April 2023

Institutional Digital Open Access Repositories in Nigerian Universities: Issues and Challenges

Peter Olubunmi Olubiyo
Adeyemi College Education,Ondo, olubiyopeter@gmail.com

Lydia Mercy Olubiyo (Miss)
Starfield College, Abuja, Nigeria,, olubiyomercy@gmail.com

Institutional Digital Open Access Repositories in Nigerian Universities: Issues and Challenges

Peter Olubunmi Olubiyo,
College Library,
Adeyemi College Education, Ondo, Nigeria
olubiyopeter@gmail.com
+2348166392038

And

Lydia Mercy Olubiyo,
Starfield College, Abuja, Nigeria,
olubiyomercy@gmail.com
+2349063762872

Abstract

Universities as institutions of higher learning place emphasis on research as one of their core functions apart from teaching and community services. A key criterion that is used to measure the standard of a university is the quality and quantity of research output. A university that falters in the production of brilliant researches that can be applied in moving the society forward socio-economically and technologically, has lost its relevance. It is therefore essential that in expanding the frontiers of knowledge and imparting the society positively, adequate attention should be placed on the intellectual output emanating from the ivory towers. 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 of institutional repositories (IRs) in Nigerian universities. Thus, Institutional Repository becomes imperative to   maximize the visibility and global impact of the institution's intellectual outputs, and also considering the weakness of the existing model of publishing which is rigorous, time consuming, expensive, and scarcely caters for the grey materials and other local scholarship. In the light of the innumerable benefits of institutional repository, university libraries all over the country, Nigeria should resort to institutional repository as a means of coping with preserving and disseminating (for full impact) their ever increasing scholarly out.

Key Words: **Institutional Digital Open Access Repositories, Nigerian Universities, Issues and Challenges**

Introduction

Today, the availability and utilization of information determines the effectiveness and visibility of any institution - be it academic, commercial, political, religious or cultural. The unrelenting quest for information in this 21st Century can, therefore, be rationalized on this score. This strong desire and eagerness for access to information has led to the establishment of information and media centers which has further restructured the way information is provided, especially, in higher institutions of learning. Thus, the sustained move for reorganization of information sources, enhance visibility in academic research outputs and strengthen the degree of information provided led to the establishment of various repositories. However, before now, these repositories were known to be mere archives as a result of difficulty in access (Chukwueke, Nnadozie and Okafor, 2020).

Universities as institutions of higher learning place emphasis on research as one of their core functions apart from teaching and community services. A key criterion that is used to measure the standard of a university is the quality and quantity of research output. A university that falters in the production of brilliant researches that can be applied in moving the society forward socio-economically and technologically, has lost its relevance. It is therefore essential that in expanding the frontiers of knowledge and imparting the society positively, adequate attention should be placed on the intellectual output emanating from the ivory towers. 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 of institutional repositories (IRs) in universities (Anenene, Alegbeleye and Oyewole, 2017).

Mellon (2006) in Akpokodje and Akpokodje (2015) states that a repository is a networked system that provides services pertaining to a collection of digital objects. Example of repositories include: institutional repositories, publisher's repositories, dataset repositories, learning object repositories, cultural heritage repositories, etc. therefore, Musa, Musa, & Aliyu, (2014) in Ukwoma and Ngulube (2019) described an institutional repository (IR) as a database for preserving the local content of academic institution. Local content consists of materials such as examination question papers, research publications, working papers and inaugural lectures generated in institutions of higher learning. These materials contain information that are relevant for teaching, learning and research in universities. They are often difficult to come by since many of them are not in published form. In some cases, the materials are leaflets that can easily become brittle. IRs provide a safe option for the preservation and accessibility of the local contents in digital format. IRs preserve and secure records that would have been obliterated by age.

There is no contradiction to the fact that information and knowledge have assumed position as one of the factors of production. The generation, acquisition and utilization of information and knowledge are indispensable factors for growth and development. Knowledge has become the most important factor that determines the standard of living and pace of development of nations. This is because the contemporary world is knowledge-based and all meaningful participation in its activities presupposes this status (Igwe, 2014). Ghosh and Das (2007) in Igwe, (2014) note that, the contrast between developed and developing countries is in terms of generating and having access to knowledge. According to Christian (2008) in Igwe, (2014), the World Bank has explored the complex relationship between knowledge and development, and made a case for the need to address information problems as a way to

eradicate poverty and improve people's lives in developing countries. It was also observed that the most technologically developed countries of the world today are knowledge-based. Developed countries invest so much time and money in research to acquire the knowledge necessary for development. Information and knowledge are the major drivers of economic change, restructuring businesses, improving skills and generating employment. In other words, unhindered access to free flow of scientific, technological, academic, and economic information at the right time would assist and facilitate the activities of other production factors. This will lead to increased productivity, which will invariably contribute to development. Thus, this make need for institutional repository in Nigerian Universities paramount.

