Issues and challenges to the development of open access institutional repositories in academic and research institutions in Nigeria

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Executive Summary

Development in information and communication technology has resulted in the emergence of open access institutional repository which is a digital archive for the preservation and dissemination of institutional research outputs. Institutional repositories make possible wide dissemination of research outputs by the mean of the internet. The growth of open access institutional repositories has been very remarkable in many developed countries. However, academic and research institutions in many developing countries like Nigeria are still battling to overcome many challenging issues in attempt to make their research outputs openly accessible by mean of internet technologies like institutional repositories. Some of the issues identified in this which adversely militate against the development of institutional repository in the country are:

- Lack of awareness of open access institutional repositories among researchers and academics in the country’s academic and research institutions. More than 74% of the respondents surveyed during the course of the research are completely unfamiliar with open access institutional repository.

- Inadequate information and communication technology infrastructure. A major problem in this area is the high cost of internet bandwidth in the region. This cost results from the use of satellite infrastructure for internet connection as opposed to much efficient and cheaper fibre optic infrastructure. There is also the problem of inadequate and epileptic electricity supply to power ICT facilities in academic institutions. The long-term solution to the high cost of bandwidth lies in the development of more fibre optic infrastructure in the region as well as open access to same. The issue of poor electricity power supply will necessitate further research into eco-friendly alternative energy generating system to power ICT facilities in academic and research institutions.,

- Inadequate funding also constitutes another problem identified in the course of the research. Most of the academic and research institutions in Nigeria are funded by the government. These institutions continue to grapple with percentage decline in budgetary allocation. Considering the fact that development of Institutional repository in this part of the world is a capital intensive project, funding constitutes another major obstacle to the development of institutional repository in the country’s institutions.

- The low level of awareness of open access institutional repository in Nigeria is directly link to issue of inadequate advocacy for open access in Nigeria. One of the best ways to promote
the development of open access institutional repository in developing countries is through advocacy. Effective advocacy presupposes that the advocates or stakeholders are very familiar with the concept. Unfortunately, evidence in the course of this research reveal that knowledge of open access institutional repository is very low among the major stakeholders in the developing region. The research analysed the recommended the South African approach in dealing with the issue through open access workshops and training for stakeholders.

This research paper concludes by highlighting the need for researchers to retain the copyright to their research works in other to have the capability to make such works available in open access repositories. This is possible through the use alternative publishing agreement. By means of an alternative publishing agreement, researchers are able to grant a limited right (license) to publishers to publish their work while the copyright in the work remains with the researcher or author of the work.
**Introduction**

As centres for intellectual and scholarly research, academic and research institutions (whether in developed or developing countries) are expected to take an interest in the creation, dissemination as well as preservation of knowledge. In any given society, this is a very complex process. This is more so in developing countries where the economic, technological and institutional structures necessary to achieve the process are not well established. Altbach (1978) has noted (and rightly) that knowledge dissemination is especially important in the third world context because the emergence of an independent intellectual life and some self-sufficiency in science is to some extent dependent on establishing the essential structure for dissemination of knowledge.¹

For centuries, institutional libraries and scholarly publishing was the conventional model adopted in preserving and disseminating knowledge from academic and research institutions. Whereas institutional libraries housed research outputs in the form of grey literatures², thus playing a greater role in terms of preservation than dissemination, scholarly publishing played a much greater role in terms of dissemination through scholarly journals. Over the past several decades, however, the economic, market, and technological foundations that sustained this symbiotic publisher-library market relationship has begun to shift.³ This shift has resulted in what Benkler called the “networked information economy” which is gradually displacing the “industrial information economy” that typified information production from about the second half of the nineteenth century and throughout the twentieth century.⁴

This research articles studies the problems associated with dissemination and preservation of research outputs from the developing world and how the development of open access repositories could be instrumental in increasing accessibility and visibility of research output from the region.

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² The term “grey literature” is used to refer to documents and ephemeral material issued in limited amounts outside the formal channels of publication and distribution.
Statement of the problem

With 92 accredited universities (public and private), Nigeria has more universities than any country in Sub-Saharan Africa.\(^5\) These universities function as a focal point for academic research in Nigeria. Egwunyenga (2008) has attributed this to the fact that research is made compulsory for both lecturers and students either by job description or by prescribed academic program of study. For lecturers and academics, the concept of ‘publish or perish’ has come to strap their subsistence and promotion within the academic environment to the volume of their research output and published works. On the part of the students (especially graduate students), the nature of their academic studies requires that they be actively engaged in research activities either in partial fulfilment of the requirements for the degree being sought or as part of terminal thesis or dissertation.\(^6\) In the light of these requirements on the part of both lecturers and students, it is to be expected that the volume of research output originating from academic institutions and addressing local problems in Nigeria will be high.

Specialized research institutions also constitute another focal point for research activities in Nigeria. Applied scientific research by these research institutions dates back to the time when the country was still under British colonial rule. Though some of the institutions were established after the country’s independence, these research institutions along with the academic institutions turn out chunk of research outputs relating to developmental issues not only in the country but also within the region.

Reasonably, these research outputs addressing issues endemic to the region should be given wide circulation so that the results of the research can be applied in addressing the issues that they sought to tackle. Unfortunately, these outputs gather dusts in the various departmental offices and institutional libraries without getting published. Some eventually get published in local journals that have minimal circulation due to poor distributorship, marketing or prestige. Thus after so much painstaking commitment of efforts and resources in undertaking researches, the outcome are not

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\(^5\) Figure made available by National Universities Commission (NUC) <http://www.nuc.edu.ng/pages/universities.asp>. This number does not include other higher institutions like Polytechnics, as well as non-degree awarding research institutions in the country.

\(^6\) Egwunyenga, E.J. “Dystrophies and Associated Crises in Research and Academic Publications in Nigerian Universities” Anthropologist, 10:4: (2008) pg 245-250 @ 245
widely disseminated. In consequences, these research findings die at the institutional level as those who need to apply the knowledge are unable to access them.\textsuperscript{7} This situation thus highlights the need for an effective process of knowledge dissemination from academic and research institutions in developing country.

**Research objective and questions**

Open access institutional repository is fast becoming one of the best avenues utilised by institutions in making their research knowledge or output widely available and accessible to the outside world via the World Wide Web. Crow (2002) presents a working definition of Open Access Institutional Repository namely “a digital archive of the intellectual product created by the faculty, research staff, and students of an institution and accessible to end users both within and outside of the institution, with few if any barriers to access.”\textsuperscript{8} The growth of open access institutional repositories has been very remarkable in developed countries as well as some developing countries like Brazil, India and South Africa.\textsuperscript{9} However, notwithstanding the large number of academic and research institutions in Nigeria, as at the time of this writing, there was no record of any functional open access institutional repository in the country. The resulting effect is that the volumes of research output emanating from the country - most of which address local and regional developmental issues continue to reside in obscurity – not visible to those who may need them.

This study seeks to identify ways through which problems associated with the poor visibility and access to research output from academic and research institutions in Nigeria could be addressed by means of open access institutional repositories. Hence to this effect the study examines the concept of open access and why it is important to academic and research institutions in Nigeria. Other research questions examined are:

- What is the state of scholarly/applied research in academic and research institutions in Nigeria?

\textsuperscript{7} Ibid
\textsuperscript{9} Currently there are 20 institutional repositories in Africa, 14 are located in South Africa
• What is the level of awareness of open access by academics and researchers in universities/research institutions in Nigeria?

• What are the obstacles to the development of open access institutional repositories in Nigeria and how could these obstacles be resolved?

• What legal strategies could be adopted by academics and researchers in negotiating intellectual property rights in their research works with a view to making such work more open and accessible to the public?

Methodology

The research articles commence with a theoretical analysis of the concept of open access as well as its historical development. There are two major components of open access – open access journals and open access institutional repositories. This research work focuses on the latter. The theoretical aspect of the research analysis examines various research literatures on open access especially as it relates to developing countries.

The empirical aspect of the research is based on field research conducted in academic and research institutions in Nigeria and South Africa - the University of Lagos, the International Institute of Tropical Agriculture (IITA) both in Nigeria, as well as University of Pretoria, National Research Foundation (NRF), Human Sciences Research Council (HSRC), and Council for Industrial and Scientific Research (CSIR) in South Africa. The result of the research shows that whereas institutions in South Africa seem to be making greater progress in terms of development and deployment of institutional repositories, their counterparts in Nigeria are bugged down by a complex combination of problems discussed later in this research article.

The research at the University of Lagos took the form of administration of questionnaires. During the survey, 100 questionnaires were administered to randomly selected participants composed of lecturers and graduate students in six different faculties namely – Arts, Education, Engineering, Law, Sciences and Social Sciences. 72 of the respondents filled and returned the 6-paged questionnaires. This represents a 72% response rate which could be considered to be very favourable. The data from the questionnaire were analysed using the Statistical Package for the
Social Sciences (SPSS). The field research at the other institutions took the form of an interview with person(s) in charge of the institution’s digital repository or project as the case may be.

**State of applied/scholarly research and publishing in Nigeria**

The emergence of scientific research in Nigeria could be traced back to the period of British colonial administration of Nigeria. Bulk of the research works during this period was basically restricted to agriculture and its allied products. This trend was not prompted by desire of the British administration to promote research or development in the region. Rather, the interest of the British administration in promoting scientific research in the region was borne out of the strategic role of the region in the supply of agricultural raw materials for British industries. Thus the British administration developed a policy framework to support and guarantee the production and supply of agricultural raw materials such as cocoa, palm produce, groundnuts etc to commercial industries in Britain. To this effect, agricultural research stations were set up in various cities across Nigeria and British West Africa.\(^{10}\)

The National Root Crops Research Institute (NRCRI) was set up in 1923 to conduct research into genetic improvement of root and tuber crops of economic importance in Nigeria. In 1939, the Nigerian Institute for Oil Palm Research (NIFOR) was established to research into development and extension of the Nigerian palms industry which was a major supplier of palm product to the commercial industries in the United Kingdom. In 1950 a sub-station of the West African Cocoa Research Institution (WACRI) was established in Nigeria.\(^{11}\) Following its independence from Britain in 1960 and mindful of the importance of research activities to nation building, the independent government took a bold step to institutionalize applied research by establishing some other research institutes – in addition to the ones hitherto established by the out-going British administration.\(^{12}\) The post-independent period also witnessed the establishment of an international non-profit research for

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11 Shortly after political independence, the sub-station was converted into an autonomous research institution that came to be known as the Cocoa Research Institute of Nigeria (CRIN).
12 Egwunyaenga *supra* note 6
development organization - the International Institute for Tropical Agriculture (IITA) in 1967. The Institute which was a joint project of the Ford and Rockefeller Foundations researches on variety of disciplines including soil science, plant breeding and genetics, plant protection, crop production and growth, animal nutrition etc.\textsuperscript{13}

As has been stated earlier, academic institutions at the tertiary level are the focal points of scholarly and applied research in Nigeria. In terms of scholarly research, university-based research entered the scene with the establishment in 1948 of the University of Nigeria – the first indigenous university in Nigeria. With the passage of time, the number has grown to 92 (as at the time of writing) federal, state and private universities. The Federal universities have been classified into three generations.\textsuperscript{14} The first generation universities are University of Benin, University of Ibadan, University of Lagos, University of Nigeria, Ahmadu Bello University and Obafemi Awolowo University. The second generation class is composed of University of Ilorin, University of Jos, University of Maiduguri, University of Calabar, Uthman Danfodio University and Bayaro University. The third generation is composed of specialized universities of technologies and agriculture situated in Abeokuta, Akure, Bauchi, Makurdi, Minna, Owerri and Yola.

