INTRODUCTION

Information Communication Technology has become an integral part of the daily activities of libraries or information centres due to its numerous benefits though it has its short falls. This had shifted libraries from their traditional means and role of working with paper documents to electronic forms and services. Thankfully, this has made information professionals to be proactive whereby services of a library are no longer only accessible within the walls of the library. It has generated a change in how clients also want to access materials. Clients of the libraries wants access to the libraries irrespective of the time and which part of the world they are. Libraries are no longer closed to users. One of the ways in which libraries are using ICT to manage knowledge, especially in academic institutions, is through institutional repository (IR). The purpose is to satisfy their client need as well as to support teaching, learning and research of Higher Educational Institutions (HEI).

Institutional Repositories is the current technology with which librarians are using to perform their core mandate of acquisition, processing, organising preservation and dissemination of knowledge. Some authors have argued that the idea is not a new concept. Sani (2018) supported by Xia and Opperman (2009) revealed that IRs have existed for almost a decade, but according to Prosser (2003) “the emergence of Institutional Repositories (IRs) is relatively a new phenomenon that provides an opportunity for an institution to share its intellectual wealth with the worldwide community of scholars”.

Institutional repositories are linked to Open Access Initiative to make electronic documents free of any challenges such as copyright issues and any form of fees apart from the cost of the technology to make available research findings. SPARC (2013) support this view that institutional repositories conforms to the standard of Open Access Initiative. Open Access” is the free, immediate, online availability of research articles combined with the rights to use these articles fully in the digital environment”. (SPARC 2013).

LITERATURE REVIEW

The IR is defined as a service that organizations provide to their members to manage and disseminate the digital contents produced by the organizations and their intellectuals (Lynch, 2003). Contrarily, Chang (2003) argued that the concept of collection, management, dissemination and preservation of scholarly work produced by the students and lecturers of universities and colleges is not well known yet. Similarly, Davis and Connolly (2007) observed that users were not well aware of the institutional repository.

However, Nicholas et al. (2012) described that institutional repositories, regardless of type, are known since the last decade. Similarly, Rafiq (2008) revealed that developing countries’ universities are taking initiative for ETD’s (Electronic Theses and Dissertations) implementation for the past decade of the twentieth century.
The Purpose of IRs

Institutional repositories (IR) are electronic collections. The purpose of the repositories is to organize and disseminate the research work produced by the intellectuals of the institutions (Anuradha, 2005). Similarly, Shearer (2003) also said the aim of IR is to help access research output without economic limitations. Islam and Akter (2013) postulate that IR resolves the problem of scholars in developing countries by providing unlimited access to intellectuals’ work without the economic barriers. They further added that the most prominent barrier for research scholars of developing countries is the limited access to the scholarly works. And, open access resolves this problem by providing access to intellectuals’ work without the economic barriers (Islam and Akter, 2013). A research work conducted by Martin-Yeboah, Alemna, Adjei (2018) on marketing of IRs, came out that in all the institutions they studied the repositories exist to project the university’s image in the global space, with research productivity being the main driving force.

The Library and IR

The role of library and information science professionals in the implementation of repositories is very much important (Ghosh and Das, 2007). Setting up of an IR is the responsibility of the Library with the support of IT professional. Organizations have realized the worth of repositories (Palmer et al., 2008). Johnson and Magusin (2009) argued that institutional repositories help the libraries to support the institutions and therefore digital repositories cannot be ignored. Likewise, Jean et al. (2011) concluded that there is the need of advertising and development of repositories. Kresh (2007) concluded that institutions are creating digital repositories and describes that the role of information specialist will change due to the popularity of repositories among the users.

Availability of Research on the IR

Other authors reports that more research materials needs to be available in the repositories. Allen (2005) revealed that academics of various disciplines acknowledge the role of repositories and users are interested to deposit their research work in the digital repositories. Goh et al. (2006) narrated that digital libraries help in creating and managing the digital information.

IR and Retrieval of Documents

Some other author also believes that digital libraries have a clear role in changing the users’ way of retrieving the information contents. Similarly, Pappalardo et al. (2007) concluded that people support the open access worldwide and it is very much important to manage the research materials in a logical manner so that content can be accessible easily. Bailey (2005) believes that reference librarians have the potential to contribute well in the development and support of digital repositories.
The Contents of IR

Halder and Chandra (2012) reveal that repositories contain the research produced by the institutions. Warraich and Ameen (2008) concluded in their study that majority (56%) accessed the digital contents of the HEC (Higher Education Commission of Pakistan) repository. Similarly, Graaf (2008) described that there were various types of research material such as research papers, thesis, working papers, and proceedings available in the institutional repositories. The contents available in the repositories include theses, dissertations, conference papers, articles, proceedings, past examination questions (Safdar and Rehman, 2015).