Digital Open Access Repositories in Nigeria

OpenDOAR, (2019) in Adewole-Odeshi and Ezechukwu, (2020) described the concept of Open Access (OA) implies the provision of unrestricted access via the Internet to research and scholarly information resources. OA is characterized by free online access and availability of information materials on the Internet without charge to users (readers) and libraries; granting users the license to make legal and non commercial use of the materials, subject to proper acknowledgement of the rights of the original owner (author) through citation and referencing. An Open Access Repository in an Institution (OARI) therefore means an online access to the research output and intellectual products created by the academic and research staff and students of an institution via the Internet without barriers. The open access movement emerged in the digital era as a response to increasing legal and economic barriers by commercial scholarly publishers which made access to research output difficult especially to people in developing countries. Thus the movement seeks to promote free and open access to research outputs devoid of permission barriers and unnecessary legal restraints, with the use of ICT components

especially the Internet. The past decade has witnessed the birth of OA initiatives, statements and conferences in support of the movement.

The challenge at this point is on how to make the research and intellectual outputs of Nigerian Higher Educational Institutions (HEIs) and research institutes available for easy accessibility, utilization and possible application. Such availability will invariably facilitate the linkages between industries and research, and possibly attract greater funding for Research and Development activities. The research outputs from HEIs and research institutes are mainly in the form of grey literature, i.e. unpublished print-based information resources and knowledge assets such as research reports, journal articles, theses, dissertations, conference and seminar/workshop papers as well as indigenous research findings published in local outlets (Igwe, 2014).

Crow, (2004) in Igwe, (2014) expressed that an institutional repository is the digital archive of the intellectual products created by the faculty, research staff, and students of an institution and made accessible to end users both within and outside the institution, with few or no barriers. It is an online locus for collecting, preserving and disseminating in digital form, the intellectual outputs of the staff and students of academic and research institutions. The research output includes electronic copies of peer-reviewed journal articles, theses and dissertations, technical/research reports, conference proceedings, seminar and workshop papers, teaching materials, monographs, inaugural lectures, matriculation and convocation lectures, lectures at commissioned events, papers and publications of other intellectual activities in the institution, etc.

These scholarly works have limited circulation even within the institutions of their origin. They also lack proper documentation in national and international bibliographic databases. They

are neither indexed nor abstracted in international indexing and abstracting agencies; as such, they are not visible to the scholarly and research communities. This situation has retarded the level of development which we would have experienced in various sectors of the economy before now, and at the same time have affected the rating of Nigerian institutions. For instance, Harnad, (2006), Gbaje (2010) in Igwe, (2014) reported that the poor visibility has affected the webometric analysis and ranking of Nigerian universities, as the ranking is usually based on the volume and quality of e-publications emanating from each university. There is therefore the need for the application and use of information and communication technologies (ICT) for the development and management of the intellectual outputs and research findings, which will be in open access domains for easy accessibility. This is because, the easier the access to research results in open access repositories, the more readily they can be read and understood, used, applied and built upon.

OpenDOAR, (2019) in Adewole-Odeshi and Ezechukwu, (2020) asserted that an open access repository is a database or a virtual archive established to collect, disseminate and preserve scientific output like scientific articles and dataset, and make them freely available. Repositories can be either linked to an institution or department or linked to a research field or subject, i.e. Institutional or Subject Repositories. Open access repositories are domiciled in a website known as OpenDoar.   OpenDOAR was launched in 2005. It is a quality-assured global directory of academic open access repositories. It enables the identification, browsing and search for repositories, based on some features, such as software or type of material held as well as location. OpenDOAR, (2019) in Adewole-Odeshi and Ezechukwu, (2020) expressed that OpenDOAR collects and provides information solely from sites that wholly embrace the concept of open access to full text resources that are of use to academic researchers. Sites that have any

form of access control and prevent immediate access are not included; likewise sites that consist of metadata records only are also declined.

