

Academic and Research Institutions Repository: a catalyst for access to development information in Africa

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#### **Abstract:**

This paper is descriptive. It shows how academic research institutions in Africa, as generators of information for all-round human development, can contribute to the attainment of Millennium Development Goals (MDGs) in Africa. The research illustrates how Institutional Repositories (IRs) of academic research institutions contribute to the dissemination of knowledge, otherwise called information, which is a vital tool for development. However, the paper reports the state of IRs in academic and research institutions in Africa and deduces the possibility of attaining MDGs in Africa by the year 2015. The researcher recommends, among other things, that an African-wide policy on IRs creation by concerned institutions, its visibility and interoperability should be made and signed by African countries through organs like the African Union (AU) in collaboration with the International Federation of Library Associations (IFLA) - Africa Section.

#### INTRODUCTION

Information sharing is *sine qua non* for the literacy of a particular group of people (Uhegbu, 2007). Economists have agreed that literacy of a nation is not only an indicator of economic development, but also a prediction of a nationwide progress that cuts across human capital development, social well-being of the people, environmental sustainability, health, safety, and entrepreneurial success (Sen, 1983; O'Sullivan and Sheffrin, 2003). Since literacy of a nation is dependent on the kind of information shared among them, developmental success - economically, politically, socially, culturally and vice versa - is therefore rooted on quality information provision. As in today's knowledge society where scholarly information drives economic growth and development (International Institute for Educational Planning, 2007), the higher tertiary education system, the topmost branch of academic institutions (Encyclopaedia Britannica Online [http://search.eb.com/eb/article-9061377]), has been commended as the main source of quality information needed for economic growth and development (<a href="http://www.iiep.unesco.org/fileadmin/user-upload/">http://www.iiep.unesco.org/fileadmin/user-upload/</a> pdf/jane07.pdf). That is to say, universities, polytechnics, monotechnics, colleges of education and other academic-oriented research institutions are producers, disseminators and the enablers of the absorption of knowledge by any society. To this note, this research is aimed at showing how the above listed institutional categories in Africa, as generators of information for all-round human development, can contribute to the attainment of Millennium Development Goals (MDGs) in Africa.

#### ACADEMIC AND RESEARCH INSTITUTIONS: GENERATORS OF KNOWLEDGE

First and foremost, the idea of this study to the words: *academic* and *research* narrows down to production of scientific knowledge. While the *academic* context points at the process of obtaining higher tertiary education knowledge through teaching and learning, the perception to the sister word *research* simply refers to the monograph styled essay of organized investigations carried out by post graduate students required for the award of degree (thesis and dissertations) alongside with the scholarly studies (scientific articles) of teaching staff in higher institutions. Hence, in this study, the two words are synonymous.

Research has shown that the most important source of technological progress over the past 150 years in developed countries has been the advance of scientific knowledge (Goldin and Katz, 1999). A South East Europe regional workshop held in Turkey in 2010 posted on their site (http://www.seecp-turkey.org/uploads/080310\_RCC\_TUBITAK.pdf) that research results are indispensable to national development. The released summary of the workshop contains the acknowledgement of participants which, amongst other things, welcomed the pivotal role of research infrastructure in the advancement of knowledge, technology and their exploitation. Hill (2006) writes that research results emanating from universities have played a key role in the process of economic growth in United States. The document rated universities as sources of new knowledge and a trainer of scientists and engineers who work in industrial laboratories. The Food and Agriculture Organization of the United Nations (1996) holds the same view as it alludes to the role of the university in human development. Yet, amidst all these coming from the West, the reverse seems to be the case in Africa. There has been a weak linkage between research and policy. While the West Africa Resource Watch (http://www.osiwa.org/attachment/20/pdf) has found a challenge of knowledge production and its use in Africa, Moahi (2009) has quoted a World Bank report which shows that weaknesses in application of knowledge is a major factor behind the economic stagnation in Africa. This, of course, is not in favour of the fact that information and knowledge are the drivers of socio-economic development anywhere, anytime. However, the West African Watch recommendations include that while academic and research institutions in Africa are encouraged with funding to write books and scholarly publications on issues bordering Africa, efforts should be made to utilize the results in the formation of national policies.

