

## **Institutional Digital Repository: An Option for Scholarly Communication in Nigeria**

By

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### **Abstract**

*The advent of information and communication technology (ICT), and electronic publishing has opened new avenues for scholars to communicate and disseminate their findings to one another. The objective is to ensure that its benefits reach a majority of the society. The development of Internet technology has also provided academic and research institutions with a very high level of visibility on the web. As a result, teaching, learning and research is widely improved in the global society today. Open access institutional repository has become one of the ICT avenues through which academic and research communities make their research results and findings available to their peers. This paper is a desk study that examines the state of Institutional Digital Repository in Nigeria. General benefits provided by Institutional Digital Repository are given, and also identify Institutional Digital Repository as an option and panacea for Scholarly Communication. Impediments such as insufficient finance, inadequate manpower, lack of power are among the several problems that are brought to the fore of this discussion. Recommendations are also made to address the identified impediments.*

**Keywords: Open Access, Scholarly Publication, Institutional Digital Repository.**

### **Introduction**

In recent years many librarians and academic authors have become concern at what is seen as the “commercialisation” of scholarly journal publishing and the requirement for authors to sign over the copyright of a paper to the publishers prior to publication. Libraries need to pay increasingly large sums to subscribe to the printed copies of the journal or to acquire license for access to electronic versions them, these resulted to researchers failing to have access to necessary scholarly materials. However, the rapid invasion of ICTs into libraries has created platforms and opportunities for scholars to work collaboratively through extensive infrastructures, with access to resources and knowledge services in borderless environments.

Academic institutions have been grappling with how to communicate to scholars the digital intellectual output they produce including journal articles, conference papers, reports, theses & dissertation, teaching materials, artwork, research notes, and research data. Clearly, technology has made it easy to create, store and access digital material. Paradoxically however, while there is potential for instantaneous access, all too often many materials are not usually made accessible to many users and they remain marooned in the authors’ computers. About 80-85% of digital intellectual output of universities is never made accessible to the public (The Open Citation Project,

2004). Also the escalating costs of online journals prohibit subscription and it is becoming more unrealistic and challenging for libraries to subscribe to all, or even most of the online academic journals (Warren, 2003). These pose a great challenge to scholarly communication among scholars. In response to the above assertion, in 2000 the appropriately named EPrints was launched by the University of Southampton, followed a couple of years later by DSpace produced by the MIT in conjunction with Hewlett Packard (Smith, Barton et al. 2003). This was followed by other software such as Digital Commons offered by BePress and the use of tools such as Fedora and Greenstone for institutional repositories. The table below shows usage of repository software in repositories registered in OpenDOAR (Directory of Open Access Repositories) from May 2013.

S/N	Software	Number	%
1	Dspace	940	41.2
2	Eprints	328	14.4
3	Digital Commons	97	4.3
4	OPUS	73	3.2
5	Unknown	278	12.1
6	Others	563	24.08
	Total	2279	100

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### Statement of the Problem

Nigeria with higher number of universities and research institutions compared to any other country in sub-Saharan Africa produce large volume of research outputs that are of paramount value to scholarly community. Unfortunately these outputs gather dust in various departmental offices and institutional libraries without being accessed and consulted. Some eventually get published in local journal that has minimal circulation due to poor distributorship, marketing or prestige. In consequence these researches die at institutional level.

Ezema (2010) adds that it is no more arguable that the traditional means of scholarly communication has been saddled with a lot of access barriers. Therefore, open access IR have been found to play an important role in the preservation and dissemination of institutional research outputs which will in turn become a constituent part of a global research outputs. The increased research impact of open access institutional repository articles due to citations has also been acknowledged by many scholars (Harnad, 2003). In the current system of scholarly communication, developing countries may be considered to have low research impact due to limited visibility of research output from such countries. Some studies have estimated that open access articles are cited 50% to 250% more than non-open access articles. In some disciplines, online files receive on average 300% more citations than materials available only in paper format (The Open Citation Project, 2004). Also, Google Scholar gives preferential treatment to materials in IRs; a paper picked up from an IR would appear higher up on the Google results list (Ashworth, 2006). Despite the promising potential of open access to improve scholarly communication in developing countries, the new form of scholarly communication is little exploited in such countries when compared to developed countries (Durrant, 2004). However the researcher observed that the situation seems not to be different in Nigeria.

