The status of the University of Khartoum institutional repository

Omer Hassan Abdelrahman

Associate Professor, Department of Library & Information Science, Faculty of Arts, University of Khartoum, Khartoum, Sudan,
Email: omhass@hotmail.com

The paper explored the current status of the University of Khartoum institutional repository (Khartoumspace) and attempted to answer questions pertaining to the contents of the repository and how they are organized, its staff and workflow, and how data is managed within the repository in addition to deposit and access policies adopted, and copyright and support issues. The study adopted a descriptive approach and used the case study method. Data collection tools included a semi-structured interview, document analysis, and observation. The study found that graduate theses and dissertations constitute the largest collection in the repository and that there is a high degree of institutional support for the repository. The paper also revealed that a mandatory deposit policy has been introduced by the University of Khartoum administration to enrich the repository with staff publications, but there is a need for more advocacy and awareness raising programmes targeting the University academic community, and like other institutional repositories in Africa, the Khartoumspace faces a number of challenges that might hinder its development which need to be addressed by the University administration.

Keywords: Institutional repositories; Khartoumspace; Open access; University of Khartoum

Introduction

The foundation of the current open access movement was laid by the Budapest Open Access Initiative (BOAI)[1] in the year 2002. At its inception, this initiative recommended two complementary strategies to achieve open access to scholarly journal literature namely, self-archiving and open access journals. The BOAI further elaborated that open access to peer-reviewed journal literature is the goal whereas self-archiving and a new generation of open access journals are the ways to achieve this goal. Ten years later, in 2012, the BOAI signatories reaffirmed the two primary strategies put forward earlier in the BOAI: Open Access through repositories (also called green open access) and open access through journals (also called gold open access). They also reaffirmed the definition of OA introduced in the original BOAI:

"By "open access" to [peer-reviewed research literature], we mean its free availability on the public internet, permitting any users 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", BOAI[2].

A recent report by the Confederation of Open Access Repositories (COAR)[3] has revealed that in Africa there has been a marked response to open access and a steady development of institutional repository initiatives particularly among universities and research institutions. According to the Directory of Open Access Repositories (OpenDOAR)[4], there are currently 3090 open access digital repositories worldwide out of which there are 136 repositories in Africa from 22 African countries as of 14-Jun-2016. Sudan is one of these countries with five registered repositories, including the University of Khartoum Institutional Repository (Khartoumspace).

Statement of the problem and research questions

The University of Khartoum is the oldest and largest university in Sudan, established in the year 1902 as the Gordon Memorial College and then

renamed the University of Khartoum after independence in 1956. The university library houses valuable research carried out by its faculty and graduate students. However, this research output is buried in the different departmental and branch libraries of the university. Setting up of an open access digital institutional repository will allow this research to be visible and accessible by other researchers in the country and abroad, thus contributing to the dissemination of this knowledge, particularly in light of the financial difficulties facing the publication of locally produced knowledge in the traditional print format. This paper investigates the current status of the University of Khartoum Institutional Repository "Khartoumspace" and attempts to answer the following research questions:

- What type of information sources does the University of Khartoum repository contain?

- How are the various contents of the repository organized?

- How is the repository staffed?

- What software platform does the repository use?

- What deposit policy does the repository implement?

- How is data managed within the repository?

- What open access policies does the repository employ?

- How does the repository deal with copyright issues?

- What is the source for funding the repository?

- What are the major challenges facing the University of Khartoum repository?

Literature review

An open access repository is defined by the Confederation of Open Access Repositories (COAR) as a set of services that provide open access to research or educational content created at an institution or by a specific research community. They may be institutional-based or subject-based collections. Crow[5], on the other hand, defines an institutional repository as:

"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."

The benefits, impact and success of open access repositories have been stressed by many writers. Jain et al[6] point out the benefits mentioned by Pickton and Barwick that an open access repository has benefits for both the university and the author; specific to the university, an IR offers increasing visibility and prestige and centralization and storage of all types of institutional output, including unpublished literature. It also offers support for learning and teaching and the ability to keep track of and analyze research performance. According to them, benefits of an IR to authors include enhancing dissemination and impact of scholarship and offering storage and access to a wide range of materials in addition to feedback and commentary from users. Nicholas et al[7] surveyed about 150 digital repositories around the world assessing their achievements, impact, and success. They found that while the size and use of repositories has been relatively modest, almost half of all institutions either have, or are planning, a repository mandate requiring deposit.

A number of writings have emerged on the worldwide growth and development of open access repositories. Pinfield et al[8] reviewed the worldwide growth of open access repositories during the period 2005 to 2012, using data collected from the OpenDOAR project. They found that at the international level, repositories were predominantly institutional, multidisciplinary and English language based and that they typically used open source OAI compliant software. They concluded that the major factors affecting both the initial development of repositories and their uptake included IT infrastructure, cultural factors, policy initiatives, awareness raising activities and usage mandates. They stressed that mandates are likely to be crucial in determining future repository development.