# THE NITTY-GRITTY OF MILLENNIUM DEVELOPMENT GOALS (MDGS) IN AFRICA

The phrase, Millennium Development Goals (MDGs), is a slogan adopted by the United Nations (UN) in 2001 as key targets for the developing world. Simply put, MDGs seek to free men, women, and children from the dehumanizing conditions of extreme poverty. The goals, eight in number, are also commonly accepted as a framework for measuring development progress in developing countries, which includes Africa. This is a pursuit agreed by one hundred and ninety-three (193) UN member states and about

twenty-three (23) international organizations, with the year 2015 as a target date for the actualization of the goals (http://www.un.org/millenniumgoals/bkgd.shtml). The goals ar:

- To eradicate extreme poverty and hunger
- Achieve universal primary education
- Promote gender equality and empower women
- Reduce child mortality
- Improve maternal health
- Combat HIV/AIDS, malaria and other diseases
- Ensure environmental sustainability
- Develop a global partnership for development

In Africa, the World Bank is committed to accelerating progress towards these goals to achieve significant, measurable improvement in people's lives. But, documents from various UN organs have shown that the move is apparently unrealizable in Africa by 2015 (Yar' Adua, 2008; Africa Progress Panel, 2007; United Nations, 2007; United Nations World Summit Declaration, 2005; Chen and Ravallion, 2004). Meanwhile, Easterly (2009) argues that the claims of UN and other agencies in recent years that MDGs may not be achievable in Africa is not logical, except for Sub-Saharan African states (because of the downward spiral of AIDS, resurgent Malaria, falling food output per person, deteriorating shelter conditions, and environmental degradation). Easterly (2009) faults the claims of UN, blaming her for use of unclear and inappropriate indicators in the measurement of the MDGs. Be that as it may, efforts are still in progress to meet the MDGs in Africa. This paper is poised to present the role of academic and research institutions repositories in the plight to meet MDGs. It is therefore informative to portray the MDGs vis-à-vis their targets and indicators. But, before we proceed, let us analyse what IR is and how it operates in information dissemination.

# THE CONCEPT OF INSTITUTIONAL REPOSITORY (IR) AND ITS ROLE IN INFORMATION DISSEMINATION

Academic and research institutions, as centres for intellectual and scholarly research, are now taking interest in the creation, dissemination as well as preservation of knowledge. This global initiative is pursued through the creation of IRs. Crow (2002) has defined an IR to mean a "digital collection that captures and preserves the intellectual output of a particular research community". Lynch (2003) states that IRs are contemporary services academic research institutions render to its community members in the form of managing and disseminating of their intellectual works through a digital medium. Therefore, it is the concept of this paper that an IR is a digital medium created by various academic research institutions with the goal of uploading all the findings of research (both monographic styled research and scientific articles of scholars) to the global public for the furtherance of teaching, knowledge and utilization of information for the progress of a nation or people.

