Digitization of Library Collection in Developing Countries: The Hezekiah Oluwasanmi Library Experience

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Abstract

The paper describes the digitization of library collections at the Hezekiah Oluwasanmi Library, Obafemi Awolowo University, Ile-Ife in response to the contemporary global trends. The digitization process, one of the earliest in the Nigerian universities, began in 2003 with a focus essentially on abstracts of masters' dissertations and doctoral theses, as well as newspaper collections of Obafemi Awolowo University, Ile-Ife. The exercise became imperative due to high demand and heavy usage of newspapers and theses by both staff and students for research and learning purposes. The paper further examines the timely intervention of the Carnegie Corporation of New York and partnership with the Association of African Universities on Database of African Theses and Dissertations (DATAD) project based in Accra, Ghana. Challenges being faced include inadequate funding, maintenance of digitization equipment, content management software, capacity building for staff, etc. Challenges notwithstanding, Hezekiah Oluwasanmi Library's experience has been a win-win situation and its experience will serve as reference points for

other sister libraries in the developing world that have joined, and still to join, the bandwagon of digitization train of library collections.

Introduction

Libraries worldwide, especially university libraries are increasingly becoming digital conscious. Hundreds of libraries and allied institutions have been launching projects designed to digitize their collections in response to the global information exchange and for wide outreach. However, the process in the developing countries, Nigeria inclusive, has been very challenging. The digitization project has been slow and expensive. The world over, electronic resources are becoming preferred because of their inherent benefit of wide outreach. As a step forward in making prints in hard copy format available online for our teeming users, it becomes essentially necessary to digitally scan our library materials especially the newspapers, theses and court cases so that many users can gain access to a wide variety of information online.

Digitization refers to all of the steps involved in the process of making collections of historical and other materials available online. In the world of Information and Communication Technology (ICT) and globalization, digitization of materials is fast becoming the norm among libraries as each seeks to contribute its quota to the world information resource. Libraries embark on the digitization of their materials for various reasons. Digitization makes library's resources available electronically thereby providing a wider access to its collections. In a networked campus, users can access the library's digitized resources from their offices and halls of residence even when the library is physically closed. Also, as many people as possible can gain access to as much material as needed at any given time, a difficult situation with a text resource.

Furthermore, digitization offers a solution for theft of items especially in developing countries where libraries have no electronic security systems to prevent theft of their collections. It is also a way of preserving aging materials which could have otherwise gone into extinction. It further allows users to search collections rapidly and comprehensively from anywhere at any time. Northwestern University, for instance, uses this to renew and replace on shelf their heavily-used, old and tattered books. The books are digitized, printed, bound and placed back on shelves. And when digitized materials are put on the web, they tend to increase the library's visibility as the users all over the world access the materials. Apart from the machines that act as interfaces, it is now possible to have most library resources stored virtually.

The choice of materials to be digitized depends on the priority of each library but there are widely accepted criteria which are normally applied. These include materials that are on high demand by patrons especially when such materials are available in limited copies or are on restricted access; local and unique materials; items that are of immediate and curricular importance; aging materials that are on high demand by patrons; useful materials that are out of publication; and materials that are difficult to handle[1].

Several websites exist which bring to light the reports of digitization efforts by several libraries all over the world. In the developed world, digitization appears to be moving towards collaborative efforts. The Portal to Texas History[2] reveals contributions to the project by several libraries including academic libraries, public libraries, museums and archives. The site also brings to focus the range of digitized materials such as weekly newspapers, historical materials, photographs of artifacts, maps, photographs of events, businesses and proceedings of the legislature of the State of Texas etc. There is also the Higher Education Resources On-demand (HERON) project which provides a national service for the UK Higher Educational Sector for copyright clearance, digitization and delivery of electronic articles and book extracts and build up a national database and resource bank of electronic texts[3].

Equipment which could be used in digitization include: Computer systems (at least one); scanners which can be flat-bed, handheld, or sophisticated scanning machines like SMA 2 and Kirtas, (digital cameras or camera phones could also be used in some cases); CD or DVD writer; printer; and of course the materials to be digitized. The process of digitization involves the selection of materials, scanning them and saving the scanned document into PCs. The scanned document could be saved in different formats such as JPEG, TIFF, and PDF. They could also be cropped or trimmed before they are permanently saved. A Content Management Software is imperative to make the scanned image accessible online to users. They could also be written to CDs or DVDs for preservation and usage by other libraries that have no Internet access.