The federal universities receive a large proportion of their grant from the Federal government. In addition, they (especially the first generation) account for a significant proportion of the scholarly research conducted in Nigeria. As a matter of fact, close to 50\% of the staff/students in Nigerian universities are teaching/enrolled in the first generation universities.\textsuperscript{15} Although research at Nigerian universities occurs in all the major branches of science, a survey by Alo (1995) suggests that Nigerian scientists have made much contribution in the fields of applied science. The survey which focused on the six first-generation universities in Nigeria shows that research in agriculture was predominant (33\%). Much of the research in agriculture focused on increasing food production through higher yields and less spoilage.\textsuperscript{16} Research in Engineering and Medicine ranked second and third respectively.

\textsuperscript{13} http://www.iita.org/cms/articlefiles/75-IITA_history.pdf
\textsuperscript{14} The classification is based on their year of establishment
\textsuperscript{15} Alo supra note 10
\textsuperscript{16} ibid
Other areas of research in Nigerian universities identified by the survey are in the physical and mathematical sciences. Research in mineralogical exploration pursued at three of the first generation universities led to the discovery of economic mineral deposits. Apart from tangential incursion into applied research, especially in analytical chemistry, the study further suggests that most of the chemical research at Nigerian universities tends towards solving fundamental, internationally recognized problems. Most of the scientists in Nigerian universities work alone on their projects though sometimes they are assisted by graduate students. Collaborative research is often rare. Though few cases emerge from “accidental convergence of individual lines of research rather than as a result of a planned attack on a major scientific problem” Even in exceptional cases where collaborative research emerge, they hardly stay on for a long while due mainly to high mobility of local academics who want to set up and lead their own groups.

The state of research publishing in local academic journals in Nigeria has been on the rise in recent times. Unfortunately, these publications are not openly accessible. A recent trend in an attempt to make such publications widely accessible has been to list the journals in the African Journal Online database. Regrettably, the database is not openly accessible and hence only details limited to the abstract of the research is openly accessible. Notwithstanding, the statistics on the database help us to understand the state of research publishing in Nigeria as compared to other African countries. The graph below lists the top five countries with the highest number of journal listings in the database.

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17 Alo supra note 10
19 Alo supra note 10
20 www.ajol.info
During the course of the research, I sought to find out among the respondents some of the reasons for publishing their research. The questionnaire contained some suggested reasons such as (1) I publish to gain financial reward, (2) I publish to gain personal prestige, (3) I publish to communicate my results with my colleagues, and (4) I publish to advance my career. The options open to the respondents with regards to each of the above reasons were: 1 - Strongly disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, and 5 – Strongly Agree. The chart below shows the valid the response in each case.

**Table 1:2 Why do researchers publish?**
Most of the respondents (72%) ‘strongly agree’ that they publish for the purpose of advancing their career (promotion).

This is not surprising. As I have stated earlier, promotion in the academic environment has come to be tied to academic publications. Hence most academics in developing countries are more concerned with having their article published and less concerned as to the visibility of the medium of publication they have adopted. This notion has resulted in the proliferation of academic journals published by departments or faculties within the academic institutions. These journals have very low circulation hence making it even more difficult to measure up to international standard. They seem to be set up for the purpose of enabling ‘colleagues’ to have their paper published so that they can have some ‘published works’ to table before academic promotion committees. The result of this academic culture was vividly described by Egwunyenga (2008)

Many journals sprout in departments and faculties in universities, some of which did not go beyond the first volume before they collapsed either because of poor subscription, funding, internal contradictions or having realized their immediate objectives of presentation for promotion.

It is one thing to measure the international standard of these research works and yet it is another thing to discuss their relevance in dealing with the local issues which they seek to tackle within the region. This research article is concerned with the dissemination of research findings from the region for the benefit of policy makers, practitioners and others who may desire the outputs and hence I will not go into debates as to what extent the quality of the research measure up to international standards.

Another important reason why researchers publish is to communicate results with colleagues. From the statistics above, 53.8% of the respondents “strongly agree” with this proposition. Hence, will it be commonsensical to reason that this objective is better attained by publishing only in local journals

21 Because university-based research seems to be conducted for the purpose of earning academic promotions, Alo (1995) observed that most of the researchers are the aspiring and relatively new PhD holders. The older academic professors are more concerned with teaching and other administrative responsibilities that leave them with little time for research.

22 Adomi and Mordi noted that some universities in Nigeria insist that academics should have published a specified proportion of their research work in foreign journals in order to be eligible for promotion to very senior academic ranks. See Esharenana E. Adomi and Chinedum Mordi Publication in foreign journals and promotion of academics in Nigeria Learned Publishing vol. 16 No. 4 Oct. 2003

23 Egwunyenga supra note 6 [emphasis supplied]
with very limited circulation? Going further from here, I shall discuss how the issue relating to wide dissemination of research outputs can be adequately addressed by means of open access initiatives.

**What is open access?**

Developments in information and communication technology especially the World Wide Web has made possible an unprecedented collaboration in the production, dissemination and exchange of information by people world over irrespective of their geographical location. This development has also given rise to various movements aimed at enabling free and open access to information by people irrespective of their economic, social, or geographical background. One of such movement associated with this concept is the open access movement.

The open access movement emerged in response to increasing legal and economic barriers by commercial scholarly publishers which made access to research output and information difficult especially to people in developing countries of the world. Thus the movement seeks to promote free and open access to research output devoid of any permission barriers and unnecessary legal restraints. The open access movement therefore seeks to use the internet - a product of the ‘networked information economy’ to provide free access to research and scholarly output to people irrespective of their physical or geographical location, or their social and economic means.

Suber (2002) was of the view that open access to scientific articles means online access without charge to readers or libraries. This will imply dispensing with the financial, technical and legal barriers that are designed to limit access to scientific research articles to paying customers. One of the most frequently cited definitions of open access has been that proffered by the Budapest Open Access Initiative (BOAI) which defined the concept of open access in relation to journal literature as:

> free availability on the public internet, permitting any user to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.

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25 [BOAI](http://www.soros.org/openaccess/read.shtml)
The concept of open access is characterized by free availability of research output on the public internet granting a user the license to make legal and non-commercial use of such material subject to proper acknowledgment of the rights of the original owner. Hence the open access initiative makes it possible for researchers to make their research output like scholarly articles freely available to the public by means of any open access instruments such as open access journals or open access repositories. The result according the Lawrence is that “[s]cientist now have almost instant access to a large and rapidly increasing amount of information that previously required trips to the library, interlibrary loan delays, or substantial effort in locating the source”.26

**The basic principles of open access**

In recent times, there has been a proliferation in writings as well as advocacy in support of open access to research outputs. This call for open access has been further echoed by advances in information and communication technology which has made access to information much easier than we have ever witnessed. Hence what we have seen in recent time is a gradual but constant shift in the hitherto conventional medium of dissemination of scholarly information.

Benkler (2006) describes the emergence of a new stage in information economy which he referred to as the “networked information economy.” This new economy according to him, is displacing the industrial information economy that typified information production from about the second half of the nineteenth century and throughout the twentieth century. What characterizes the networked information economy is that decentralized individual action—specifically, new and important cooperative and coordinate action carried out through radically distributed, nonmarket mechanisms that do not depend on proprietary strategies—plays a much greater role than it did, or could have, in the industrial information economy. The catalyst for this change is the happenstance of the fabrication technology of computation, and its ripple effects throughout the technologies of communication and storage.27 Benkler further observed that

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27 Benkler *Supra* note 4
[I]n the industrial economy in general, and the industrial information economy as well, most opportunities to make things that were valuable and important to many people were constrained by the physical capital requirements of making them...The networked information economy improves the practical capacities of individuals along three dimensions: (1) it improves their capacity to do more for and by themselves; (2) it enhances their capacity to do more in loose commonality with others, without being constrained to organize their relationship through a price system or in traditional hierarchical models of social and economic organization; and (3) it improves the capacity of individuals to do more in formal organizations that operate outside the market sphere. Information, knowledge, and information-rich goods and tools play a significant role in economic opportunity and human development.28

The basic principle of open access is founded on the shared and equitable distribution of knowledge. Such knowledge is very essential for developing countries striving to improve the general welfare of their population. The relationship between knowledge and development cannot be overemphasized. Hence even when a country has abundance of natural resources, it must transform the resources to things it needs. This transformation involves access to knowledge and information. Ghosh and Das (2007) noted the contrast between developed and developing countries institutions in terms of generating/access to knowledge as well as the relevance of knowledge to development. They observed that the developed world consists of information rich countries, enterprises and organizations that exert powerful control over valuable information resources. On the other hand the developing world is at a critical juncture where the development of technologies, economies and humanity as a whole are largely dependent on access to relevant and adequate information resources. The academic and research institutions in the developing world cannot afford to subscribe to a wide array of primary literature due to lack of resources or limited budgetary provisions. In this situation, Ghosh and Das believe the open access movement gains worldwide support as an alternative and sustainable model of scholarly communication.29

The World Bank has also 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 observed that the most-technologically developed countries of the world today are knowledge-based.30 Developed countries invest so much time and money in research to acquire knowledge necessary for development. Developing countries on the

28 Ibid
other hand with limited research resources and capabilities rely heavily on knowledge created in the developed world. Altbach (1978) described the situation thus:

Third world nations are in many respects still dependent on the industrialized countries. One of these dependencies is in the area of knowledge creation and distribution. The major universities, research institutes, libraries, journals and publishing firms are located in the industrialized nations. The bulk of the funds spent for scientific research is spent in the West…Third World nations are, in a sense, at the periphery of the world system of knowledge, with the industrialized nations at the centre of the system. This situation …is part of the result of …the imbalance in the world’s scientific production.31

Hence the need for developing countries to access much needed knowledge for development is very important. According to Chan et al (2005) the importance of access by 80% of the world’s population to the international library of knowledge is now recognized as an essential means of increasing the stability and economic development of the poorer nations.32 However, such access is often difficult in industrial information society where commercial publishers seem to put access to such knowledge beyond the financial reach of researchers, academics and institutions in developing countries.

Benkler has rightly noted that while the networked information economy cannot solve global hunger and disease, its emergence does open reasonably well-defined new avenues for addressing and constructing some of the basic requirements of justice and human development. Because the outputs of the networked information economy are usually nonproprietary, it provides free access to a set of the basic instrumentalities of economic opportunity and the basic outputs of the information economy.