The issue of knowledge preservation has come of age that it will be seminal to recount the quest of Altbach (1978), who noted rightly that knowledge dissemination is increasingly important in the third world context taking into cognizance, the rise of an "independent intellectual life and some self-sufficiency in science". This, he affirmed, calls for the establishment of viable structures and medium for the dissemination of knowledge. Meanwhile, Crow (2002, p.1) opines that every academic and research institution has a natural responsibility, as generators of primary research, to preserve and leverage their constituents by means of sharing their scholarly activities. Earlier, the trend of preservation and dissemination of scholarly knowledge were solely trusted in the confines of the institutional libraries and scholarly publishing (journals) respectively. Institutional libraries, particularly, have always served as access points for information starting from the era of closed stacks, through shelf reading and card catalogues, punch cards, and to the OPACS system (Christian, 2008). However, in recent times, the trend has been modified as a result of the birth of a technology-driven society against a previous analogue nation. This is what Benkler (2006) narrates as an overthrow of "industrial information economy" by a "networked information economy". This emerging society is characterized by its ambitious but feasible quest for knowledge. Information is needed fast everywhere and Information and Communications Technology (ICT) is a competent tool for its actualization. This no doubt, relates to why UN incorporated the availability and use of ICT and its components as an indicator for sustainable development (MDGs number eight). Hence, ICT compliancy is demanded from all and sundry. The academic and research world is expected to grasp its potentials for collation, preservation and dissemination of information. And this therefore takes this descriptive paper to the light of IRs in Africa and their symbiotic relationship to Africa's attainment of MDGs by 2015.

#### IRS AND THE ATTAINMENT OF MDGS IN AFRICA

How can an IR contribute to an international journey of halving extreme poverty, halting the spread of HIV/AIDS, providing universal primary education, amongst others in developing countries like Africa? It seems strange! But it should not, because this study has cited a good number of researches that agree that information drives development. As an information dissemination medium, IRs consists of formally organized and managed collections of digital content created by faculty, staff and students of an institution. Lynch (2003) and Ottaviani and Snavely (2003) strongly believe that the perfection of teaching, learning and research lies on availability of publications and other research models. While this is a common knowledge that needs not to be argued on, it is much simpler to conceive that the ability to do or observe something demands learning through listening, reading or practice. As a matter of fact, the concept of education, information and knowledge in general requires that both the actor be trained to act and the spectator be taught to watch beneficially. So, the availability of publications and scholarly research of various kinds which cuts across diverse fields and discipline, for public use and reuse, is a plight that will increase the transfer of information needed by: the teacher to teach, the researcher to come up with new research, the information user to use it without limits, the planner to plan based on new realities and, the government to govern under emerging policies economically, politically and otherwise.

Now, in view of the MDGs for Africa, IRs are potential facilitators for the actualization of the MDGs. How?

- 1. Good IRs contain and allow public access to thousands of research publications that provide emerging economic and political policies that will salvage falling economies and poverty ridden nations. Fauth, et al (2006) posits that poverty is caused by bad economic and political policies. This is exactly the context in the first goal in the MDGs.
- 2. Efficient IRs will provide information and share the knowledge that teachers present and future of a nation will require in graduating school pupils and preparing the secondary graduates for post-secondary education. This is the second pursuit of UN in her goal two of the MDGs.
- 3. Anecdotal observation in few Nigerian homes shows that preference for male-child education against the female-child thrives more in homes with uneducated parents. The achievement of "gender equality and empowerment of women" is likely to be a norm greatly achievable when the citizens are educated. Although the present day society in Africa is beginning to accept female education as an investment and not a waste of family resources, attaining the indicators listed by UN (United Nations, 2003) in this regard would require massive investment in the education of boys and girls of this age alike. This is the MDGs third goal.
- 4. Malnutrition and poor health medications are the causes of child mortality (http://www.unicef.org/health/index\_problem.html). Researches in formulation of new drugs are going on daily in various higher institutions. Science as a discipline has had an increased attention in terms of education in recent years. Hence, the availability of research results and new discoveries in this discipline is a gain in leveraging health challenges and informing citizens aright on nutrition. This is the fourth goal in the UN's MDGs.
- 5. Another UN's desire to improve maternal health is currently checked by the ratio of maternal child delivery attended to by skilled health science personnel. Skill, here, refers to being educated in the medical profession. Education, as said earlier is strengthened by the availability of teaching, learning and research information. Thus,

the fifth MDG is likely to attain an excellent positive high when academic and research IRs provides freely all teaching and learning support in higher institutions.

