



Building open access institutional repositories for global visibility of Nigerian scholarly publication

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Abstract

Purpose – The purpose of this paper is to explore the potential of open access institutional repositories (IR) in enhancing the global visibility and impact of Nigerian scholarly publication.

Design/methodology/approach – This is a literature-based opinion paper which examines the problem of open access IR in Nigeria providing pragmatic suggestions that would address the challenges of making Nigerian scholarly publications accessible internationally.

Findings – While the paper acknowledges several problems that impede the building of open access IR, it equally highlights some necessary requirements for the building of IR with a road map for the development of functional IR in Nigeria.

Practical implications – The proliferation of universities and other higher institutions that are in one way or the other engaged in research activities suggests that Nigeria would have generated a lot of research to facilitate speedy development. Available evidence shows that in recent years scholarly publications in Nigeria lack viable means of global dissemination, which has reduced the global visibility of many publications from the country. This paper focuses on the current situation in scholarly publications in Nigeria and examines the need for building of institutional open access repositories and its influence in the dissemination of scholarly research from the country to the international scholarly community.

Originality/value – The originality of the paper is purely the proposal for the building of IR in Nigeria which includes creation of awareness on IR, government sponsorship of IR, development of information and communication technology infrastructure, use of effective advocacy, submission of electronic theses and dissertations, and self-archiving mandate. The paper concludes that open access IR are the most viable means of ensuring the global visibility and impact of Nigerian scholarship.

Keywords Open access, Institutional repositories, Scholarly communication, Impact factors, Scholarly visibility, Electronic publishing, Nigeria

Paper type General review

Introduction

The slow pace in socio-economic and political development in Africa has been linked to inadequate information to propel knowledge and development. With so many universities and research centres scattered all over the continent, it is obvious that a lot of research would have been conducted in these institutions. In Nigeria for instance, there are close to 100 accredited public and private universities, several research institutes and colleges of education, monotechnics, and polytechnics. These institutions engage in a number of researches through their academic staff who require them for promotion and retention of tenure ship and the students who must submit thesis or dissertations as part of the requirements for the award of degree, certificates, and diplomas. Paradoxically, these research generated over the years are buried in different libraries in Africa with very few scholars and students accessing them (Christian, 2008; Ezema, 2010). This development makes Africa researchers to depend highly in the information generated from

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the developed countries of Europe and the USA thus reducing Africa to only information consumers in the global information environment. For this, Adebowale (2001) had argued that "there is a marked division in the economies and politics of knowledge production and dissemination between the developed countries on one hand and developing countries on the other." Consequently, African countries have continued to rely on research which to a large extent may not be relevant to the problems facing the region.

A lot of factors pose serious challenges to scholarly publishing in Africa. These have been documented in a number of literatures (Rosenberg, 1997; Bello, 2008; Murray and Crampton, 2007). While Murray and Crampton (2007) argue that researchers on African topics need access to not only European and American sources but also to the publication outputs from Africa, Bello frowns that despite an enormous number of journals published in Africa recently, majority of them are hardly accessible outside the institution where they are published leading to duplication of research and poor visibility of articles in such journals. The limited circulation of scholarly publications in Africa has resulted in the call for a way of fashioning out a proper method of disseminating scholarly research in developing countries, particularly Nigeria so as to balance the global information equation and improve the visibility and impact of Nigerian research outputs.

The building of institutional open archives repositories is a new approach in the dissemination of research findings in many developed countries. Unfortunately, African countries, particularly Nigeria have not properly positioned themselves in the use of this method in the global dissemination of their research findings. The focus of this paper is to:

- examine trends in scholarly publishing in Nigeria;
- explore the impact of open access institutional repositories (IR) in research dissemination;
- examine issues in building open access IR in Nigeria;
- discuss the global visibility and impact of Nigerian scholarly publications; and
- propose the way forward for open access IR in Nigerian universities.