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The Obafemi Awolowo University Experience

Fig. 1: Main entrance/front view of Hezekiah Oluwasanmi Library

Historical Background

In response to the challenges of the digital age, it is the primary objective of the Hezekiah Oluwasanmi Library (HOL) (Fig.1) to digitize its heavily-used collection. The library serves a total population of twenty five thousand (25,000) students and seven thousand (7,000) members of staff. The library's plan to digitize its collection received a boost from the timely intervention in form of a grant received from the Carnegie Corporation of New York. In 2003, the library received a grant of two hundred and twenty thousand US dollars ($220,000) from the Carnegie Corporation. The fund enabled the library to start the conversion of its manual catalog into electronic format and purchase the much needed equipment for the digitization of its newspaper collection.

The Library (HOL) has two on-going digitization projects. They are: the digitization of some of the Nigerian newspaper collection which the library subscribes to; and the abstracts of Masters and Doctoral theses and dissertations of the University. The choice of the newspaper collection for digitization was informed by its high demand and heavy usage by both staff and students for research purposes (Table 1). An earlier work on newspaper management and use in HOL attested that the newspapers served as good complements of books, journals and other resources in the library[4]. The HOL has a newspaper collection beginning from 1962 when the University was founded, then University of Ife, now Obafemi Awolowo University. Before the onset of digitization, newspapers were manually processed for users. The processing involves the reference librarians first reading the newspapers to determine the educational and academic articles due for indexing. Having indexed the newspapers, 3 by 5 inch catalogue cards are then prepared for the articles for ease of access and retrieval. The indexed articles are then cut from the mother newspapers, mounted on plain sheets of paper and filed (Fig.2). The files are kept in boxes and then arranged in a room. A staff of the reference section fetches the newspapers for users when requests are placed (Fig.3).

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Table 1: Newspaper Collection Requests/Usage

Academic Session	Newspaper Clipping	Complete Newspaper
1997/1998	12,441	1,447
1996/1997	5,508	1,186
1995/1996	4,534	987
1994/1995	1,997	1,073
1993/1994	1,987	1,073
1992/1993	2,058	1,424
1991/1992	3,574	1,468
1990/1991	3,204	2,789
1989/1990	2,730	1,863
1988/1989	1,928	1,731
1987/1988	897	1,574

Fig. 2: Copies of newspaper clippings mounted on paper and arranged in files

Fig.3: Newspaper clippings arranged in files and cartons

Of recent, storage of newspaper clippings' files and cartons is posing a big challenge to the library management. The newspapers from 1962 to 1985 had earlier been converted to microfilms which were being accessed in the Audio-Visual section of the library. Incidentally the technology of microfilming has also become obsolete with the coming of computers. Thus those already in microfilm will eventually be digitized again. Preserving the newspaper collection in form of digitization is vital in that they may serve as veritable sources of evidence for judicial litigation.

An important project that deserves immediate attention, but yet to be attended to, is the digitization of the manuscripts of customary court judgment (Fig.4), spanning across 50 years from 1900 to 1963.
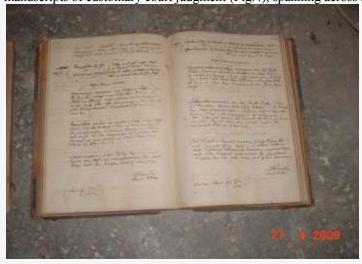

Fig. 4: Manuscript of Customary Court judgment

This rare manuscript collection is unique to Obafemi Awolowo University, Ile-Ife, in that they were the legal deposits of the then Western Nigeria Regional Government. Also, they serve as primary source of customary law in Nigeria in that they are the legal proceedings arising from the cultural heritage of the people. The manuscripts run into hundreds of volumes and are kept in a large separate air-conditioned room for good preservation (Fig.5). However, weather, especially high humidity, frequent requests, and constant usage as court precedents have been affecting the quality of the paper as they are becoming brittle. In addition, since they are yet to be catalogued, the arrangement on shelves has been haphazard, making retrieval difficult. These old and brittle manuscripts of court cases need to be digitized as a measure of preservation for the posterity and to conserve space. Hence, these and other salient reasons underscore the importance of digitizing the newspapers and other important and university rare documents.

Fig. 5: Manuscript of the customary court judgment arranged on shelves

One would ask why digitize newspapers at a time online versions are available? What is rather peculiar about the HOL newspaper digitization process is its complete digitization and not part as typified by the on-line version. Almost all Nigerian newspapers have gone digital, but the online version excludes adverts, change of name and other important and relevant information. The HOL digitizes the complete newspaper as published. This is so because the library's copy can serve as authentic, original and certified copy for evidence in court proceedings.