- 6. Various information relating to the sixth goal of UN's millennium development goal Combating HIV/AIDS, malaria and other diseases are numerous in journals and other scholarly publications. Statistics on varying issues like the number of citizens infected, information sources for infected patients, demographic reports, new medical approaches, preventive measures and the likes are scattered in various research publications done in many higher institutions in Africa. IRs has the potentials to synergize this information and make them publicly available.
- 7. Courses narrowed or related to environmental studies are run in higher institutions in Africa. While UN wants to ensure environmental sustainability in Africa, universities and other higher education centre have a handful of data that will help in the actualization of this goal. The importance of environmental resources to man, good uses and general value to humanity would be a sensitization rightly carried out in learning and research institutions, after which the students will go back to their communities and inform their aged parents and kinsmen rightly.
- 8. The best global partnership for development, as UN's eight goal states, is to synergize learning and research. Bridging the information gap has been a proposal adopted by all but not fully materialized. The availability of ICT is paramount. The workability of IRs, the way it works in Europe and America, is also essential. Some good researches have been done by Africans but are either out of rich to indigenes because of poor circulation or are not widely available because of unavailability of ICT medium to transport them. Good a thing, UN observes that the availability of ICT is a crucial target in the actualization of its goal number eight (United Nations, 2003). Hence, workable and interoperable IRs are avenues of attaining MDGs in Africa.

Thus, these arguments above indicate that IRs are essential to MDGs attainment in Africa.

#### WHERE IS THE HOPE OF AFRICANS IN ATTAINING MDGS BY THE 2015?

In relation with IRs, Africa's chances of attaining the MDGs by 2015 are the focal issue at this point. Already, Kuchma (2010) has cried that "millions of educators and researchers, small businesses, students, physicians and clinicians, patients and their families, and others are without affordable access to the quality research information" in Africa. Kuchma (2010) further writes that the present scientific research into malnutrition, hunger, agriculture, tropical and neglected diseases in Africa needs to be more accessible and more visible locally and globally to contribute to solving local and global problems by aiding more effective government policies and informing other stakeholders rightly towards achieving the health and other outcomes stipulated by the UN MDGs. But, the question at the moment is: can the existing academic research IRs in Africa be of any help in the attainment of UN MDGs in Africa before 2015?

Firstly, let us have a picture of repositories in Africa, showing the picture of all categories, which includes the institutional based repositories known as IRs for short. Out of fifty-five (55) sovereign states in Africa (www.african-union.org/root/au/memberstates/), only sixteen (16) states have open access (internet connected) repositories. The table below shows the distribution of repositories per category.

Table 1: Distribution of Repositories in Africa per Category

| S/N | REPOSITORIES               | QUANTITY |
|-----|----------------------------|----------|
| 1   | Institutional Repositories | 48       |
| 2   | Subject-based Repositories | 4        |
| 3   | Government Repositories    | 0        |
| 4   | Aggregating Repositories   | 2        |
|     | Total                      | 54       |

Data culled from www.opendoar.org (valid record as at June 27, 2012).

The Table above shows that Africa has fifty-four (54) repositories consisting of three (3) out of the four (4) types of repositories existing globally. In the context of this research, which is on academic and research institution, this paper adopts the fifty-four

repositories because both the institutional, subject-based and the aggregating repositories are found to be academic/research inclined. Furthermore, the distribution of fifty-four (54) repositories among the sixteen (16) countries of Africa is as shown below.

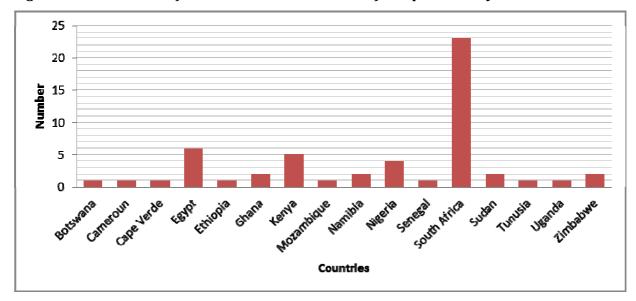
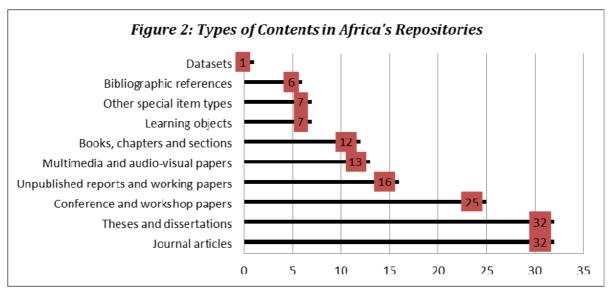