Scholarly publishing in Nigeria

Scholarly research in Nigeria began even before the political independence of the country. This was necessitated by the desire of the colonial administration to promote research that would facilitate the supply of agricultural raw materials to feed British industries scattered all over the world then, rather than the promotion of research and development in the region (Christian, 2008). Therefore, the earliest research institutes in Nigeria were agro based. For instance, the National Root Crops Research Institute was established in 1923, while National Institute for Oil Palm Research was established in 1939. Other research institutes were established after the Nigerian independence in 1960. With the establishment of universities in the country beginning with the University College Ibadan in 1948 and the first indigenous University of Nigeria in 1960, the focal point of research in Nigeria shifted more into the universities. Since then, so many other government- and private-funded universities have been established and all of them are involved in the conduct and communication of research findings. A survey by Alo cited in Christian (2008) reveals that Nigerian scholars have made remarkable contributions in the field of applied research. The survey which studied the six

first-generation universities in Nigeria shows that research in agriculture was predominant (33 percent), while research in engineering and medicine ranked second and third, respectively.

Similar research outputs have been observed in the humanities and social sciences, but recent studies show that research productivity has been on the decline as a result of certain factors. The general underdevelopment of African countries Nigeria inclusive has some correlation with their dependent on foreign countries for almost all forms of knowledge. Olukoju (2004) argued that the long neglect of education in Nigeria has contributed in the nose-diving of scholarly publishing in the country, particularly during the military dictatorship. According to him, Nigerian academics were distracted from their primary responsibility of teaching research and supervision of students' research work to confronting official neglect and anti-human policies. This ugly situation resulted in the collapse of many publishing houses and brain drain where a lot of outstanding scholars fled the country in search of better working conditions or to escape from the repressive military governments. In line with this, Olukoju (2004) regrets that scholarly publications in Nigeria have declined since 1980s and has associated this decline with the pattern of information generation and dissemination in the global community. The developed countries of Europe and North America control large chunk of both print and electronic information and thus have continued to maintain scholarly information divide between the developed and developing countries.

Perhaps, the greatest challenge facing scholarly publication in Nigeria is the ability to devise appropriate method of dissemination of these research findings that will enable colleagues within and outside the country to have access to them. The research findings are mainly published in journals with very limited access. Some of the research findings are only read by the journal reviewers and the authors. These journals have very low circulation, which makes it even more difficult for them to measure up to international best practices. It has been argued that they are often set up for the purpose of enabling "colleagues" to have their paper published to earn promotion and retain tenure ship. The result of this academic culture was vividly described by Egwunyenga (2008) as he argued that:

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.

This practice has reduced many journals in Nigeria to highly localized publication which may not compete favourable in the global scholarly environment. Christian (2008) regrets that not only that some of the research findings in these journals hardly measure up in the international arena but often are not relevant in dealing with the local issues which they seek to tackle within the region. This, therefore, defeats the aim of the research for according to Christian, research article is interested in the dissemination of research findings from the region for the benefit of policy makers, practitioners, and others who may desire the outputs.

Since most of the local journals are neither indexed or abstracted by international indexing and abstracting agencies nor listed in any online databases, the global visibility and accessibility are usually poor even when there are quality papers in them. In addition to this, the high subscription cost of high impact-rated foreign journals is making it difficult or even near impossible for Nigerian researchers to have access

to these journals. The Nigerian researchers are in a crossroad: the local journals are poorly circulated and the foreign one are beyond the budget limits of most libraries. Following these development, many has canvassed for self archiving of the publications of researchers in the IR as a way of facilitating the dissemination of research findings.

Open access institutional repositories and research dissemination

For some time now the building of IR has been canvassed for the dissemination of research findings of scholars all over the world. The landmark meeting for open archives initiatives (OAI) was held by the Open Society Institute in Budapest in 2001. This resulted in the establishment of the Budapest Open Access Initiative (BOAI) and a definition of two basic ways of bridging the knowledge gaps in science. The first open access strategy was called self-archiving, and subsequently also referred to as institutional archives/IR, and proposed that copies of already published research articles should be archived in the author's institutional archive and made available free to all (Chan *et al.*, 2005). All such open access archives would be OAI-compatible. This means that they would be compatible with the open archives initiative's metadata harvesting protocol (OAI-MHP) and, therefore, would be interoperable and searchable by any search engine globally. The second strategy was the development of open access journals (open access publishing) with alternative funding models that allowed free access to all readers with costs borne by the authors' institutes or sponsoring organizations.

