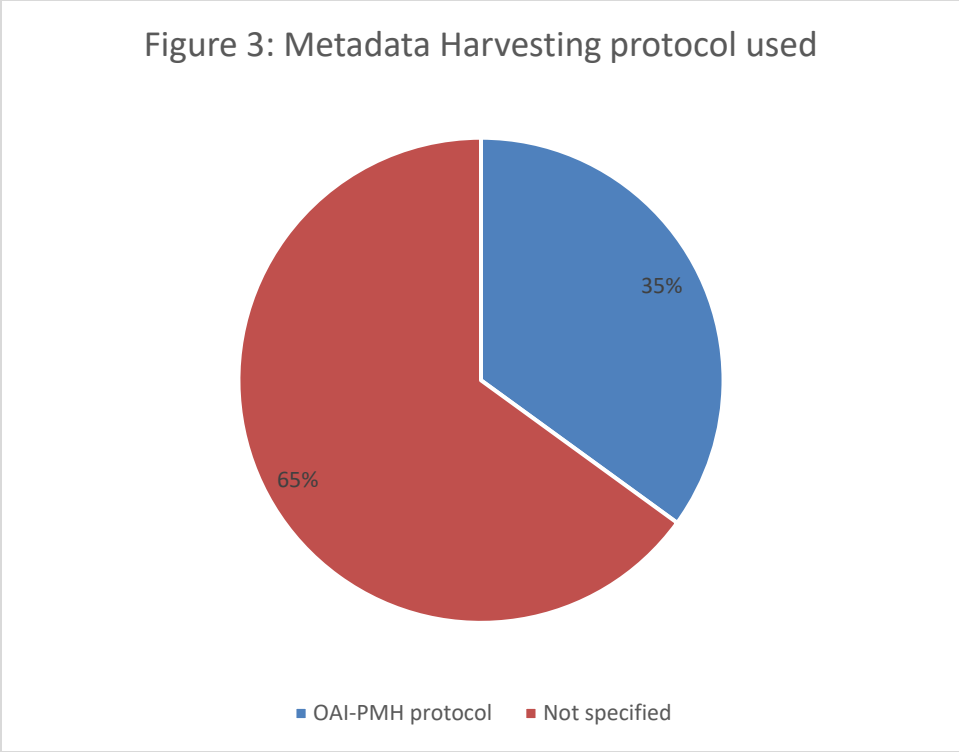
Results in Figure 2 shows that, out of the 20 IRs, the majority (17: 85%) used DSpace to manage content in the IRs, only 3 (15%) IRs adopted EPrint as the software to manage the contents in the IRs. The finding shows that DSpace is widely accepted as the software to manage the local contents in the IRs in universities in Nigeria.

Figure 2: Software used to manage content in the IRs



Metadata harvesting protocol used in the IRs

The 20 IRs sites were investigated to know the metadata harvesting protocol adopted. The IRs site investigation revealed that, only 7 (35%) of the IRs support OAI-PMH protocol. While, majority (13: 65%) of the IRs did not specify the metadata harvesting protocol used (Figure 3).



The challenges encountered in developing institutional repositories.

Repository administrators/librarians were asked to mention the challenges they encountered in the development of IRs. The responses were grouped according to similar topics. Lack of fund was mentioned by all the respondents (20: 100%), followed by inadequate facilities and absent of IR related policies mentioned by 17 (85%) respondents each. Others are: challenge of collecting contents from various contributors mentioned by 16 (80%) respondents, considering copyright issues mentioned by 15 (75%) respondents, lack of mandatory self-archiving policy mentioned 12 (60%) respondents, and lack of interest from contributors to submit to IR mentioned by 10 (50%) respondents.

Table 2: Challenges encountered in developing IRs as mentioned by repository administrators/librarians.

s/n	Major categories	Frequency	Percentage
1	Lack of fund	20	100%
2	Inadequate facilities	17	85%
3	Absence of IR policies	17	85%
4	Challenge of collecting contents from various contributors	16	80%
5	Considering copyright issues	15	75%

6	Lack of mandatory self-archiving policy	12	60%
7	Lack of interest from contributors to submit to IR	10	50%

Discussion of findings

Number of University libraries in Nigeria that have developed an institutional repository

The results in Table 1 shows that out of the 202 NUC approved universities, 95 polytechnics, 63 colleges of education and over 100 research and allied institutions in Nigeria, no single polytechnic, colleges of education or other institutions were found to have developed IRs in Nigeria. Only 20 universities have successfully developed an institutional repository. The finding shows that there is an increase in number of repositories in Nigerian universities from 6 in 2009 to 20 in 2022. However, the growth is slow compared to the number of universities in Nigeria, the growth cannot even be compared to IR adoption in other African countries like South Africa and other parts of the world particularly, Europe, Asia, and America. Mwalubanda, (2021) studied the development of institutional repositories in East Africa countries: a comparative analysis of Tanzania, Kenya, and Uganda. The findings of this study reveal that East African region has a total number of 66 repositories, which are registered in OpenDOAR. Kenya is a leading country in the region by having 42 repositories, followed by Tanzania with 14 repositories and Uganda with 10 repositories.

The task of supporting the institutions in sharing, disseminating, and preserving information that they produce remains the main role of institutional repositories. According to Rutanya (2017, p. 276), ‘in the age of electronic publishing and digital content, academic institutions are increasingly realizing the importance of IRs as a vital infrastructure for scholarly communication’. Furthermore, IRs and Open Access (OA) movement has provided room for different authors and institutions to communicate their findings to the society. Several studies have reported that Open Access IRs facilitate the storage and accessibility of locally produced content generated by university communities. They also increase the accountability and promotion of locally produced content, and increase the visibility of the university (Abdelrahman, 2017; Saini, 2018). As pointed out by Ezeani and Ezema, (2011), Baro and Otiode, (2014) the fruits of research from the formal research programs of conventional universities and academic research institutions in Nigerian universities

are under-utilized as the access to the theses and dissertations is very limited to users outside the university.

