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Development of the African Digital Health Library (ADHL): Experience at the Medical Library, University of Ibadan, Nigeria.

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Abstract

The African Digital Health Library, (ADHL) is a collaborative project involving five African institutions namely Bamako University of Science and Technology, Kenya Methodist University, Universities of Ibadan, Nairobi, Zambia, and Zimbabwe. The University of Ibadan Nigeria component of the ADHL (ADHL-UI) is described in this paper. Funded by the Office of Global AIDS Coordinator of the United States Department of State, the goal of ADHL-UI is to store, preserve, make accessible through an institutional repository, theses and dissertations by postgraduate students of the institution's College of Medicine. The ADHL-UI has over 1000 theses and dissertations accessible on the internet. Creation of the ADHL-UI, a repository of theses and dissertations in the Medical Library, University of Ibadan, is a major contribution to research development and preservation of institutional scholarly heritage. Effective use by students and faculty will help in reducing duplication of research efforts and create visibility for the authors and the institution.

Keywords: Digitization**,** Institutional repository, University of Ibadan, African Digital Health Library, Nigeria

Introduction

Libraries play important roles in the educational sector of every country by providing access to world-class information resources, services, and stimulating academic research. Hence, the success of any educational institution depends on its library. Traditionally, libraries have managed information produced by publishers, outside of the parent institutions (Sterman, 2014). Librarians select, acquire, organize, make accessible, promote, preserve, and provide long-term access and instruction on use of information resources.

As libraries around the world face shrinking budgets in the face of rising costs of information resources including traditional scholarly journals, the need has arisen for institutions to bring together their intellectual output and make them accessible to all. Researchers, policy makers, and librarians the world over are coming together to introduce reforms to make scientific knowledge affordable by creating institutional repository (Hirwade & Hirwade, 2006). Creation of IR is one of the ways academic institutions across the globe are addressing the challenges caused by lack of access to "local" research contents. During the last two decades IR has emerged as an important new model in scholarly communication (Jekins, Breakstone & Hixdon, 2005).

An IR is a digital service that academic institutions can offer to the members of their communities. It provides an online warehouse designed to archive, manage, organize, preserve, and showcase the intellectual output of students, faculty, and staff to a global audience. Developments in digital technologies have affected many aspects of the academic enterprise, especially the way scholarly communication is being carried out. An IR supports the dissemination of knowledge by curating locally produced digital materials.

Institutional repository is defined as a long-term digital archive that contains scholarly or artistic work produced by the members of an institution (Utah Valley University, 2015). Such repository is also critical to developing, managing, leveraging digital content and bringing greater value of the institution's digital outputs (Blythe & Chachra, 2005). According to Lynch (2003), "A university-based institutional repository is a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members". An IR supports the dissemination of the knowledge produced by the community by curating scholarly publishing, digital publishing, and the creation of unique, local digital collections to support campus scholarship, teaching, and learning (TCNJ, 2013). The goal of digital repositories is to "enable better access, searchability, usability, and visibility of their research output by those with Internet access" (Ocholla, 2011).

To remain relevant in the information age, it is essential for libraries to digitize their printed resources and make accessible to their patrons. Since the beginning of the 21st Century, an increasing number of academic institutions around the world have established IRs in order to collect and provide open access to local contents produced by their faculty, students, and staff (TCNJ, 2013). Providing access to information free of charge in electronic format is a concept that has gained momentum around the world. Although the IR movement started with large research universities, over the years, the number of smaller institutions and libraries providing IR services has been on the increase (TCNJ, 2013). The largest repositories are found in Europe, Australasia, and North and South America. In 2014, The Webometrics Ranking of World Repositories lists 272 repositories in the USA, and 1746 repositories in the world (Sterman, 2014).

In Nigeria, some universities have created their own institutional repository where local content materials are stored and made accessible electronically to members of the community and those that they serve. Examples of universities in Nigeria that have functional IR are: University of Jos, University of Nigeria, Nsukka, University of Lagos, University of Ibadan and Covenant University. The choice of materials to be digitized

depends on the priority of each library however, certain criteria are normally applied. These include: limited or restricted printed materials that are on high demand by library users; aging and fragile materials that are in high demand by library users; items that are of immediate and curricular importance; and useful materials that are out of publication (British Library, 2007).

