

Planning for Open Access Repositories and Challenges in African Universities

¹**Dr. Emmanuel Babatunde Ajala (MNIM)**

*Department of Informatics, Tshwane University of Technology Pretoria
South Africa. Email: tundeajala@yahoo.com Cell: +27789340171,
+2348023414177*

and

²**Maleshoane Anastacia Sepeame**

*Department of Informatics, Tshwane University of Technology Pretoria
South Africa. Email: maleshoanes07@gmail.com Cell: +27788854501*

Abstract

There are rich and quality information of African content that are of world interest. University of Ibadan is endowed with a lot of information materials that are now difficult to manage manually. Digitization becomes the saving grace for excellent preservation and perfect dissemination locally and globally. There are sound framework in Africa especially in Nigeria and South Africa for digitization and open access to very rich data but due to some challenges like sociopolitical and economic problems including electric power generation that need to be solved the digitization in Africa can not sail through easily. The solid framework and structures including the rich endowment in Africa can be a platform for global partnering.

Keywords: *Digitization, Repositories, Scoping review, Open Access*

Introduction

There are lots of rich and quality information of African Content and origin that are of World interest. These information materials mostly fall under the GREY literature i.e. that are not in general print and circulation. Several times the management and excellent preservation of these information in Africa are being questioned based on the fact that most of them are not accessible, not property disseminated and this a times fall in to the hands of foreigners who take custody of them without any local African access-right and eventually are now managing them, a times repackage them and even sell them back to us when they discover we need them. While some are now extinct and can no more be accessed due to poor preservation.

African University libraries are playing a major role in capturing, digitizing and taking a good custody of these information materials. In some African Universities there are University Archives in which an age long information materials are being preserved. Such is the University of Ibadan Library System in Nigeria. Who has embarked on an on-going digitization of their institutions repositories with a bid to make it accessible on-line ensuring excellent local and global access. This is also geared with the aim of harnessing and preserving the rich information resources in the institution for knowledge creation and usage.

The principle of the digitization adopted is based on the view of Smith (1999), finding out that digitization often raises expectations of benefits, cost reductions and efficiencies that can be illusory and if not viewed realistically, may have the potential to put at risk the collections and services that libraries have provided for decades. While realistically digitization increases access, removing the constraints of traditional access that might involve geographical and economic challenges, preserving images, audio and other animations; it increases the life span of materials making it available for the generations to come, other localities or nationality to share the knowledge.

Currently the web stands out to be the best place to preserve and share knowledge globally. The aim of this paper is to give an overview of the experience, challenges and initiative of developing the information repositories and open access at the University of Ibadan Nigeria, looking at the African frameworks and structures on ground that can serve as platform for global partnership.

Methodology

In this paper the scoping review of open access repository was conducted in some universities in Africa especially the University of Ibadan in Nigeria with that of Stellenbosch University and the University of Pretoria in South Africa were focused. The choice of these universities was based on the frequent publicity of their attempt and programs in this matter. This is in order to feel of the open access repository attempt in Africa and to determine the success and challenges faced; then suggest the way forward, looking at the African antecedents. The secondary report of projects and programs in these universities was majorly reviewed.

Institutional Repositories and Open Access Initiatives in Africa

Bailey et al (2006) defines Institutional Repositories IR as means of collecting and providing access to diverse, locally produced digital

materials. Donovan & Watson (2008) describe IR as a means of collecting the intellectual digital outputs of an organization. The development of IR as a system facilitates the capture, storage, preservation and dissemination of an institute's intellectual output in electronic format. Such output varies from institution to institution; some will capture theses and dissertations, whilst others will capture published papers, unpublished pre-prints, working papers, conference presentations, inaugural papers, data sets, teaching materials etc.

Looking at the awareness and perception of institutional repositories in the higher institutions in Africa, Aghwotu and Ebiere (2016) examined the awareness and attitude of African lecturers towards establishing IR in Africa and reported that (90%) of the respondents stated that they were aware of IR. Moreover Ukwoma and Dike (2017) studied 491 academics' attitudes towards the utilization of IRs in five African universities with IRs according to OpenDOAR. They reported that the fact that academics disagreed with the negative statements in the null hypotheses showed that they had a positive attitude towards submission of their publications.