IR have been variously defined. Crow (2002, p. 4) looked at IR as the "digital collections capturing and preserving the intellectual output of a single or multi-university community (which) provide a compelling response to two strategic issues facing academic institutions." Such repositories according to Crow provide 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; and have the potential to serve as tangible indicators 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.

Bailey *et al.* (2006) defined it as a means of collecting and providing access to diverse locally produced digital materials. In the same vein, Donovan and Watson (2008) described it as a means of the intellectual digital outputs of an organization for the purpose of making them accessible to the global research community. Perhaps, a more elaborate description of IR is provided by Rosenblum (2008) in his explanation that an IR is a resource or a system that facilitates the capture, storage, preservation, and dissemination of an institution's intellectual outputs in an electronic form. Such outputs vary from one institution to the other, but often capture theses and dissertations, while others capture published papers, unpublished preprints, working papers, conference presentations, datasets, teaching materials, etc. Most IRs also includes other grey literatures which are usually difficult by their nature to access by researchers.

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.

Many have the view that the current closed access publishing model has failed to portray the quality and quantity of research done in African universities and by African scholars (Harnad, 1994, 1999, 2001; Ghosh and Das, 2007; Kakai, 2009). Thus, Pfister and Zimmermann (2008) have also identified justifications for IR to include increase in visibility and impact of research output, change in the scholarly publication paradigm and the growth of publication outputs of the institution.

Two movements have been responsible for this, namely the OAI and the open access movement (Harnad, 2009). The OAI designed the OAI-MHP to make all IR interoperable – so that their distributed local contents could be treated as if they are in one global repository. The open access movement defined the primary target of contents of IR and the fundamental reason for depositing them. The conviction people have about open access movement is that it will make scientific and technical papers and other research outputs freely available to researchers and other interest groups which is an improvement to the current system of scholarly publishing which Chan *et al.* (2005) described as very expensive with several restrictions as commercial publishers place excessive price and permission barriers on research publications that are largely funded by the public. According to Christian (2008), the open access initiative is a response to the increasing legal and economic barriers which commercial scholarly publishers impose on researchers who need access to published research outputs particularly researchers in developing countries. Therefore, the motive of open access movement is the total removal of access barriers on scholarly research outputs.

The internet is the new technology which propels open access as it has the potentials of online dissemination of research findings globally with little or no hindrance as long as the document has no access restriction. This view is shared by Suber (2002) in his belief that open access to scientific articles means online access without any restriction to the readers or the libraries. The BOAI cited in Christian (2008) defined the concept of open access in relation to journal literature as the:

[...] 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.

This definition shows that open access is interested in the free availability of scholarly outputs on the internet granting the user to make legal and non-commercial use of the document and at the same time acknowledging the intellectual ownership of the author of the document. This is what Benkler (2006) described as the emergence of a new stage in information economy. According to him, this “networked information economy” is supplanting the industrial information economy. What is obvious with open access movement is that there is a democratization of availability and access to information and this will go a long way in bridging the information gap between the developed and the developing countries.

A situation where by access to publicly funded research findings are denied to scholars does not make for equitable distribution of information. This has also been regretted by Harnad *et al.* (2001) when they argued that “fee-based access tolls” denied researchers access to invaluable research materials and equally has reduced the visibility of many

authors in the global scholarly community. According to them, journal publisher in rendering quality control and certification and dissemination for refereed research papers would want to recover what they may have spent and possibly make profit through subscription (S) fee from both institutions and individuals, and in the present online environment, institutional license (L) for electronic access and lastly per view (P). Therefore, SLP has been a serious hindrance in accessing research findings from peers and colleagues. Institutions and individuals who are not capable of these two ways of access have little or no access to the global scholarly publications and quality research published in low impact journals, which are indexed nor abstracted internationally. This is why many have advocated for open access IR as a new way of addressing these problems.

