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**Institutional repositories and heritage materials in selected institutions within three
African countries**

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Abstract

This study investigates how institutional repositories are making hidden or lost cultural digital heritage accessible in academic libraries in selected countries within Africa. The design of the study is a descriptive design. The research makes use of a structured questionnaire prepared using Google forms and sent through e-mail to 40 members of academic staff in selected academic libraries in three African countries namely; Nigeria, Ghana and Uganda. In all, 35 responses were received, generating a 87.5% response rate. Data collected was analyzed using an Excel Spreadsheet. The findings reveal that 25(78.1%) indicated that they have only theses/dissertations as their institutional repository, while 22(68.8%) showed they have research articles and manuscripts in their institutional repository respectively. Nearly all the respondents (95.7%) use their institutional repositories for research purposes, 87% use it to contribute/deposit materials into the repository for others to use. The study also discovered that about 85% benefit from using digitized heritage materials. Inadequate funds, unstable power supply, poor internet connectivity, and poor marketing of an institutional repository among others are the major challenges faced in the implementation and uses of IRs. It was therefore recommended that the management of the institutions should ensure that enough funds are allocated for the implementation of IRs. Further recommendations include the establishment of effective advocacy measures that will create awareness both within and outside the academic environment on implementation and uses of an institutional repository in academic institutions in Africa.

Keywords: Institutional repositories, digitization, heritage materials, digitized heritage materials

Introduction

Academic libraries have always been allotted the role of curating information and providing access to resources to support the work of parent institutions; this role is broadening to include digital resources and to accommodate data management requirements (Tarver & Phillips, 2013). Schofield and Urban (2015) noted that both academic libraries and archives have increasingly used digital mediums to preserve materials and provide access to users, allowing them to serve more diverse, and much more distributed populations by digitizing collections with unique or rare material that otherwise has limited circulation in order to improve long-term preservation and expand access to cultural materials. As a result of this, academic institutions therefore decided to develop digital repositories which are a mechanism for managing and storing digital content, following open standards to ensure that the contents covered is easily accessible, searchable, as well as retrievable for later use. These repositories could be subject or institutional in nature, but the focus of this study is the institutional repository which is described by Lynch (2003) as a set of services that an institution offers to the members of its community for the management and dissemination of digital materials.

Repositories provide services to faculty, researchers, and administrators who want to archive research, and historic materials. Their collections contain the memories of people, communities, institutions and individuals, scientific and cultural heritage, and the products of our imagination, craft and learning throughout time, while these are thereby creating the heritage of the future (Nimnoi & Rao, 2014). Various definitions from the literature reviewed, state that special collections in institutions are tangible in nature and these collections are images, videos, maps, rare books, Thesis/Dissertations, Articles, and Inaugural lectures/Speeches. When these

collections are made available on an electronic platform (Institutional Repository), it becomes a digital heritage material for the institution, thus making hidden materials accessible. The establishment of Institutional Repositories (IRs) is driven by various aspects including the open access and open archives movement, the need for changes in scholarly communication to remove barriers to access, and the increasing awareness that universities and research institutions are losing valuable digital and print materials (Drake, 2004). Ogden (1993) noted that traditionally, libraries and archives independently have undertaken activities to preserve their heritage. Ogden (1993) stresses that many countries have realized the value of preserving heritage resources which **make those in advanced areas** in developing strategies to effectively manage and preserve their digital heritage resources and to establish national digital memories.

Digitizing of cultural heritage materials and its preservation has not yet become firmly rooted in the selected African countries (Ghana, Nigeria, Uganda). As a result of this, the study therefore looks at the types of heritage materials in IRs, purpose of digitizing heritage materials in libraries, benefits of digitizing heritage materials as well as challenges faced in implementation and use of institutional repositories in some selected African countries.

Statement of the Problems

IRs has been known worldwide to provide free access to a seamless amount of information materials. It is also the means or medium through which an academic institution or organizations can showcase their holdings to the global community. However, researchers have observed that challenges exist with the implementation and uses of IRs holding special collections. It is against this background that this study is designed to look at how institutional repositories are making digital heritage materials accessible.