Rosenblum (2008) then posited that whatever output is captured into an IR will be described using standard metadata formats and protocols – which are tags that describe the output and enable recognition and retrieval of the output on the World Wide Web.

On the other hand Open Access OA concept is simply described by Harnad (2009) as a means in which all barriers are removed to allow full or absolute access to institutional repositories locally or globally online.

Ubogu (2009) narrated that IR and OA initiatives in Africa began in 1998 earlier before the term OA became a current concept. He explained that- *Rhodes University, in South Africa, mounted its first digital thesis on the World Wide Web in 1998, and it became the first institution in Africa to do so. Now Rhodes University has developed an OA repository using EPrint software containing other digital knowledge products apart from thesis.

*UNESCO sponsored Electronic Thesis and dissertation ETD workshops was remarkable at the University of the Witwatersrand, South Africa in 2003 and University of Addis Ababa, Ethiopia in 2004 where in both countries decision was made to establish national ETD projects.

*As one of the softwares available for OA, Greenstone software training have been held in Namibia Malawi, Zimbabwe, and Lesotho *while in 2007 SARUA organized the OA Leadership Summit in Botswana.

*It was also posited by Ubogu (2009) that the Kenya Libraries and information consortium organized a digital repositories workshop to raise awareness about OA and IR.

*The Database of African Thesis and Dissertations DATAD is already established. This is a programme of the Association of African Universities (AAU) which was designed to improve management and access to African scholarly work. This is made possible by development of OA repositories of institutions which participated in the programme.

In Nigeria the effort of eIFL.net in promoting the development of OA in the University Libraries is very remarkable. In 2008, OA repositories workshop was held at the Ahmadu Bello University Zaria, Nigeria where an OA working group was created.

In 2009 the great slide was made by a joint effort of IFLA, University of Witwatersrand South Africa, United National Economic Commission for Africa UNECA, Carnegie Corporation of New York and SIDA to assemble Libraries and Archives to the First International conference on African Digital Libraries and Archives at Addis Ababa Ethiopia during which "Addis Ababa Declaration and Recommendations on knowledge for Development in Africa and Digitization of African knowledge and heritage" was made. With all these initiatives, African institutions are beginning to collaborate to develop IRS. In Nigeria with the support of MacArthur foundation, the first University in Nigeria, University of Ibadan and four other first generation universities in the country are coming together to adopt the same Library software (VTLS) and share their resources in forming a joint IR. This is a welcome development in Nigeria and other part of Africa collaborating, given the financial constraints of most of the countries.

University of Ibadan Library System

Established in 1948 with the University (known by then as the University College Library) progressively expanded into a large library system now known as Kenneth Dike Library. This is the main Library of the decentralized Library system having up to twelve other Faculty Libraries scattered round the campus with a medical Library located at the University Teaching Hospital sited at about ten kilometers away from the Main Campus. The Library now provides services to about 50,000 students and about 4,500 staff and many other researchers and students from over 90 universities in the country consulting the rich collections of the library. Oyemakinde and Ajala (2001) established the fact that its stock, which is now approximately 1 million volumes and which increases through new acquisitions yearly is becoming un

manageable with manual system particularly as there is difficulty with personnel turn over.

The information technology has been a saving grace to this problem to an extent. The management of the computerization of the University Library and the conversion project has not been easy partly due to the large collections. Though in the face of constraints and management problems, there are gradual improvements.