According to Christian, (2008), Gbaje, (2010) in Igwe, (2014), there was statements and conferences on Open Access which include the Budapest Open Access Initiative (BOAI) by the Open Society Institute in 2001, the Bethesda Statement on Open Access Publishing in 2003, the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, the United Nations Summit on the Information Society Declaration of the Principles and Plan of Action, the Organisation for Economic Cooperation and Development (OECD) Declaration on Access to Research Data From Public Funding, the International Federation of Library Association and Institutions' (IFLA) Statement on Open Access to Scholarly Literature and Research Documentation in 2004. In 2007, The Canadian Institutes of Health Research (CIHR) announced an open access mandate for CIHR-funded research. In a similar vein, in January 2008 the National Institute of Health (NIH) released the text of its new open access mandate for NIH-funded research. The mandate requires all NIH funded researchers to deposit their article into PubMedCentral – an open access archive. Same year, the Harvard University Faculty Council approved a plan to make open access archiving for all research works produced by the faculty members. Similar policy has also been adopted by some other tertiary institutions in the world.

Hence, Christian, (2008), Gbaje, (2010) in Igwe, (2014), opined that the availability and accessibility of the research outputs and intellectual products of Nigerian universities, polytechnics, research institutes, colleges of technology, colleges of agriculture, colleges of education, etc in open access repositories will contribute significantly to the achievement of vision 20: 2020. Oke (2010) in Igwe, (2014) posits that the polytechnic system, and indeed other tertiary institutions and research-based organisations, must strive to be part of the global

knowledge network where they can make inputs and also benefit from the contributions of others. This is possible via the development of open access institutional repositories (with the use of open source software).

Oke (2010) in Igwe, (2014) noted that having open access repository is to create global visibility for an institution's scholarly research output, thereby projecting the image of the institution and its host country. One of the principles underlying the open access initiative is that wide dissemination of, and access to research and scholarly outputs is desirable so that subsequent works can be informed by the earlier works of others. If this principle is taken away, what is left is an endless circle of duplication whereby scholars and researchers are constantly 're-inventing the wheel' because they are unaware of the fact that an in-depth research has already been conducted on a subject matter which they are about to research or are currently researching. Thus, to avoid this unnecessary duplication saves time and enables researchers to expend their effort in other areas of human endeavor that has not been explored or researched, thereby moving at a faster pace in scientific investigation and the application of research results to key sectors of the economy for sustainable development. Open access increases the efficiency of scientific discovery since the likelihood of wasting resources and time on duplicative investigation decreases when researchers have comprehensive access to the results of earlier work. More so, the fundamental principle of research is that wide dissemination of research results is vital for validating these results and advancing the field of knowledge.

Digital Repository Facilities

In order to ensure the success of the Digital Repository Project in Ahmadu Bello Univeristy (ABU) Zaria, Nigeria, Aliyu and Mohammed (2013) identified some of the

equipment and facilities acquired and installed for converting source materials from physical/ analogue formats to digital one. These include:

1. **Hardware**:

(a) Scanners: Based on the fact that there is no single scanner that can provide all digitization needs for ABU Digital Repository Project, as such a variety of scanners are needed to complete different digitization tasks, three Xerox Documate 752 high-speed duplex scanners were procured for the take-off of the project to replace the old HP flatbed scanners being used previously. The scanners were selected based on the following reasons:

i. Volume (average number of pages and images to be scanned)

ii. Scanner duty cycle (average number of scans recommended for a scanner model)

iii. Need for color, black and white, or gray scale scans

iv. Resolution and format

v. Document size

vi. Single or double sided (also referred to as simplex or duplex)

vii. Scanner warranty

viii. Maintenance requirements.

(b) Computers: Normally, the computer to be used for any scanning activity/tasks must be able to handle very large files which can be memory and processor intensive. Thus, new

computers with 2GB Random Access Memory (RAM) and disk space were acquired. The image-processing speeds have a direct impact on the workflow and the speed of the scans.

(c) Monitors: Monitors are used to preview the quality of images to be captured. A large-screen monitor that supports a high-resolution display should be used for image editing and quality control. This was why 19 inches (flat panel) was acquired to properly review images. The ability to calibrate and control the monitor contrast, brightness, and color temperature is very important.

2. Software

Naturally, software are needed for the hardware to work. Some relevant software were thus acquired and installed for such purposes. These include:

(a) Optical Character Recognition (OCR) software to convert the hardcopy image to a digital one and then into text that a word processor can understand what is being done using the Abby Fine Reader 8.0 as installed. ABBYY FineReader is a powerful, yet easy-to-use application for professional quality conversion of document images and PDF files to editable and searchable electronic files. The product delivers outstanding accuracy when converting a variety of document types including tables and spreadsheets, magazine articles, contracts, and faxes. Enhancements in version 8.0 give FineReader new intelligence, making it more accurate, flexible, and adaptable for a wider variety of users than ever before.