Essential features of institutional repositories

The building of any IR requires understudying the essential features involved. This is because the repository is 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 (Crow, 2002). These features according to Crow (2002) are that they must be:

- institutionally defined;
- scholarly;
- cumulative and perpetual; and
- open and interoperable.

A brief discussion of these features will assist in the understanding of how IR will improve the research visibility of any institution that successfully builds a repository. From the discussion, we can see that IR can assume many forms and serve variety of purposes.

Institutionally defined. Unlike other types of repositories such as discipline-specific repositories and subject-oriented or thematic digital libraries, IR intends to capture the original research and other intellectual property generated by an institution's constituent population who are actively involved in research in many disciplines. It represents an historical and tangible embodiment of the intellectual life and output of an institution. This implies that the repository will only capture publications from university community that is the staff and students. The IR usually complement the roles of the university archives. Developing IR does not, however, require that each institution act entirely on its own. In some cases, universities may pull resources together in a form of consortia for implementing IR via collective development. Such cooperation could deliver economies of scale and help institutions avoid the needless replication of technical systems. Indeed, consortia might well prove the fastest path to proliferating IR and attaining a critical mass of open access content (Crow, 2002).

Scholarly content. Though some repositories may contain materials that are not scholarly in nature depending on the policy, the main trust of IR is to preserve and make accessible the scholarly publications of an institution. This content may include pre-prints and other works-in-progress, peer-reviewed articles, monographs, enduring teaching materials, datasets and other ancillary research materials, conference papers, electronic theses and dissertations, 36 and gray literature.

Cumulative and perpetual. An essential feature of IR is that it must be cumulative and perpetual. This has two implications; first, whatever the content submission

criteria for a repository, items once submitted cannot be withdrawn. Cases of withdrawal can only be done in presumably rare cases involving allegations of libel, plagiarism, copyright infringement, or “bad science.” This removal would be the functional equivalent of revoking the registration initially granted to the contribution on accession into the repository. Perpetuity does not mean, however, that all contents must be universally accessed forever. Institutions must develop criteria and policies which will guide them in implementing rights management systems.

The other aspect of this feature is that repositories tend to preserve and make accessible digital contents of the institution on a long-term basis. This suggests that digital preservation and long-term access are correlated – each being largely meaningless without the other. To provide long-term access to the digital contents, therefore, requires a considerable planning and commitment.

Open and interoperable. A major feature of IR is that it has to provide no- or low-barrier access to the intellectual product generated by the institution which will then increase awareness of research contributions. The goals motivating an institution to create and maintain a digital repository – whether pan-institutional, as a component in the changing structure of scholarly communication, or institution-centric – require that users beyond the institution’s community gain access to the content (Crow, 2002). The absence of this feature defeats the major objectives of advocating for open access IR. Another important element of this feature is that users outside the institution should be able to retrieve the content not minding the location. Therefore, IR systems must be able to support interoperability in order to provide access using multiple search engines. An institution does not necessarily need to implement searching and indexing functionality to meet these requirements: it could simply maintain and expose metadata, allowing other services to harvest and search the content.

Building of open access institutional repositories in Nigeria

The development of IR in Nigeria and other African countries has been very slow in spite of the international awareness which have been given to it through conferences and workshops (Chan *et al.*, 2005; Christian, 2008). Among the developing countries, India, Brazil, and South Africa are more adaptable to the building of IR. According to Christian (2008), of the 20 IR in Africa, South Africa alone has 14 of them. This means that the remaining six is shared among other African countries including Nigeria. This does not tell a good story of the vision 20-20-20 in Nigeria because the scientific and technological development of any country is highly dependent on the availability and the use of research findings.