Kuchma and Rosenblum[9] surveyed the development of institutional repositories (IRs) in developing and transition countries. They collected data from about 49 repositories from 20 countries on three continents out of which five African countries participated in the survey namely, Cameroon, Ghana, Namibia, South Africa, and Zimbabwe. Their findings showed that there was an increasing rate of growth of repositories over the last several years prior to 2010,

and that 85% of the materials in the repositories of the participating institutions are open access or publicly available, and that the major challenge that the institutions faced in implementing, promoting and running the repository was content recruitment.

A number of authors tackled the issue of institutional repositories in the African landscape in terms of the problems they encounter, need for support, advocacy issues, and policy considerations.

Okede and Owate[10] pointed out that the problems of institutional repositories in Nigeria are poor ICT infrastructure, poor institutional funding of institutional repositories, absence of institutional repositories policies, lack of awareness of publishing in institutional repositories, irregular power supply, lack of man power training, and low internet bandwidth in the country. Corletey's[11] study of the repositories of four academic institutions in Ghana with a view to find out how these repositories met the challenges of technical support, content provision, qualified personnel, and institutional backing, revealed that all four institutions had problems with their repositories. While two were completely out, two were uploading some content but their platform was only visible within the library. The study concluded that the absence of policy legalizing the operation of the repositories made it difficult for the managers to request for equipment, content and qualified staff to run the repositories.

Uzuegbu[12] highlighted the need for regional and international support for IRs in Africa and recommended 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 in collaboration with the International Federation of Library Associations (IFLA) - Africa Section. Other African writers dealt with policy and advocacy issues for institutional repositories in Africa. For instance, Moahi[13] stressed the importance of addressing certain policy considerations for the successful uptake and use of institutional repositories in Africa. According to him these include issues of interoperability which ensures output discoverability and the IRs availability and accessibility at all times, and that the system used for deposit and searching for output must be simple and user-friendly.

As for advocacy, Ezema and Okafor[14] examined advocacy issues in open access institutional repositories in Nigeria. They found that advocacy is very critical in attracting funds and creation of awareness for institutional repositories in Nigeria and that major advocacy strategies are the use of institutions websites, face to face interaction with target groups, seminars and workshops

The issue of managing institutional repositories also has received attention in the literature. Zuccala et al[15] examined the role of the digital repository manager, and discussed the future of repository management and evaluation in the United Kingdom. They found that few managers had received any formal training. The repositories were relatively new and web statistics had been used by the managers to monitor their success. They concluded that digital repositories require ongoing evaluation to determine their quality and new directions for growth and that repository managers will need formal training in the future.

Objectives of the study

To investigate the current status of the University of Khartoum Digital Institutional Repository (Khartoumspace) in terms of content, workflow and data management, access policy to contents, and copyright and funding issues.

Methodology

This study adopted the descriptive survey approach involving the case study method. A semi-structured interview was conducted with the administrator of the University of Khartoum Digital Repository (Khartoumspace) in order to collect data about the current state of the repository in terms of its workflow and data management, institutional support and funding sources, copyright issues and the major challenges facing the development of the repository. This interview was complemented by data collected from the Directory of Open Access Repositories (OpenDOAR) and data from the Khartoumspace website, in addition to data from other sources such as reports on the repository.

The University of Khartoum Digital Repository (Khartoumspace)

The University of Khartoum Digital Repository (http://khartoumspace.uofk.edu) emerged as a result of the development of the first open access repository in the Sudan; the Dspace@ScienceUofK which was

set up in 2011. Baleela[16] reported on this departmental institutional repository and stated that it was set up as a result of the EIFL-funded OASCIR (Open Access awareness-raising campaign among researchers at the Faculty of Science) Project, aimed to raise awareness about open access at the Faculty of Science, University of Khartoum (UofK) through a series of training activities for scholars and the implementation of an Open Access Institutional Repository (OAIR) for researchers to deposit their research output. The Dspace@ScienceUofK, which acted as a seed digital repository for the Sudan, has now been developed into the Khartoumspace; the University of Khartoum open access institutional digital repository since 2013[17].

Contents of the repository

The University of Khartoum Digital Repository contains different types of digital materials. These include articles, conference papers, graduate theses and dissertations, undergraduate dissertations, books, and the University of Khartoum archives documents. The disciplines covered include pure and applied sciences, medical and health science, and humanities and social sciences. The full text or an abstract of all publications are available either in English or in Arabic. There are now a total of 19265 items deposited in the repository – as of June 2016 and this number is steadily increasing. Table 1 shows a breakdown of the different items held by the Khartoumspace.

Staffing, workflow and data management

There are four fulltime employees for managing the University of Khartoum IR, including a library professional with an MA degree in library science. This is in addition to the IR manager who is a faculty member at the Faculty of Science and one of the early open access advocates at the University of Khartoum. The IR manager also works as head of the department of digital content and supervises the IR under the umbrella of the information technology and networks administration.