Objectives to the Study

The main objective is to investigate how institutional repositories are making hidden or lost cultural digital heritage accessible in academic environments in Africa. The specific objectives are:

1. to identify the types of heritage materials available in institutional repositories;
2. to ascertain the purpose of digitizing heritage materials;
3. to determine the frequency at which staff members access the institutional repositories;
4. to ascertain whether the use of IRs are of any benefits to its users; and
5. to find out the challenges faced in the implementation and use of an institutional repository containing heritage materials?

Research Methodology

The research conducted was in the form of a survey research. The targeted population is all members of library staff in some selected academic libraries in three African countries namely; Nigeria, Ghana and Uganda. A structured questionnaire, which is the main instrument for data collection, was prepared using Google forms. The questionnaire was sent through e-mail to 40 members of library staff (Librarians, Support Staff and IT Personnel) in some selected academic libraries in Nigeria, Ghana and Uganda using convenience sampling techniques. The e-mail address were obtained from group of young librarians and LIS Faculty who converged for Continuing Professional Development (CPD) programmes organized for qualified librarians from Carnegie countries in Africa (Ghana, Uganda, Nigeria, South Africa, and Tanzania). It took place in March 2016 at the University of Pretoria, South Africa. Due to the limited time for the programmes, few participants were able to be contacted for the study. The academic institutions used were selected randomly. In all, 35 responses were received generating a 87.5% response rate. Data collected was analyzed using an excel spreadsheet. Search tools adopted for this study was ProQuest/Serials Solutions Summon, a web -scale discovery tool that indexes a wide variety of databases. We also performed advanced search on databases such as Library and Information Science Source on the University of Pretoria Library Website.

Review of Related Literature

Overview of Institutional Repositories

Various authors have defined Institutional Repositories (IRs) but the most frequently cited definition is that of Johnson (2002) who described an Institutional Repository as “a digital archive of the intellectual product created by the faculty, research staff, and students of an institution and accessible to end-users both within and outside of the institution to access”. The essential characteristics of an institutional repository are that it is institutionally defined, scholarly in scope, cumulative and perpetual, open and interoperable (Crow 2002). Many institutions of higher education generate documents (journal articles, conference papers, reports, thesis, teaching materials, research notes, research data, etc) which need to be managed, by providing proper housing, protection from mutilation and theft, library binding, and occasional repair and restoration.

Drake (2004) noted that the main purposes of institutional repositories are to bring together and preserve the intellectual output of a laboratory, department, university, or other entity, the incentives and commitments to change the process of scholarly communication. Ball, Groenewald, and Van der Westhuizen (2016) pointed out the benefits of an institutional repository as; enhanced global visibility, interoperability with other repositories, sharing of knowledge internationally and tool for peer reviewing. Boama and Tackie (2015), stressed that a challenge posed with this type of materials is that they become obsolete very fast, which can lead to loss of important heritage resources, and if this loss of heritage materials is not checked, it can create gaps in future memories. Ngulube (2007) asserts that “scholars use research findings to generate further research, models and archetypes.” Thus findings accruing from research should be made available for others to build upon and for the society to benefit, while advances in digital technologies have led to the development of technical solutions geared towards creating

and managing digital assets through IRs. This assertion was supported with the findings of Anenene, Alegbeleye, and Oyewole (2017) who stated that the opinions of the respondents as highlighted in their study revealed that regardless of the money spent on establishing IRs, the benefits far outweighs the demerits.

Overview of Cultural Heritage Materials

Culture connotes the beliefs, arts, morals, values, traditions, customs, food habits, religious beliefs and various behavioral traits needed to survive in a given geographical environment. In other words, the environmental, social, and political forces shape the responses of a group of individual and the sum total of all the responses is defined as culture (Zindagi, 2015). Cultural materials have a lot of importance as culture is something we do, a performance which fades into memory and then disappears, but the record of culture consists of artifacts which we make, which persist but inevitably decay (Lyman & Kahle, 1998). It is described by Cloonan (2015) in (Boaman & Tackie, 2015) as the perpetuation of culture through forms such as monuments, habits, artefacts, ideas, beliefs, oral and written communication that have survived and have been documented. The Cultural Heritage is therefore made up of tangible and intangible, natural and cultural, movable and immovable assets inherited from the past (Drijfhout and Boer, 2015). United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2009-2014) described Cultural Heritage as the legacy of physical artifacts and intangible attributes of a group or society that are inheritable from past generations, maintained in the present and bestowed for the benefit of future generations.