The near absence of IR in Nigeria has been linked to the information and communication technology (ICT) infrastructure in the country coupled with the neglect of research and education in the country. Other factors that contribute to lack of IR in Nigeria according to Christian (2008) are lack of awareness of open access IR, epileptic power supply and lack of trained ICT personnel. Though IR is a capital intensive project, no nation that wants to be part of the present information economy could ignore the critical roles of IR in aggregating the research productivity of scholars in the country. The building of IR is usually guided by a number of procedures as shown below:

- (1) *A clear proposal of the repository.* There should be a clear and defined step-to-step approach of how to go about the project. The necessary personnel,

equipment, materials to be included in the repository and the policy that would guide the repository are to be articulated in the proposal stage.

- (2) *Digitization of print materials.* Most often IR begin with print materials for the materials to be included are often in print format. This requires that these materials which may include publications from staff and students, theses and dissertations, technical reports, etc. must be converted to electronic formats in readiness for the repository.
- (3) *Copyright issues.* One of the greatest challenge facing IR is the problem of copyright. Some of the materials in the repositories have no copyright owner. The institution has to take decisions on such materials. For theses and dissertations, the university claims the copyright owner but this must be formalized by the legal unit of the university. Another copyright-related problem is that some authors find it difficult to self archive the published works because of the fear of litigation from the journal publishers. Fortunately, enough Harnad (2001) has reported that many journal publishers are comfortable with self-archiving of scholars' publications.
- (4) *Choice of OAI-compliant software.* For any IR to be interoperable there must be software that is compatible with OAI-MPH, which will provide a seamless search of materials with other repositories. Two most popular softwares, which are OAI-compliant are DSpace developed by Massachusetts Institute of Technology and Eprint, which was developed by University of Southampton, Southampton. Jadhav and Bamane (2006) argue that many institutions prefer DSpace for it has a well-documented planning and implementation stages with strong flexible technical and administrative features such as e-mail/password-based authentication, persistent identifiers.

Open access institutional repositories for visibility of Nigerian scholarly publications

A major challenge of Nigerian scholarship is poor visibility of research findings coming out of the country. This has been documented in a number literature (Bako, 2005; Okebukola, 2002; Ezema, 2010) and, therefore, has often given low impact to published works coming from the country. In addition to this, the quality papers from the country lack readership and by extension low citations from colleagues in and outside the country. Visibility of publications is usually associated to the extent in which the said published work is read and or cited by other scholars and in a broader perspective how much the paper contributes to the growth of human knowledge. Looking at journal visibility, Zainab and Nor (2008) remarked that journal visibility is sometimes synonymous with journals that have achieved some measure of impact in the global scholarly community. This means that for Nigerian publications to achieve visibility, they must have secured reasonable impact in the growth of knowledge and this cannot be obtained when the papers are neither read nor cited by others.

Obviously, scholarly publications by faculty members could add impact to the prestige of the institutions they are associated with, but Christian (2008) believes that:

[...] an IR stands to generate greater impact by centralizing 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 relation to this, Crow (2002) had earlier underscored the place of institutional digital repositories in these words:

While faculty publication in these journals reflects positively on the host university, an IR concentrates the intellectual product created by a university's researchers, making it easier to demonstrate its scientific, social, and financial value. Thus, IR complement existing metrics for gauging institutional productivity and prestige. Where this increased visibility reflects a high quality of scholarship, this demonstration of value can translate into tangible benefits [...]

Consequently, there is no doubt that building of IR in Nigeria will not only boost the global visibility and utility of their research, but will also introduce a novel research culture focused on meeting international best practices 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, which many believe have been lacking in the research from Nigeria. This is because the underlining purpose of IR according to Taylor (2009) is the cumulative and permanent store, dissemination, and ensuring of improved impact of research of a particular institution. Therefore, building IR in Nigeria will help in aggregating the research outputs in the country and make them circulate widely in the international circles.

In addition to this, the web visibility of Nigeria scholarship is another roadmap toward the visibility of the universities where these publications are coming from. Thus, Nigerian universities which have continued to be at the vanishing point in terms of global and African web ranking of universities will begin to see light at the end of the tunnel since their publications would give them the visibility needed for better ranking.

