The creation of an information repository: a perspective from Mozambican higher education sector

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Abstract:

Open Access Repositories are seen as an opportunity for knowledge exchange and scholarly communication, especially in a country like Mozambique, where the spread and access to information is still very poor and there are few journals where the researchers and academic staff can publish the results of their work. Due to this situation, the common sense is that there is not research activity in the country, even in the higher education institutions. In order to change this vision and taking advantage of the technology available, a group of university librarians has decided that, even if they are few, it is possible to present the research results which have been still hidden within the walls of each university, by establishing a joint Open Access information repository. The paper aims to describe the project of establishing an information repository in Mozambique, the implications of having a joint project, the challenges for getting contents, bearing in mind all the issues related to copyright, and also the inclusion of other institutions in the project. Also, it looks at the impact of the repository in the academic and research community within the country and some strategies that have to be defined in order to increase the readership on the repository contents, either by Mozambican users, or from other parts of the world.

Keywords: *Open Access - Information Repositories – Mozambican literature – Mozambique*

MOZAMBIQUE – SOME BACKGROUND INFORMATION

Mozambique is located in the southern Africa region, bordered by the Indian Ocean at East and Tanzania, Malawi, Zambia, Zimbabwe, South Africa and Swaziland in the North, West and South. The country occupies an area of 799.390 km² and is administratively divided by 11 provinces, with its capital located in Maputo. These provinces are also divided by

districts, under which are other small administrative divisions. In total, there are 128 districts spread by all the country.

The level of development and provision of services varies a lot among the provinces, and the capital city is where different facilities can be found. Anybody that comes for the first time to country can easily feel the differences between Maputo and the remaining of the country.

The population estimated for 2007 is 20.226.296 inhabitants (www.ine.gov.mz), the majority of them living in rural areas, where the basis for surviving is the agriculture. The majority of the population works by its own (62.1%), which means that a huge percentage of the population is not formally employed. The data shows that only 13.3% of the population is employed in public and other services and 24.6% of the country's population works without any remuneration.

The country is amongst the poorest of the world, and there are areas living in extreme poverty. These areas are characterized by no access to clean water, electricity, roads and other basic living conditions. The country's economy is heavily dependent on donor funds and many projects that are run are funded by those donor's funds.

Within the country, more than 20 African languages are spoken, but none of them are spoken in the whole country. Therefore, for political, regional and social reasons, Portuguese was chosen as the official language. Portuguese was the language of colonial ruler, and, by the independence, started to be used as the national language.

EDUCATIONAL SYSTEM, HIGHER EDUCATION AND RESERACH

In Mozambique, the school system covers the primary, secondary, technical and university levels. The number of schools increases almost every year and the same applies to the higher education institutions. However, there is still a high illiteracy rate, since half of the country's population is totally illiterate. The statistics figures provided by the Ministry of Education and Culture, reveals that, by the year 2005, 51.9% of the population was illiterate. However, so far this is a remarkable achievement, if we consider that by the independence time the illiteracy rate was something like 93%.

Currently, there are 38 higher education institutions in Mozambique, where 17 are public and the remaining 21 are private ones. Eduardo Mondlane University is the oldest public university in the country and Politécnica University is the oldest private, and started its activities in 1996. In terms of research institutions and according to the Ministry for Science and Technology portal, there are five research institutes within the country dedicated to areas such as agriculture, fishery, tropical diseases, hydrology and education. However, the information about the research activity in the country is not widely available.

THE GOOD NEWS BROUGHT BY THE ICT´S

Although one of the poorest countries in the world, Mozambique is on its way to be part of the global information society. Some steps were already taken, bearing in mind the goals related to the information society. One of the most important of them was the establishment of Internet connectivity throughout the country and the promotion of the use of Information and Communication Technologies (ICTs). Today Mozambique is amongst the sub-Saharan countries which have achieved full Internet connectivity.