Figure 1: Distribution of Academic Research IRs in Africa per Country

Data is valid as at June 27, 2012. (www.opendoar.org).

While the Figure above shows the distribution of the repositories per country, the illustration below shows the contents of the repositories and the counts of their appearance among the fifty-four (54) repositories in Africa.



Data is valid as at June 28, 2012.

From the figure 2 above, it is deduced that journal articles and theses and dissertations are the prime content in African repositories. This is seen in thirty-two (32) repositories, out of the fifty-four (54) academic and research repositories in Africa. This is followed by conference papers, unpublished reports and working papers, in that order. Meanwhile, the subject coverage of these contents needs to be exposed. Thus, figure 3 below shows the subject coverage of the fifty-four (54) repositories.

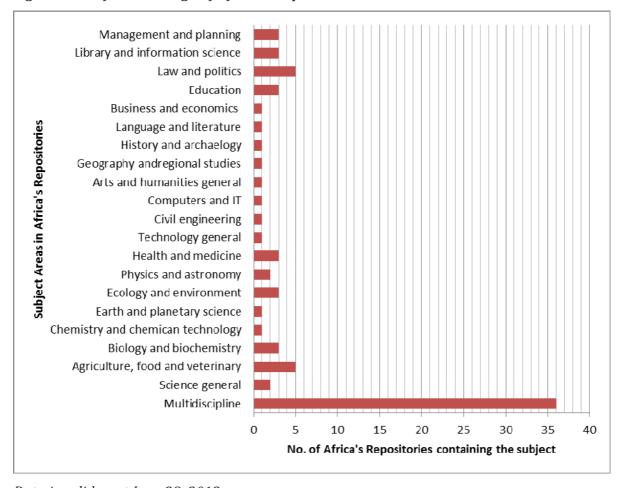


Figure 3: Subject Coverage of Africa's Repositories

Data is valid as at June 28, 2012

Figure 3 above narrates that thirty-six (36) of the fifty-four (54) repositories in Africa contain items that is multidiscipline in scope. Details on other subjects are clearly captured in the figure. See Appendix 1 for a comprehensive list of the number items in each of the repositories, otherwise known as the size of each repository (Appendix 1).

Now that a picture of Africa in terms of repositories in general has been shown, probably it looks encouraging to see that Africa has something in stock for global view, information dissemination and furtherance of knowledge which leads to the development of a nation. It is also interesting to see that less than half of African countries (16 out of 55) have academic and research repositories which cover about twenty-one (21) subject areas, ten (10) broad content types and thousands of items in them - the size of majority of the repositories encouraging (See appendix 1).

Nevertheless, further enquiry shows that this effort of Africa is very meager to contribute to her development, information dissemination and furtherance of knowledge. It is observed that other nations are doing better than Africa as contained in figure 4 below.