Ekwelem, Okafor and Ukwoma (2011) noted that a people's cultural heritage is their way of life and in a broad sense their traditional behavior including the ideas, acts and artifacts which are passed on from one generation to another. Digital heritage consists of unique resources of human knowledge and expression which embraces cultural, educational, scientific and administrative resources, as well as technical, legal, medical and other kinds of information created digitally (UNESCO, 2003). Digitization enhances the offerings of cultural heritage institutions, making information accessible rapidly and comprehensively from anywhere at any time. Due to their importance in different fields like education, research, history, archeology and anthropology, most of the cultural and heritage materials are being converted into digitized form knowing that permanent access to this heritage will offer broadened opportunities for creation, communication and sharing of knowledge among different communities, as well as protection of rights and entitlements and support of accountability (Lalitha and Murthy, 2005). Many of these resources have lasting value and significance, and therefore constitute a heritage that should be protected and preserved for current and future generations (UNESCO, 2003).

Digitization of Cultural Heritage Materials

Digitization is rapidly becoming one of the standard forms of preservation for archival Institutions, libraries and information centres of analogue materials. Digitization is a process by which physical or manual records such as text, images, videos, and audio are converted into digital form (Etelint 2006). The primary and usually the most obvious advantage of digitization is that it enables greater access to electronic formats and focus of contents that are selected for digitization (Hughes 2004). Digitization is sometimes presented as a panacea for problems of preservation and access. However, access to digitized collections and their preservation, especially in the longer term, may be problematic. The problems are not only technological, but

also economic, political, legal and moral (Britz and Lor, 2003). Pickover and Peters (2002) have pointed out that digital technology is not ideologically neutral and poses social and political as well as technological challenges. Digitization of library resources on cultural heritage has recently brought about new technological development to heritage materials in the library and other institutions in this digital age. A study conducted by Nimnoi and Rao (2014) in Thailand, to explore the metadata practices for cultural objects collection in an archive, a library, and a museum found that the main objective of all their memory institution is; to preserve the originals in both the physical cultural objects and its contents.

The digitization of heritage material is central to protecting a sense of who is making a meaningful reference in our culturally diverse world. Educating librarians about digitization is now widely recognized as an essential element of any plan to address the preservation problems we face in respect of digitization of African materials (University of Wisconsin-Madison Libraries, 2003). According to Britz and Lor (2003), digitization projects seem to be mainly confined to relatively small, specialized collections. A typical example is Africa Focus, a project of the University of Wisconsin-Madison Libraries, which provides the general public with access to a digitized selection of images and sounds from the collection of the University's African Studies Program (University of Wisconsin-Madison Libraries, 2003).

Benefits of Institutional Repositories (IRs)

Pickton and Barwick (2006) state that the benefits of an institutional repository specific to the University is to increase visibility and prestige; this is possible because an institutional profile and individual staff profiles can be linked to the full text of articles. It is also a mechanism to keep track of and analyzing research performance of individual universities. In turn, this contributes to the web rankings of institutions worldwide. Furthermore, IRs may be used: to support marketing activities, to attract high quality staff, students and funding from development partners and other donor agencies; as a means for the centralization and storage of all types of institutional output, including unpublished literature; as a supporting tool for learning and teaching; an instrument to standardize institutional records; and a way to break down publishers costs and permissions barriers and dependency for preservation of content. Effective delivery of education relies on adequate access to knowledge and since IRs provide access to the full text digital learning objects, they are fundamental to teaching and research. IRs captures both the grey and published literature within institutions. Grey literature is the primary means of technical communication, since it is cheap and quick to produce (Sidwell, Needham and Harrington, 2000). If grey literature exists in institutions of higher education and of great value to the institutions then, it should be managed and accessed. Shearer (2003) adds that, "IRs provides access to scholarly material without the economic barriers that currently exist in scholarly publishing." This view is supported by Lynch (2003) and Rumsey (2006) who argue that, IRs open up new forms of scholarly communication for both short-term and long-term accessibility. However, Genoni (2004) attributes changes in scholarly communication to advances in digital technologies. Prosser (2003) looks at IRs as marketing tools for attracting funding agencies, students and staff. Shearer (2003) states that, "IRs holds the promise of being advantageous to researchers especially those in the developing world." Barton and Waters (2004) summarized the potential uses of an institutional repository relating to scholarly communication; management and storage of learning materials, electronic publications and research collections; preservation

of digital research work; building university prestige by showcasing academic research work; providing an institutional leadership role for the library; research assessment; encouraging open access and; housing digitized collections.