Considering that the world today is profoundly marked by the revolution of the ICTs, with its utmost exponential on the Internet, assuring a rapidly circulation of information and affecting all sectors of activity, the Mozambican government has decided, in 2000, that the country could not possibly be put aside of this process.

One of the first measures that has been taken was the production of an Information and Communication Technology (ICT) policy which aims to contribute to the poverty reduction and improve the lives of the Mozambicans; contribute to the fight against illiteracy and promote the development of human resources; raise the efficacy and efficiency of the public and private sectors; provide universal access to information and knowledge, improve the governance and public administration and turn Mozambique into an active and competitive partner in the Global Information Society.

Although the country has this very ambitious ICT policy, the impact of the use of the information technology is not very high. If we take, for example, the conclusions of a recent study[1] carried out among the public universities, we can easily find out that the impact of the use of ICT´s among those institution is very low due to constraints like as lack of managerial strategies in the introduction of ICT´s, lack of specialized human resources, lack of hardware infrastructure, lack of defined procedures for using ICT in different institutions, among others. Apart from these constraints, the introduction of ICT´s in the daily working, however slowly, is taking place.

MOTIVATION FOR ESTABLISHING AND INFORMATION REPOSITORY

The development of institutional, disciplinary or aggregated repositories can be seen as a service that seeks to put the research outputs openly available, by encouraging academics to place their publications into those repositories. (Henty, 2007). Also the building of a repository is an opportunity provided to scholars to develop their research portfolio, establishing an electronic publishing service, which means that the potential for development trough repositories looks endless.

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[1] The study took place between March and June 2009 and involved eight higher education institutions.

Taking into account that the open access movement has been growing to an increasingly coordinated worldwide movement and it brings a lot of benefits, particularly to researchers and other information users in the developing world, it is hoped that the Mozambicans will be able to take advantage of these new opportunities.

The access to electronic products, especially in higher education institutions which is in place in the country is the use of electronic journals and other sources of information. However, due to the difficulties related the computers infrastructure, speed of using the Internet, ability of using the electronic products, lack of preparation from the information professional, among other reasons, the use of the available databases is not spread within the users. One additional reason is the fact that, most of the information available is in English, which is not a language used by the most of the users. There are not many scientific databases in Portuguese, which contributes for the non interest of the users. Nevertheless, the use of electronic resources has started its first steps, especially in higher education and research institutions. These are the institutions that are better prepared, in terms of equipments and personnel to use the information available electronically.

THE FIRST STEPS TOWARDS AN INFORMATION REPOSITORY

Although research outputs are not abundant in the country, there is some research that is taken, especially in the higher education institutions in order to obtain a degree. Until recently, all the universities in the country were only offering graduate courses[2], but currently there are also masters and PhD programs. The motivation behind the idea of establishing a repository was the fact that, for once, Mozambique should stop to be only a consumer of information, and become also a contributor in terms of production and access to information.

According to Chan, Kirsop, Costa and Arunachalam (2005) states, almost 85% of the scientific publications of the world come from only eight countries and the productivity from developing world accounts for only 2.5%. However, this percentage can also come from the fact that what is produced in the less developed countries is still hidden within, particularly, the higher education and research institutions. In the point of view of Chisenga (2006), the products of research taken in a continent such as Africa are not visible for the world and even for the users in the continent, due to financial restrictions which, in fact, affects the publication and distribution of these research products.

In fact, when it comes to publishing within different countries in Africa, apart from the existence of very few titles, they have little distribution and visibility. One other problem, for the case of Mozambique, is related to the fact that the publication of these few titles is extremely irregular.

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[2] This are called Licenciatura courses, and take between three to four year at the university.

Therefore, the advent of ICTs and specially the World Wide Web holds a great opportunity to a more equitable distribution of information and knowledge and for the access to information produced by Mozambicans.

It was within this spirit that a group of university librarians, from three different institutions, have decided to join efforts and establish a joint repository among the tree institutions.