Another principle underlying the open access initiative is that wide dissemination of and access to research and scholarly output is desirable so that subsequent works can be informed by the earlier works of others.33 Take away this principle and what you have in an endless circle of duplication whereby scholars and researchers are constantly ‘reinventing the wheel’ because they are unaware of

31 Altbach supra note 1 @ 492
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. Avoiding 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.

Veltrophas argued (and rightly) that 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.

Another underlying principle is based on the fact that the public should have free access to results from research funded by their tax money. The House of Commons Committee on Science and Technology observed that “[p]ublic money is used at three stages in the publishing process: to fund the research project, to pay the salaries of the academics who carry out the peer review for no extra payment, to fund libraries to purchase [the] publication.” Hence it is considered unfair and imprudent to use public money to fund a research and then require the same public to further fund access to the result of the research. The public also benefits in the sense that open access makes it much easier to determine what research had previously been funded. In this way, same research is not funded over and over again.

Although open access to research output from developed countries is important to researchers in developing countries. The concept of open access should not be limited to availing researchers in developing countries with research output from developed countries. Granted this is important but equally important is access to output from developing countries especially by researchers within the region. Since the developing world constitute about 80% of the world population, it will


unreasonable to ignore access to research generated by 80% of the world population.\textsuperscript{37} This thus calls for a consideration of open access from the context of access to research output from the developing world.\textsuperscript{38} This call is further substantiated by the endemic nature of issues within the region.

Chan et al (2005) were of the view that while it might be easy to imagine the consequences of information famine on scientific communities in developing countries, it is hardly recognized that the international scientific community is equally impoverished by inability to access output from researchers in the developing world. This situation they argued, could stifle development initiatives. An example of this could be seen in the case of tuberculosis. It is now evident that isolates of \textit{Mycobacterium tuberculosis} from India differ genetically from those taken in the West, and are different again from those isolates in China. Hence a vaccine based on the research from the West will have limited efficacy in India or China.

Open access to research output from developing world will help the region to judiciously utilize their limited resources by avoiding duplication of researches to common issues. The state of open access to researches in developing countries is so poor that it is much easier for a researcher in Nigeria to know what have been published on a given issue by a researcher in the United States or Britain than to locate a similar publication by a researcher in neighbouring country like Cameroun.

\textbf{The ‘rise and rise’ of open access movement}

The development of internet technology has brought enormous opportunity to communicate research results instantaneously to people irrespective of distance.\textsuperscript{39} The open-access movement is the worldwide effort to provide free online access to scientific and scholarly research literature, especially peer-reviewed journal articles and their preprints.\textsuperscript{40} The history of the open access movement can be traced back to the 1960s, but the movement gathered momentum in the 1990s with the growth of modern information and communication technology especially the internet and the

\textsuperscript{37} Chan et al \textit{Supra} note 32
\textsuperscript{40} Peter Suber, \textit{Timeline of the Open Access Movement} http://www.earlham.edu/~peters/fos/timeline.htm
ability to copy and distribute electronic data at little or no cost.\textsuperscript{41} A defining moment in the history of the open access movement came in 2001 at a landmark meeting initiated by the Open Society Institute in Budapest. The gathering resulted in the adoption of the Budapest Open Access Initiative (BOAI). The document rightly noted the importance of new technology in the dissemination of knowledge:

An old tradition and a new technology have converged to make possible an unprecedented public good. The old tradition is the willingness of scientists and scholars to publish the fruits of their research in scholarly journals without payment, for the sake of inquiry and knowledge. The new technology is the internet. The public good they make possible is the world-wide electronic distribution of the peer-reviewed journal literature and completely free and unrestricted access to it by all scientists, scholars, teachers, students, and other curious minds.\textsuperscript{42}

The result of this convergence of ‘old tradition’ and ‘new technology’ is the emergence of a capability to access information conveniently and instantaneously. The document also acknowledged that open access to literature will accelerate research and provide a forum for collaborative learning by people rich and poor thus uniting humanity in a common intellectual conversation and quest for knowledge.

In 2003 another important document in the history of the open access movement was released – the Bethesda Statement on Open Access Publishing. This document in addition to providing a working definition of open access publication, was a declaration by stakeholders within the biomedical research community setting out the procedure each stakeholder needs to take in order to promote a gradual transition to open access publishing.\textsuperscript{43}

Other important events which shaped the open access movement includes the adoption of the Berlin Declaration on Open Access to Knowledge in the Science and Humanities in 2004\textsuperscript{44}, the United Nations Summit on the Information Society Declaration of the Principles and Plan of Action,\textsuperscript{45} the Organisation for Economic Co-operation and Development (OECD) Declaration on Access to Research Data From Public Funding (2004)\textsuperscript{46}, the International Federation of Librarian Association

\textsuperscript{41} See entry for Open Access Movement in wikioedia.org
\textsuperscript{42} Budapest Open Access Initiative http://www.soros.org/openaccess/read.shtml
\textsuperscript{43} Bethesda Statement on Open Access Publishing http://www.earlham.edu/~peters/fos/bethesda.htm
\textsuperscript{44} http://oa.mpg.de/openaccess-berlin/berlindeclaration.html
\textsuperscript{45} http://www.itu.int/wsis/docs/geneva/official/dop.html
\textsuperscript{46} http://www.oecd.org/dataoecd/9/61/38500813.pdf
and Institutions’ (IFLA) Statement on Open Access to Scholarly Literature and Research Documentation, (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 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 the default for all research articles produced by the faculty. The plan was subsequently approved by the faculty. Similar policy has also been adopted by some other Universities.

Two roads to open access

The “Gold” Road

This is synonymous with open access journal publishing which is a model of scholarly publication that makes journal articles available to the public by means of the internet “without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself.”

The Bethesda Statement on Open Access Publishing defines an open access publication to include publications that meet the two conditions below:

- The author(s) and copyright holder(s) grant(s) to all users a free, irrevocable, worldwide, perpetual right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship, as well as the right to make small numbers of printed copies for their personal use.
- A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in a suitable standard electronic format is deposited immediately upon initial publication in at least one online repository that is supported by an academic institution, scholarly society, government agency, or other well-established

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47 http://www.ifla.org/V/edoc/open-access04.html
48 http://www.cihr-irsc.gc.ca/e/34851.html
49 http://www.openmedicine.ca/article/view/213/135
50
52 see BOAI supra note 25
organization that seeks to enable open access, unrestricted distribution, interoperability, and long-term archiving (for the biomedical sciences, PubMed Central is such a repository).

The directory of open access journals\(^{53}\) contains a comprehensive list of open access journals from diverse disciplines. The aim of the Directory is to increase the visibility and ease of use of open access scientific and scholarly journals thereby promoting their increased usage and impact.\(^{54}\)

*The “Green” Road*

This is a model of scholarly publishing whereby researchers and academics make pre-print or post-print copies of their research work or publications available in open access digital repositories or archives. The archive could be the personal web page of the author, a subject or discipline-based repository\(^ {55}\) or an institutional repository.\(^ {56}\) Institutional repository as a form of open access model is the subject of this research paper.

Institutional repository has been defined as “a digital archive of the intellectual product created by the faculty, research staff, and students of an institution and accessible to end users both within and outside the institution, with few if any barrier to access.”\(^ {57}\) Lynch sees it as “a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members.” Hence the role of an institutional repository is basically to collect, preserve and disseminate the host institution’s research outputs. The research outputs could include electronic copies of pre-prints as well as post-print articles, conference and working papers, committee papers, teaching materials, thesis and dissertations, monographs, multimedia, student projects etc.

Although institutional repositories are usually associated with universities and research institutes, they could also apply to governmental, non-governmental and corporate organisations that generate

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\(^{53}\) [www.doaj.org](http://www.doaj.org)

\(^{54}\) [http://www.doaj.org/doaj?func=loadTempl&templ=about](http://www.doaj.org/doaj?func=loadTempl&templ=about)

\(^{55}\) A good example is the Electronic Research Archive (ERA) in International Health [http://www.thelancet.com/journals]. It allows researchers to deposit research papers of special relevance to health issues in developing countries, see also the Social Science Research Network (SSRN) [www.ssrn.com](http://www.ssrn.com)

\(^{56}\) see for example MIT’s DSpace at [http://dspace.mit.edu/](http://dspace.mit.edu/)

\(^{57}\) Crow, *Supra* note 8
intellectual output that could be digitised and disseminated. Chan et al noted that institutional repositories administered by universities or research institutes for members of their community, are the fastest growing form of open access archives. Institutional repository has emerged to revolutionize the methods of preservation as well as communication of research outputs in academic and research institutions.

The Scholarly Debate on Open Access Institutional Repositories

It is now obvious to the academic and scholarly community that the traditional model of scholarly communication via subscription-based journals serves to hinder rather than expand access to research output. In the light of emerging trends in digital scholarly communication, open access institutional repositories play an important role in the preservation and dissemination of institutional research outputs which in turn becomes a constituent part of a global research output. Although publication by faculty members in scholarly journals could add impact to the prestige of the institutions they are associated with, an institutional repository stands to generate greater impact by centralising research outputs generated by the institution’s researchers, and thus serving as a much better and simpler metrics for gauging the quality of the institution’s academic scholarship, productivity and prestige. In the case of research and academic institutions in developing countries, development of institutional repository will not only boost the global visibility and utility of their research, but will also introduce a novel research culture focused on meeting international standard and values. Knowledge by a researcher that his research will be openly accessible by a global audience will have an impact on his focus and standard. Anbu was of the view that the current closed access publishing model fails to portray the quality and quantity of research done in African universities and by African scholars.

Pfister and Zimmermann (2008) also identified justifications for institutional repository to include increase in visibility and impact of research output, change in the scholarly publication paradigm and

59 Chan, Supra note 32
61 Crow supra note 1
62 John Paul Anbu K supra note 35 @ 6
improvement of internal communication within the institution. A study by Stanger and McGregor (2006) revealed that an institutional repository could have a positive impact on the visibility and accessibility to an institution’s intellectual output. Their study was based on the School of Business of the University of Otago in New Zealand. The school was the first to develop a publicly accessible institutional repository which went into operation in mid-November 2005. By the end of January 2006 there was a record 9000 downloads from 60 different countries. Over two months later, the number of downloads doubled and included visits from eighty countries. The statistics further showed a total of 18,744 downloads from 80 distinct countries since the repository went live. Growth had been consistent over the entire period. The most popular paper (an Information Science discussion paper) had 451 downloads from 23 countries after twelve weeks in the repository. The top ten downloaded papers included two discussion papers, two working papers, two technical reports and four Honours dissertations (one of which was manually scanned from the original hard copy). Of these, only the discussion papers were previously available online, so the advent of the repository has had a clear impact on the availability of research within the School of Business.63

Crow (2002) has argued that institutional repositories provide a compelling response to two strategic issues facing academic institutions. First, it expands access to research, reasserts control over scholarship by the academy, increases competition and reduces the monopoly power of journals, and brings economic relief and heightened relevance to the institutions and libraries that support them. Secondly, it serves as a tangible indicator of a university's quality and to demonstrate the scientific, societal, and economic relevance of its research activities, thus increasing the institution’s visibility, status, and public value. (Crow 2002). Additionally, institutional repository could also be seen from two complementary perspectives. First as a natural extension of academic institutions' responsibility as generators of primary research seeking to preserve and leverage their constituents' intellectual assets; and secondly as one potentially major component in the evolving structure of scholarly communication.64

Institutional Repositories provide access to wealth of scientific and technological information and knowledge which are very essential for development. The opportunities presented by institutional repositories and Open Access archives to the development of Africa as well as the challenges hindering the development of digital information repositories on the continent has been examined by Chisenga (2006). He acknowledged the fact that several of the research output from the region exists in the form of grey literature i.e. unpublished information and knowledge resources such as research reports, theses and dissertations, seminar and conference papers. Very little research outputs find their way into the world’s well-established international scientific journals, due to various problems and among them because publication in mainstream journals faces the problems of over-subscription and recorded prejudice against submissions from developing country scientists. Additionally, local journals in general have poor distribution and visibility. This situation results in research from developing countries not being indexed in major international databases which have the capacity to increases the visibility of these research outputs. He further noted that much of the research generated in research institutions are not being shared or developed further beyond field and laboratory research. Very useful and valuable technological and scientific information and knowledge remains unexploited and in some cases is lost.65

The establishment of Institutional Repositories in academic and research institutions in Africa is a serious developmental issue that requires urgent attention. As Chisenga rightly observed, they are valuable for research and development because they can offer instant access to information and knowledge resources being generated on the continent. The universities and research institutions in Africa are the major centres of research and consequently the major generators of research based data, information and knowledge. The scientific and technological information and knowledge which they are generating should be easily accessible, and the creation and use of institutional repositories could be the first step in this process.