South African Context: a case of Stellenbosch University and University of Pretoria

In the study of Czerniewicz and Goodier (2014) review the open access repository in Stellenbosch University and the University of Pretoria, they explained that South African researchers face challenges in terms of funding: the average research and development (R&D) intensity (R&D as a percentage of GDP) for Organisation for Economic Co-operation and Development (OECD) countries was 2.4% in 2009, while few developing countries had reached 1%. All researchers have problems accessing research; in the African and South African context, the limited availability of research is a serious problem, one even worse for researchers not affiliated to universities and research institutions. The cost of access is already so high, and the situation is exacerbated by worsening exchange rates: it would be dramatically worsened by the proposed VAT on digital media which would see university libraries' purchasing power reduced by a further 40%. Czerniewicz and Goodier (2014) explained further that researchers also face challenges in terms of the dissemination and visibility of their research: and reported a study in 2013 showing the almost entire invisibility via a Google search of South African research in an area where it is known that much research has been undertaken. They explained that the visibility issue is ironically about to become much worse when the funder policies requiring open access in the global north are implemented, and what is found online is research from the global north and not local, southern research. Geopolitical knowledge inequality, already an acknowledged problem, is about to be exacerbated through poor online access and limited discoverability as well as through new bottlenecks to participation. Online visibility is not a form of vanity; it is now an essential requirement for participation in knowledge creation networks. At the time of writing, South African research funders either in or outside of government structures - including the National Research Foundation (NRF), the Department of Science and Technology (DST) and the Department of Higher Education and Training (DHET) - had not taken a definitive stand

on open access and no such similar open-access publishing requirement is exerted on South African funded research. Universities therefore make strategic decisions at the institutional level, shaped partly by global research funding contracts and individual institutional missions. A handful of South African universities have adopted open access policies, including the University of Cape Town whose policy sets the scholarly dissemination default to open, encourages all scholarship to be made available, and requires journal articles, theses and dissertations to be deposited,²³ while the University of Pretoria and Stellenbosch University have led the way in developing open repository infrastructure and content.

As described by Czerniewicz and Goodier (2014) recent survey of the capacity for evidence synthesis in Africa amongst 176 researchers, government officials and NGO workers indicated that a lack of access to research literature and data was one of the greatest hindrances to their work – second only to lack of funding. As of 2015, only 48% of the scholarly outputs from South Africa were openly accessible. The challenges of openly sharing scientific publications are not new in South Africa. Czerniewicz and Goodier (2014) described that the largest abstract and citation database of peer-reviewed literature, Scopus, listed only 6.8% of articles as openly accessible in 2009. This research climate may contribute to the fact that in the South African government, the use of research outputs as a main source of evidence is tepid, at best. In a recent survey, only senior officials in the government indicated that they rely on research, while the majority responded that they rely on their networks. While inability to access publications was not included in this survey, it would be reasonable to hypothesise the role it plays. Although tacit knowledge from strong networks can be useful, research data and publications remain imperative for evidence-informed decision-making. In situations where institutional subscriptions are not feasible, open access provides another paradigm to facilitate evidenced informed decision-making. The case for open access is perhaps best understood in the context of health care. In the era of evidence-based medicine, the public has an underlying assumption that physicians and front line health-care workers are updated with high-quality health information so as to provide the best care possible. Prior to June 2017, this assumption would have been partially inaccurate in South Africa as health-care workers did not have access to the Cochrane Library, the gold-standard source for health-care reviews. Beginning in the early 1990s, the push for open access has gained traction in the mainstream research community, albeit at a slow pace. This lag is why the call for immediate open access for

all articles published in the European Union (EU) by 2020 was welcomed as a firm step forward. As the EU moves forward with open access policies, it will be crucial for African countries, especially South Africa, to take a strong stance in support of open access, not only to protect their research interests, but also to maintain the goal of increasing the global sharing of scientific knowledge. With these efforts, South Africa may also benefit from tailored open access policies that better meet the needs of their knowledge users and producers. There are two pathways to open access that the EU will rely on: green (self-archiving) and gold (publishing in open access journals). However, both green and gold open access pose some challenges for researchers in South Africa. Gold open access usually shifts the costs from subscribers to researchers through an article-processing fee, which may be too high for authors/institutions, whereas green open access typically requires the institutional infrastructure to host a repository of articles that can be accessed via online searches.