As preparation for this project, there was at first a short training course that took place in Maputo, Mozambique, and attended by librarians or library assistants from different institutions, with support from eIFL.net[3].

In terms of financial support, the project received a grant from a program which is funded by the World Bank and run at the Ministry of Education, known as QIF - Quality Innovation Facility.

Considering that one of the institutions involved in this project, the Universidade Eduardo Mondlane, had been already benefiting from funds of the World Bank, which were used to build the new library building, it was decided to place the server on that premises. Therefore, the technological bit has been the responsibility of that university. The other two institutions are more involved in the contents issues.

AN INNOVATIVE PERSPECTIVE

www.saber.ac.mz

If we consider what is happening all over the world in terms of establishing information repositories, we can easily see the Mozambican approach as an innovative one. In general, repositories are either subject-based or institutional based, although there are also some experiences on aggregated repositories. For example, in the case of Portugal, every institution has started by building its own repository, and now there is this ongoing project which aggregates the different institutional repositories.

In the case of Mozambique, the decision was, from the start, to build a joint repository which could be seen as a single entry point for access to information produced in the country, or about the country.

In the first stage, and by the time of its public launch, in November 2009, the Mozambican repository had three participating institutions, namely Centro de Formação Jurídica e Judiciária, Universidade Eduardo Mondlane and Universidade Politécnica. Currently, one

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[3] This course was delivered by a Portuguese librarian, from Minho University, Mr. Eloy Rodrigues, who offered all the support and assistance, when Mozambique would decide to start a repository.

other institution has joined the project, the Universidade Pedagógica, and plans are there to include as many institutions as possible, from the higher education institutions and research centres.

The mission of the repository is very clear and simple: the make available, through Open Access, the Mozambican research outputs and also information produced around the globe about Mozambique. The objectives to accomplish this mission are:

- Collecting, aggregating and indexing scientific and scholarly contents available at t the higher education and research institutions in Mozambique which can be made available in Open Access.
- Make available, via a single point of Access, the information that results from research produced in Mozambique or about Mozambique.

CONTENTS, SOFTWARE AND THE ROLE OF *SABER*

In terms of contents, what can be seen in the repository *SABER* are, basically, conference paper, thesis, dissertations and what are called licenciatura works, since most of the research literature in Africa, and Mozambique is not an exception for that, is in the format of grey literature, which means not published elsewhere and produced in a very limited number of copies. In Mozambique, every higher education institution demands their students, to be graduated, to write a piece of work, which can have about 60 pages. In general, these are case studies and a good way of compiling information about a specific company or institution.

One of the institutions involved, the Universidade Politécnica, has got a journal in which articles from different areas of knowledge are published. Although that is a commercial journal, there was an authorization to deposit all of the articles. Some reports are also part of the content of the repository.

The deposit activity is still made by the libraries staff. However, as the repository grows and the users, who are also the authors of the contents, start trust better in the repository and feel that it can make a difference in their lives, the next stage is to start the self deposit process.

The role of the repository created in Mozambique does not differ from the role played by other repositories, which can be summarized as to collect, preserve and disseminate the research outputs of an institution.

The software adopted for the Mozambican repository known as *SABER* is DSpace and the main reason for this was the fact that our consulting institution, the Portuguese university of Minho, was already using this software. Therefore, any expertise, technical support and advice could be taken from that university. Among the major reasons for this choice is, of

course, the fact that we could, from the beginning, use a Portuguese version of DSpace, since at the Minho University library services there was that translated version.

THE USAGE OF *SABER,* THE DEPOSIT ACTIVITY, COPYRIGHT AND PRESERVATION ISSUES

The statistical data[4] that can be acquired from the usage of the repository *SABER* are, by all means very encouraging. The number of visits is increasing and also the materials deposited. Although in the way we collect the statistics we cannot check which texts/contents are being, effectively, downloaded, we can have a good idea if the visits to the repository. The actual downloads is one of the areas where we are going to work in the next few months, since it is very crucial to find out what are the most used materials. However, in terms of visits we are very pleased to see that users from different parts of the world, and particularly from Portuguese speaking countries, are using our repository as one source of information.