The importance of institutional repository in collaborative production and dissemination of scholarly information have been evidenced by concerted efforts geared towards assisting academic and research institutions in developing open access institutional repositories. In 2004, the Science Committee of the UK House of Commons conducted an eight-month inquiry during which the Committee heard public evidence submitted by representatives from the scholarly publishing industry, librarians, academics and government departments as well as examined expert submission in relation to scholarly publishing. The Committee recommended for the establishment of institutional repositories in all British universities.66

The Joint Information Systems Committee (JISC) has also initiated the Repositories Support Project (RSP) which is a 2-year initiative to assist Higher Educational Institutions (HEIs) in England and Wales in the development of a deployed network of inter-working repositories for academic papers, learning materials and research data. The principal aim of the RSP is to increase the pace of institutional adoption by providing practical assistance and advice based on available solutions, with an emphasis on the operational issues to do with the installation, implementation and deployment of institutional repositories.67 There is also the Database of African Thesis and Dissertations (DATAD), an initiative launched in 2000 by the Association of African Universities. The objective of the initiative was to build a central repository for thesis and dissertations from regional universities.

There is now a growing call for academic and research institutions to establish institutional repositories where their scholars and researchers are required or mandated to deposit or archive their research output.68 Such call has been borne out of public policy considerations. For example, there

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66 House of Commons Select Committee on Science and Technology Tenth Report Session 2003-04 <http://www.publications.parliament.uk/pa/cm200304/cmselect/cmsctech/399/39909.htm>
are 27 federal, 31 state and 34 private universities in Nigeria. The federal and state universities receive the bulk of their funding from the federal and state governments respectively. If we accept the argument of open access advocates that public research institutions that receive grants from public funds should be obliged to make their research output accessible to the public, an open access institutional repository provides the best avenue for such accessibility.

The State of Open Access Institutional Repositories in Nigeria

The emergence of Open Access Initiatives as well as information and communication technologies provides a veritable medium to address the problem of poor visibility of academic research information emanating from developing countries like Nigeria. The shift from the conventional print publication to the use of digital sources and internet media have provided academic and research institutions in Nigeria with an opportunity to make their grey literature and research output accessible to the outside world. However, it may be surprising to observe that academic and research institutions in the country are yet to take advantage of the benefits provided by open access institutional repositories.69

Some of the issues identified by existing literatures as being responsible for the slow uptake of institutional repositories in Africa include lack of knowledge or awareness of open access institutional repository, poor state of information and communication technology, inadequate advocacy for open access repositories, poor or inadequate funding, copyright and intellectual property rights. The field research for this project presented an opportunity to examine empirically the extent to which these and other issues affect the development of institutional repositories in Nigeria. The respondents were asked to rank the extent to which they think the issues above contribute to lack of institutional repositories in their institution. The results are presented below.70


69 As at the time of writing there is no record of any functional open access institutional repository in Nigeria
70 Some questions in the questionnaire were left unanswered by some respondents while some choose more than one reply to a question. These replies where counted as invalid and hence not taken into consideration in the analysis.
Awareness of open access publishing

Table 2.1 above shows that 42.6% of the respondents ‘strongly agree’ that lack of knowledge or awareness of open access institutional repository is an obstacle to the development of institutional repository in their institution. This is in addition to 26.4% who ‘agree’ (as opposed to ‘strongly agree’) to the same. Before getting to this point in the questionnaire, I sought to determine the level of awareness of open access institutional repository among the respondents themselves. Without first giving a definition or explanation of an open access institutional repository, the respondents were asked to state their level of familiarity with the term “Open Access Institutional Repository/Archive” with reference to scholarly research. The chart below shows the response:

<table>
<thead>
<tr>
<th>Lack of knowledge of open access</th>
<th>Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>26</td>
<td>42.6</td>
</tr>
<tr>
<td>Agree</td>
<td>15</td>
<td>26.4</td>
</tr>
<tr>
<td>Neutral</td>
<td>8</td>
<td>13.1</td>
</tr>
<tr>
<td>Disagree</td>
<td>7</td>
<td>11.5</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>5</td>
<td>8.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inadequate ICT infrastructure</th>
<th>Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>17</td>
<td>27.4</td>
</tr>
<tr>
<td>Agree</td>
<td>29</td>
<td>46.8</td>
</tr>
<tr>
<td>Neutral</td>
<td>4</td>
<td>6.5</td>
</tr>
<tr>
<td>Disagree</td>
<td>9</td>
<td>14.5</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>3</td>
<td>4.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inadequate Funding</th>
<th>Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>32</td>
<td>49.2</td>
</tr>
<tr>
<td>Agree</td>
<td>14</td>
<td>21.5</td>
</tr>
<tr>
<td>Neutral</td>
<td>6</td>
<td>9.2</td>
</tr>
<tr>
<td>Disagree</td>
<td>6</td>
<td>9.2</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>7</td>
<td>10.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inadequate advocacy</th>
<th>Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>30</td>
<td>48.4</td>
</tr>
<tr>
<td>Agree</td>
<td>19</td>
<td>30.6</td>
</tr>
<tr>
<td>Neutral</td>
<td>4</td>
<td>6.5</td>
</tr>
<tr>
<td>Disagree</td>
<td>4</td>
<td>6.5</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>5</td>
<td>8.1</td>
</tr>
</tbody>
</table>
Of the 66 valid response to this question, only 2 (3%) of the respondents were very familiar with the concept of open access institutional repository, 15 (22.7%) know very little about the concept and a great majority of the respondents precisely 49 representing 74.3% are completely unfamiliar or know nothing about open access institutional repository. The questionnaire then went on to define and describe open access institutional repository. With this additional information, the respondents were asked to indicate the level of importance of institutional repository to their institution. A total of 55 (78.4%) agreed that the development of institutional repository is “very important” for their institution. 10 respondents representing 13.9% of the total response agreed that it is “important”, 5 (6.9%) respondents were neutral. None of the respondents sees institutional repository as being “unimportant” to their institution.

Lack of knowledge or awareness of open access institutional repository is not peculiar to the respondents at the University of Lagos. In fact this is the situation in most developing country institutions. A research earlier carried out by Papin-Ramcharan and Dawe (2006) at the University of West Indies in Trinidad and Tobago shows that just 8% (6/79) of the academic staff members of

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71 Christian supra note 39 @ p. 6
the Institution’s faculty of engineering are aware of digital repositories. None of the respondents in
the survey has ever deposited a research paper in any institutional repository.72

Ignorance or lack of knowledge of open access institutional repository seems to be one major issue
to the development of open access institutional repository in developing countries. It is only when
this ignorance is tackled that any meaningful progress can be made. The South Africa situation
illustrates this. Although South Africa currently house the highest number of institutional
repositories in Africa (currently 14), it took great deal of awareness campaign to achieve this state.
Open access in South Africa was introduced in 2004 by the Electronic Information for Libraries
(eIFL) in collaboration with South African Site Licensing Initiative (SASLI) – a coalition of South
African Libraries Consortia. Series of workshops were organized focusing on hands-on-training on
open access software and other issues related to establishment of institutional repository such as
copyright, metadata, policies, populating and marketing of institutional repositories etc. Years went
by after the workshops without any visible impact. Just like most novel concepts which will usually
take time before people begin to buy in, it actually took a while before librarians and institutions in
South Africa started to think about open access institutional repositories. The effort in South Africa
eventually paid off as the country now host more institutional repositories than all the other countries
in Africa combined and all this happened within a period of 4 years. More research output from
South Africa is now visible to the outside world than research knowledge from any other country in
the continent.

Similar approach has also been adopted by eILF in Nigeria, in the spring of 2008, it organized the
first open access workshop for researchers and librarian in Nigeria.73 The South African example
illustrates the fact that national as well as regional workshops on open access in developing countries
could go a long way in contributing to the development of institutional repositories. In addition to
regional efforts, Chan et al (2005) have also argued that more global and coordinated approaches to
institutional repositories need to take place and agencies such as the WHO, UNDP and UNESCO are
in a position to take a leadership role.

72 Jennifer Papin-Ramcharan supra note 38
73 International Workshop On Open Access Repositories: New Model For Scholarly Communication
<http://www.nulib.net/oai/>
Inadequate ICT connectivity and infrastructure

The development of open access institutional repositories requires fast and reliable internet connection as well as deployment of adequate information and communication technology infrastructure. The major point of internet access to students and staff at Nigerian universities is through internet cafés.\textsuperscript{74} A study of internet usage in Nigerian universities by Jagboro (2003) shows that 45.2 percent of the respondents access the internet through internet cafés.\textsuperscript{75}

The situation is not too different at the University of Lagos. There are about seven of such commercial internet café at the University each with an average of about 20 computers. The cafés are operated by private entrepreneurs on facilities or buildings leased from the University. The average cost for using the internet facility at the café is about $1 for an hour. Although this may appear cheap, the connectivity is so slow that it may take about 15 minutes to access a yahoo mail account. There is also a university local area network (LAN) that provides internet connections to the academic staff but the university’s LAN is so often plagued with technical issues that even the academic staffs often do patronize the cafés for internet access.

The University also owns one internet café which was funded by a mobile phone company and located at the University main library. The University café though is fraught with too many restrictions such as prohibition of the use of external storage devices like disks or flash drives. Hence since users cannot download materials from the internet into any external drive, they only have the choice of paying to print the materials. This thus makes the café only useful for checking and replying to emails as opposed to research.