ABBYY FineReader 8.0 redefines OCR accuracy and performance by delivering:

- a significant increase in overall recognition accuracy - with up to 30 percent accuracy improvement for "difficult-to-read" images such as faxes and documents scanned at low resolution;

- more intelligent PDF conversion - with smarter, faster processing and output to searchable, secure, and tagged PDF files;

- higher productivity and greater applicability - with new automation tools, fast processing options and ability to use FineReader for a wider range of tasks, including digital camera support and "instant" OCR with a new Screenshot Reader application (Abby, 2005).

(b) Usually, files could be converted from one format to another e.g. Documents are typically stored as Tagged Image File Format (TIFF), Portable Document Format (PDF), Portable Document Format for archiving (PDF/A), or Joint Photographic Experts Group (JPEG) files. The most preferred format selected for use is the PDF formats specifically; the Nitro PDF express was adopted in ABU, Zaria, Nigeria.

(c) Content Management software: Indexing record can be the most costly part of any digitization effort, yet it is vital for allowing users to find the information they require. Indexing can include assigning and capturing various metadata including bibliographic data and subject terms. The Dublin Core metadata has been adopted for such purpose.

Issues and Challenges of Nigerian Universities' Institutional Repositories

Okoroma and Abioye (2017) are of the note that universities in Nigeria are major centres for research output and other valuable literature. However, many of the literature remain unpublished and are never utilized by the masses. There is a glaring divide between the explosive output of literature in the universities and the users of information for education, research and manpower development. Thus, Institutional Repository becomes imperative   to maximize the visibility and global impact of the

institution's intellectual outputs, and also considering the weakness of the existing model of publishing which is rigorous, time consuming, expensive, and scarcely caters for the grey materials and other local scholarship. In the light of the innumerable benefits of institutional repository, university libraries all over the country are resorting to institutional repository as a means of coping with,preserving and disseminating (for full impact) their ever increasing scholarly out. Literature has revealed insignificant adoption rate of institutional repository in Nigeria. OpenDOAR, (2014) in Okoroma and Abioye (2017) analyzed that out of 3,370 institutional repositories in the world in the year 2014, Africa has only 95 (3.7%) repositories and Nigeria has just 8 (7.9%) out of 95 repositories in Africa.

Adewole-Odeshi and Ezechukwu, (2020) illustrated the growth of Nigerian open access repositories since 2009 when it started. The researchers noted that before 2009 there was no Institutional Repository available in Nigeria. The first Open access Institutional Repository was developed in 2009 at University of Jos. Only 5 (20%) repositories in Nigerian Universities were created between 2009 and 2013. The highest number of institutional repository constituting 11 (44%) were developed by Nigerian institutions between 2014 and 2016; followed by 9(36%) between 2017 and 2019. Thus, the analysis showed that there are 25 (100%) open access repositories in Nigeria and they are institutional. No Nigerian repository is Disciplinary, Aggregating or Governmental. It was also revealed that open access repositories in Nigeria make use of two main softwares which are Dspace with a total number of 20 (80%) and Eprints 4 (16%) with 1(4%) unknown.

Akintunde, (2002) Akintunde, (2010) in Akpokodje and Akpokodje (2015), expressed that internet access in the University of Jos started with a small step of accessing electronic mail through American Online in 1996 and Skannet in early 1997. In June 1997 the backbone for a campus Wide area Network was laid with a server maintained in the NuNet office. The intranet

was activated in 1998. The intranet was used to send and receive mails as well as host the University's newly created website which was created in 1998. Based on the availability of Internet (wired and wireless) on campus, the University of Jos under the leadership of the library launched its Open Access Institutional Repository- http://dspace.unijos.edu.ng – in June 2009. In the research it was stated that it was a realization of three years' dream. Between 2006 and 2009, there was a very high demand by both library staff and patrons to promote access to the University's resources.