About the project

The ADHL-UI digitization project started in August, 2018. It is one of the six library digital repository projects in Africa implemented by Network of African Medical Librarians (NAML) and sponsored by the Office of Global AIDS of the United States Department of State. Other participating institutions are Kenya Methodist University, Meru, Kenya, University of Nairobi, Kenya, Bamako University of Science and Technology, Bamako, Mali, University of Ibadan, University of Zambia and University of Zimbabwe. We describe in this paper, our experiences on implementing the project, achievements and the lessons learnt at the E. Latunde Odeku Medical Library, College of Medicine, University of Ibadan, Nigeria.

The Main Goal and Objectives of the Project

The main goal of the project is to preserve, expose and make accessible 'local' health research output (theses and dissertations) of faculty and postgraduate students of the University of Ibadan, Nigeria, through the development of an institutional repository – Digital Health Library (DHL). The objectives of the project are to increase access to research output (theses and dissertations) generated by faculty and graduate students, develop human resources of the Library, and conduct training for users on how to retrieve information from ADHL-UI. This paper serves as a roadmap or blueprint to other libraries that do not yet have an IR but wish to develop one in the future.

The Need for an ADHL in University of Ibadan

The University of Ibadan has a large collection of Dissertations and Doctoral Theses, written and submitted by postgraduate students in partial fulfillment of the requirements for Masters (including Master of Public Health) and Doctor of Philosophy degrees. For many decades, the theses and dissertations submitted by students are in print formats only; though in recent times, students are being mandated to submit soft copy of their thesis/dissertation on CD. To access information from theses and dissertations produced in UI, a potential reader must visit the University Library (Kenneth Dike Library). This constraint limits access to valuable research findings and diminishes visibility for the authors.

In order to make the research output in the health sciences available and accessible, a pilot project was carried out focusing on 'theses' and 'dissertations' in the College of Medicine which comprises of four faculties namely: Basic medical sciences, Clinical sciences, Dentistry and Public Health. Therefore, the creation of accessible digital health repository that houses theses and dissertations on health-related disciplines became a necessity. The creation of an ADHL-UI was aimed at promoting wide dissemination and quick access to local research output of faculty and graduate students in the University of Ibadan, Nigeria. This paper describes the process of implementing the ADHL project at the E. Latunde Medical Library, College of Medicine, university of Ibadan, Nigeria.

The Setting for ADHL-UI

The E. Latunde Odeku Medical Library was established in 1966 as a research library and a part of the University of Ibadan Library System. The main objective of the Medical Library is to serve the information needs of staff and students of the College of Medicine. It is housed in a separate purpose planned two storey building, as part of the College of Medicine Complex. It occupies an area of 25,000 square feet, can seat 300 readers and have a stack capacity of over 120,000 books and journals. The stock comprising of clinical journal

and monographs is over 49,000 volumes. The Library also houses a couple of theses and dissertations (College of Medicine, University of Ibadan calendar, 2017).

Staffing and Delineation of Responsibilities

The project has a Principal Investigator (PI) who managed and supervised project activities. The PI was assisted by six other staff, two of whom were contract staff while the four other personnel are staff of the library and Information Technology (IT) Unit in the institution. These personnel were trained on library digitization and on how to handle the digitization equipment. While two of the staff are charged with the responsibility of scanning the selected items for digitization, two others were responsible for creating metadata for the scanned items and submit them to the ADHL-UI repository, the remaining two assist with ICT related tasks while the PI carries out quality control on the submitted content and gives approval for content to be uploaded on the repository.

Software and Equipment

The digitization equipment in use for the project are; one flatbed scanner, two IPEVO VZ-1 ultra high definition HDMI/USB dual mode document scanner, two desktop computers, a multi-purpose HP printer, external storage devices, a HP Proliant DL360p Gen9 Server and Adobe Creative Suite 5 was acquired for converting the scanned documents to PDF format, customizing/editing and optimizing the content before upload.

The ADHL-UI uses DSpace. DSpace is an open source repository software package typically used for creating open access repositories for scholarly and/or published digital content. DSpace is the most widely used digital repository software in the world. It is used by libraries, universities, research centers, government agencies, archives, and private sector companies to manage, collect, and share all types of digital assets including digital images, video, articles, datasets and working papers. The staff handling the upload of the digital content were trained on how to use DSpace. The digitization workflow is shown in Figure 1. The items in ADHL-UI passed through three main stages. The first stage is scanning, the second is editing, followed by OCR and the third is uploading of the content into the repository.