Students and staff who really desire access to the internet for the purpose of research are better off visiting the other commercial internet café where they have the privilege of downloading research materials into external memory devices and accessing same later from their home computers or laptops. This reduces the cost of printing volumes of research materials. Another observation made during the course of the research is that the number of internet café and computer equipment at the

\textsuperscript{74} Internet cafés are computer labs that provide commercial internet services to client on timed (usually) hourly basis.
\textsuperscript{75} K.O. Jagboro \textit{A study of Internet usage in Nigerian universities: A case study of Obafemi Awolowo University, Ile Ife Nigeria} First Monday, volume 8, number 2 (February 2003), <http://firstmonday.org/issues/issue8_2/jagboro/index.html>
institution are quite inadequate hence it is not often surprising to find long queue of clients spending hours waiting to gain access to available computer in order to access the internet. This problem is further compounded by the slow speed of internet connectivity.

Notwithstanding the growth in internet usage in Nigeria, the speed and reliability of the internet connections still posses a great deal of challenge to most of the institutions in Nigeria. Low internet bandwidth availability in the sub-Saharan African region posses an obstacle to the deployment of institutional repository. It has been observed that institutional repositories require reliable and fast internet connection since the common mode of availability of materials are in the form of PDF files. The high cost of internet bandwidth in developing countries makes it much difficult for academic institutions in the region to afford adequate bandwidth to host digital repositories. It has been observed that bandwidth allocation in Africa is so expensive that most universities (on their own budget) cannot afford more than 1.544 Mbps which is less than many home broadband users in North America have. African universities pay about $10,000 a month for same internet bandwidth that will cost a consumer in Europe and North America less $100 a month. The problem was well-described by Jensen (2006):

Bandwidth is the life-blood of the world’s knowledge economy, but it is scarcest where it is most needed – in the developing nations of Africa which require low cost communications to accelerate their socio-economic development. Few schools, libraries, universities and research centres on the continent have any internet access. For those that can afford it, their costs are usually thousands of times higher than for their counterparts in the developed world, and even Africa’s most well-endowed centres of excellence have less bandwidth than a home broadband user in North America or Europe, and it must be shared amongst hundreds or even thousands of users.

In 2003, the International Network for the Availability of Scientific Publications (INASP) commissioned a report which compared internet connectivity and cost in selected African universities with a British university. It was observed that several African universities in the study

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76 Jennifer Papin-Ramcharan supra note 38  
77 Christian supra note 39  
80 Mike Jensen Open Access: Lowering the costs of international bandwidth in Africa, APC Issue Papers <http://www.researchictafrica.net/images/upload/open_access_EN.pdf>
have an internet connection of between 512 Kbps and 1Mbps (as at May 2003). The British university (Bristol) by contrast has a 2.5 Gbps link. This is 5120 times as much as the University of Dar es Salaam, (Tanzania) has. The report further notes that whereas University of Dar es salaam has 2000 computers shared by 11000 users (i.e. an average of 5.5 person per computer), Bristol has 16,000 computers shared by 22,000 users (i.e. an average of 1.3 person per computer).\(^{81}\)

One of the major factors responsible for the high cost of internet bandwidth in Africa is the use of satellite bandwidth as opposed to much cheaper optic fibre infrastructure. So far, there is only one major cross-continental fibre link network in sub-Saharan in Africa (SAT-3/WASC/SAFE), which connects eight countries on the west coast of Africa to Europe and the Far East. The SAT-3 business model has been criticized as high-priced due to the closed nature of the infrastructure - it is controlled by the state owned monopoly operators in each country in which it lands. This has resulted in initiatives for new fibre projects to add more African countries to the global grid and also to induce competition which will naturally result in lower prices. Such initiatives includes SEACOM (East Africa to London)\(^{82}\), TEAMS (Mombasa to Fujairah)\(^{83}\), EASSy (East Africa to Port of Sudan)\(^{84}\), MalN OnE (West Africa to Portugal)\(^{85}\).

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\(^{81}\) Vente supra note 78
\(^{82}\) http://www.seacom.mu/index2.asp
\(^{83}\) http://en.wikipedia.org/wiki/Teams
\(^{84}\) http://en.wikipedia.org/wiki/EASSy_(cable_system)
\(^{85}\) http://en.wikipedia.org/wiki/Main_One
Hence as Jensen (2006) rightly observed, unless interventions are made to reduce the cost of existing international fibre links as well as to quickly develop new fibre infrastructures, the continent will be prevented from tapping its latent potential and this will further widen the digital divide.\textsuperscript{86} Although the problem of internet connectivity is not unique to Africa, it is most extreme in developing countries in sub-Saharan Africa which has the lowest teledensity in the world and the highest unmet demand for telecommunication services.\textsuperscript{87} As a way out of this quagmire, Jensen has emphasized the need for

- Increased backing by policy makers and regulatory agencies in Africa to implement policy changes and regulations that allow open access to international fibre
- Support to local associations of bandwidth providers to establish shared international fibre gateways
- Increased backing for international fibre projects which aim to provide equal access to all bandwidth providers.\textsuperscript{88}

Although the development of additional optic fibre infrastructure, as well as open access to the infrastructure, will provide a permanent solution to the high cost of internet bandwidth in sub-Saharan Africa, this measure is capital intensive and may take a long time to materialize. In the meantime, there is need for donor agencies and international organizations to intervene and subsidize the cost of bandwidth by the institutions in the region. To this effect, the Partnership for Higher Education in Africa established a major collaborative project for its partner universities in Africa known as the Bandwidth Consortium (BWC). BWC was able to negotiate with a satellite service provider to bring expanded internet bandwidth at approximately one-third of the existing cost to academic institutions in the continent. The Partnership through BWC subsidizes the cost of internet bandwidth in selected African universities.\textsuperscript{89}

One of the beneficiaries of this project in Nigeria is the Ahmadu Bello University. As a result of the BWC initiative, the University is now able to afford a 1.6MB uplink and 6.0MB downlink internet bandwidth for its connectivity. This seems to be a short-term solution to the problem which may not

\textsuperscript{86} Jensen \textit{Supra} note 80
\textsuperscript{87} Ibid
\textsuperscript{88} Ibid
\textsuperscript{89} See \textit{The Bandwidth Consortium: Opening the Power of the Internet to African Universities} <http://www.foundation-partnership.org/pubs/press/bandwidth.ph>
outlast the Consortium’s financial capability. Although this effort is quite commendable, it suffices to state that the long-term solution to the cost of internet bandwidth in Africa lies in the development of fibre optic infrastructure.

Another infrastructural problem associated with internet connectivity in Nigerian academic institutions is the problem of electricity power supply. An institutional repository should be openly accessible 24 hours a day. This will thus imply a sustained and regular electricity supply to power ICT facilities. Electricity supply is a major problem in developing countries like Nigeria. This problem has made the development of projects like an institutional repository in Nigeria much difficult and expensive. Fatunde (2008) has observed that poor electricity supply is a major impediment to the operation and growth of information and communication technology in Nigerian universities. According to him:

Only a trickle of daily electricity production dribbles erratically into the country's 93 institutions, rendering ICT systems dysfunctional. Universities resort to diesel-propelled generators, but they are expensive and environmentally unfriendly.90

Nigeria produces about 2,500 megawatts a day of electricity – ten times less than its daily need. The extent to which this problem affects ICT projects in the Nigerian educational sector is self-evident. For example, in 2001 the National University Commission (NUC) in Nigeria commenced development of the virtual library project. The need for the project was to create a central digital repository that will assist the Nigerian university system in terms of acquisition of electronic resources to supplement the resources available in the individual university libraries. In order to deal with the problem of constant shortage of electricity power supply, the server for the project had to be located in far away United Kingdom thus resulting in much higher cost of operation.

Another institution that has had to deal with this problem in its effort to develop an institutional repository is the International Institute of Tropical Agriculture (IITA). The Institution which is at the final stage of developing an open access institutional repository also had to locate its server in the United Kingdom due mainly to the incessant problem of power supply in Nigeria. While 27.4% of the respondents at the University of Lagos ‘strongly agree’ that inadequate information and

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communication technology infrastructure is a problem to the development of institutional repository at the university, 46.8% ‘agree’ to that proposition. Various other researches has also confirmed that many institutions in developing countries face an unreliable electricity supply, poor Internet connections, as well as a lack adequate computer equipment, appropriate software, and even technological expertise. (Arunachalam, 2003; Fourie & Neale-Shutte, 2006; Papin-Ramcharan & Dawe, 2006).

The issue of electricity supply in Nigeria is a problem that transcends the educational sector to almost every sector of the Nigerian economy. As far back as 2004, it was reported that Nigeria loses about N66bn ($555m) annually as a result of incessant power outage. The magnitude of this problem goes beyond the framework of this research. Hence I would rather discuss a solution with regards to the development of institutional repository in Nigeria. To deal with the problem of power supply as it relates to the development of institutional repository, there is need to focus on development and implementation of efficient power generating alternative to diesel powered generators to power ICT facilities in educational and research institutions. Such alternatives could include wind or solar powered generators. This would help in sustaining ICT facilities for hosting the institutional repository such as the server. Development of such alternative energy sources though are capital intensive thus bringing us to another serious issue militating against the development of institutional repositories in Nigeria.

**Inadequate Funding**

Lack of funding is another major problem experienced by developing country institutions in their effort to establish digital repositories. As has been stated above, the state of ICT infrastructure in academic and research institutions in developing countries like Nigeria is so low to sustain the development of institutional repositories. Hence a viable digital repository project will first require serious upgrading of the current state of ICT facilities in many academic and research institutions in Nigeria.

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91 See Agha Ibiam *Nigeria Loses N66bn Yearly Through Power Failure*<http://nm.onlinenigeria.com/templates/?a=293&z=2>
Development of institutional repository in developing countries is much a capital intensive project than in developed countries. This is because academic and research institutions in developed country already have in place a well-established state-of-the-art ICT infrastructure to build on. But in developing countries, this infrastructure or foundation is not in place and will require huge financial resources to put them in place.

Additionally, the high cost of internet bandwidth in developing countries (previously discussed) further worsens the problem. It is rather curious that developing country institutions with far limited financial resources (as compared to their counterparts in developed countries) eventually end up paying more for same bandwidth than their counterpart in developed countries. These factors contribute to inflate the cost of establishing digital repositories in developing countries. As had been stated earlier, most of the universities in Nigeria receive substantial part of their funding from the government’s budgetary allocation. This increase in cost of developing digital repositories is even made worse by the fact that the institutions in this region continues to grapple with declining funding from budgetary allocations from the government. It is necessary to state though that institutions like the IITA does not face this problem in the same measure as other universities or research institutions in Nigeria. The IITA is an international organization that receives bulk of its funding from outside Nigeria. Hence even though its allocation from the Nigerian government has been on the decline in the past three years, this decline has been made up for by increased funding from international government and donors.\(^\text{92}\) The table below shows the organization’s funding for the preceding five years.

