An Overview of Digital Library and Institutional Repositories: A Case Study of University of Calabar, Nigeria

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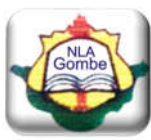
Abstract
This paper examined the various institutional repositories being used in the 21st century. It tried to differentiate between subscribe databases and open access resources such as search engines, theses, dissertations and research papers. Being a case study research, emphasis has been indicated regarding primary sources of information to assist researchers and graduate students of the University of Calabar.
Digital content of theses and dissertations occupy a critical space in research literature and are a primary source of research interest. This paper postulates major challenges facing theses and dissertations such as the traditional methods of preservation and dissemination and archiving. This ultimately poses serious challenges to library and information professionals who are saddled with the responsibility of preservation, and dissemination of recorded knowledge. Several electronic resources were available in the University of Calabar Library; postgraduate students were aware and utilized them. The use of electronic resources was slow compared to the investment made in electronic resources. It is hoped that the advent of Information and Communication Technologies (ICT's) will give librarians and information managers the opportunity of preserving and disseminating theses and dissertations in electronic format through the Electronic Theses and Dissertations (ETDs) platform more efficiently. This is the crux of this exploratory scholarly paper.

Keywords: Digital Library, Institutional repository, Open Source, Utilization, Electronic Resources, University of Calabar library, Postgraduate Students.

1. Introduction

Institutional repository is published online and is basically open to the public. While some academic journal articles are available only to subscribers and not retrievable by general search engines, such as Google, theses, dissertations and research papers, while institutional repository are fully accessible by the public free of charge and are accessible by general search engines. Popular software such as Omeka, DSpace, EPrints, and Bepress are also open sources. These software applications are meant to make original source code freely available and are redistributed as well as modified. Data collated by Dhanavandan, (2020) from the open access directory http://www.opendoar.org/ on 12th December, 2019 indicates that theres a total of

5268 repositories available in the world and it identified maximum 898 from United States of America and it is first position and Japan occupies the second position with 546.

Kaladhar, Doraswam and Rao, (2018) define Institutional repositories as an "Extension of an academic institutional activity in support of research and developmental activities of the institution, protecting intellectual efforts and to promote scholarly communication among the users within the institution". Saini, (2018) conversely addressed an institutional repository is an online archive of the intellectual output created by the faculty and researchers of an institution to enhance the visibility and promote free access of the research at a single interface. The repository either may contains all the subject of the study of an intuition or it may a subject-specific, depend upon the capacity and interest of the intuition. Theses and dissertations occupy a critical space in research literature. Globally, they form the bulk of the empirical evidences coming from both undergraduate and graduate students of the world universities. As very important primary information sources, they assist many researchers and graduate students in formulating their own research interests. The research value of theses and dissertations depends on the structure and progressive panel review process, which adds value to the enrichment of the work.

2. Objectives of the study
The thrust of this paper is, therefore, to examine the prospects of electronic theses and dissertation projects in Nigerian university libraries, with specific interest to University of Calabar. This paper intends to:
1. Explore the status of ETD's projects in Nigerians university libraries
2. Examine the prospects of ETDs in Nigerian university libraries.
3. Identify the challenges of developing ETDs in Nigerian university libraries.
4. Propose strategies for developing ETDs in Nigerian university libraries.

3. Origin of some Institutional repositories
According to New World Encyclopedia (2018) and other research it depicts that the origin of the "institutional repository" [IR] is twofold: IRs are partly linked to the notion of digital interoperability, which is in turn linked to the Open Archives Initiative (OAI) and its Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH). The OAI in turn had its roots in the notion of a "Universal Preprint Service," since superseded by the open access movement. IRs are partly linked to the notion of a digital library - that is, collecting, housing, classifying, cataloging, curating, preserving, and providing access to digital content, analogous with the library's conventional function of collecting, housing classifying, curating, preserving and providing access to analog content.

The growth of institutional repositories (IRs) began in the earliest part of the 21st century and they emerged as a result of the Budapest Open Access Initiative (BOAI), which demanded that online scholarly publications should be offered free and openly accessible to the public (Swan 2005, cited in Wickham, 2010). The call for open access was made in 2001 at the Budapest Open Access Initiatives (BOAI), and it was strongly endorsed by large group of individuals and organizations; consequently, it has continued to gain momentum since then. This call was due to the fact that, academics worldwide lacked access to current research publications in their field Odili, (2017). Today, there is a mash up that indicates the worldwide locations of open access digital repositories. This project is called Repository 66 and is based on data provided by Registry of Open Access Repositories (ROAR) and the OpenDOAR service (a directory and tool for worldwide open access repositories) developed by the SHERPA (Securing a Hybrid Environment for Research Preservation and Access). As of 2007, data from this service

indicates that the most popular IR software platforms are Eprints, DSpace, Bepress and Omeka in 2008.