The digitization of abstracts of Theses and Dissertations of the Obafemi Awolowo University started in 2004 as a part of the Database of African Theses and Dissertations (DATAD), another project being sponsored by the Carnegie Corporation of New York and some other sponsors through the Association of African Universities. It aimed at having a database of African Theses and Dissertations and preserving them in digital form so as to facilitate electronic access and hence add African content to the Internet for World Wide Web access. Obafemi Awolowo University and the University of Jos were selected in Nigeria for the project.

Digitization of newspaper collection

The newspaper collection is housed in the Library's Conservation room. They are arranged and boxed according to type and issue, month by month and year by year (Fig. 6). Users could request for a complete newspaper or make use of newspaper clippings' files. The clippings files and boxes as well as the accompanying card index catalog are located in the Reference Section of the Library. Users search the catalog and request for appropriate file. When complete editions are requested, they are fetched from the conservation room by staff at the Reference desk. The complete paper edition was used for the purpose of digitization.

Fig. 6: Conservation room where newspapers are kept in cartons and shelved

Digitization Equipment

Equipment used for the newspaper digitization include: a networked SMA 21 Scanning machine (Fig.7) which came with Batch scan wizard software that runs it; an Internet ready computer system loaded with the SMA scan software; a CD/DVD writer for the backup. The machine communicates with the PC through a network cable.

Fig. 7: SMA 21 scanner used for the scanning of newspapers

Digitization Process

The newspaper is scanned using the SMA 21 digitizing machine in conjunction with the batch scan software which is installed on the PC. When the paper is spread out as double page, the machine could scan the pages together as one or page by page depending on the setting. Each page is stored in JPEG format (Fig.8). Initially, the documents were being saved as PDF files. With Adobe Acrobat, each scanned page is cropped. The pages are put together to make the complete paper which is then saved as a PDF file. The files are saved into hard disks for local access and written to CDs for keep.

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Fig. 8: An officer working on SMA 21 scanner to scan newspapers

The digitization process commenced with the 1986 papers due to the fact that the pre-1986 papers already exist as microfilms. This was the earlier method of preservation which is now becoming obsolete. The plan was to digitize the papers from 1986 upwards to the most current before the processing of pre-1986 materials. As the process moved to more recent years, the number of pages was on the increase and the black and white publication gave way to colored publications. The implication of this was an increase in the size of the digitized dailies and the requirement of additional storage spaces. A daily issue, when scanned and saved as jpeg format, takes up to a minimum of 50Mb and above of hard disk space. This led to a search for a means of reducing a file size and higher-capacity hard disks. There was also the question of indexing to make the files searchable and more useful than the newspaper cuttings collection.

Consequent upon these challenges, the Library commissioned a software engineer to develop program which was capable of compressing the heavy file sizes to a manageable and readable proportion and at the same time make the entire newspaper collection available and searchable by users. This was done and a 60% compression of file size was achieved considering the readability of the files after processing. The files were also optical character recognition (OCR) processed so as to facilitate word search. Currently the digitized newspapers could be searched on the library's locally developed Library Management Software. To date, these national newspapers, viz: Daily Times, National Concord, Daily Sketch (all now out of circulation), The Comet, now the Nation, the Guardian, the Nigerian Tribune, the Punch and the Vanguard have been digitized from 1986 to 2006.

Digitization of Abstracts of Theses and Dissertations

The second digitization project in the Library is the abstracts of theses and dissertations by staff and postgraduate students of the Obafemi Awolowo University. This started when the Obafemi Awolowo University was brought into the DATAD project. The Database of African Theses and Dissertations (DATAD) is a project of the Association of African Universities (AAU) being co-sponsored by the Carnegie Corporation of New York, the Ford Foundation, the Rockefeller Foundation and a number of other sponsors. The Obafemi Awolowo University was brought into the project in 2004 at the instance of the Carnegie Corporation of New York. The equipment and software for the project were supplied by the AAU in July/August 2004 while training was conducted for staff members between 15th and 18th August, 2004. The project work started immediately after the training[5].

Equipment and Process

The equipment being used for the digitization of theses includes 2 PCs, 1 flatbed scanner, 1 printer, Omnipage 14 Pro software and Procite Bibliographic Software. The title page and abstract of the thesis are scanned using Omnipage 14 Pro. With this software, the document is scanned and edited. It is then saved into a folder as a Word

document. The saved data is transferred into Procite software and other information are added such as the supervisor, the degree obtained, the university and keywords for the abstract (Fig.9).

Fig. 9: Digitization of abstract of theses

So far, a total of 1172 records have been digitized covering 1987 to 2004. The digitized records are written to CD and sent to the Association of African Universities DATAD unit, based in Accra, Ghana for uploading into the database. A copy of the records sent is kept with the Library for users' online access.