\(^{92}\) During the course of my interview with Eric Koper, IITA’s Head of Communication, I discovered that funding was not an issue with regards to the institution's development of a repository. In fact IITA has already developed an institutional repository but the repository could not go public due to copyright issues that had to be cleared.
A typical cost for developing an institutional repository in Nigeria will cover the cost for a server, subscription for adequate bandwidth, cost for building an alternative energy source, computer staff time for running and maintaining the ICT facilities, costs of purchasing scanning equipments, library staff time in formatting documents etc. Asked whether inadequate funding is an obstacle to the development of institutional repository in their institution, 49.2% of the respondents ‘strongly agree’ while 21.5% “agree” with the proposition. When we combine the percentage of those who ‘strongly agree’ with those who ‘agree’, a total of 70.7% of the respondents see funding as an obstacle to development of institutional repository.

Inadequate advocacy

One of the best ways to promote the development of open access institutional repository in developing countries is through advocacy. For such advocacy to be really effective, it must be undertaken by the stakeholders in the region. These stakeholders includes lecturers, researchers, librarian as well as students. Effective advocacy presupposes that the advocates or stakeholders are very familiar with the concept. Unfortunately, as we have seen in the course of this discuss especially from the research data presented above, knowledge of open access institutional repository is very low among the major stakeholders in the developing region.
Majority of the respondents to the questionnaire see advocacy as the major obstacle to development of institutional repository. 48.4% of the respondents ‘strongly agree’, while 30.6% of ‘agree’ that the inadequate advocacy is an obstacle to the development of institutional repository. When we combine the two groups, we have a total of 79% who ‘strongly agree’ or ‘agree’ that inadequate advocacy is a major obstacle to development of institutional repository in the target institution. This contrasts with 67.2% for ‘lack of knowledge of open access’, 74.2% for ‘Inadequate ICT infrastructure’, and 70.7% for ‘Inadequate Funding’. Greater percentage of the respondents see the issue of advocacy as a problem than any of the other issues stated in the questionnaire. There is need for increased advocacy of open access institutional repository in the developing countries like Nigeria. Advocacy could be undertaken through national and regional workshops and conferences as well as training of stakeholders within the region.

**Managing intellectual property rights through alternative publishing agreements**

Another issue that may affect the development of institutional repository is intellectual property. At the time the field research for paper was carried in the Spring of 2008, the International Institute of Tropical Agriculture (IITA) in Nigeria had been able to develop and institutional repository. Unfortunately though, the repository could not go public due to some copyright issues that needed to be resolved. It happened that copyright in research works conducted by the researchers at the Institute was signed away to the journal publishers when the papers where submitted to commercial journal publishers for publication. Curiously, the Institute lost the right to make public research works it has funded and now have to negotiate the right from the journal publishers.

Intellectual property right is an aspect of law that covers diverse legal rights that exists in creative work. Intellectual property law embraces such exclusive rights in copyright, patent, trademark, industrial designs, trade secret, trade name etc. For the purpose of this research paper, we shall be concerned with intellectual property as it relate to copyright. Copyright law determines how a person can deal with a written work such as a journal article or a research paper. Generally, a copyright holder has the exclusive right to authorize the copying, recopying or distribution of the written work. In other words, s/he has the right to determine whether the work shall be available in a closed or open access format.93

93 Pappalardo K. *supra* note 33
**What is copyright?**

Copyright is a collection of legal rights that attach to an original work when it is created.\(^{94}\) Copyright law is an aspect of intellectual property law that seek to invest authors with monopoly right or control over their creative work including the right of exploitation to their work as well as the right to “ensure that their work is properly credited and is not changed in a way that harms the author's reputation”.\(^{95}\) Copyright protects expressions and not ideas. Hence a work will qualify for copyright protection if its passes the test of originality. Originality does not mean that the work must be novel as in the case of patent, rather the work must originate from the author in the sense that the author must have invested some minimal intellectual effort as opposed to mere copying.

Subject matters which fall within the domain of copyright law include literary work, artistic work, dramatic and musical works. Literary work covers written or printed expressions irrespective of the form in which they exist whether in paper or electronic format. Research articles or papers and written materials in digital repositories clearly fall within the domain of literary work. Although for now, bulk of the contents in many open access digital repositories and electronic journals consists of literally works in the form of written materials, Pappalardo (2008) has observed that increasingly in the future, other kinds of materials will be contained in digital repositories and published in electronic journals. Such materials may include images, diagrams and graphs. This ordinarily should fall within the classification of artistic works. However, in discussing copyright as it relates to open access institutional repositories, this research paper will focus on literally works.

**Nature of copyright in literary works**

A copyright holder has the exclusive right to make his work available to the public as well as the right to authorize others to make copies of the work. Copyright in literary work confers on the author the exclusive right to reproduce the work in a material form, to publish, perform as well as communicate the work to the public, and to make an adaptation of the work e.g. translation.\(^{96}\) The

\[^{94}\text{Pappalardo supra note 33 @ 22}\]
\[^{95}\text{David Vaver, Copyright Law: Essentials of Canadian Law, Irwin Law Inc 2000 @ 1}\]
\[^{96}\text{Pappalardo supra note 33 @ 23}\]
right holder also has a right to authorize any other person to exercise the right which he (the right holder) has over the work.

The author’s right to reproduce his work includes the right to convert the work from a paper format to digital or electronic format. This right is especially important since the development of institutional repository will usually entail scanning of previously published work in paper format and converting same into digital format for uploading in the repository. Unless this is done with the permission of the copyright holder or under a statutory exception such as fair use or fair dealing, this will amount to copyright infringement.

Ownership and assignment of copyright

Generally, copyright in a work is originally conferred on the author of the work. This is referred to as the first ownership of copyright. There is however an exception to this general rule. One of such exception relates to a situation where the literary work is produced by the author under a contract of service of apprenticeship or under a contract of employment which expressly vest copyright in the work on some person or institution other than the author. For example, copyright in a research paper produced by a researcher in the course of his employment in a research institution or a university will normally vest in the author in the absence of any express agreement to the contrary.

Where the literally work is the product of the combined effort of more than one author e.g. a team, copyright in the work will vest jointly in the authors unless the authors have contributed various and distinct part of the work in which case each will retain the copyright in relation to his/her distinct part of the work. Copyright although intangible is recognized in law as a property and hence capable of transferability. This could be done in any of the following two ways discussed below.

Ownership right in copyright could be transferred by assignment. Assignment of copyright is the process whereby a copyright holder in a work (assignor) completely divests himself of all rights as it relates to the work by transferring the same to some other legal person (assignee). When copyright in a work is assigned, the original owner henceforth is in the same position as any other person in relation to the work. S/he cannot exercise any right or use the work except with the consent of the assignee. Otherwise the original owner will be liable for copyright infringement unless the act comes
under a statutory exception to infringement. This principle applies in every case where for example, an author of a research paper submits same for publication in a journal and is required to assign the copyright in the work to the journal publisher(s). This is one area where researchers and academics need to be especially cautious to understand the full legal implication of what they are doing. An example of assignment clause in publishing agreements is reproduced below:

In consideration of the publication of the Article in the Journal, I hereby assign to [XYZ] Publishing copyright for the full period of copyright and all renewals, extensions, revisions and revivals together with all accrued rights of action throughout the world in any form and in any language (including all media, both now known or later developed). [XYZ] Publishing may assign its rights under this Agreement. Notwithstanding the above, I retain all proprietary rights other than copyright, such as patent and trade mark rights and rights to any process or procedure described in the Article.

As a matter of fact, all a journal publisher need in order to be able to publish your work is a license to publish – which is a limited right as opposed to an assignment. Why then the desire to take over almost all right in works they have barely made any minimal contribution to? Commercial publishers have proffered the following justifications:

- that it enables the publisher to effectively protect your work against copyright infringement and/or plagiarism;
- so that the publisher can efficiently process third party permissions and enter into licensing arrangements regarding your work;
- so that the publisher can maintain the integrity of your work through centralized management of all media forms; and
- that it facilitates wide distribution of your work by the publisher.97

Suber (2007) has found the argument that a journal publisher needs assignment of copyright to effectively protect an author’s work from plagiarism to be ludicrous. According to him:

It's inaccurate and disingenuous to argue that publishers need exclusive rights to prosecute plagiarists. First, the rights are rarely used this way. Plagiarism is typically punished by the plagiarist's institution, not by courts --that is, by social norms, not by law. Second, if it's ever desirable to pursue a plagiarist in court and authors don't give publishers the right to do so on their own, then authors retain that right to use as they see fit. Third, many authors would rather have a larger audience and impact than give their publisher the seldom used legal tools to prosecute plagiarists. Authors should make this decision, not publishers. Finally, if an author discovers a plagiarist and the publisher really wants to get involved, the author can always delegate the publisher to act as his/her

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97 Ibid
agent. For this purpose, publishers don't need rights from the time of publication, nor do they need exclusive rights, let alone a policy to limit access to the author's work.98

Also a commercial publisher does not need assignment of copyright to facilitate a wide distribution of your work. As will be noted below, this task could be facilitated by grant of a license. Most commercial journals provide paid (and hence limited) access to research works. Experience has shown that open access journals and repositories provide the widest possible access to research output and they do this without divesting the author of his/her copyright. The argument that a publisher needs copyright assignment in order to publish or facilitate wide distribution of your work cannot be substantiated. However, you do need to retain the copyright in your work in order to make the work available in an open access repository. This could be achieved through licensing.

Licensing is a means by which an author may authorize some other person (including a publisher) to exercise one or more of his exclusive right to a literary work without divesting himself/herself of all his rights in the work as in the case of assignment. A license is a consent or permission to use intellectual property on the terms specified by the licensor who remains the owner.99 The author still retains all rights to the literary work subject only to the rights granted or licensed. Unlike assignment, a license need not be written, it could even be implied from conduct. Hence by merely submitting a research paper to a journal for publication, the author impliedly grants the journal the right or license to publish the work.

A license can be exclusive or non-exclusive. An exclusive license grants the licensee the exclusive right to a particular act in relation to the copyright. The right is exclusive because no other person, not even the author, can exercise the right for the duration in which it is granted. A non-exclusive license grants to the licensee the permission to exercise the relevant right while at the same time permitting the author to grant the same right to some other person and to continue to exercise the right himself. Licensing as opposed to assignment is particularly important to authors who wish to make their work available by means of open access. Hence an author may wish to grant a license to a journal publisher as opposed to assignment. This license will relate to right to publication and distribution of the work in the journal. In this way, the author will still retain the right to deposit the

98 Peter Suber, “Balancing author and publisher rights” SPARC Open Access Newsletter, issue #110, 2 June 2007, http://www.earlham.edu/~peters/fos/newsletter/06-02-07.htm#balancing
99 David Vaver Supra note 95
work in an open access repository. The licensing process could be achieved through the use of alternative publishing agreement.

*Alternative Publishing Agreement*

Traditionally, authors are required to assign their copyright to journal publishers in return for publication of their works. This is usually the case with commercial journal publishers. A survey conducted in 2007 by the OAK Law Project shows that 85% of commercial publishing agreement contained among its terms the assignment of copyright to the publisher. The survey further revealed that of the 85% that sought the assignment of copyright, authors were given minimal usage right to their works. The publishing agreement expressly states that the duration of the assignment would be for the full term of the copyright (usually 70 years) plus any extensions or renewals.\(^\text{100}\) The problem with this conventional publishing agreement requiring the assignment of copyright has already been emphasized. An alternative publishing agreement allows the author of a work to grant to the publisher the rights necessary to enable the publisher to publish the work while at same time allowing the author to retain the copyright to the work.