The four main objectives of institutional repositories are listed below:
  I.   To create global visibility for an institution's scholarly research;
  II. To collect content in a single location;
  III. To provide open access to institutional research output by self-archiving it;
  IV. To store and preserve other institutional digital assets, including unpublished or otherwise easily lost ("grey") literature for example, theses or technical reports (New World Encyclopedia 2018).
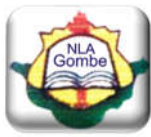
4. Status, Challenges and Strategies of Digital Contents in Nigerian University Libraries (Theses and Dissertations)

Theses and dissertations occupy a critical space in research literature. Globally, they form the bulk of the empirical evidences coming from Students of higher institutions. As very important primary information sources, they assist many researchers and graduate students in building a sound research foundation with regards to their own research interests. The research value of theses and dissertations depends on the structured and progressive panel review process, which adds a lot to the enrichment of the work. However, major challenges facing theses and dissertations are management, preservation and access for scholarly communication. Mahanta (2021) cited Mupulanga (2013) who conducted research on digitizing library materials and establishing digital repositories in the libraries of the University of Malawi. The findings showed that, despite the slow pace, the UNIMA Libraries are digitizing library materials and creating digital repositories really slow. Additionally, it is discovered that the majority of projects lack technical expertise, particularly when it comes to operating the systems in environments with secure Linux-based systems. Depending on the training obtained and the financing source, three of the five institutions were recognized to use Greenstone, two adopted DSpace, and one adopted Procite.

These challenges have been underscored by a number of researchers (Mahanta 2021; Paul S. Muneja and Ndenje-Sichalwe 2016.) Njagi and Namande (2018) have researched the state of institutional repository implementation in a few newly founded universities in Kenya and noted that the traditional methods of archiving and disseminating theses and dissertations are inefficient and unwieldy, pointing out that print forms have limitations since access to them seems to be restricted to very few individuals within the place where they were generated.

Unfortunately, the management, preservation, and dissemination of these very important research evidences in Africa and particularly in Nigeria fall below expectation. For one, theses and dissertations fall within the group of grey literature which many libraries and information centers find difficult to track down, and for another, very few copies are produced and they are usually buried in the libraries of the institution where they are generated (Ezema, 2011). Consequently, the dissemination of theses and dissertations in Nigeria lacks global visibility. Similarly, theses and dissertations lack adequate methods of preservation, to the extent that even the university libraries lose so many of them to fraudulent library users and lack of proper management. This development poses serious challenges to library and information professionals who have the responsibility of preserving and dissemination of recorded knowledge.

These challenges notwithstanding, available evidences have shown that there has been a continuous increase in the production of knowledge embedded in theses and dissertations in

Africa. For instance, (Ubogu, 2006), noted that universities generate theses and dissertations from graduate students seeking award of higher degrees. According to him, Africa has more than 180 universities that generate theses and dissertations periodically. Nigeria has 107 universities funded by government and private individuals (NUC, 2011) that generate several theses and dissertations on a regular basis. The increase in the number of universities across the globe, particularly in Africa, came as a result of the present knowledge society. Most repositories languished understaffed and poorly supported, abandoned by library and institutional administrators, scoffed at by publishers, librarians and open-access ideologues Rebecca Mary Marsh , (2015),". (Vijayakumar and Vijayakumar, 2007), reported that between 1996 and 2000 there was a 27% increase in the number of doctorates awarded by UK institutions, which stood at 13 670 at the end of 2000. In another study by Genoni and Cowan (2002), it was estimated that the 19254 enrolments in the year 1991 for higher degree research programmes in Australian universities rose to 37374 by 2000. According to the study, during the same period, research completed higher degrees rose from 2491 to 5325. The National Science Foundation (NSF) survey reported that between 1988 and 1998, U.S universities collectively awarded almost 400,000 and have awarded more than one million doctorates in about 40 years period. All this points to the fact that, there has been a steady growth in the production of theses and dissertation in the global scholarly communities. Several commentators have tried to uncover why there has been low faculty engagement and to highlight the risks of institutional repositories losing their raison d'etre without the support and interest of the academics they have been created to serve (Burns et al., 2013).