Open access institutional repositories in Nigeria: the way forward

From literature, building of IR is not a simple task, particularly in developing countries like Nigeria. Apart from the huge financial requirements and infrastructural support, there is interplay of other critical factors. This paper, therefore, proposes the following approach to ensure the building of IR in Nigeria:

- *Creation of awareness.* It is evident that a very serious challenge facing institution repositories is lack of awareness. The focus on this will be the stakeholders in the university system, particularly the administrators such as vice chancellors, registrars, librarians, and the university council members. Creation of this awareness should be in form of national conferences, workshops, and symposium and resources persons should be experts in the area. The National University Commission should be at the centre of this awareness campaign. This campaign will likely arouse the interest of government on the need to fund these projects.
- *Government sponsorship of IR.* Funding of IR is a capital intensive venture and, therefore, would require government intervention. The poor funding of universities in the country even make it more imperative that individual institutions will find it difficult or near impossible to develop IR on their own. Federal Government can assist universities by selecting few universities (probably the first generation universities), while others will follow gradually. State Governments would equally release some subventions to their universities for the sole purpose of developing IR.
- *Development of ICT infrastructure in the country.* IR are ICT driven and, therefore, any organization that would develop its IR must devote huge some of money

for information and communication infrastructure. Unfortunately, most developing countries particularly in Africa are associated with poor ICT development. Christian (2008) regretted that this has been a serious challenge to the building of IR in Nigeria. Mitigating this problem requires a firm political will from the government in terms of provision of reliable and affordable power supply in the country. This is because the major problem with the growth of ICT in Nigeria has been the problem of power supply. For the various universities in the country that are likely to champion the building of IR, significant percentage of their budget should be devoted to ICT facilities and training of personnel in ICT-related areas.

- *Use of effective advocacy.* The use of advocacy has been found to be an efficient method of effecting changes in organization and the wider society. Building of IR is a new approach to research dissemination and many stakeholders know little or nothing about them. The library as the centre for dissemination of information should be at the centre of this advocacy. The Committee of University Librarians in Nigeria should, therefore, be in the forefront of this advocacy. The campaign for development of IR should be carried within individual university administration through the National Universities Commission and to the Federal and States Ministries of Education. Similarly, the Nigeria Library Association should equally sponsor advocacy programs on the development of IR in Nigeria.
- *Submission of electronic theses and dissertations.* Theses and dissertations are among the research work in Nigeria that are least disseminated locally and internationally. This may probably be because only few copies are produced and kept in the institutional libraries where they were produced. Many of them get lost if proper care is not taken. These materials are highly required for a well-developed IR. Universities should, therefore, as a matter of policy require students in addition to the submission of specified number of hard copies of their theses also submit electronic copies. This will form an aggregate of documents, which will no longer be digitized when building the IR. Apart from this, it will ensure for the adequate preservation of the theses.
- *Self-archiving mandate.* When an IR has been established, the growth is highly dependent on continuous addition of institutional publications into the repository. This is usually done by requesting scholars to self-archive their publications in the repository. Available evidence from Harnad (2001) shows that many scholars would not abide by a mere request for some reasons such as lack of awareness of the benefits, time factor, and copyrights implications of self-archiving their publications. This, therefore, requires that if the growth of the repository will be guaranteed, there should be a form of mandate on the scholars to self-archive their publications. A form of mandate should be that publications that are not archived in the repository would not be considered in the appraisal of the scholar and other issues concerning promotion and retention of tenure ship.

Conclusion

The dissemination of research findings in Nigeria is one of the greatest impediments in the global visibility of scholarly outputs in the country. That Nigerian scholarly community is at a crossroad is no longer the issue, but how to launch it back

into the global arena. Visibility entails the publication in high impact journals but with access toll, most papers in such journals have limited readership, particularly in developing countries. The building of IR in Nigeria perhaps will to a large extent improve the dissemination of research findings from the country. However, the building of IR would require the development of a new technological culture, which is capital intensive. This paper, therefore, believes that with the political will, Nigeria has all it takes to develop open access IR in Nigerian universities. What is required to realize this are the proper creation of awareness, adequate funding of universities, regular power supply, development of ICT infrastructure, the use of effective advocacy, and submission of electronic theses and dissertation.

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