A draft example of a publishing agreement in the form of a license to publish as opposed to assignment of copyright have been drafted by the SURF Foundation together with the Joint Information Systems Committee (JISC).\(^\text{101}\) Alternatively, an author could opt to publish his work in an open access journal(s) that permit the author to archive his published work in an open access repository. In this way, the work will be given the widest possible dissemination. A comprehensive list of open access journals could be found in the directory of open access journals (www.doaj.org).

The SHERPA/RoMEO project was commissioned to address issues relating to publishers' copyright policies as well as authors archiving rights. RoMEO is a continuing project developing and maintaining a database that lists journals' and publishers' copyright agreements. The project produced a list of various categories of publishers and the extent to which their copyright policies support or impede open access. The project provides resourceful guide to authors who may wish to


\(^{101}\) This could be access online at <http://copyrighttoolbox.surf.nl/copyrighttoolbox/authors/licence/>. A copy has also been reproduced at the Appendix A
utilize the open access model in giving the widest publicity to their work. A total of 95.3% of the respondents to the questionnaire at the University of Lagos are unaware of the SHERPA/ReMEO project while 4.7% of the respondent are familiar with the project. This further goes to highlight the need for awareness and advocacy to enable authors understand the right to their work and avenue through which they could protect such rights in order to make their work available in their institutional repositories.

Conclusion and Recommendation

In the course of my discussion, I have highlighted the some of the issues that affect the development of institutional repository to include lack of awareness of the open access publishing in academic and research institutions in developing countries, inadequate information and communication infrastructure, lack of funding as well as poor advocacy for open access. The issue relating to copyright management was also discussed. In the light of these observations, the following recommendations are proffered:

With regards to the issue of awareness and advocacy, it is highly recommended that the approach adopted in eIFL and SASLI in South Africa be applied also in Nigeria - namely: organizing series of conferences and capacity building workshops to educate and train stakeholders in academic and research institutions in Nigeria. In this way their knowledge of open access will be enriched and they will be in a better position to advocate for change in policies within their institution and at national level. This will create a conducive environment that will nurture the development and growth of open access in Nigeria. Considering the size of the country and number of educational institutions in the country, it suffices to add though the level of resources required here will be more than what was committed in South Africa.

The two major issues in ICT relates to Internet bandwidth and electricity supply to power ICT infrastructure. With regards to the first, the short term solution will be to support initiatives (such the Bandwidth Consortium (BWC)) aimed subsidizing the cost of internet bandwidth in academic and research institutions in Nigeria. The long-term solution in this area should take the form of increased backing for international optic fibre infrastructure as well as an open access policy to the project so as to provide equal access to all bandwidth providers. To deal with the issue of electricity supply to
power ICT infrastructure, there is need to fund research into development and implementation of efficient power generating alternatives to power ICT facilities used in the deployment of institutional repositories.

It was also observed that the development of institutional repository in Nigeria as well as most developing countries is a capital intensive project. This issue is worsened by the diminution of budgetary allocation from government to the educational sector. There is need for increased funding from international donor agencies to help academic and research institutions in Nigeria to uplift the state of their ICT infrastructure. Other alternative sources of funding that could be researched into includes corporate entities like telecommunication companies operating in the country.102

As regards copyright issues, it is highly recommended that authors within the region should be educated on their rights in relation to their intellectual output. This is very important as these authors continue to sign away their legal right without knowledge of the legal implication their act. If this problem is not tackled at the moment, their institutions will encounter another difficult problem in filling their repositories should they succeed in developing one sometime in the future.

102 MTN a mobile telephone company operating in most African countries as well as Zenith Bank has helped to fund the establishment of internet café at the University of Lagos
Appendix A: License to publish

The undersigned

... 

Name author(s) (“the Author(s)”) 

grants to 

... 

Name Publisher (“the Publisher”) 

the following licence. 

Background 

This agreement concerns the publishing of scholarly and/or scientific works, and is intended to reflect a balance between the rights of the Author and the Publisher, according to the following principles:

- The Author and the Publisher believe it is in the general interest to grant maximum access to scholarly and/or scientific works without compromising quality or academic freedom, especially when public resources finance such works;
- The Publisher wishes to receive financial compensation for his contribution in the publication of the scholarly and scientific work;
- The Author and the Publisher believe that particularly in the so-called subscription model a balance should be achieved between granting maximum access to scholarly and/or scientific works and granting financial compensation for the publication of these works.

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103 http://copyrighttoolbox.surf.nl/copyrighttoolbox/authors/licence
**Clause 1  Definitions**

The following words shall have the following meanings:

1. **Acceptance:** the communication to the Author by the Publisher of his willingness to publish the Author’s work.
2. **Article:** the published version of the Author’s work, entitled ““.
3. **Publication:** The journal or similar periodical publication, in print or in digital form, for which the Article is destined.

**Clause 2  Licence of rights**

1. Upon Acceptance, the Author grants to the Publisher a sole licence to exploit the rights listed in clause 2.2 in the Article throughout the world for the full term of the copyright.

2. The sole licence mentioned in clause 2.1 encompasses the right for the Publisher:
   a. to reproduce the Article in whole or in part, and to communicate the Article to the public in print and/or digital form, whether or not in combination with the works of others, for example the making available to the public via internet or any other network, as part of a database, on-line or off-line, for use by third parties;
   b. to translate the Article into other languages and to communicate the translation of the Article to the public;
   c. to create adaptations, summaries or extracts of the Article or other derivative works based on the Article and exercise all of the rights in such adaptations, summaries, extracts and derivative works;
   d. to include the Article, whether in translation or as adaptation or summary, in whole or in part in a computerised database and to make this database available to third parties;
   e. to include the Article, in whole or in part, whether in translation or as adaptation or summary, in a reader or compilation;
   f. to rent or lend the Article to third parties;
g. to reproduce the Article by means of reprography, notwithstanding the limitations in the law.

3. The Publisher undertakes that the name of the Author and the source is acknowledged in standard bibliographic citation form.

**Clause 3 Rights reserved by Author**

1. The Author retains all other rights with respect to the Article not granted to the Publisher and in particular he can exercise the following rights:

   **Educational or research use**
   
   To reproduce the Article, in whole or in part, and to communicate it or make it available to the public, whether in print and/or digital form, whether as part of a course pack or a compilation, for use in education or research within the Author’s own institution or the institutions with which the Author is affiliated.

   **Dissemination**
   
   To upload the Article or to grant to the Author’s own institution (or another appropriate organisation) the authorisation to upload the Article, immediately from the date of publication of the journal in which the Article is published (unless that the Author and the Publisher have agreed in writing to a short embargo period, with a maximum of six (6) months):
   
   a) onto the institution’s closed network (e.g. intranet system); and/or
   
   b) onto publicly accessible institutional and/or centrally organised repositories (such as PubMed Central and other PubMed Central International repositories), provided that a link is inserted to the Article on the Publisher’s website.

   **Preservation**
   
   To grant to the Author’s own institution (or another appropriate organisation) the authorisation to reproduce the Article for the purpose of preventing it from deteriorating, or if the original is currently in an obsolete format or the technology required to use the original is unavailable, for the purpose of ensuring that the Article continues to be available for education and research purposes;
Future reuse
To reuse whole or part of the Article in a dissertation, compilation or other work.

Personal use
To present the Article at a meeting or conference and to hand out copies of the Article to the delegates attending the meeting.

Use by end users
To grant to end users of the Author’s own institution or (or another appropriate organisation), the authorisation to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works.

2. For every form of (re)use of the Article as described in the above paragraphs, the Author or the Publisher undertakes always to include the complete source (at least the Author’s name, the title and the number of the Publication, and the name of the Publisher), unless this is impossible.

Clause 4 Moral rights
This agreement does not affect the moral rights of the Author in or to the Article. More specifically, the Author asserts his right to be identified as the Author and the right to object to derogatory treatment.

Clause 5 Warranty
1. The Author warrants that he/she is the sole creator of the Article and that the Article does not infringe any existing third party copyright or moral right.

2. The Author shall hold harmless and indemnify the Publisher from any third party claims resulting from the publication of the Article should there be a breach of this warranty. The warranties contained in this article also apply to any drawing, photograph or other illustration included in the Article and delivered by the Author.

3. The Author authorises the Publisher to institute, in co-operation with the Author, the necessary steps to prevent third party infringement of the copyright in the Article. The Author and Publisher undertake to provide each other full co-operation and complete information in this regard. The costs are subject to a separate agreement when the question arises.
Clause 6  
Obligation to publish

Subject to the Acceptance by the Publisher undertakes to publish the Article to the customary standard of the Publisher at the cost and expense of the Publisher within a reasonable period after Acceptance.

Clause 7  
Complimentary Copies

The Author has the right to receive 2 (two) complimentary copies of the issue of the Publication in which the Article appears. In case of a Publication in electronic form, the Author has the right to receive a copy, or to gain access to the relevant Publication. The Author may not put on the market or sell these copies.

Clause 8  
Legal relationship

1. The Publisher may transfer the exploitation rights on the Article to a third party, provided that this third party fulfils the Publisher’s obligations contained in this agreement towards the Author.

2. If the Author can show that his moral rights are affected by the use of his Article by the Publisher pursuant to a licence, the Author may demand that the Publisher stop said use. The Publisher must honour the request unless this cannot be reasonably asked of him in view of the scientific or historical value of the Article.

3. The Author has the right to terminate this agreement if the Publisher goes into bankruptcy or liquidation or any other arrangement for the benefit of its creditors.

4. Termination of this agreement does not affect any prior valid agreement made by the Publisher with third parties.

5. Nothing in this agreement is intended to confer rights on any third party.
Clause 9  Multiple Authors

In the case of multiple authors, the Author has the consent of each author to enter this Licence to publish on behalf of them.

Clause 10  Applicable Law

This agreement shall be governed by and construed in accordance with the country of residence of the Author whose courts shall be courts of competent jurisdiction.

Clause 11  Final clause

The agreement comes into effect immediately on Acceptance and shall remain in force for the lifetime of the copyright in the Article.