As long as historic monuments remain without falsification and misleading imitations, they will, even in a neglected state, create a sense of continuity that is an essential part of cultural identity". Sharing cultural heritage contents through Web 2.0 spaces expands opportunities for institutions and their communities of interest to actively use and reuse these contents. It also provides opportunities for counteracting the silo effect of limiting access to these contents to institutional websites and repositories (Zorich, Waibel and Erway, 2008).

On software employed to manage the content of IR, Mohammad (2013) discovered that from the few numbers of universities in Nigeria studied, on the types of software adopted in their institutional repositories, only Ahmadu Bello University, Zaria, the Federal University of Technology, Akure, the University of Jos, use DSpace, while the University of Nigeria, Nsukka uses Open Registry and Covenant University is using Eprints Software.

Challenges

Many academic libraries, museums, and other institutions keep special collections and it is often a challenge, especially for smaller institutions, to generate financial, personnel, and practical support in maintaining such collections. Hence, libraries tried to look at a meeting point to balance between attaining optimal conditions for caring of special collections with preserving and promoting such collections to the best of their abilities given limited resources (Darbey & Hayden, 2008). A study carried out by Okumu (2015) on adoption of institutional repositories in universities in Kenya revealed that although institutional repositories are very important in tackling challenges users face in relation to access and use of repository resources, the library staff lack the necessary skills to manage the **repository effectively, intellectual property right, Internet Self-Efficacy, as well as cost of institutional repositories, among others**. Christian (2008) stressed that poor advocacy and marketing of the institutional repository in relation to open access is one of the reasons for slow uptake of IRs in Africa. Mohammed (2013) notes that as institutional digital repositories remain very significant to effective scholarly communication, its potentials are not adequately harnessed because of lack of ICT infrastructure for implementation of an institutional digital repository, insufficient technological skills, unstable power supply, and lack of fund among others. However, adequate funding, training and retraining of librarians, creation of awareness among stakeholders, increased bandwidth and power are among the recommendation made to address the obstacles. In a related issue, Mensah (2015) survey using three public universities from three regions in Ghana, found out that existing digital preservation methods and systems were inadequate, and management of the institutional repository could lead to consequences such as denial of access to their digital collections or total loss of information.

Findings and Discussion

(1) Names of the Institutions used with their geographical location

S/N	Institutions	No. of Responses	Countries	Percent
1	Ahmadu Bello University	3	Nigeria	9.68
2	Afe Babalola University	1	Nigeria	3.23
3	Elizade University	1	Nigeria	3.23
4	Ladoke Akintola University	1	Nigeria	3.23
5	Madonna University	1	Nigeria	3.23
6	Federal University of Minna	1	Nigeria	3.23
7	Federal University Oye	1	Nigeria	3.23
8	University of Ghana	4	Ghana	12.90
9	Ghana Armed Forces Command and Staff College	1	Ghana	3.23
10	Bishop Stuart University	2	Ghana	6.45
11	National Fisheries Resources Research Institute	3	Uganda	9.68
12	Gulu University	4	Uganda	12.90
13	Makerere University	3	Uganda	9.68
14	Berekum College of Education	1	Uganda	3.23
15	Kyambogo University	1	Uganda	3.23
16	Bugema University	1	Uganda	3.23
17	Ankole Western Institute of Science and Technology	1	Uganda	3.23
18	African Rural University	1	Uganda	3.23
	Total	31		100

Table 1 above shows the distribution of the respondents for this study. Out of 35 participants, only 31 responded to the questions relating to their institutional affiliation where 15(48.41%) of the respondents were from Uganda, 9(29.06%) were from Nigeria, and 7(22.58) of the respondents were from Ghana. This means that the other 4 respondents did not reveal the name of their institutions.