What do we have

The richness and uniqueness of information of African content is of world notice and interest based on the fact of our uniqueness in character, culture, indigenous education, diversity (both in language, topography and climate); richness in natural endowment, mineral and human resources, antecedents and events that surrounds us in Africa etc. Information on these attracts the world view and present materials for new academic research and discourse away from the usual western tradition entrenched in many colonized countries.

At the Universities of Ibadan Library the uniqueness of the growth and rich content of the resources is based partly on the fact that the library enjoys the “Legal-deposit-right” like the National Library of the nation in which all publishers will drop a copy of their publications in this library. Apart from the Institute of African Studies which attracts information of African content, the Library has an Africana section housing materials of African descent. This is a very unique collection in the country and in Africa attracting researcher all over the world with African research interest.

The recent declaration of the University becoming a Post Graduate University puts the university at a vantage position in research output, thus a good attention is turned to the quality of theses and dissertations being produced while proper storage, un hindered accessibility and usage for knowledge creation becomes a challenge to the management, and librarians of the institution.

The Need for Excellent Preservation and Dissemination

The University of Ibadan have produced more than 5,000 PhDs, almost a million Masters and over a million First degree theses, dissertations and project reports. The materials which are mostly in print form are in various field of learning including Medicine, Engineering, Education etc. The coordination of these theses generally is yet to be perfected. This may have deprived a lot of scholars from effective use of these information tools.

At the Faculty level some Departments have taken the custody of these theses especially the Masters and First degree which are kept in the HOD's offices while the students have no access. There is no doubt that the problem of space and adequate preservation is yet to be properly solved.

African Challenges

Many challenges are being faced in accessing knowledge in Africa today. The bulk of these challenges bring a lot of implication to what we digitize, facilities for perfect and effective digitization, control and correct accessibility to digitize information content. It also implicates sustainability and adequate usage of these information contents for African empowerment and development. All these challenges are being faced by the University of Ibadan.

- The problem of funding and inadequate infrastructure is a big challenge. This challenge has been faced by partnering with other institutions in a cost effective combination of effort. The Macarthur assisted sharing of resources of the University of Ibadan and some other first generation Universities project is a positive move in this direction. Donations and funding of international organization like Macarthur Foundation and other donor agents has made us to move forward.
- The electric power generation capacity in Africa is still a big problem. This has a lot of implications to digitization and industrialization in Africa.

United Nation Economic Commission for Africa (UNECA) (2007) reported that the total electricity production for Africa in 2003 was 507TWH. This is seen to be too small for a continent of almost 50 countries with many thickly populated settlements.

From the presented data of shared installed capacity in Africa in 2004, over three quarters of the continents installed capacity comes from South Africa and North Africa.

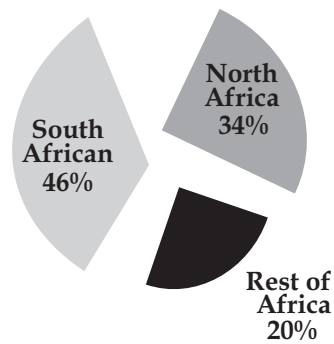


Fig. 1. Installed Capacity in Africa 2004

(Source IEA 2005, UNECA 2007)

Only about 10 out of about 50 countries have overcome the problem of inadequate electricity power supply (which includes South Africa and some North African countries). The rest of African countries are still struggling and battling with inadequate power supply.

Nigeria has the largest population in Africa with many thickly populated towns and cities. In spite of the exploitable hydropower capacity and oil fired generation unit we can only generate 3,000MV of electricity. This is inadequate for the countries consumption need which is estimated to be 120,000MV though some neighboring countries still share from this small Electric capacity being generated in Nigeria. The most interesting aspect is that the electric situation in these neighboring countries is not as bad as that of Nigeria, (generating the capacity). This may be because of the small population of these countries using the shared capacity. Most industries and institutions depend largely now on Electric generating set which is not cost effective.