## **Objective of the study**

The objectives of this study are:

- ✓ To reveal the current state of open access intuitional digital repository in Nigeria
- ✓ To examine the role of open access intuitional digital repository in scholarly communication
- ✓ Highlight challenges of enabling open access intuitional digital repository in Nigeria
- ✓ To provide adequate solutions aimed at tackling the identified challenges

## **Defining Institutional Digital Repository**

The term “institutional repository” may have dissimilar meaning to different people (Allard et al. 2005). As the concept is rather new, there are diverse opinions on its meaning (Bailey 2005). Generally an institutional repository is an electronic system that captures, disseminates and preserves intellectual results of a group of universities or a single university. Lynch (2003) has defined a university institutional repository as a collection of services that a university proffers to its own members intended for the management, organization and diffusion of digital works produced by these members. Crow (2002a) and Ware (2004) characterized an institutional repository as open, interoperable, cumulative, perpetual, contributes to the process of scholarly communication in collecting, storing and disseminating the scholarly content. The Scholarly Publishing and Academic Resources Coalition (SPARC) position paper declared that "Institutional repositories are digital collections capturing and preserving the intellectual output of a single or multi-university community, providing a critical component in reforming the system of scholarly communication a component that 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" (Crow 2002b).

In the simplest sense of the term, an institutional digital repository is an electronic archive of the scholarly output of an institution, stored in a digital format, where search and recovery are allowed for its national or international use. The general idea is to store, manage, and preserve a university's born-digital and digitized assets, making them freely available via the internet.

## **Benefits of Enabling Institutional Digital Repository**

The use of the Open Access model as a way to reduce costs and increase access is a point made by Crow (2002a). Jones et al. (2006) argue that IRs have a greater potential than other types of information resources for disseminating research. Bauer (2005) points out that IRs can gather and provide access to a wide range of grey resources, i.e., material not in a journal article format, such as theses, datasets, presentations, archive documents and images. Others, such as Mercer, Rosenblum and Emmett (2007) contend that the number of items being added to IRs is far less important than their role as “disseminating engines,” while others point out that IRs allow information to be shared with external as well as internal users of the organisation (Primary Research Group, 2007; Whitehead, 2005), gaining recognition for the institution’s research outputs.

Institutional digital repositories (IRs) are increasingly deployed in academic institutions to manage a variety of digital content including educational, research, and archival materials. The benefits of IRs have been touted by many authors and include increased knowledge sharing Yeates (2003), control over the digital assets of the university (Crow 2002a, 2002b), and preservation (Lynch 2003). Gibbons (2004) cites major benefits such as stewardship, efficiencies, showcasing an institution and wider distribution as compelling reasons for establishing an IR. All of these benefits involve digital curation because they span the information life-cycle and involve achieving goals that are central to digital curation, such as “interoperability with the future” and

“communication across time” (Rusbridge et al. 2005).

Gibbons (2004) presented compelling reasons for why an organization would want to establish an IR including providing an infrastructure for preservation of digital content, lowering the barrier to document distribution, creating a centralized digital showcase in which research, teaching, and scholarship can be highlighted, and facilitating wider distribution. Yeates (2003) also listed the benefits of IRs, such as: extending the range of knowledge sharing, existing investment in information and content management systems can be leveraged; and more flexible ways of scholarly communication are available. Academic institutions would also reap these benefits. IR proponents argue that they form the infrastructure for a new scholarly publishing paradigm that wrests control away from publishers and puts it back in the hands of the academy, increase visibility, prestige, and public value of contributors, maximize access to the results of publicly funded research, and increase the number and diversity of scholarly materials that are collected and preserved by academic institutions (Crow 2002a, 2002b; Chan 2004).

### State of Institutional Digital Repositories in Nigeria

The growth of open access institutional digital repositories has been very remarkable in developed countries as well as some developing countries like Brazil, India and South Africa (Christian, 2008). But not much had been heard in sub-Saharan African countries (Nigeria inclusive). Nigeria with an estimated population of 150 million has 129 universities, 75 polytechnics, 63 colleges of education and 100 research and allied institutions host the highest number of institutions compared to any country in Africa (Bola, 2013). Curiously, there are 19 active Institutional Digital Repositories in South Africa, 6 each in Egypt and Kenya and Nigeria has 5 (Directory of Open Access Repository, 2013).

#### Nigerian universities with intuitional repositories listed in OpenDOAR

S/N	Universities	URL	Content	Software
1	Ahmadu Bello University, Zaria	<a href="http://kubanni.abu.edu.ng:8080/jspui">http://kubanni.abu.edu.ng:8080/jspui</a>	Conferences,Theses	Dspace
2	Covenant University, Otta	<a href="http://eprints.covenantuniversity.edu.ng/">http://eprints.covenantuniversity.edu.ng/</a>	Articles	Eprints
3	Federal Uni. Tech., Akure	<a href="http://dspace.futa.edu.ng:8080/jspui/">http://dspace.futa.edu.ng:8080/jspui/</a>	Articles; References; Theses	Dspace
4	University of Jos, Jos	<a href="http://dspace.unijos.edu.ng/">http://dspace.unijos.edu.ng/</a>	References; Conferences; Learning Objects; Multimedia	Dspace
5	University of Nigeria, Nsukka	<a href="http://unn.edu.ng/chart/repo">http://unn.edu.ng/chart/repo</a>	Articles; Theses	Open Registry