The repository *SABER*, which is multi-universities based is viewed in line with what Chan (2004) argues, which is, an "immediate route" to provide the maximal access to research results that come from Mozambican institutions which, otherwise, are kept inside those institutions.

Within the structure of the repository *SABER* each community is equivalent to one institution and the submission policy is the same for all communities. There is one librarian in each university who is responsible for his own community. Within each community there are a number of sub-communities that represent schools or departments in each participating institution. The contents are deposited in collections representing the disciplines in each institution. The size of collections varies a lot and various are still empty or have only few items.

Currently there are 2.234 items in the repository, mainly, dissertations, licenciatura works, conference papers and some project reports.

On what regards to copyrights, the Mozambican policy in each participating institution holds the right to publish the contents of dissertations and the licenciatura works. However, we still look for an authorization from the authors to publish their work in the repository. When it comes to conference papers and other materials, we ask for permission to publish it in the repository. So far, there are authors who are a bit skeptical to provide their work, since they mainly fear the plagiarism. We always try to explain to them that the plagiarism is in existence before the technology for establishing repositories and, in fact, this idea of having

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[4] Within this repository, we decided to download the statistical information via
https://www.google.com/analytics/reporting/login?ctu=https%3A%2F%2Fwww.google.com%2Fanalytics%2Fsettings%2F%3F, since we couldn´t yet include a more adequate and accurate form of gathering the usage statistics. However, this is a good indication of, at least, the visits that our repository receives.

the contents openly accessible will reduce the temptation of plagiarism. Since most of these contents were never published elsewhere, there are not problems with editors.

This repository can assure the long term preservation of the contents produced in the different institutions, if we take into account that the real situation of that grey literature is not the most recommended one. Many of the hard copies have disappeared from the libraries or from the departments and many more will probably disappear. Within each participating institution there is an ongoing project to convert into digital formats all the relevant contents produced. The main argument to the managers of those institutions is the fact that we have an infrastructure for the repository and we must add content to that.

CHALLENGES AND NEXT STEPS

The issues that can be, in a way, adverse to the development of this repository and should be resolved are the same ones identified by Christian (2008), for the case of Nigeria. Among those issues are the lack of awareness about information repositories and their benefits among the academic and research communities within the country; inadequate information and communication technologies infrastructure and the high costs of internet bandwidth; lack of funds and also a poor advocacy strategy on Open Access.

In order to gather more content to the repository, a study on scholarly research that is taken in Mozambican institutions, either higher education, or research ones has to be carried out, to make sure that the repository managers are aware of almost all research that has been made. This information can be, for example, retrieved through a questionnaire to be sent to the different institutions.

For increasing the number of deposits in *SABER*, managers of the institutions already participating and also from the ones who can eventually join this project, can seek for leading their institution into deposit mandatory policies. So far, what has been going on is, on one hand, within the libraries in the participating institutions, the available contents in the libraries are put in digital forms, by using scanning processes and creating PDF files and these contents added to the repository. Of course, there is the need of an authorization from the author. The other process is by inviting particular scholars who we know that are sensitive to the access to contents to submit their work. Clearly, on a long term, this will not work properly and there is some sort of commitment from the institutions. As Ghosh and Das (2007) indicate for the case of India, in Mozambique some sort of declaration or statement on Open Access and Information Repositories is needed, as a way to show the institutions commitment to this movement.

In all the institutions involved in the repository project, the point of gathering the contents is the library. However, there still the need to a more clearly defined policy, since not in all of this universities there are mandatory policies to send the products of the research to the

library, no matter the format, which can be either printed or electronic. Most of the potential contents are placed in the academic departments or faculties and the library has to, all the times, ask those departments to send their materials.