Items are deposited by the repository employees who catalogue these items under the supervision of the library professional.

The repository adopts the open source software Dspace as a software platform. The IR administrator stated that they were planning to conduct training sessions for the University faculty members on the use of the Dspace software so that they can self-archive their own publications.

The University of Khartoum Digital Repository is registered with a number of repository directories and registries such as Directory of Open Access Repository "OpenDOAR" and Registry of Open

Table 1—Items held by the University of Khartoum Digital Repository

Item Type	Number
Graduate theses and dissertations	9499
Staff publications	3486
Administrative documents	2351
Undergraduate dissertations	1783
Conference papers	778
University of Khartoum Journals' articles	565
Books and book chapters	411
Institutes (Publications)	221
University Pioneers (biographies)	113
Videos	26
Centres (Publications)	11
IT Service Documentation	10
Training	6
Audio	5
Total	19265

Access Repositories "ROAR". The repository can be easily searched using Google Scholar.

Policy issues

The University of Khartoum digital repository has a standardized set of policies in place covering a wide range of issues including reuse of metadata and full data items, types of document and dataset held, depositors, quality and copyright, and preservation. This standardized policy has been supported lately by the University Vice Chancellor's decision to associate faculty staff promotion with depositing their research output in the repository, thus introducing a mandatory deposit policy.

Copyright

All submitted journal articles are checked with the SHERPA/RoMEO publishers' database to determine the specific journal's or publisher's archiving policies including restrictions and conditions and permissions.

As for graduate theses and dissertations, there is an embargo period of five years after which the thesis or dissertation is accessed as full text in the repository if not published within this period. However, this provision is yet to be included in the repository's deposit policy after being signed by the Vice Chancellor. Nevertheless, all theses and dissertations older than five years including those which have been retrospectively digitized by the University Digital Library are accessible as full text without their authors' permission.

Usage

Usage statistics of the Khartoumspace show that the University of Khartoum digital repository is widely accessed from within the country and from different parts around the world with most visits coming from China, United States of America, Russia , France, Germany, Egypt, Japan, United Kingdom, and Saudi Arabia. This usage statistics data is available only to the repository administrator and other authorized personnel.

Institutional support and funding

Initial moral and financial support for setting up an open access digital institutional repository was provided by the former Dean of the Faculty of Science and the former Vice Chancellor. This support was extended at the early stage of the seed repository at the Faculty of Science (the Dspace@ScienceUofK). The current University of Khartoum administration continues to support the Khartoumspace both morally and financially; all activities of the University of Khartoum digital repository are financed by the University administration from the general University budget. The Khartoumspace is under the close supervision of the "Higher Committee of the Digital Content", which is directly connected to the Vice Chancellor. Nevertheless, bureaucracy in the University administrative system was stated as one of the challenges facing the development of the University of Khartoum Institutional Repository.

Conclusion

The University Library is currently carrying out a project on retrospective digitization of the older graduate theses and dissertations held by the University of Khartoum Library as of 1950, which will add more full text theses and dissertations to the repository.

Presently, there are a number of redundant entries in the repository that could be grouped under a more general entry such as staff publications to include conference papers, publication in the University of Khartoum journal, publications of various centres and institutes of the university.

The Khartoumspace is managed by the IT department with little involvement from the University Library. This is attributed to the lack of IT skills on the part of the library personnel which calls for more ICT training for the library staff so as to enable them to contribute to the development of the repository.

Bureaucracy in the University of Khartoum administrative system is one of the challenges to the development of the repository. This contributes to the delay in implementing newly introduced or proposed policies that are essential for the development of the repository. This bureaucracy may be attributed to the fact that the University of Khartoum is a very old university established in the year 1902, and as such maintains deeply rooted procedures in the administrative system. Nevertheless, support for the repository by the top university administration can expedite the implementation of decisions pertaining to its development.

There is a need for more advocacy campaigns among academic staff members. These can be performed by means of awareness raising programs and training workshops for faculty members on self-archiving and benefits of depositing their research output into the repository. Addressing these issues will assist in the dissemination of knowledge by making the repository more beneficial to the university community and to other researchers worldwide as well.

The mandatory deposit of faculty publications which has been recently introduced will assist in solving a major challenge facing the Khartoumspace which is the reluctance of the University faculty members to deposit their research output in the repository. However this mandate should be accompanied by more advocacy activities which will result in an increasing number of faculty members depositing their research output in the repository after understanding the benefits of doing so compared to the perceived risks.

Like many other institutional repositories in Africa, the Khartoumspace confronts a number of challenges that could hinder its development including lack of advocacy programmes and shortage of skilled and trained manpower.

Further research is needed to explore the different aspects of use and usability of the Khartoumspace and its benefits to the University research and academic communities, with a view to evaluating the current repository content, access mode and polices in place.

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