The advent of Information and Communication Technologies (ICT's) has offered librarians the opportunity of preserving and disseminating theses and dissertations in electronic format through the electronic theses and dissertations (ETDs) platform. n addition to the internet and WWW, Institutional Repository requires hardware and software that are used as main infrastructural facilities for creating IR. The required hardware depends on the specifications and the version of the repository softwar (Muneja and Ndenje-Sichalwe (2016). The Motto behind the institutional repository is to meet the user needs and expectation of electronic resources and services. Institutional repository is a set of information in the form of electronic resources to support the user needs of an institution (A.Kaladhar, B.R. Doraswamy Naick). University Microfilms International (UMI) in the United States first discussed the idea of electronic theses and dissertations (ETDs) in 1987. The term ETD applies to "any thesis or dissertation that is submitted, archived and accessible solely or at least primarily in an electronic format. Such a dissertation might be written on any conceivable subject and need avail itself of no presentational or organizational feature that could not be duplicated in paper" (Kirschenbaum, 1996). This implies that the essence of ETDs is to provide easy access to research materials documented in theses and dissertations. ETD therefore offers wider access to research materials and to the global scholarly community. (Ubogu, 2002) has argued that Africa has to participate in the global efforts to make theses and dissertations information available, and there are increasing initiatives to that effect. There are several OA repository software but selecting the right one for building IR has been a challenge to most practitioners, especially those with low technical know-how. D-Lib, (2015) highlights evaluation criteria for selecting repository software to include checking the functionality of the software, scalability, extensibility, interoperability, ease of deployment, system security, system performance, physical environment of the software, platform support, demonstrated successful deployment, stability of development organization and strength of technology roadmap for the future. These criteria can be used to securitize a software that could be reliable for developing IR (Paul S. Muneja , Esther Ndenje-Sichalwe (PhD) 20)
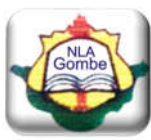
As mentioned in the Unesco *Guide for Electronic Theses and Dissertations*, access to ETDs may be the only open to those in developing countries who cannot afford to make purchases from Proquest, who cannot wait for expensive shipping of copies through interlibrary loan, who cannot attend the myriad conferences which demand considerable travel related expenses or, who cannot pay for expensive journals -that only may have short summaries of theses or dissertations results (Fox, 2001).

In view of the challenges associated with ETD in Nigeria, this paper is proposing the following recommendations. Governments should increase funding of universities, particularly the university libraries. When this increase in funding has been made, a specified percentage of the library budget should be dedicated to the full implementation of ETD projects and their sustenance. Efforts should be made for sustainable power supplies in the country by encouraging government and private individuals and organization to embark on power generation in the country. Universities should be connected to the national grid so as to ensure adequate power supply for ETD projects. In order to provide adequate ICT infrastructure, universities should regard information and communication technology as critical in the overall development of the institutions. There is a need for private and public partnership (PPP) for adequate Internet connectivity and procurement of ICT hardware/software facilities in the universities. Universities should set up committees made up by experts to develop workable copyright policies in relation to electronic theses and dissertations. The National Copyrights Commission should be involved in the development of such policies. Every Nigerian university should be encouraged to develop an ETD policy that would serve as a guide for the full implementation of electronic theses and dissertations in Nigerian university libraries. Universities that have not started the collection of electronic copies of students' theses and dissertations should, as a matter of urgency, mandate the student to submit their research works in electronic and print format. This will reduce the cost of digitization of hard copies when the university is ready for full implementation of an ETD project. The National University Commission should develop a strategy for aggregation of all the theses and dissertations in the country for the possibility of establishing an Electronic Theses and Dissertation Network in Nigeria (ETDNet). When this is established university libraries will have a lot to contribute to the global information platform.

This paper has explored the relevance of theses and dissertations in research activities globally and nationally. The traditional methods of organizing and preserving theses and dissertations have been highlighted and the limitations of these traditional methods pointed out. The belief is that ETD is a very efficient method of organizing, archiving and disseminating theses and dissertations for the scholarly communication process. African countries have been slow in the adoption of ETD in their universities, notwithstanding the perceived benefits of the project.

Several reasons ranging from funding, technological challenges and copyright issues, amongst others, have been identified as the barriers for full adoption of electronic theses and dissertations in Nigeria. The strategies for mitigating these barriers were revealed in this paper and recommendations provided. If Nigeria as a country is serious about research and development and willing to favorably compete in the present knowledge or digital economy, serious efforts should be made to ensure full implementation of electronic theses and dissertations (ETD) in Nigerian university libraries. The recommendation provided in this study will be of immense assistance to policy makers and all stake holders in research and development in Nigeria.