Signed by the Author on (date)
Appendix B: Universities in Nigeria

Federal Universities

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<th>S/N</th>
<th>FEDERAL UNIVERSITIES</th>
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<td>4</td>
<td>Fed. Univ. of Petroleum Resources, Effurun</td>
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<td>Federal University of Technology Yola.</td>
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<td><a href="http://www.uniabuja.edu.ng">http://www.uniabuja.edu.ng</a></td>
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<td>15</td>
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<td><a href="http://www.unaab.edu.ng">http://www.unaab.edu.ng</a></td>
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<td>16</td>
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State Universities:

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<td>2</td>
<td>Adamawa State University Mubi</td>
<td><a href="http://www.adamawastateuni.net">www.adamawastateuni.net</a></td>
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<td>3</td>
<td>Adekunle Ajasin University, Akungba.</td>
<td><a href="http://www.ajasin.edu.ng">www.ajasin.edu.ng</a></td>
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<td>4</td>
<td>Akwa Ibom State University of Technology, Uyo</td>
<td><a href="http://www.akutech.edu.ng">www.akutech.edu.ng</a></td>
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<td>5</td>
<td>Ambrose Ali University, Ekpoma,</td>
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<td>6</td>
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<td><a href="http://ibbuniversity.net/">http://ibbuniversity.net/</a></td>
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**Private Universities**

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<td>9</td>
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## Appendix C: Research Institutions in Nigeria

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<td>1</td>
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<td>5</td>
<td>Animal Production Research Institute (APRI)</td>
<td><a href="http://www.claes.sci.eg/arc/apri.HTM">http://www.claes.sci.eg/arc/apri.HTM</a></td>
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<td>Animal Production, Fisheries and Oceanography Research Institutes</td>
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<td>7</td>
<td>Animal Reproduction Research Institutes (ARRI)</td>
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<td>8</td>
<td>Arable Crops Research Institutes</td>
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<td>Cocoa Research Institute of Nigeria (CRIN)</td>
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<td>12</td>
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<td>Food Technology Research Institute (FTRI)</td>
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<td>Forestry Research Institute of Nigeria</td>
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<td>Forestry, Horticulture and Tree Crops Research Institutes</td>
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<td>18</td>
<td>Institute of Agricultural Research and Training (IAR&amp;T)</td>
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<td>International Institute for Tropical Agriculture</td>
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<td>20</td>
<td>Lake Chad Research Institute (LCRI)</td>
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<td>National Agricultural Extension Research and Liaison Service (AERLS)</td>
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<td>National Research Institute for Chemical Technology</td>
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<td>National Root Crops Research Institute (NRCRI)</td>
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<td>28</td>
<td>National Stored Products Research Institute (NSPRI)</td>
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<td>National Veterinary Research Institute (NVRI) – Vom</td>
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<td>Nigerian Building and Road Research Institute</td>
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<td>31</td>
<td>Nigerian institute for Oceanography and Marine Research</td>
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<td>Nigerian Institute for Oil Palm Research (NIFOR)</td>
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<td>Sugar Crops Research Institute (SCRI)</td>
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</tr>
<tr>
<td>39</td>
<td>Veterinary Serum and Vaccine Research Institute (VSVRI)</td>
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</tbody>
</table>
Dear Sir/Madam,

Open access to scholarly and research articles is a topic of growing importance especially to researchers in developing countries. Open access enables free and immediate electronic access to a scholar's work. Studies show that open access increases the impact of - and number of citations to - work made accessible in this way.

We are interested in understanding scholars' views on open access Publishing and Institutional Repositories and would very much like to hear your opinions. Should you wish to share your opinion with us, please kindly complete the questionnaire attached. Data collected will be used to inform research funders and scholars themselves of the state of play and how open access is progressing in Nigeria. If you desire to receive the final report resulting from this research, please feel free to include your contact email address at the end of the questionnaire.

The questionnaire can be completed in about 20 minutes.

**Naturally, we do not request any personally identifiable information. All responses will be treated as strictly confidential.**

Thank you in advance for your cooperation. We do value your input and advice.

Yours sincerely,

Gideon Emcee Christian, LL.M
Communities and the Information Society in Africa
International Development Research Centre (IDRC)
INTERNATIONAL DEVELOPMENT RESEARCH CENTRE (IDRC), CANADA

Research Project on Issues and Challenges to Development of Open Access Institutional Repositories in Academic and Research Institutions in Nigeria

QUESTIONNAIRE

Section A: About You

1. What is your area of expertise?
   a. Law
   b. Engineering
   c. Medicine
   d. Sciences
   e. Other ___________________________________________

2. What is your designation in your institution?
   a. Lecturer
   b. Researcher
   c. Graduate Student
   d. Other ___________________________________________________

3. Where do you generally publish your research articles?
   a. Local academic journals
   b. Foreign academic journals
   c. Both local and foreign journals

4. Are these journals available on the internet for free access by internet users?
   a. Yes
   b. No
   c. Don’t know

5. Are you aware of opportunities to publish your research articles in open access journals which provide free access to research articles through the world wide web (internet)?
   a. Yes
   b. No

Section B(1): Institutional Repositories

6. Are you familiar with the term “Open Access Institutional Repository/Archive” with reference to scholarly research?
   a. Completely unfamiliar—I have never heard of this before
   b. I have come across this concept but know nothing about it
   c. I have come across this concept and know a little about it
   d. I have come across this concept and know quite a bit about it
   e. I am very knowledgeable about open access institutional repository or archive
If your answer above is (a) or (b), skip question 7 and 8

7. Briefly explain what you understand by the term “Open Access institutional repository.”

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

8. Can you list below examples of Open Access Repositories or archives you know and/or use?
   i.___________________________________________________________________________
   ii.__________________________________________________________________________
   iii.__________________________________________________________________________

Section B(2):
Open Access Institutional Repositories are online digital archives established by academic and research institutions in order to make the research and intellectual outputs of their researchers and academics widely accessible to users via the internet. There are also subject-based repositories or archives established by bodies other than academic or research institutions for the purpose of providing open access to research outputs or articles in a particular field of study like Science or Humanities. Institutional repositories are now clearly and broadly being recognized as essential infrastructure for scholarship in the digital world.

9. An institutional repository for your institution is
   a. Very Important
   b. Important
   c. Neutral
   d. Unimportant
   e. Very unimportant

10. Do you think that the establishment of an institutional repository by your institution will enhance the global reputation of your institution?
   a. Yes
   b. No
   c. Don’t know

   If possible, give reason for your answer___________________________________________________
   __________________________
11. Do you think that the establishment of an institutional repository by your institution will enhance your reputation as a member of the institution?
   a. No           b. Not sure           c. Yes

12. In what ways will the establishment of an institutional repository by your institution enhance your reputation as a member of the institution? (Select all that apply)
   a. Will make my research publications more visible and widely accessible
   b. Will motivate me to publish more research work to be deposited at the repository
   c. Will boost the reputation of my institution and by implication my reputation as a member of the institution
   d. Don’t know
   e. Others please explain:_____________________________________________________

13. Researchers and academics in Nigeria will benefit immensely if their institutions establish Open Access Institutional repositories.
   a. Strongly agree          b. Agree           c. Neutral
   d. Disagree               e. Strongly disagree

14. In the past year has your own institution or librarians in your institution brought to your attention any Open Access or Institutional Repository publishing initiatives?
   a. Yes           b. No

   If Yes, which______________________________________________________________

15. Please indicate the extent to which the following factors contribute to the lack of Institutional repository in your institution. (Circle the applicable)
   (5 = Strongly agree; 4 = Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly disagree)

   Lack of knowledge or awareness Open Access  5  4  3  2  1
   Inadequate information and communication technology  5  4  3  2  1
   Inadequate funding  5  4  3  2  1
   Inadequate advocacy for Open Access Repository  5  4  3  2  1

16. If your institution establishes an Open Access repository, would you consider having a copy of your article(s) previously published in a subscription-based journal deposited in the institutional repository?
a. Yes, I will  
b. Not sure/maybe  
c. No, that will breach the copyright of the journal publisher

17. If your institution establishes an Open Access repository, would you like to have your pre-published or work-in-progress research outputs or articles deposited in the repository for free access by internet users?
   a. Yes, I will  
b. Not sure/maybe  
c. No

18. If your institution develops an institutional repository and MANDATES that you deposit copies of your articles in the repository to be made freely accessible to internet users via Open Access, what would be your reaction?
   a. I will comply willingly  
b. I will reluctantly comply  
c. I will not comply

Please can you give reason(s) for your answer above

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

19. If your research funder(s) makes a policy mandating you to deposit your work in an open access institutional repository or archive as a condition for receiving grants, what will be your response?
   a. I will comply willingly  
b. I will reluctantly comply  
c. I will not comply

Please can you give reason(s) for your answer above

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

20. In the past 3 years how many times have you deposited full copies of your research work in ANY Open Access Institutional Repository or archive? ________________________

21. If you have NOT deposited drafts or published research articles in any Open Access Repository or archive, are you aware of the possibility of providing open access to your work by depositing a copy to Institutional or subject-matter Open Access archives on the internet such as SSRN, arXiv, PubMed etc?
   a. Yes  
b. No (if “No” Please go to 24)  
c. Question not applicable to me
22. How did you originally learn about self-archiving in an institutional or subject-based repository or archive as a means to provide open access to your work?
   a. I read about Open Access
   b. From information provided by my institution or library
   c. From my colleagues
   d. From my co-authors
   Other (please specify)

23. What was your original motivation for depositing your work in an Open Access repository or archive? Select all that apply.
   a. Encouragement from library personnel at my institution
   b. Encouragement from departmental advocates
   c. Encouragement from my research funder(s)
   d. Encouragement from my colleagues and/or co-authors
   e. I was predominantly self-motivated
   f. Open access articles are cited more often than articles accessible only in subscription journals
   Other (please specify)

24. Do you think there should be a national policy explicitly directing or supporting the development of institutional repositories in academic and research institutions in Nigeria?
   a. Yes    b. No    c. Don’t know

25. When you deposit a research work in an Open Access Institutional Repository or archive, who do you think should retain the copyright to the work?
   a. Myself
   b. The institution that owns the repository
   c. Don't know

26. Are you aware of the SHERPA publisher copyright policies?
   a. Yes    b. No

Section C: Your use of research information
27. When you carry out your research or write a research article, you need access to articles by other workers. These may be in open access repositories/archives, open access journals or subscription-based journals. We are interested in how easy it is for you to access the articles you need to read, whatever the source. Which one of the following statements best applies to you?
   a. I have easy access to all the articles I need to read
   b. I have easy access to most of the articles I need to read
   c. I have easy access to some of the articles I need to read
   d. I have easy access to very few of the articles I need to read
28. In general, what are your objectives when publishing scholarly work? Please indicate the extent to which you agree or disagree with the following statements by circling whichever applies:

(5 = Strongly agree; 4 = Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly disagree)

- I publish to gain direct financial reward: 5 4 3 2 1
- I publish to gain personal prestige in my field: 5 4 3 2 1
- I publish to communicate my results to my colleagues: 5 4 3 2 1
- I publish to advance my career: 5 4 3 2 1
- I publish to increase my chances of gaining funding: 5 4 3 2 1

Other (please specify) ________________________________________________________

29. What research tool(s) do you use when researching on the internet?
   a. Search Engines like Google, Yahoo! AOL etc
   b. I visit Open Access websites
   c. I use bibliographic databases
   d. I do not use the internet for my research
   b. Others (Please specify) ____________________________________________

Optional

30. Please include your contact email below if you wish to receive an electronic copy of the final report resulting from this research. (Please note that we will use your email solely for the purpose of communicating with you in relation to this research and no other purpose).

   Email: __________________________________________________________________

31. Are you
   a. Male
   b. Female