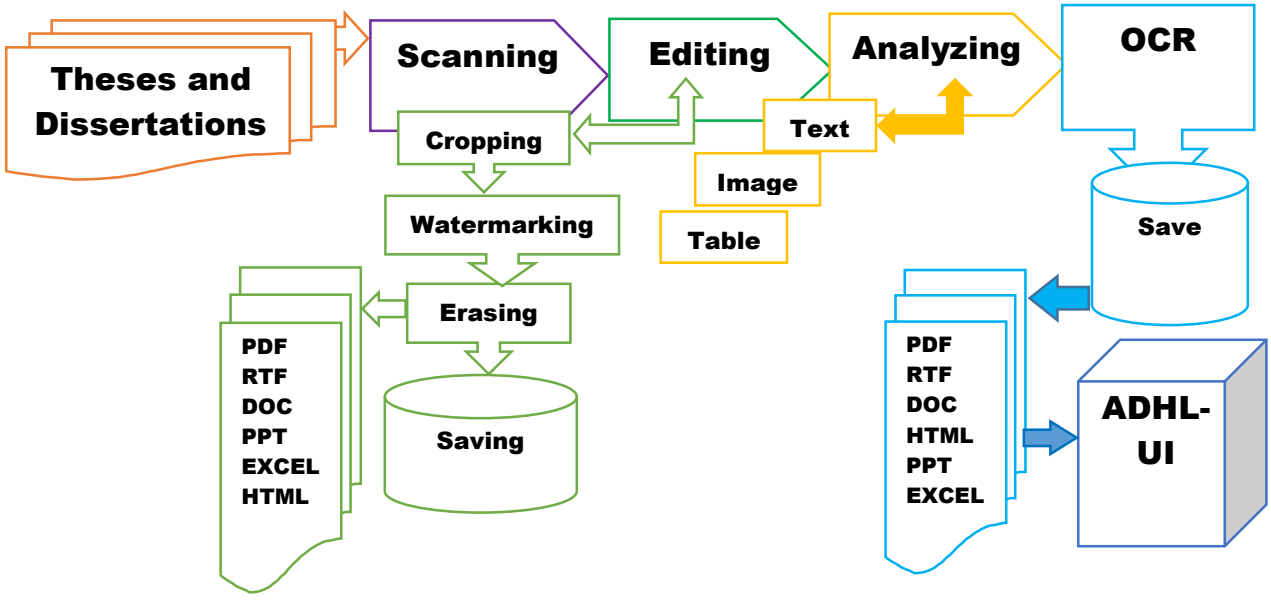

Figure 1: Digitization Workflow Diagram for African Digital Health Library, University of Ibadan

The Scanning stage: The theses and dissertations were scanned with IPEVO visualizer scanners and are automatically saved as pdf documents. The scanning stage is an important aspect of the workflow because it determines the quality of the digitized document, ensuring that the scanned documents are not blurry does not contain foreign images. Care is also needed at this stage because the quality of the output of an Optical Character Recognition (OCR) software depends on the clarity of the scanned document.

The Editing: After the items have been properly scanned, they are converted to editable documents using OCR. The OCR is a technology that converts the text on a digital image into an editable text. While OCR technology was originally designed to recognize printed text, it can be used to recognize and verify handwritten text as well. Running OCR on scanned documents is a very important aspect in digitization because an editable document can be easily traced by plagiarism detecting tools via its text. Watermark and footer are then added to the OCR documents. Watermarks and footers are always added after running OCR because if they are added on the scanned image, OCR will recognize the scanned document as an already editable document and will refuse to convert the other texts on the scanned document to editable texts. Hence, adding watermarks and footers comes after the scanned documents have been converted to editable text. The file is then optimized for upload. This involves editing of the characteristic of each document with respect to size, i.e. making the document light for easy upload and download and yet maintaining the text quality for readability by users.

The Uploading: The uploading stage involves the creation of metadata for the processed digital document and submitting the processed digital document on ADHL-UI repository on DSpace. Two project staff served as submitters who create metadata for the processed digital documents and submit same on DSpace. However, the submitted documents are automatically forwarded to an Administrator on the repository, who then checks the quality of the submitted work for final approval or rejection.

Program outcomes

The ADHL is accessible at: http://adhlui.com.ui.edu.ng and https://adhl.africa. As at October 2019, a total of 1045 theses and dissertations are available in the repository. These consist of 299 Ph.D. theses and 746 dissertations (Masters and MPhil). There are 853 scanned and 192 born digital contents in the repository**.** Total visits to the repository by Faculty are shown in Figure 2. From its inception, ADHL-UI has recorded many visitors from across the globe. Slightly less than half (48.0%) of the visits were for Faculty of Public Health collection.