(2) Gender (35 responses)

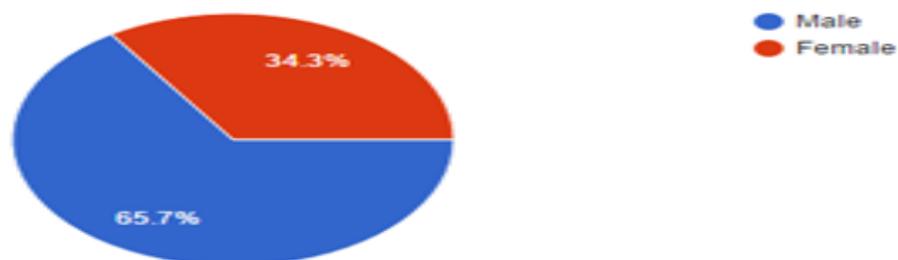


Fig. 1

The Fig. 1 above reveals that 23(65.7%) of the respondents were male while 12(34.3%) were female.

(3) Years of Work Experience (35 responses)

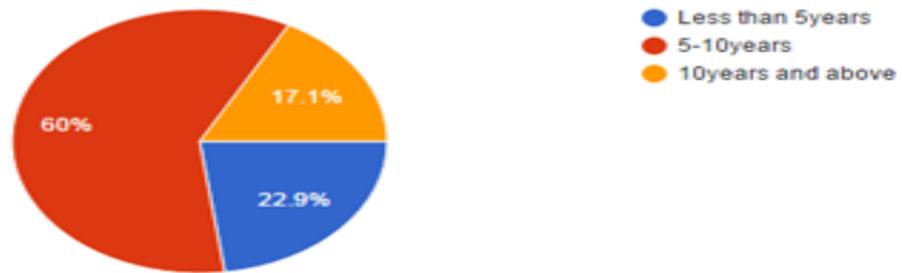


Fig. 2

Fig. 2 above shows that 8(22.9%) of the respondents indicated that they have spent less than five years on the job, 21(60%) have spent 5-10 years on the job, while 6(17.1%) indicated that they have spent 10 years and above on the job. Therefore, it can be inferred that more of the respondents covered in this study have 5-10 years working experience.

(4) Do you have an Institutional Repository (35 responses)

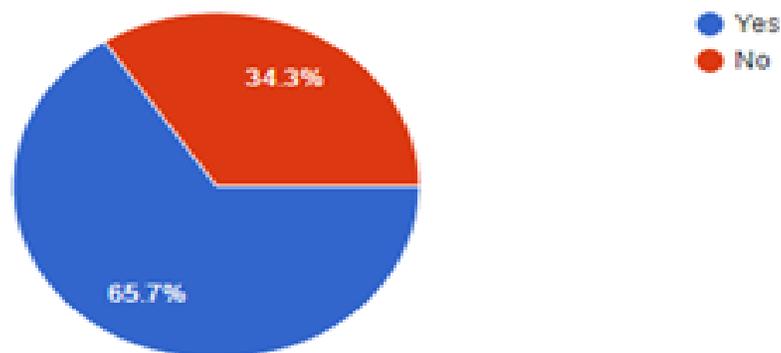


Fig. 3

From Fig. 3 above, 23(65.7%) of the respondents reviewed that they have institutional repository in their institution of learning, while 12(34.3%) of the respondents indicated that they do not

have an institutional repository. It is possible that some of these institutions that claimed not to have an institutional repository are still struggling to have one while others have institutional repositories but are facing some challenges which may prevent their institutional repository of being functional.

(5) Which of the following are Heritage Materials/Special Collections in your Institution?