Type of local content used to develop IRs in the university libraries in Nigeria.

Results on the contents hosted in IRs revealed that theses and dissertations is hosted by nearly all the IRs, closely followed by journal articles, conference proceedings. This finding is agreement with the literature as empirical evidence from several studies have shown that most of IRs content types are theses and dissertations, and journal articles (Ezema & Onyacha, 2017; Dhanavandan & Tamizhchelvan 2014; Ejikeme & Ezema 2019; Mwalubanda, 2021).

Type of software used to manage content in the IRs.

The finding on the type of software to manage content in the IRs in Nigeria shows that DSpace is widely accepted as the software to manage the local contents in the IRs in universities in Nigeria. This finding agrees with several studies on the wide adoption of DSpace as the software to manage the digital resources (Anyaoku et al. 2019; Chisita & Chiparausha, 2020; Islam et al. 2020, Mwalubanda, 2021). The top-four reasons for using DSpace have been described as: (1) focus on institutional repository use; (2) it is lean, agile and flexible; (3) it is easy and simple to install and operate; and (4) it includes a core set of functions that can be extended to or integrated with complementary services and tools in the larger scholarly ecosystem (DSpace, 2015). Literature suggests that different conditions and criteria may be considered when selecting appropriate software for use. This includes the ‘needs of the user, functionality of the software, technical specifications, repository and system administration, content management, dissemination, archiving and system maintenance’ (Smith, 2015, p.9).

Metadata harvesting protocol used in the IRs

Results on the meta-data harvesting protocol adopted revealed that only few of the IRs adopted OAI-PMH, while the majority of the IRs did not specify the type of Meta-data harvesting protocol. Repositories today widely use open source metadata harvesting protocol, i.e. OAI-PMH because of its application independent harvesting framework (Loan & Sheikh, 2016; Pinfield et al., 2014; Roy et al., 2013). The OAI compliant repositories expose the structured data (metadata) through OAI-PMH for

harvesting by service providers for creating value-added services. Therefore, IRs should offer their metadata through various harvesting protocols like OAI-PMH.

The challenges encountered in developing institutional repositories.

The results in Table 2 shows that the most mentioned challenges encountered in the development of IRs in Nigeria are: lack of fund, inadequate facilities, absence of IR policies, and challenge of collecting contents from various contributors. These findings are in line with the existing literature, especially the publications of Ezeani and Ezema, (2011), Sadiku, Kpakiko and Tsafe (2018), Anyaoku et al.'s (2019), and Dlamini and Snyman (2017). For example, Sadiku, Kpakiko and Tsafe (2018) reported on the issues around building and sustaining an institutional digital repository and its corresponding challenges to global visibility in Nigeria. They argued that building and sustaining an institutional digital repository project requires a strong financial backing. Dlamini and Snyman (2017) also noted that Africa as a continent is struggling in the implementation of IRs both in terms of establishing and use. Different factors such as lack of funds, poor infrastructure, lack of government support and lack of expertise have been attributed to this phenomenon.

Institutional repositories are information and communication technology driven, therefore, any university that would develop its IR must devote huge sum of money for information and communication technology infrastructure. Development of institutional repositories requires dedicated infrastructure such as hardware and software, stable internet facilities, and so on. Evidently, most of the university libraries in Africa are still struggling with stable and high-speed internet connectivity (Sadiku, Kpakiko & Tsafe, 2018; Anene, Ozor & Baro, 2020). Collecting contents such as electronic theses and dissertations and journal articles from authors is a major challenge in building IR in Africa (Bangani, 2018; Jelagat, Odiini & Wamukoya, 2021). For example, if submission of electronic theses and dissertations is not made mandatory, masters and Ph.D students will not want to submit their work for the purpose of developing IR with the fears that online access to their full-text theses will increase the chances of misuse of their researches. The study shows the need for librarians, researchers, stakeholders, and institutions management in developing countries like Nigeria to come together to address the challenges that hinder the growth of repositories. There is need for policy formulation on mandatory adoption, training, financial support, and technical support to overcome those challenges.

Conclusion

The study revealed that no one college of education, or polytechnic libraries in Nigeria have embraced development of IR. Only 20 university libraries have successfully developed IRs to manage local contents emanating from the universities. The study also found that the majority of the institutional repositories contain primarily theses and dissertations, journal articles and conference proceedings. DSpace was the most preferred software used in the various IRs to manage local contents, and lack of fund, inadequate facilities, absence of IR policies, and challenge of collecting contents from various contributors were the most mentioned challenges encountered in the development of IRs in Nigeria.

The study will assist stakeholders in developing countries like Nigeria to see their initiatives on supporting the development of IR. However, more support from stakeholders is needed in providing training to librarians, good IT infrastructure, collaboration between library organizations and stakeholders, and provision of fund.

Recommendations

Based on the findings, the following recommendations are made:

All tertiary institutions most especially Colleges of Education and Polytechnics, and also other universities that have not developed IR in Nigeria should as a matter of priority plan and invest on the development of IRs to showcase their local contents emanating from the institutions to the world.

The management of tertiary institutions support is highly needed in making sure the fund needed to establish IRs is provided because good IR environment is critical and need funding as IR development is capital intensive.

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