Development of IRs

Van Der Graaf and Van Eijndhoven (2008) revealed that there were some institutions in Europe which have more than one digital repository. But the majority has one repository. Again, Graaf (2009) conducted a study and concluded that Europe has implemented digital repositories for research. Author believes that implementation of digital repositories is useful for the authors, researchers, and institutions.

At the moment, the development of digital repositories, especially in the developing countries, is in the developing phase and the awareness about the concept among the users is not very high but the targeted users have keen interest in the institutional repositories. Institutional repositories are very much important for the promotion of research culture. It is very important to enrich the repositories with the maximum contents. (Safdar and Rehman, 2015)

STATEMENT OF THE PROBLEM

Universities and research institutions are foci for intellectual and scholarly research work. According to Uzuegbu (2012), these institutions must therefore have the interest in the creation, dissemination, use, as well as preservation of knowledge from their communities. The ability of these universities to harness the content created by the members of their communities is the key to achieving the important responsibility in making the content easily accessible for usage. The faculty, research and student scholarship represent a priceless intellectual capital of a university but the value of that capital lies in its effective dissemination and usage by its possible present and future audiences. Research has effectively not happened until it has been communicated (Hahn, 2008). According to Christian (2008) institutional repositories are fast becoming one of the best tools being used by institutions in making their research knowledge or local content widely available and accessible to their user community. The University is therefore obliged to aid in the transfer of any such new knowledge or technology to its user community. Yet, notwithstanding the availability of such work, in-house statistics show that there has been poor accessibility and usage to these scholarly works. This observation was also confirmed by OECD (2011) and went on further to reveal that local content remains inaccessible even to the local population, not to mention at a wider level. It is against this background that the current study was carried out to investigate the setting up and management of institutional repositories to manage institutional knowledge of two Ghanaian higher educational institutions.
Aim of the Study

The aim of the study was to investigate the establishment of institutional repositories to manage knowledge in two Ghanaian higher educational institutions.

Objectives of the Study

The objectives that guided the study were:

1. To identify the benefits of institutions’ IR
2. To find out how the IR is funded
3. To find out issues concerning the population of the repositories
4. To find out whether the institutions have qualified persons to manage the IR
5. To find out the challenges faced in managing the IRs
6. To make recommendations based on the findings of the study.

Research Questions

The study was guided by the following research questions:

1. What are some of the benefits to be derived from establishment of the IRs?
2. How is the IR funded?
3. How are document uploaded onto the IR
4. What is the qualification of persons managing institutional Repository?
5. What are the challenges of managing the institutional repository?

Methodology of the study

This study was based on qualitative research approach. Studies carried out through a qualitative approach seek to understand a particular phenomenon through those experiencing it (Vaismoradi, Turumen and Bondas, 2013). The qualitative approach was chosen to understand the problems that librarians face with the establishment and management of an IR. Further, the qualitative method was selected to better get the participants’ insights. The qualitative approach was reinforced by inductive content analysis. Inductive content analysis enables researchers to describe the characteristics of a document’s content by reporting “who says what, to whom and with what effect” (Bloor and Wood, 2006: 58). These authors maintain that inductive content analysis is employed by counting and reporting occurrences of themes, words or phrases within one or more documents. This study employed qualitative descriptive inductive content analysis that enabled the researchers to reveal who said what with respect to the research questions that guided the study. This means that the qualitative data would be analyzed through inductive content analysis to represent participants’ perspectives on each of the research questions. This type of analysis usually employs a questionnaire with open-ended questions and a few multiple choice questions for data collection (Bardakci, Arslan and Unver, 2017).

Data collection

Questionnaire was used to collect data from the participants. The researchers believed that the librarians would express their views more in writing than in face- to – face interview. The use
of both questionnaire and inductive content analysis is being considered by scholars in qualitative research (Bardakci, Arslan and Unver, 2017). The construction of the questionnaire was guided by both the research questions and literature review regarding the place of IR resources in academic activities. A follow up telephone interviews were made with some Librarians to clarify issues that were not clear to some answers given in the questionnaire.

Participants

The study was done in the two universities in Ghana. One public university – Cape Coast University and the other a private – Central University. Both universities are well endowed in terms of ICT development, library holdings and virtual library development and access to online resources. The research participants were librarians of the universities.