5. Availability and Utilization of Virtual library by Postgraduate Students in a Nigerian University Library: A Case Study of University of Calabar, Nigeria

The extent of availability and utilization of electronic resources by postgraduate (PG) students in the University of Calabar (UNICAL) Library is examined by this scholarly paper. The University Library had e-journals, e-books and access to databases and Internet resources. E-journals were the most often used e-resources.
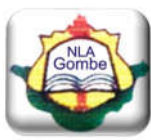
Lack of computer skills, slow network, inconsistent internet connectivity, power outage and irrelevant electronic information resources were the problems postgraduate students encountered while accessing and using electronic resources in Unical Library. Based on the findings, the following recommendations were made: adequate budgetary allocation should be given to the University Library for subscription to online databases and acquisition of electronic books, more relevant open access databases should be made accessible to users, creation of awareness on the available electronic resources in Unical Library, installation of inverter and battery system in the Electronic Library, and organizing users education for better use of electronic resources in Unical Library.

The 21st Century has experienced a remarkable proliferation of electronic resources (e-resources) which have tremendously change the information seeking attitude of students and researchers globally. In recent times, electronic resources have been identified as the major sources for information dissemination in the universities, especially for researchers (Egberongbe 2011).

Electronic resources, in most universities, are integral part of the electronic library and stand as vital academic resources that support teaching, learning and research activities (Zhang ye, and Liu, 2011). In a study carried out by (Dadzie, 2005) on Electronic Resources: Access and usage at Ashesi University College, Ghana, She noted that electronic resources were invaluable research tools.

In academia, electronic resources are dominating the research activities of researchers; researchers have realized the importance of such resources (Hadagali, Kumbar, Nelogal and Bachalapur, 2012). Electronic resources provides accurate and timely information, especially for students who depend greatly on the electronic resources for information to advance research and collaboration with other researchers around the world for intellectual growth (Ukpebor, 2012)

The goal of postgraduate study in any university is for further development of graduate students with the spirit of enquiring knowledge through training and research in an atmosphere of intellectual independence and individual creativity with a strong sense of group cooperation (Lateef, Omotoso and Owolabi, 2013). (Ndubuisi and Udo, 2013), in an empirical study of motivation, challenges and strategies in the use of electronic information resources by postgraduate library users in South-East Nigerian Federal Universities, that a large majority of students use online journals for preparing project reports and for listing references. This shows that postgraduate students, irrespective of their field of work, have information needs in their various levels of studies and research. In spite of perceived availability of electronic resources in universities and their benefits to university education, their effective utilization by postgraduate library users in Nigeria appears to be hampered by different factors (Ndubuisi and Udo, 2013). In a study conducted by Ojo and Akande (2005), they drew a conclusion from their research that the level of usage of electronic information resources among students was low. Today, it is very common to find electronic resources in most university libraries.

However, their availability does not necessary equates their utilization. Availability and utilization of electronic resources is the totality of utilization when needed and their being able to meet the information need of who is using them. The above situation establishes some doubts, in spite of enormous literature review about the availability and utilization of electronic resources in academic libraries.

6. An Overview of Electronic Resources

The term electronic resources or e-resources is seen by (Deng, 2010) as library's information materials that are in electronic form which include electronic books (e-books); electronic newspapers (e-newspapers); electronic journals (e-journals) as well as Internet resources. E-resources also consist of databases, magazines, archives, theses, conference papers, government papers, scripts and monographs in an electronic form. MEDLINE, ScienceDirect, AGORA (Access to Global Online Research in Agriculture), HINARI, OARE (Online Access to Research in the Environment), LexisNexis, Ebscohost were mentioned as examples of databases (Ani and Edem, 2012). The importance of electronic resources to students and academic libraries cannot be over emphasized, "they offer postgraduate students the chance to access relevant and current information from different subject areas" (Joshua 2014). The emergence of electronic resources, according to Ani and Edem (2012), has tremendously transformed the handling and management of information in Nigerian academic environments and university libraries in particular.

7. The Electronic Library, University of Calabar

The e-library, University of Calabar is accessible at https://library.unical.edu.ng/. The e-library was donated to the University of Calabar by Deep Offshore Community Affairs Group (DOCAG), Nigeria. This was coordinated by Prof. O.O. Lawal, the University Librarian during his tenure. DOCAG is a conglomerate of oil companies/ oil servicing companies in Nigeria (TOTAL, NNPC, SHELL, and CHEVRON). The e-library was commissioned on 19th December 2012 by Mr. M.A. Fiddi, group general Manager, NNPC. The e-library provides access to a number of electronic resources such as electronic/ Online Data Bases, (Agora, JSTOR, Science Directive CDROM and Databases) etc.