### The Role of Open Access Institutional Digital Repository in Scholarly Communication

Scholarly communication is a broader term reflecting various processes through which scholars exchange information with one another in the course of knowledge creation (Rao, 2001). Thorin (2003) divides scholarly communication into three main distinct aspects: the process of conducting research, developing ideas, and communicating these ideas informally with other scholars and scientists, the process of

preparing, shaping, and communicating to a group of colleagues what will become formal research results and the published formal product that is distributed to libraries and other places in print form or electronically. From the definitions and functions of scholarly communication, it is evident that for a complete cycle of scholarly communication to take place, there are four core processes: (i) the creation of scholarly content, (ii) validation, (iii) documentation, and (iv) dissemination. Scholarly communication is achieved either through informal channels and means such as personal contacts through lectures, conferences, seminars or by means of publishing scholarly work in recognized channels such as refereed journals, books or other publications like conference proceedings, theses and dissertations (Rao, 2001).

There is sufficient basis to suggest that part of the reasons for the low profile of scientists in Nigeria is the poor access to scientific publications from the developed countries, exacerbated by the institution of copyright (Tagler, 1996). Nigerian scientists require access to scientific publications, which scientists all over the world are always willing to make available at no cost, in order to benefit from and also contribute to the world stock of knowledge.

There are two main reasons to setup an IDR the first is to attempt to modify the current scholarly publishing system, and the second tend to support the Open Access movement, but this researcher is more interested in the initial reason. In this case IRs is a strategy to improve access to traditional scholarly content. The effects of IDRs are threefold: they empower faculty for the dissemination of their digital materials, motivate preprint dissemination and finally they will “encourage the exploration and adoption of new forms of scholarly communication that exploit the digital medium in fundamental ways” (Lynch, 2003).

IR proponent Lynch (2003) regards institutional repositories as essential infrastructure for modern scholarship. He argues that “the development of institutional repositories emerged as a new strategy that allows universities to apply serious, systematic leverage to accelerate changes taking place in scholarship and scholarly communication”. Also, Markey et al (2007) remarked that, “a considerable portion of the scholarly record is born digital, and some scholarship is produced in digital formats that have no physical, in-the-hand counterparts. The proliferation of digital scholarship raises serious and pressing issues about how to organize, access, and preserve it in perpetuity. The response of academic institutions has been to build and deploy institutional repositories (IRs) to manage the digital scholarship their learning communities produce”. According to Jain; Bentley and Oladiran (2010) discussions concerning IRs as a possible alternative publishing model split IR adherents into different camps, between innovators and purists. One model frames deposit in a repository as an adjunct, and complementary to, the traditional publication process (Hunter, 2007). Lynch (2003) for example firmly believes “it underestimates the importance of institutional repositories to characterise them as instruments for restructuring the current economics of scholarly publishing rather than as vehicles to advance, support, and legitimise a much broader spectrum of new scholarly communications”. The other group sees repositories as the beginning of new forms of academic publishing. Hunter (2007) agreed that the e-Scholarship Repository had effectively become a publishing platform. From the above assertions, it is apparent that there is at least complete agreement on how an IDR can complement analogue and e-traditional forms of publication. All parties accept that the revolution in scholarly communications means that traditional forms such as journal are not meeting the yearnings of modern day scholars. Institutional digital repositories can support these new manifestations of scholarship that emphasize data as an integral part of the record and discourse of scholarship (Lynch 2003).

### **Impediments to Enabling Institutional Digital Repositories in Nigeria**

Moller (2004) points out that despite many opportunities that present themselves, many countries in Africa are yet to utilize the privilege offered by these resources to internationalise their research sources. The full benefits of institutional digital repository can be achieved only if stakeholders involved are fully aware of its potential roles. Christian (2008) posited that there is empirical evidence that the knowledge of open access institutional digital repository is very low among the major stakeholders including lecturers, researchers, librarians and students in Nigeria. Effective advocacy and promotion is crucial for successful implementation of institutional digital repository.

Another major problem that is militating against the takeoff of institutional digital repository in Nigerian libraries is the dearth of ICT infrastructure and facilities. Akintunde, (2006) opines that “many libraries in Nigeria still operate in the traditional service pattern where librarians are in charge in main service points of circulation, reference, serials, acquisition, cataloguing and documents without any emphasis on academic disciplines” This is a sad affirmation of a similar complaint several years ago by Afullo (2000), that Nigeria was rated among the lowest in Africa in telecommunication infrastructure and so not much is expected of academic libraries in Nigeria, though the situation seem to have improved overtime. This factor made adoption of institutional digital repository difficult in developing countries as reported by Arunachalam (2003) “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”.