Researches had it analyzed that the growth of open access institutional repositories in Nigeria over the last 10 years is slow. OpenDoar website is a directory of all open access institutional repositories in the world. It is a quality-assured global directory that enables the identification, browsing and search for repositories. OpenDoar was analyzed to get statistics of institutional repositories in Nigeria based on such parameters as: type, status, software, total number of records, subject covered and content uploaded. Findings also show that a total of 68,610 items have been uploaded in the 25 open access repositories in Nigeria since their creation till date with University of Nigeria, Nsukka having the highest upload of 23,367 items, however, University of Jos started the initiative of open access institutional repositories in Nigeria in 2009. Dspace software was found as the preferred Software for most of the repositories. The study also revealed that most of the institutional repositories are multi-subjects based. Their study recommended among other things that Institutional repositories should be made a prerequisite for Nigerian Universities Commission (NUC) accreditation and funding should be made available to set up functional Institutional repositories in Nigeria (Adewole-Odeshi and Ezechukwu, 2020).

Akintunde, (2002) Akintunde, (2010) in Akpokodje and Akpokodje (2015) observed that immediately after the installation of IR, the visibility of research output of University of Jos became very obvious, thus, University of Jos moved from nowhere on the map to 4th position in

Nigeria, 70th in Africa and 7000th in the world on the Ranking Web of World Universities for January 2010 ranking. The ranking web of world universities has attracted a lot of interest in the last two years among Nigerian universities. The process of making institutional resources available and visible demands a collective effort of scholars – who contribute reports of their ongoing and completed researches; librarians – who organize resources and put them in appropriate templates for upload, visibility, and accessibility; and technicians – who ensure that network infrastructure is up and running 24/7 are ground. The institution itself plays a critical strategic role of providing critical infrastructure such as bandwidth and electric power, and also ensuring through policy (and enforcement), that the university community makes resources available on the Internet.

Christian, (2008), Gbaje, (2010) in Igwe, (2014) asserted that higher education institutions and research institutes in Nigeria are yet to take full advantage of the opportunities and benefits provided by open access institutional repositories for accelerating the development of the country. Some of the issues identified by existing literatures as being responsible for the slow uptake of institutional repositories in the country include lack of knowledge or awareness of open access institutional repository, poor state of ICT infrastructure (server, bandwidth, electricity), inadequate technical and skilled staff, apathy on the part of institutional top management, inadequate advocacy for open access repositories, poor or inadequate funding, copyright and intellectual property rights. Others include absence of relevant policies, inadequate attention to institutional libraries among others.

In addition, institutional repositories offer several benefits for the management and preservation of the research output generated within universities. These benefits have not been achieved without challenges. Numerous factors that militate against the utilization of IRs,

ranging from managerial and infrastructural issues to content submission, have been identified. The provision of content by authors and researchers of institutions is one of the major challenges. Thus, Nixon (2002) , Nwokedi (2010) as cited in Ukwoma and Ngulube (2019) asserted that the central challenge for developing an IR does not lie with technical implementation but in instilling a change of mindset among researchers to freely make self-archiving an important part of their academic life. It was discovered that many lecturers are not willing to submit their work to IRs. However, Watson (2006), Royster (2007) in Ukwoma and Ngulube (2019) stated that many articles received from authors were requested, but the academics are not really aware of what the libraries will be doing with the papers submitted.

Way Forward to the Challenges of Nigerian Universities' Institutional Repositories

In the light of the above issues and challenges, there should be the following as way forward: Formulation of a national policy to mandate all Higher Educational Institutions (HEIs) and research institutions in the country in order to set up open access repositories for global visibility of their research results and possible utilization for development.

☐ Aina, (2001) in Igwe, (2014) expressed establishment of a national centre or agency for the coordination of research to implement the above proposed policy. South Africa has a similar body known as National Research Foundation (http//www.nrf.ac.za), which hosts a database of major researches in South Africa.

☐ Igwe, (2010) in Igwe, (2014) asserted that there should be formation of consortium for the procurement of ICT components, and internet bandwidth among HEIs and research institutes for faster access to the internet where the repositories will be domiciled. Formation of consortium among libraries is a wonderful idea for the accomplishment of objectives that may not be satisfactorily achieved independently. A good example is the partnership of six Nigerian

university libraries – the Obafemi Awolowo University Ile-Ife, the Ahmadu Bello University Zaria, the University of Port Harcourt, the Bayero University Kano, the University of Ibadan and the University of Jos – for the procurement of the best acclaimed integrated library automation software, the Virtual Library Management Software from Visionary Technology in Library Solution (VTLS) USA, at a lower cost than they would have paid individually. This drastically reduced the cost of the software and provides sufficient expertise in its maintenance. Gbaje & Okojie, (2011) in Igwe, (2014) noted that in another development, international agencies and non-governmental organisations like the partnership for Higher Education in Africa (including the Ford, Carnegie, MacArthur, and Rockefeller Foundations) in 2005 assisted a consortium of 13 African universities, 6 from Nigeria (the afore-mentioned universities) to lower Internet connectivity cost. The partnership has donated over $5 million to make satellite bandwidth available to the consortium at $2,330 per Mbps/month instead of $7,300. That is the power of partnership and formation of consortiums.