Copyright

The World Intellectual Property Organization (WIPO)[6] defines copyright as a legal term describing rights given to creators for their literary and artistic works. Thus, the digitization process currently going on at the HOL is not meant to deny authors of literary and artistic works their economic and moral rights, rather it is in consonance with the objectives of the Obafemi Awolowo University which are for teaching, learning and research purposes. In line with the concept of fair use which allows for limited use of copyrighted materials without requiring permission from the rights holders, the digtization process of the HOL is not meant for profit purpose but essentially to enhance the teaching, learning and research programme of the university. Currently, the students, on submission of their theses, are required to submit electronic copy to the postgraduate school of the Obafemi Awolowo University. In addition, they are required to give a written permission to the University for the use of their theses for research and learning purposes.

Challenges

The digitization project of the Hezekiah Oluwasanmi Library has been confronted by a number of challenges. These are essentially peculiar to libraries in developing countries and Nigeria in particular in their effort to contribute local data to the global information resource base. First and foremost is inadequate funding. Funding for the purchase and maintenance of modern and state-of-the–art digital equipment remains a major constraint. There is the need for external funds to be injected. This could come from International Organizations like the Carnegie Corporation of New York; without whose grants the Hezekiah Oluwasanmi Library, Obafemi Awolowo University could not have been able to achieve its digitization objective. Multinational companies, philanthropists and the government could also positively impact on the success story in the quest to digitize African University libraries. The challenge of funding unearths the need for capacity-building in the area of grant-writing and sourcing for funds among librarians.

 Another major challenge is electricity. Computerization and digitization become unrealizable in an environment of epileptic power supply. For instance, the HOL suffers from acute power supply disruption from the national grid. This has resulted in constant breakdown of the digitization equipment hence institutions, companies and individuals are forced to procure alternative power supply which has prohibitive initial financial outlay and running cost. The

issue of power has become a national calamity, thus it has to be given a priority by any library aspiring to attain global visibility. This issue could also be addressed by cultivating a power saving culture. When purchasing computers for instance, preference has to be given to flat screen monitors because they consume less energy when compared to CRT display units.

Scanning pages of brittle old newspapers, court reports and proceedings, books and theses at high speed without doing damage to them is another problem that calls for urgent attention. Furthermore, storage of the digital information into storage media of choice as well as the preservation of the content of the storage media and the media themselves pose another major challenge. Though major achievement has been recorded in the area of procurement of equipment for digitization through the assistance of the Carnegie Corporation of New York, getting appropriate content management software to make the digitized information available online to users still remains a major challenge.

Infrastructure is also a major challenge. Digitization of library materials and indeed global visibility require the setting up of computer networks at the local, metropolitan and national levels. Libraries in Nigeria must join the information super highway[7]. Information abounds on the web on digitization and other topics of interest which librarians must be able to access. The UNESCO site, for instance made available the content of Bohemica 1998[8], a CD-Rom about digitization of rare library materials and a very rich resource. Being able to access world information resource calls for a national gateway, network of fiber optics among Institutions and libraries and affordable bandwidth. Well, Nigeria though not there yet, is forging ahead in the setting up of these much needed infrastructural layout. The laying of fiber optics by Globacom and the Nigeria Communications Satellite I (NigComSat-1) recently launched are steps in the right direction.

Training/capacity building remains a key challenge in digitization as it requires a combination of skills (scanning, photographing etc.) Many librarians lack the basic computer training, not to mention specialized training required in the art of digitization. There is need for continuous training to build library staff capacity in equipment maintenance and software management. In recent times, there have been series of workshops by the Nigerian Library Association and ICT bodies but only few librarians get sponsored to attend while most could not afford to sponsor themselves. It is cheaper to train staff than to outsource the project.

Conclusion

The benefits accruable from digitization of library collections cannot be quantified. Aside making the library collections viewed and accessed at any time from anywhere, printing is also possible from the web. The library's collection will also be open and made accessible to a much larger user-base within and outside the university community. In addition, users can easily find the required materials quickly and independently with less stress and without having to border the library staff. This ultimately may lead to enhanced usage of the library's collections and facilitate efficient and effective teaching and learning process.

For libraries in developing countries to be relevant in the digital age, there is an urgent need for collaboration between national and international donor agencies as exemplified by Obafemi Awolowo University, Ile-Ife, Nigeria and the Carnegie Corporation of New York. Training and re-training of library staff become very important as well as putting in place necessary infrastructure at the local and national level. Library management also needs to accord high priority to computerization and digitization. It is when this is done that libraries in developing countries of the world can upload their peculiar local content to the world information database.

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