The Central University is a private university initiated by the International Central Gospel Church (ICGC). It was stared in October 1988 as a bible training school for pastors and leaders of the church. It became University College in 1998. In January 2016 it received the Presidential Charter to become an autonomous and fully-fledged university. The Central University has an institutional repository known as CUspace managed by the University Library.

The University of Cape Coast is a public university established in October 1962. It attained the status of a full and independent university in October 1971. The UCC has an institutional repository known as UCCspace.

Sampling Techniques

Convenience sampling was used to identify the participants as it enables researchers to reach groups of librarians who are available (Fraenkel and Wallen, 2006). Copies of the questionnaire were produced and administered or distributed by the researcher to librarians of the university library within the period of the research.

Data analysis

After the data collection, the researchers started to deduce themes and codes to be able to answer the research questions. Inductive content analysis was applied to the qualitative data. Descriptive statistics were also used to determine frequencies or percentages for the relevant codes that formed the themes. The difference in the perceptions of the librarians on the direct and indirect factors underlying the challenges of establishment and management of the IRs.

Trustworthiness

Trustworthiness of qualitative research can be measured by trustworthiness, transferability and reliability of data (Shenton, 2003; Pitney, 2004). Triangulation of data sources was adopted by the researcher to achieve credibility by ensuring that participants from different libraries – both private and public universities. For transferability of data, the researchers provided detailed descriptions for methods, data collection, data analysis and participants.
FINDINGS AND DISCUSSION

Data collected regarding two institutional repositories were gathered and analysed comprehensively under the various themes - content analysis of repository, policy documents and an observation of the website hosting the repository.

Using user experience analysis method the researcher evaluated the two repositories. It is the process of measuring the interaction between a user and a user interface, often a website, an application or a design.

CENTRAL UNIVERSITY REPOSITORY

Interface

Fig 1. Interface of CUspace

The design interface of Central University College repository (CUspace) is shown in Figure 1 above. CUspace was created in 2012.

Means of populating the repository

A careful observation of the IR showed that the total number of materials in the CUspace is 1,225. These are mainly past examination paper, though communities have been created and named for articles, theses and dissertations. There are supplementary E-books but not accessible to the public but can only be accessed on the main page of the Library’s website.
The design interface of University of Cape Coast Repository (UCCspace) is shown in Figure 2 above. The UCCspace interface states the number and types of documents on the repository as compared to CUspace. To know the number of documents on CUspace a user would have to search by the title to get the total number of documents in the repository. UCCspace has a total of 1570 materials on the repository, 43 E-books, 1 past examination question, 1507 theses and dissertation (Doctorate and Masters), and 19 university publications. This is boldly on the user interface of the repository.

**Technical Consideration**

**Software**

In setting up an online digital repository one needs to consider the software to use. Both institutions are using DSpace, an open source software, with updates also an open source. CUspace is using version 2.0 of the Dspace software, which is making the interface look old and the banner on the interface is also stretched. UCCspace is using version 5.8, but the most current version is Dspace 7, according to Duraspace (2019). Both institutions have not registered with Duraspace as using Dspace.

**Infrastructure**

Central University and University of Cape Coast hosts their own repository in a dust free and air conditioned room. The Central University Repository is sitting on a 155mb internet backbone with the server residing in the main campus at Miotso. This findings confirms an earlier research done by Martin-Yeboah (2015) about the sitting of the servers.
Funding

According to Asante, Edward (2014) for academic libraries to operate effectively and efficiently, there is the need for adequate budgetary allocation in order to boast collection development practices, service provision, acquisition and selection as well as patronage of the library. Analysis of responses from both universities revealed that there is not enough funding for their IRs. Based on this assumption IR managers of both institutions were asked if they had budgets for their IR projects and whether the budget approved were enough for the projects. Response received from the IR manager of CUspace is that there is no separate budget for their IR. The repository is funded through the university budget for the library. The UCC is also stated that their IR is also funded through the main library administration budget. Bot managers agreed that the funding was not enough.

Policy

There is a need for the repository to have a formal policy to guide in the management of the repository. (Mapulanga, 2012, [cited in Ofosu-Ampong (2016) policy will stipulate the type of documents or heritage material that would be authorized for digitization and this policy can’t be overlooked. Responses received from both universities revealed that they do not have any approved policies. While UCC has a poicy yet to be approved, the CUspace has no policy at all. The IR manager of CUspace indicated that there is no formal policy guiding the operations of the repository of the Central University. The contents of the repository are owned by the universities. As a responsibility, the repository managers check copyright and propriety or worthiness of a document before being uploaded.