(32 responses)



Fig. 4

From Fig. 4 above 25(78.1%) indicated having Theses/Dissertations Collection as heritage materials in their institutional repository, followed by 22(68.8%) having Manuscripts and Research Articles in their institutional repository. About 17(53.1%) have Journals and Inaugural lectures/Speeches/Presentation in their institutional repository, 16(50%) indicated having Newspapers in their institutional repository, 15(46.9%) have Audios in their institutional repository, while the least came from Images with 8(25%). The high deposition of Theses/Dissertations could be because they are research documents that were classified as “unpublished materials” which cannot find their way to peer review either of open access or subscribed journals and print houses. Eventually, institutional repositories happened to be a saving platform where such materials could have a wide coverage and better visibility to interested researchers outside the institution. Theses/Dissertations happened to be included in this survey because it is in the form of books or documents since books and documents are classified as moveable heritage materials.

(6) For what purposes do you use Institutional Repository? (23 responses)

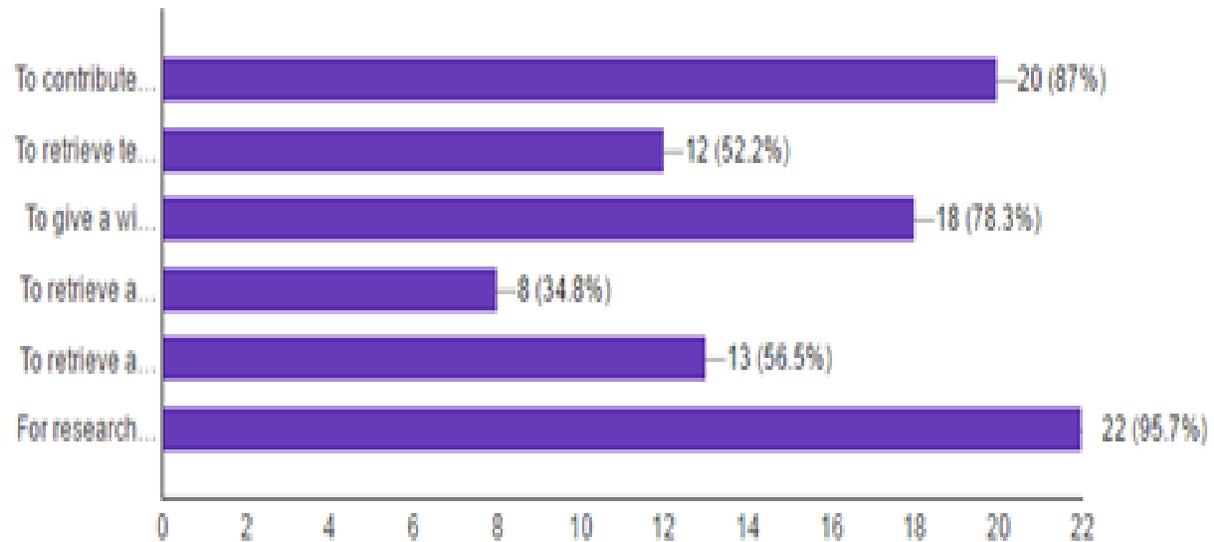


Fig. 5

The fig. 5, show the purposes of using the institutional repository. It was revealed that 22 (95.7%) of the respondents indicate using it for research purposes, to contribute or deposit materials into the repository for others to use 20 (87%), and to give a wider coverage of published materials 18 (78.3%) followed respectively. The least was recorded from 8(34.8%) of respondents who revealed using it to retrieve and to use images, maps, diagrams or other visual aids. To deposit materials in an institutional repository shows that academic staff use the institutional repository to share their research output for wider coverage and visibility. In all, the findings reveal that academic staff uses the institutional repository for many academic purposes. This simply emphasizes how important and relevant an institutional repository is as it enables students, staff and other interested users to have easy access to those resources that were classified as cultural and heritage materials deposited in the institutional repository.