It is hoped that, with much more marketing and publicity of the repository *SABER* much more institutions can join the project and contribute with their contents for to this Open Access portal to scholarly and research information produced in Mozambique. A plan to publicize it in an event organized by the funder, for July 2010 is in place. Also production of leaflets to distribute within the higher education and research institution is also one of the planned next stages. The dream here is to have within the repository, contents from every higher education and research institution in Mozambique.

As Christian (2008) points out, most of the academics in developing countries are eager to publish their research results, but they do not care a lot on the visibility of the medium of publication they have adopted. In the case of Mozambique, the same applies and one of the challenges, from our point of view, is to make those academics and researchers aware that, if publishing in Open Access, the impact and visibility of their work will be bigger than ever before.

For each of the academic community that is part of the repository and as well for the potential communities, there is the need to demonstrate the value of the repository. And, as Henty (2007) argues, additional to the value, we have to assure the quality of the repository in order to be responsive to the user's needs.

The long term sustainability of the repository is again an issue to consider. This is an area which should be clarified, since we are not going the receive support every year from now on. The startup grant from the QIF program was an enormous contribution, but we cannot count always with those funds. Since this is a joint repository, every single member has to contribute to the sustainability of the service.

LESSONS FROM THIS PROJECT

If bearing in mind the Mozambican set up, one will easily find out that cooperation is not one of the strongest areas among the different sector of work. So, from the start it was almost unbelievable that a project like this one, where three different institutions were involved, being two of them public and another one a private and also the fact that electronic resources are not that much spread in the country, it would be unlike to achieve any success in this project. However, the reality proves to be the contrary.

The repository established in Mozambique, which is up and run, was developed in a way, not within the expected conventional format, at least for a project with this dimension, whereby an agreement among the participating institutions could be likely the first step.

This was an initiative from a group of three librarians, which is now growing to the level of being something that is the responsibility of the top management of the participating institutions.

This type of strategy usually work in a country like Mozambique, where the institutional managers, and in this case, the universities managers, and the broader society need to see something happen to believe in it, and the repository is the live proof of that. Here we can recall that, few years ago, when we started learning about repositories at the Universidade Politécnica, we sent a proposal to start an institutional repository and we couldn´t receive any support from the university management. Now we know as a fact that the strategy was not the appropriate one.

CONCLUSION

Considering that dissemination of research results is a crucial step for validating those results and make some progress in the field of knowledge creation, the repository *SABER* aims to bring its contribution for the dissemination of research results from Mozambique. So far, only four institutions have joined this repository, but plans are to marketing this repository in order to increase the number of member institutions and also the number of users.

From a modest project, the repository *SABER* is growing in Mozambique and being spread to other institutions and to the wider country. We believe that this is a good contribution to the Open Access Movement, alongside with the promotion of other form of taking advantage of this movement, which is the promotion of Open Access Journals. Of course much has to be done, but the first and safe steps were already taken.

By having a product that is Mozambican, in a situation where it was almost impossible to have access to the Mozambican literature, users can take this opportunity to be aware of what are the research results within the country. To quote Chisenga (2006), information repositories are very relevant to the African environment and they will provide a better image on Africa´s scientific and technological outputs and specialization, increase the accessibility and impact of research both in Africa and at global setting and also contribute to preserve and maintain the research outputs from Africa and, in this case, from Mozambique.

The repository *SABER* is an ongoing project and, all the time, we are trying to identify forms of marketing, advocating and bring other institutions to this project. This means that in few weeks, some of the information provided in this paper can be outdated, particularly the number of deposits and institutions embracing this idea. We found this particularly attractive, since it means that the skepticism about having contents on an Open Access repository is narrowing down.

The impact of this repository is still not the desired one, but with the appropriate promotional strategies we believe that the impact of SABER will increase greatly and make some difference in the access to information produced in Mozambique, either by Mozambican or other users, from all over the world. Although the main language is Portuguese, most of the contents have an abstract in English and, if people are interested in those contents will find a way to translate it, just as we do with contents in languages other than Portuguese.

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