Populating/Content of IRs

An observation of the two repositories revealed that CUspace contained only past examination questions while that of UCC contain scholarly work of students pursuing Masters and Doctorate programmes, University publication, past examination questions and E-books.

A follow interview with the Librarians revealed that both UCCspace and CUspace collect both paper base and electronic document from students and faculty. The act of self-archiving is not allowed in both institutions. Faculty sends document to the library while students sent their documents to the department before they are forwarded to the library. In Central, students and faculty are to sends their documents to the library to be uploaded. At the time of this study, training was ongoing to enable faculty members self-archive their own research work

Marketing

UCCspace used communication media such as email, twitter and facebook to market and create awareness of the repository. The CUspace on the other used flyers, celebration of Information Week, and the use of any opportunity available to their principal officers of the university to inform any audience about the university’s IR both in Ghana and outside the country. In a similar work by Martin-Yeboah, Alemna, Adjei (2018) The IR manger stated that the level of awareness of the repository is not enough and must therefore be intensified among the university community.

Marketing of the IRs in the two institutions are done by the libraries. This confirms the work Martin-Yeboah, Alemna, Adjei (2018) as they stated that the outfit of the university library has been
spearheading the marketing of the repository, with irregular support coming from the Public Relations outfits as in the case of Central University.

Qualification of managers of IR

In an academic library there are different categories of the staff, this depends on the qualification. There are professional librarians, paraprofessional libraries, quasi librarians depending on the qualification. The professional librarian are those with a send second degree and higher in librarianship or Information Studies. The para-professional have a first degree in Information studies or librarianship and the quasi professionals are those with a Diploma certificates in Librarianship. There are other professionals like the Information Communication Technology. There are other staff like cleaners.

There are 208 library staff at University of Cape Coast 7 IT staff, 28 professional library .4 of the library staff are in charge of the daily operations of the IR, the 4 are made up of 2 IT staff, 1 with PHD and the other with Master of Arts. The remaining 2 are professional librarian with Master of Philosophy in Library Science. These 4 are also in charge of the IT unit as well as digital Unit of the library. Central University has 20 library staff, 18 of them are professional librarians and 2 are IT professionals. 2 of the library staff are in charge of the daily operations of the IR, 1 IT staff and a library staff. Just like UCC these 2 are also responsible for IT schedules in the Library.

Benefits

The two (2) institutions are of the view that the IRs are beneficial to the authors and institution and the repository increases visibility for the author as well as the institution. Long term access to digital material hence preservation of materials. Central adds that the platform will help academics get their research results to the outside world. This confirm an earlier research by Culler and Chawer citing Pinfield, Gardner and MacColl (2002) that primary reasons for placement output in an institutional repository is exposure - that by having their research and publications openly available on the web, not just in fee-based databases, scholarly journals, or books, their work is likely to be used and cited more.

The findings also agrees with Lynch (2003) that IR aids in preservation of publications of institutions in digital form, which frees them from the need to maintain this content on a personal computer or website

Challenges

Based on the analysis of the questionnaire and interview, the following are some of the challenges enumerated:

- Both institutions had a challenge of funding
- CUspace reported of technophobia of some of their staff and lack of interest
- The work load is far beyond the number staff managing both the CUspace and UCCspace
- At Central University there is a challenge with mail server, and attendant challenges with self-archiving.
• UCCspace has a policy but not approved, CUspace had no policy
• Awareness creation of the repository is not enough

RECOMMENDATION/CONCLUSION

The study propose that Central University College

• Central University College known as CUspace should update their software which is also open source and customise the repository to enhance the repository to make it interesting to search for information, this will also increase the positive image of the library staff
• The IT staff should also work on the repository so that the link back will be enable
• Managers of the IR should ensure that IR policy governing the operations of CUspace is worked on and approved to guide them.
• Populating an IR is time demanding, more hand should be employed to work on the uploading full text materials of scholarly publication or abstract of document which full text cannot be uploaded
• Apart from information week, communication with faculty and flyer, awareness can be creating on the institution web page, Facebook, what’s up, library orientation which are of no cost to the library
• Members of faculty should be trained to enable self-archiving to reduce work load on the managers of the repository
• Work to convince get management and other stakeholders to whip up their interest and the backing on the IR

The study propose that University of Cape Coast:

• UCCspace should have their IR policy approved and upload it on the repository for everyone to see
• The repository manager should continue to create and run awareness program for the university community to increase their visibility
• Members of faculty should be trained to enable self-archiving to reduce work load on the managers of the repository

IRs are very useful, information professionals and all stakeholders should work to sustain its longevity and efficacy
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