(7) How often do Respondents Access their IR

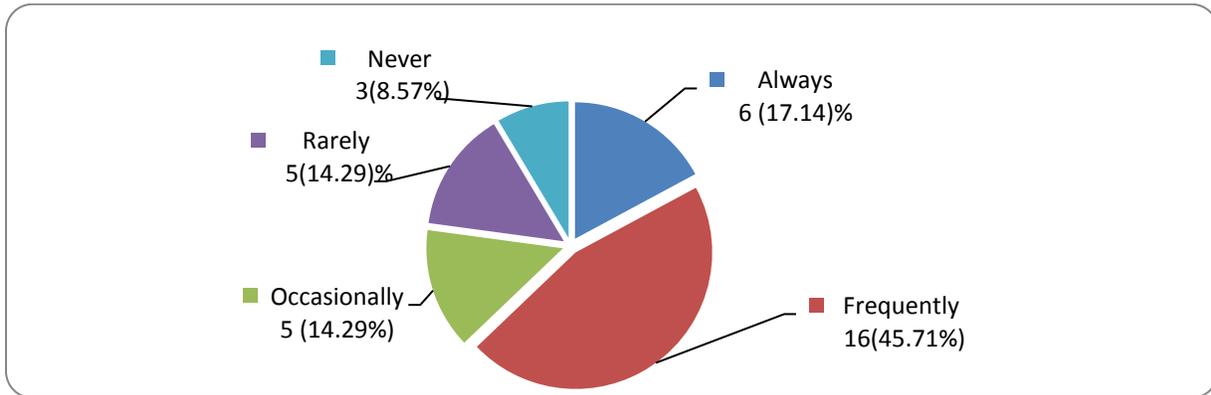


Fig. 6

From fig. 6 above, 16(45.71%) of the respondents show they frequently access institutional repositories, 6(17.14%) indicated that they always access it, 5(14.29%) of the respondents indicated that they occasionally access it, while another 5(14.29%) of the respondents also said they rarely access their institutional repository. This implies that members of library staff have not fully embraced the needs of making use of digitized heritage materials in our academic institutions in Africa. It may be that most of them are not aware of its existence, they did not know how to go about it, or do not have enough time to access the digitized materials. This means that libraries need to put more effort into creating more awareness which will enable the library users to see the reason why they need to embrace the use of digitized heritage materials available in libraries and other related institutions in Africa.

(8) Is Digitization of Heritage Materials Beneficial?

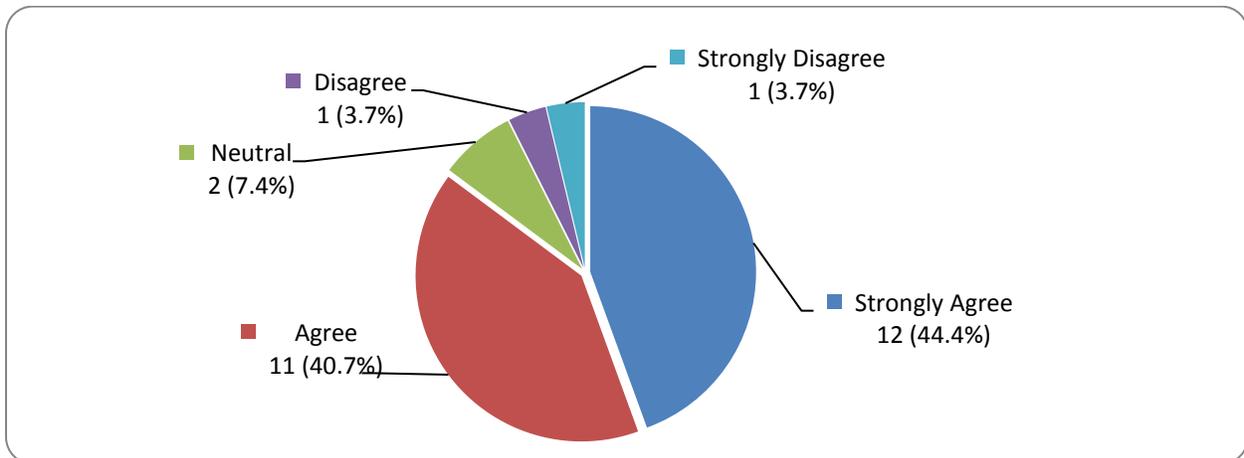


Fig. 7

From Figure 7, 12(44.4%) strongly agreed on Digitized Heritage Material as beneficial, 11(40.7%) agreed that it is beneficial while 2(7.4%) of the respondents were Neutral. It was also recorded that 1(3.7%) disagreed with the benefits of digitized Heritage material. The findings revealed that digitized heritage materials are beneficial. This implies that digitized heritage materials have been of immense advantage to the academic staff in pursuing their academic activities. Ball, Groenewald, and Van der Westhuizen (2016), in their study, agreed with this and went further by pointing out the benefits of an institutional repository as; enhanced global visibility, interoperability with other repositories, sharing of knowledge internationally and tool for peer reviewing.