☐ The copyright and intellectual property rights should be given a good face in the country.

☐ Nigeria needs non-governmental organisations (NGO's), corporate bodies, professional associations and individuals to serve as advocates for the open access movement and open access to research findings and scholarly resources.

☐ Higher education institutions, research institutes, scholars, researchers, lecturers, and other stakeholders in Nigeria should accept and participate actively in the open access to knowledge initiatives. When an institution collects and shares its output, the members of the institution benefit while also making the world academically richer by allowing scholarly communication to flow more freely, which will be utilized and applied for accelerating developmental programmes.

The repository software products that are available as open source are proving to be effective in fulfilling these informational harvesting functions. Libraries are ideal place for initiating and managing open access repositories, and thus fulfill their duty to their various institutions as stewards of information. Nigerian government, its higher education institutions and research institutes should make hay while the sun shines in developing open repositories with content of their research output that can be easily accessed, used and applied.

Conclusion and Recommendations

This study is an eye opener to the fact that there is a very slow growth rate of open access repositories in Nigeria. For Nigeria to take its place in the intellectual environment, its intellectual content must be made open and visible online because this is the era of Knowledge Democracy which signifies knowledge is of the people, by the people and it is for the people, so it should not be hoarded. Based on these findings, the following recommendations were made by Adewole-Odeshi and Ezechukwu (2020):

1. Institutional Repositories should be made a very important prerequisite for Nigerian Universities Commission's (NUC) accreditation of Universities.

2. Librarians should be trained to possess ICT skills so that they do not only upload content but also provide ICT support when needed without consulting the ICT department.

3. Institutions should also ensure that the standard of their theses and dissertations is not compromised so that it can be easily uploaded without fear of plagiarism.

4. Regulatory bodies of Library and information Science such as Librarians Registration Council of Nigeria (LRCN) should establish and implement policies concerning Institutional Repositories in Nigeria.

5. Institutions should ensure that ICT facilities are put in place to ensure the smooth running of institutional repositories.

6. Funds should also be made available by institutions because setting up and running a functional institutional repository is capital intensive.

References

Abbyy (2005). FineReader 8.0 Redefines OCR Accuracy. Available at:https://www.abbyy.com › company › news › abbyy-fin...

Adewole-Odeshi, E. and Ezechukwu, O.C. (2020). An analytical study of open access institutional repositories in Nigerian Universities. Available at: https://creativecommons.org/licenses/by-nc/4.0

Akpokodje, V. N. and Akpokodje, E. T. (2015). Availability and utilization of institutional repositories as indicators to institutional web ranking. *European Journal of Computer Science and Information Technology* 3, (2), 29-40.

Aliyu, A. and Mohammed, Z. (2013). Deployment of Ahmadu Bello University Zaria, Nigeria institutional digital repository. *The Information Manager*, Vol.13 (1& 2), 30-34

Anenene, E.E., Alegbeleye, G.B. and Oyewole, O. (2017). Factors Contributing to the Adoption of Institutional Repositories in Universities in South-West Nigeria: Perspectives of Library Staff. *Library Philosophy and Practice (e-journal)*. Available at: http://digitalcommons.unl.edu/libphilprac/1508

Chukwueke,C., Nnadozie, C.D. and Okafor, V.N. (2020). Enhancing Academic Visibility of Faculty Members in Nigerian University Community: The Role of Institutional Repositories. *International Journal of Research and Scientific Innovation (IJRSI),* VII (IX), 87-94. Available at:www.rsisinternational.org

Igwe, K.N. (2014). Open Access Repositories in Academic and Research Institutions for the Realization of Nigeria's Vision 20: 2020. *International Journal of Information Science and Management*,12(1), 33-46

Okoroma F. N. and Abioye A. A. (2017). Institutional Repositories in University Libraries in Nigeria and the Challenge of Copyright. *Advances in Social Sciences Research Journal,* 4(15), 62-72.

Ukwoma, S.C and Ngulube, P. (2019). Obstacles to the Utilization of Institutional Repositories by Academics in Higher Education in Nigeria. *Webology,*16 (1), 138-150. Available at: http://www.webology.org/2019/v16n1/a183.pdf