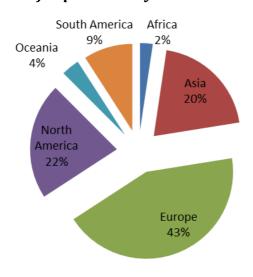


Figure 4: Proportion of Repositories by Continent - Worldwide

Data used for the diagram is calculated from 2,162 academic and research repositories in the world. (http://roar.eprints.org/view/). (www.opendoar.org). Data used is valid as at June 28, 2012

It is evident in figure 4 above that the leading economies of the world (e.g.: Europe, North America and Asia) have more IRs than developing continents like Africa. The Figure 4 posits that Africa contributes only 2% of the world's open access repositories. This is the reason why African academic institutions, particularly universities, are ranked lowest in the world (Moahi, 2009). Of course, there is no way the nation's scholarship can be ranked higher than she is now since visibility and accessibility of academic works (research

output) is one crucial requirement in the ranking of academic institution (Kgautlhe, 2009). So Africa's academic works and research are not yet visible and accessible. Though her IRs are a little good in subject coverage, they are very poor in number, content category and size (See Appendix 1 for size). And how can this situation lead to effective knowledge transfer within the continent? It is not gainsaying therefore that the state of IRs in Africa is equal to the status of development in the region. Previously, an anecdotal study has shown a significant relationship between IRs and the level of all-round development, which has also been confirmed in this paper. Hence, the hope of attaining UN's MDGs in Africa by 2015, with the academic research IRs contributing to it, is not feasible.

#### RECOMMENDATIONS

There are possible ways out of this dilemma. The following suggestions can be employed:

- 1. UN should dialogue with the African Union (AU) on this matter. Policies supporting and mandating the creation of IRs in academic research institutions in Africa should be made and implemented.
- 2. The International Federation of Library Association (IFLA), Africa Section, should monitor the implementation of the policy. The visibility and interoperability of the IRs should be ensured.
- 3. Governments of African countries should be encouraged and made to fund the creation of IRs in their academic institutions through the appropriate channels in their states (e.g. National University Commission (NUC) for Nigeria).
- 4. Library associations in African countries should be the immediate watch dog for this project. The associations for academic and research libraries should be at the fore front.
- 5. This project should be taken seriously by all the parties involved.

#### CONCLUSION

This paper has shown how academic and research institutions in Africa, as generators of information for all-round human development, can contribute to the attainment of MDGs in Africa. The contributor has illustrated how IRs of academic and research institutions contribute to the dissemination of knowledge, otherwise called information, which is a vital tool for development. It is reported in this paper that IRs in

Africa are meagre (in number, content and item population) compared to what developed nations like Europe and America has. As a result, IRs in Africa are not in any way, for now, indicating positivity towards the attainment of UNs MDGs in Africa by the year 2015. The researcher recommends a collaborative effort involving IFLA, AU, State Governments, national associations and groups as the way forward.