(9) The challenges faced in the implementation and use of the institutional repositories containing heritage materials?

S/N	Challenges	No. of Responses	Percent
1	Software problems	3	9.38
2	Poor internet connectivity	2	6.25
3	Unstable power supply	4	12.50
4	Not appreciating its important	2	6.25
5	Inadequate fund	5	16.63
6	Copyright issues	1	3.13
7	Poor marketing of IR	2	6.25
8	Reluctant of faculty in submitting their articles	1	3.13
9	Absent of good back up	1	3.13
10	Poor qualities of paper of materials to be digitized	1	3.13
11	Not taking information seriously	1	3.13
12	Absent of working policy	1	3.13
13	Poor planning	1	3.13
14	Restricted access to some valuable information	1	3.13
15	Staff are not properly train	2	6.25
16	Few trained staff sometimes leaves	1	3.13
17	Fear of implementing IR	1	3.13
18	Not yet experience any challenges	1	3.13
	Total	32	100

Table 2

Table 2 reviews that inadequate funding, as indicated by 5 (16.63) of the respondents, was the leading obstacle encountered, followed by unstable power supply 4 (12.50), software problems 3 (9.38%), while poor Internet connectivity, not appreciating its importance, staff are not properly trained, as well as poor marketing of the institutional repository had 2(6.25%) respectively. Inadequate funding as the leading obstacle towards the development of institutional repository is not farfetched considering that financial resources are dwindling in this part of the continent, leading to reduction in budget allocated to this and other important projects in our academic institutions, more so that the development and implementation of an institutional repository is capital intensive. Unstable power supply is not helping matters in this part of the world, posing a serious threat towards the effective implementation and use of an institutional repository containing digitized special collections in Nigeria, Ghana and Uganda. This finding is in line with the assertion of Mohammad (2013) who noted that unstable power supply and the problem of funding constitute major constraints towards the effective management of IRs in this region.

Summary of the findings

1. It reveals that 25(78.1%) indicated that theses/dissertations form a major part of their heritage materials in their institutional repository, followed by 22(68.8%) revealing having research articles and also manuscripts as heritage materials in their institutional repository respectively.
2. Nearly all the respondents (95.7%) used their institutional repository for research purposes, and 87% use the institutional repository to contribute/deposit materials into the repository for others to use.
3. Less than half of the respondents claimed that they frequently access the institutional repository.
4. About 85% of respondents reveal that they benefit in using digitized heritage material.
5. The major challenges faced by the respondents in the implementation of the institutional repository are: not having enough funds, unstable power supply, software problems, poor internet connectivity, and poor marketing of institutional repository among others.

Conclusion

There have been efforts to digitize and preserve resources of cultural heritage so as to gain momentum on accessibility of such important materials throughout the world. People are able to achieve this task with the invention of institutional repository which is described by Lynch (2003) as a set of services that an institution offers to the members of its community for the management and dissemination of digital materials. Institutional repositories have therefore come to stay in academic institutions in Nigeria, Ghana and Uganda as well as other countries in Africa. On the whole, it makes the holdings of an institution, in particular heritage materials such as thesis/dissertations, manuscripts, research articles, grey literatures, conference papers, teaching materials, inaugural lecture materials, maps, images, and others visible to the wider world. The importance of IRs in making resources easily seen cannot be said to be over emphasized, this is because it is one of the quickest and easiest means to make available local contents and digitized cultural heritage resources that are hidden visible and open to the global community.

Recommendations

From the findings of the study, the following recommendations are made:

1. The management of the institution should ensure that enough funds are allocated for the implementation and maintenance of an institutional repository.
2. Other sources of power supply such as an inverter, wind mill and solar energy to complement electric power supply, should be available in order to have stable power supply.
3. Back up plans for data recovery should be in place.
4. Increased bandwidth that will support internet connectivity.
5. Put in place effective advocacy measures that will create awareness both within and outside the academic environment on benefits of the institutional repository containing heritage materials, in our academic institutions in Africa.

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