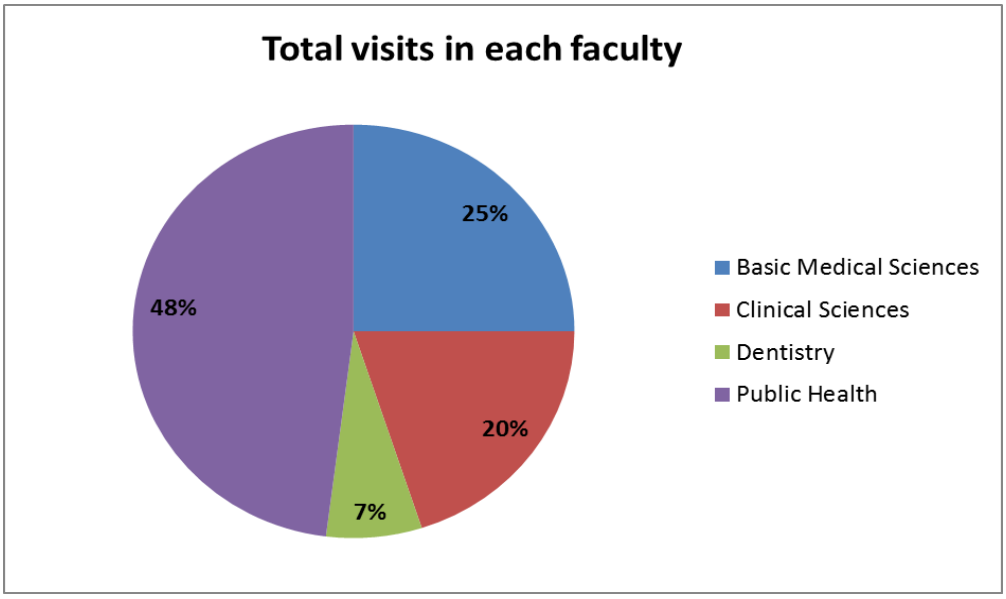

Figure 2: Total visits by Faculties

Challenges Encountered by ADHL-UI Team

Inadequate power supply: the issue of inadequate power supply is a common problem in Nigeria and other countries. Thus, strategies to overcome this constraint must be prioritized by librarians planning to implement a similar project because it is very difficult for digitization to work effectively in an area with inadequate power supply. ADHL-UI team encountered this problem such that the project was always put on hold whenever electricity was not available, which hindered many of the processes and procedures.

Technical problems: Technical problems such as difficulty in accessing the ADHL-UI occurred occasionally. Uploading of contents, the ADHL-UI repository was always put on hold whenever it occurred. Due to the heavy workload, some scanners and computer broke down. This problem also slowed down the digitization project. Frequent malfunctioning of Adobe 9 Suite software was also a regular occurrence during the project. Also, institutional network topology and security was also an issue at some point although was eventually solved with the help of the College ICT Team.

Achievements and Lessons Learnt

The ADHL has recorded three achievements. First, the theses and dissertations can now be easily accessed by those who need them, thus meeting a previously unmet need. Secondly, the repository has increased the longevity of the scholarly works and finally, it has relieved library staff the burden of searching through stalks for requested theses or dissertations.

We learnt four lessons in implementing the project details of which are described below.

Omissions of some details at the planning stage: Detailed planning is very important when starting a digitization project. We experienced some setbacks which could have been averted but for some omissions during the planning stage of the project. For example, at the onset of the project, no separate collections for theses and dissertations were created on the ADHL-UI repository. The processed theses and dissertations were all submitted in the same collection thereby making it impossible to determine the number of theses and

dissertations in the repository. To address the issue, separate collections had to be created for each and were later moved to their appropriate collections before we could determine the number of theses and dissertations in the repository. Hence, it is important for every aspiring library planning to embark on a digitization project to have a detailed plan before starting the project.

Teamwork pays: Teamwork is crucial for the success of any project. This is because within the group, difficult problem and challenges can be easily addressed. Brainstorming is a good opportunity for the team to exchange ideas and come up with creative and appropriate ways of doing things. For example, the Team had problems with the quality of scanned documents and members brainstormed ways of addressing it. Different ideas and opinions came up and solutions were identified. Hence, it is important for every aspiring library planning to embark on a digitization project to always work as a team.