Access and maintenance of institutional digital repository will require internet access and enough bandwidths. Universities in Nigeria face serious challenge of insufficient bandwidth, while the development of institutional digital repository requires fast and reliable internet connection. According to 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 and public libraries on the continent have internet access.” A survey for Africa Tertiary Institutions Connectivity Survey (ATICS) carried out by the African Virtual University in 2005 showed the average African university has bandwidth capacity equivalent to a broadband residential connection available in Europe, pays 50 times more for their bandwidth than their educational counterparts in the rest of the world, and fails to monitor, let alone manage, the existing bandwidth (ATICS, 2005). As a result, what little bandwidth that is available becomes even less useful for research and scholarship purposes. Also in 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.

Electricity supply is a major problem in developing countries like Nigeria. This problem has made the development of projects like an institutional digital 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. 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. In another vain Zakari (2009) cited in Okiy (2010) opines that academic libraries in Nigeria are plagued by epileptic power supply among others in their efforts to connect their libraries to the internet.

Establishment of institutional digital repository requires a huge financial investment, therefore Lack of funding is another major problem experienced by developing country institutions in their effort to establish institutional digital repositories. Chesenga (2000) noted that “many libraries in sub-Saharan Africa especially academic, school

and public libraries depend entirely on government funding for their operations. Funding from government is no longer adequate.” It is sad to note that even recently, Akintunde (2006), Blakes (2006), Jagboro (2007) and Omekwu and Echezona (2008) all cited in Okiy (2010), had reasons to cite inadequate funding as a major setback to digitization and hence globalization efforts of academic libraries in Nigeria. For instance, the funding problems experienced by the Hezekiah Oluwasanmi library of the ObafemiAwolowo University, Ile-Ife, in their efforts towards digitization of their theses, dissertations and newspapers led to sourcing for funding from the Carnegie Corporation of the United States of America and the Association of African Universities Okiy (2010). This was because funding from the Nigerian government was grossly inadequate. As Akintunde (2006) puts it, “funding by government (Federal and State) which has been the sponsor of 75 percent of the libraries has been dwindling and quite unreliable in the last few years.”

Implementation of institutional digital repository requires requisite technological skills, however such technological is either totally absence in some libraries or inadequate. According to Gbaje, (2007), “the implications of transporting library services to the online environment for the Nigerian academic libraries in the digital age are enormous particularly with the dynamic nature of digital technology which is constantly creating the need for new skills, work environment and work methods. This problem has prevented many libraries in enabling institutional digital repository.

### **Conclusion**

Institutional digital repository has many opportunities that Nigerian scholars can exploit. It is a way of bridging the Digital Divide, enabling development and innovation and making sure that researchers working in Nigeria get visibility and communicate effectively their research findings in the world, and can be aware of what other researchers in are doing. By putting research results in institutional digital repository, discussion is made possible and further innovation enabled. Though Nigerian universities have stated responding to this new innovation there are still much to be done. Unfortunately, academic and research institutions in Nigeria are still struggling to overcome the many challenging issues in an attempt to make their research outputs openly accessible to scholars through open access institutional repositories. However it is concluded that institutional digital repository remain the single most popular vehicle for effective scholarly communication and yet its potentials are not adequately harnessed because of lack of ICT infrastructure for implementation of institutional digital repository, insufficient technological skills, epileptic power supply, lack of fund among others. Adequate funding, training and retraining of librarians, creation of awareness among stakeholders, increased bandwidth and power are among the recommendation made the tackle the identified challenges.

### **The Way Forward**

In the light of the foregoing, the following are hereby recommended as the way forward:

- ✓ Workshops, seminars, conference and all other avenues should be exploited to create adequate awareness among stakeholders on the potential benefits of institutional digital repository.
- ✓ Government at all levels, national and international donors and other friends of the library should make massive investment on ICT infrastructure of libraries.
- ✓ Adequate Internet bandwidth through the massive development of internet facilities by relevant agencies should be made to harness the impact of institutional digital repositories in Nigeria.
- ✓ Relevant agencies should increase the financial share of university and research libraries were vast research reports are emanating to invest in capially intensive project like implementation of institutional digital repositories to ease scholarly communication.

- ✓ Library schools should incorporate ICT based course to meet the ever growing technological skills of 21th century librarian
- ✓ Bodies such as NLA (Nigerian Library Association), LRCN (Librarian Registration Council of Nigeria) should frequently organise training and retraining of librarians in current trends such as institutional digital repositories.
- ✓ It is also recommended that National Universities Commission (NUC) Committee of University Librarian of Nigerian University (CULNU) should make it mandatory among universities the establishment of intuitional digital repositories.

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