On the 5th of September, 2014, the University of Calabar Graduate School Digital Library was commissioned and opened to all University staff (Graduate Faculty and Non-Academic Staff) and registered students of the Institution. The Graduate School Digital Library has a seating capacity of over 200 users and 24 hours, 7 days access via Intranet or Internet. As at the time of the commissioning, the Graduate School Digital Library had varied amount of digital materials and subscribed to other digital libraries such as Nigerian Virtual Library.

A study carried out by Ndubisi and Udo, (2013) in the South-East Nigerian Universities, revealed that students were motivated to use electronic information resources in their libraries. In another development, the researchers revealed that insufficient computers with Internet facilities, incessant power outage, slow Internet connectivity, and lack of ICT skills, inadequate ICT infrastructure and difficulty in finding relevant information are challenges militating against the utilization of electronic resources by postgraduate students. In an empirical study of motivation, challenges and strategies in the use of electronic information resources by postgraduate students, it was revealed that postgraduate students were motivated to use electronic resources because they were more informative, easy to access and use, saves time and less expensive (Ndubisi and Udo, 2013).

7.1 The virtual library services of University of Calabar

It has been reported that Nigerian universities are lagging behind their counterparts in western countries in terms of research productivity (Adams, King and Hook, 2010, Komolafe-Opadeji 2011). Part of the problems has been attributed to inadequate modern ICT infrastructural facilities in Nigerian universities leading to low levels of availability and utilization of electronic information resources by postgraduate students. In order to know the cause and make recommendations, the study investigated the extent of availability and utilization of electronic resources in University of Calabar Library.

Availability and utilization of electronic information resources is the key to the success of postgraduate studies in any institution and the library plays the central role in making information available and accessible. It is therefore also necessary to find out if the University of Calabar Library is performing her primarily responsibility of providing e-resources to meet user's information needs, learning and research.

It is in the light of the above reasons, that the researchers examined the available electronic resources in University of Calabar Library and how they are used by the postgraduate students in learning and research.

7.2 The type of electronic resources available for postgraduate students in University of Calabar Library

The popularity of e-journal among the respondents may have been influenced by the activities of postgraduate students which is dominated by research. With the presence of Internet and WIFI within and around the University of Calabar Library, registered students had access to Internet resources without entering the Electronic Library or traditional library. More so, users find it more convenient using search engines which gave them access to Internet resources. It is possible that the convenience of access to Internet resources through search engines minimized the awareness and utilization of electronic books by postgraduate students in University of Calabar.

Summary

The study was undertaken to examine the availability and utilization of electronic resources by postgraduate students in the University of Calabar Library with the aim of determining availability, identifying types, ascertaining usage and the problems associated with the usage of the electronic resources.

Analysis yielded the following findings:

1. To a great extent, electronic resources were available in the University of Calabar Library.
2. The University Library had e-journals, e-books and access to databases and Internet resources.
3. Databases that were accessible as at the time of this research were: Science Direct, Nigerian Virtual Library,
4. Majority of postgraduate students in the University of Calabar often made use of the electronic resources in the University Library. However, online databases were underutilized.
5. Electronic journals were the most often used electronic resources by postgraduate students.
6. The problems postgraduate students encountered while accessing and using electronic resources were: lack of computer skills, slow network, inconsistent internet connectivity, power outage and mass of irrelevant information.

9. Conclusion

Several electronic resources were available in the University of Calabar Library; postgraduate students were aware and utilized them. The use of electronic resources was slow compared to the investment made in electronic resources. However, the awareness and utilization of online databases was significantly very low among postgraduate students in University of Calabar. Lack of computer skills and slow network were the major reasons that discourage some postgraduate students from effective utilization of electronic resources in the University of Calabar Library.

Recommendations

In view of the findings of the study, the following recommendations were made to improve on the availability of electronic resources and their utilization in the University Library:

1. Adequate budgetary allocation should be provided to the University Library for subscription to online databases and acquisition of electronic books.
2. More relevant open access databases such as Academic Journals should be made accessible to postgraduate students.
3. The Library Management should create awareness on the electronic resources available in the University Library and its importance to postgraduate studies. Users should be made to understand that even if they cannot use a computer system, staff would assist them to meet their information needs.
4. Inverter and battery system should be installed in the Electronic Library to ensure regular power supply.
5. Train/retrain librarians and appropriate user education should be organised for postgraduate students for better use of electronic resources in the University Library.
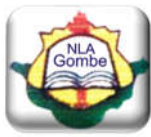
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