Orientation of stakeholders is essential for the success of a digitization project: Lack of information by stakeholders about the nature and potential benefits of IR may affect progress and acceptance. For example, some stakeholders were reluctant to release materials to digitize because of concerns about plagiarism. In response, the team conducted advocacy and orientation meetings where stakeholders were informed about the nature of the project, the potential benefits, and assurance of the safety of the materials. Training programs were also conducted for staff and students on how to access information in the ADHL.

The processed digital documents should be backed up from time to time in case of emergency: File and data backup are important in digitization project. Data and file loss can happen at any time. There was an instance a collection on the ADHL-UI repository was accidentally deleted and there was no other way to restore those items on the collection. What saved the situation was that the deleted items were restored by retrieving them from the external storage device. Having onsite and offsite backup can prevent low morale resulting from loss of data.

Recommendations

In order to minimize wastage of resources and ensure success of a digitization project, four key measures need to be taken by some stakeholders of the digitization project who are: the donor agencies; the school authority and project managers.

1. The institution should have a clear policy for selection of resources for digitization because not all the resources in the library need to be digitized. There is need for clarity on the purpose of the digitization project and who the targeted groups are. The institution should also secure funding for the project because setting up and maintaining a digitization project involves a lot of expenses including purchase of equipment and provision of regular supply of electricity.

2. The donor agencies should follow up the digitization project and request for statistics and reports on the progress of the project. Statistics and reports need to be collected by the donor agencies from time to time to ensure that the project is implemented according to plan.

   Project managers should assign tasks to staff members based on their competencies. He/she should give a target to be accomplished per day by each staff to prevent delay on the completion of the project. In recruiting new staff, the project manager should ensure that only those who have the required skills in library digitization are recruited. Faculty, and librarians need to be trained. Staff working on the IR need initial training and continuing education. End users also need information and training on how to access the IR in order to derive maximum benefit from the project.

Conclusion

Creation of the ADHL-UI is a major contribution to research development and preservation of institutional scholarly heritage. Effective use by students and faculty will help in reducing duplication of research efforts and create visibility for the authors and the institution. The ADHL-UI was successfully launched and currently functional despite initial challenges. The dedication of staff and team approach to implementation are key factors that contributed to the success of the project. It is therefore important for libraries intending to digitize their resources, to adopt team approach towards the library digitization project.

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References

Blythe, E. and Chachra, V. (2005). The value of proposition in institutional repositories. *EDUCAUSE Review*, 40(5). 1527-6619

British Library (2007). Early printed collections: digitization projects, London. http://www.bl.uk/collections/early/digmain.html

Buehler, MA & Boateng A. (2005). The evolving impact of institutional repositories on reference librarians. *Reference Services Review*, 33(3): 291-300.

College of Medicine, University of Ibadan. Calendar, 2017.

Jagboro, K.O. Omotayo, B.O. & Aboyade, W.A. (2012). Digitization of Library Collection in Developing Countries: The Hezekiah Oluwasanmi Library Experience. *Library Philosophy and Practice (e-journal),* http://digitalcommons.unl.edu/libphilprac/823

Jenkins, B., Breakstone, E., & Hixson, C. (2005). Content in, Content out: the dual roles of the reference librarian in institutional repositories. *Reference Services Review*, 33 (3), 312-324

Lynch, C.A. (2003). Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age. *ARL,* 226, 1-7. http://www.arl.org/newsltr/226/ir.html

Ocholla, D.N. (2011). An Overview of Issues, Challenges and Opportunities of Scholarly Publishing in Information Studies in Africa. *African Journal of Library, Archives and Information Science,* 21 (1).

Sterman, L. (2014). Institutional Repositories: An Analysis of Trends and a Proposed Collaborative Future. *College & Undergraduate Libraries* 21, (3-4).http://doi.dx.org/10.1080/10691316.2014.943919

The College of New Jersey (TCNJ). (2013). TCNJ Library Institutional Repository Proposal. http://library.pages.tcnj.edu/files/2014/02/TCNJ_IR_Project_Plan_131205.pdf

Utah Valley University (2015). *Institutional Repository.* https://www.uvu.edu/library/archives/institutional-repository.html

World Intellectual Property Organization (2019). What is Copyright? http://www.wipo.int/copyright/en