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# **APPENDIX 1**

| S/N | INSTITUTIONAL REPOSITORIES IN AFRICA   | NO. OF ITEMS<br>OR SIZE OF R |
|-----|--|------------------------------|
| 1   | Addis Ababa University Libraries, Addis Ababa University (አዲስ አበባ<br>ዩኒቨርስቲ), Ethiopia             | 2597                         |
| 2   | American University in Cairo (القاهرة في الاميركية الجامعة), Egypt                                 | 2334                         |
| 3   | Universidade Jean Piaget de Cabo Verde, Cape Verde   | 240                          |
| 4   | Institut Fondamental d'Afrique Noire, Université Cheikh Anta Diop,<br>Senegal                      | 311                          |
| 5   | North-West University Library, North-West University, South<br>Africa                              | 6284                         |
| 6   | Cairo University (القاهرة جامعة), Egypt  | 707                          |
| 7   | Covenant University, Nigeria   | 576                          |
| 8   | Council for Scientific and Industrial Research (CSIR), South Africa                                | 4944                         |
| 9   | Bibliotheca Alexandrina (الإسكندري مكتبة), Egypt   | 62000                        |
| 10  | University of Namibia Library, University of Namibia, Namibia                                      | Missing                      |
| 11  | Cape Peninsula University of Technology, South Africa  | 383                          |
| 12  | Faculty of Science, University of Khartoum, Sudan  | 206                          |
| 13  | DUT Library, Durban University of Technology (DUT), South Africa                                   | 609                          |
| 14  | Library and Information Department, Faculty of Arts, Menofia<br>University (المنوفية جامعة), Egypt | 49                           |
| 15  | Federal University of Technology, Akure, Nigeria., Nigeria   | 2347                         |
| 16  | Kenya Agricultural Research Institute (KARI), Kenya  | Missing                      |
| 17  | Kenyatta University Library, Kenyatta University, Kenya  | 3522                         |
| 18  | Kwame Nkrumah University of Science and Technology (KNUST),<br>Ghana                               | 4008                         |
| 19  | International Livestock Research Institute (ILRI), Kenya   | 5133                         |
| 20  | Polytechnic of Namibia, Namibia  | 241                          |
| 21  | Rhodes University Library, Rhodes University, South Africa   | 2588                         |
| 22  | Stellenbosch University, South Africa  | 18375                        |
| 23  | Strathmore University, Kenya   | 147                          |
| 24  | Rift Valley Institute, Kenya   | Missing                      |
| 25  | British University in Egypt, Egypt.  | 46                           |
| 26  | Department of Computer Science, University of Cape Town, South<br>Africa                           | 517                          |
| 27  | Law Faculty, University of Cape Town, South Africa   | 197                          |
| 28  | Makerere University, Uganda  | 1752                         |
| 29  | University of Johannesburg (UJ), South Africa  | 4283                         |
| 30  | University of KwaZulu-Natal (UKZN), South Africa   | 5373                         |
| 31  | University of South Africa (Unisa), South Africa   | 5023                         |
| 32  | University of Botswana, Botswana   | 774                          |
| 33  | University of Fort Hare, South Africa  | 275                          |
| 34  | University of Ghana, Ghana   | 1216                         |

| 35 | University of Jos, Nigeria  | 1787  |
|----|---|-------|
| 36 | University of Limpopo, South Africa                                 | 248   |
| 37 | University of Nigeria Nsukka, Nigeria                               | 21102 |
| 38 | University of Pretoria (UP), South Africa                           | 7308  |
| 39 | University of the Free State, South Africa                          | 720   |
| 40 | University of the Western Cape, South Africa                        | 194   |
| 41 | University of Zimbabwe, Zimbabwe                                    | 319   |
| 42 | University of Zululand, South Africa                                | 960   |
| 43 | University of Pretoria - Department of Library Services, University | 15883 |
|    | of Pretoria (UP), South Africa                                      |       |
| 44 | Université Virtuelle de Tunis (UVT), Tunisia                        | 598   |
| 45 | University of the Western Cape, South Africa                        | 1599  |
| 46 | African Capacity Building Foundation (ACBF), Zimbabwe               | 87    |
| 47 | University of the Witwatersrand, Johannesburg, South Africa         | 6429  |
| 48 | Sudan Libraries & Information Association, Sudan                    | 5     |

| S/N | SUBJECT DISCIPLINE REPOSITORIES IN AFRICA                          | NO. OF ITEMS |
|-----|--|--------------|
|     |  | OR SIZE OF R |
| 1   | Centre for the Study of Higher Education (CSHE), University of the | 791          |
|     | Western Cape, South Africa   |              |
| 2   | Helwan University (حلوان جامعة), Egypt                             | 52           |
| 3   | CamPuce, Cameroon  | 8            |
| 4   | University of KwaZulu-Natal (UKZN), South Africa                   | Missing      |

| S/N | SUBJECT DISCIPLINE REPOSITORIES IN AFRICA                | NO. OF ITEMS OR SIZE OF R |
|-----|--|---------------------------|
| 1   | Universidade Pedagógica, Universidade Eduardo Mondlane,  | 2709                      |
|     | Mozambique   |                           |
| 2   | ASSAf (Academy of Science of South Africa), South Africa | 236                       |

**NB**: Data on all the tables are valid as at June 27, 2012. **'R'** denotes Repository.

# **AUTHOR'S BIOGRAPHY**

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