The positive move in Nigeria towards this challenge is the individual effort in each State of the country (with a times outside assistance) to start generating isolated Electric capacity which are yet to be effective in meeting the needs of the people. Industries Institutions and Organizations depending on Electricity still have to spend a lot on Electric generator (This is not too convenient to maintain)

The government effort to increase the capacity is on going. The dredging of River Niger project was launched by the Federal Government on the 9th of September 2009, this we hope will increase the water output of the river to bust the hydroelectric power generation. There are efforts also to include other sources like solar and thermal electric sources in the National generating programme.

Also there are no effective policy formulations surrounding information handling in many African nations. Where there are, such

policies are not being enforced. Such is the case in Nigeria that has a framework of such policies on ground but no enforcement.

Diso (2009) described the framework of sound policies existing in Africa at regional and sub regional levels that can be coordinated and used as framework for comprehensive information policies for the continent like- the African Regional Action Plan on the knowledge Economy (ARAPKE): a frame work for Action, developed by the ECA, inclusive of the “Accra commitments for Tunis 2005” component.

Other frameworks include those within which ARAPKE was developed which include:

- African Information Society Initiative (AISI) which promises a sustainable information society in Africa by 2010
- New Partnership for Africa's Development (NEPAD) under AU, which commits itself to ICT revolution in Africa.
- World Summit on Information Society (WSIS) Declaration that commits itself to creating on all-inclusive society where everyone can create, access; utilize and share information and knowledge.

In terms of existing structures Diso (2009) also presented the following readily available platforms for developing digital libraries in Africa i.e.

- The African Virtual Library and Information Network (AVLIN) – The ECA Library
- National Information and Communication Infrastructure (NICI) which exists in many African countries.
- The satellite based Cooperative Information Network (COPLINE) Initiative which links scientist in many African countries.
- Pan Africa Development Information Systems (PADIS's) CABECA (Capacity Building for Electronic Communication in Africa) UNECA Project to promote computer networking throughout Africa.
- Regional Information Network for Africa (RINAF) developed by Inter-governmental Information Programmes (IPP) of UNESCO to provide internet services to several African Countries with plans of 5 regional and 10 national nodes.

With all these framework and structures one will think that digitization in Africa will sail with ease. But despite the immense potentials of Africa the continent (including Nigeria) is generally riddled with problems that must be addressed in order to develop effective strategies for knowledge networking and sharing. These include:

Socio-political and economic instability- poor governance, weak civil society and low capacity utilization, poor ICT culture, low internet access

capacity (low speed/broad band penetration) comparing broad band subscription (ITU 2007).

Africa	-	0.5%
Oceania	-	1.6%
America	-	30.5%
Europe	-	33.7%
Asia	-	38.3%

Starting a Change/Recommendation

The University of Ibadan has started a big stride toward digitization and ensuring perfect sharing of her resources with other University Libraries. This effort has been encouraged by the frameworks and structures on ground and funding from external funding agents. The African initiative on digitization is moving positively especially with the first international conference on African Digital Libraries and Archive that came up in July 2009 at Addis-Ababa Ethiopia, where a good starting point on coordination, policy formulation, control, encouragement and partnering was made.

From these solid framework and structures, University of Ibadan and other University Libraries in Africa are sure of getting to a higher height in digitization soonest.

This conference therefore will be a good forum to call on other continents and nations of the world to

- Develop a good partnership with African Libraries in sharing resources and facilities together. There are lots of national benefits that will be achieved through this. The human and other potentials in Africa can be a good platform for a lasting and sustained relationship with Africa.

AVLIN looks very much like a central node in Africa where other nations from other continent can link with any nations in Africa. The AAU with her head office in Ghana is also a good entry node for any University Libraries from other continent to link with University libraries in Africa

Conclusion

Global Interaction on digitization will definitely bring international benefit. More of such forum like this is encouraged where different experiences all over the world will be assembled and shared. This will help us to face our challenges globally and bring solution to digitization problems.

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¹ is a staff of Kenneth Dike Library University of Ibadan Nigeria and an adjunct lecturer at the Department of Informatics, Tshwane University of Technology Pretoria South Africa.

² is a Phd. student at the Department of Informatics, Tshwane University of Technology Pretoria South Africa