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Digitizing resources for University of Nigeria repository: Process and challenges

Helen Nneka Eke
Assistant Librarian/Webmaster, Nnamdi Azikiwe Library, University of Nigeria, Nsukka.
E-mail: helen.eke (at) unn.edu.ng, heleneke.eke (at) gmail.com

Abstract

This paper reports on the implementation of digitization of resources at the University of Nigeria, Nsukka (UNN); the processes involved and the challenges faced. In the context of the establishment of a digital library in University of Nigeria, the study aimed to: establish progress that has been made by UNN in digitizing their resources; report the process of digitizing these materials; find out problems encountered in the digitization project; and proffer solutions to the problems encountered. To elicit the necessary information, a literature review of studies done on digitization was carried out. Additionally, information on digitization of University of Nigeria resources was gathered through the University website as it contained necessary information that guided the study. The research was started off mid 2009 and concluded in December, 2009. Researcher's personal experiences and observation methods were also employed in the course of this study. The paper gives an overview of digitization and the digitization initiative in the University of Nigeria, Nsukka including the processes. A lot of challenges are facing the successful digitization of resources in University of Nigeria. Such major deterrents in the project include legal aspect and finances. Other factors were also discussed and the ways forward to the hindrances highlighted. This paper establishes that there are challenges militating against the digitization project in the University of Nigeria, Nsukka (UNN) which demands immediate attention. However, solutions are proffered, which can help in ameliorating the challenges raised.

Keywords

Introduction

In recent times, universities in Africa have embarked on integration of technology in their operations. This serves as a tool for improvement and development, especially in a situation where attention is drawn to the academic contents and ways of digitizing and preserving them. University libraries are fully involved in this development as they are the heart of the University, being that they house the intellectual contents of the institutions. This effort to digitize the intellectual property of the institution is what is known as digitization.

A related emergent trend in academic libraries is the implementation of institutional repositories (IRs), digital collections that capture and preserve the intellectual output of university communities (Crow, 2002). A repository established by a particular university or other research institution is known as an institutional repository. It can be intended to collect and preserve – in digital form – the intellectual output of an institution, as PhD theses, preprints, post prints, working papers, or technical reports. It can also contain the institutions digital library, the collection of printed and manuscript documents, public archives, and graphic material, originating from the institution or elsewhere, that the university has converted to digital form for use within the university, and generally available to anyone. It can also contain the administrative output of the institution, as reports, directories, and local archival documentation. A well-developed example is the eScholarship Repository of the University of California Digital Library (Wikipedia, 2011).

In a digital library, resources are stored and made available in electronic forms, and the services of the library are also made available electronically. Rosenberg (2005) noted that these services are made available frequently over the Internet so that users can access them remotely. This refers to e-services which most libraries are trying to embrace in the digital environment. Rosenberg stated that as libraries embrace the digital environment, their most crucial role is not that of providing e-resources, but of establishing services that facilitate access to the information available. According to Fabunmi, Paris and Fabunmi (2006), library digitization has become part of the work of librarians, and most libraries are involved in digitization. Libraries in Nigeria are not left aside in this digitization trend in universities.

By 2006 national census figures, Nigeria is the most populous black nation in the world with approximately 140 million people. There exist 93 universities in Nigeria as at 2008, 27 belonging to federal government, 30 to state governments while private individuals or organizations own 36. As noted by Omekwu and Echezona (2008), the state of ICT in Nigeria is poor especially when compared with some African countries such as Egypt and South Africa. Okiy (2008) hence commented that many librarians in Nigeria are therefore taking up the challenge of computerizing their libraries and some have taken some steps to source the requisite funds to digitize and archive their library resources for easier web-based access. For Kashim Ibrahim library, Unesco's sponsorship of the heads of six University librarians to a workshop on the use of the Greenstone open source software, sparked the library's initial interest in digitization. Additionally, digitization of theses and dissertations at the university libraries of Jos and the Obafemi Awolowo University, under the AAU-DATAD programme, provided a model for ABU to start digitizing its post-graduate theses and dissertations. The ultimate aim was to provide global access through the Internet for all the theses and dissertations accepted for higher degrees in the University.

The aim of digitizing library materials is for preservation and easy access by any user or researcher. In the words of Fabunmi, Paris and Fabunmi (2006),

> *Digitization improves access to library resources. By digitizing library collections, information will be accessible to all instead of a group of researchers. Digital projects allow users to search for collections rapidly and comprehensively from anywhere at any time. Digitization makes the invisible to be visible. Several users can access the same material the same time without hindrance. It also removes the problem of distance, as users do not have to travel to libraries that possess the hard copies of library materials before they can access and use such materials (p.30)*

This entails that the digital library would be open at any time for consultation of materials. Materials uploaded on the website are always there for people to consult, except when erased by the website administrator. In the University of Nigeria, Nsukka, theses and

dissertations are always there for researchers and students to use. It is an effort to increase the web content of the university website, as well as to preserve its intellectual content. The project is also an opportunity to develop technical infrastructure as several resources are required for the creation of digital library collections, their maintenance and provision of services.

Several efforts have been made towards the full establishment of a digital library in the University of Nigeria, Nsukka, but some gaps exist in this pursuit or dream realization. Some factors may not have been put into consideration to enable the sustenance and growth of a digital library in the institution.

Universities are centers of research and development and Nigerian Universities have started to key into this, realizing the need to build and develop digital libraries that will enhance research activities. The University of Nigeria Nsukka commenced the digitization of their resources in 2008 with the aim of preserving their resources and also to increase the university's web visibility. The publications date from 1980 to date. Many fields of science are represented, with an emphasis on all the courses offered by the University. Digitization of these resources is expected to improve the image of the university in the long run, and also add to the webometric ranking of the university among the top universities in the world.

Digitization: Overview

The term 'digitization' has been variously defined by different authors. Digitizing is the art of converting the contents of a document from hard copy into machine-readable format. Digitization implies conversion of documents and art works into digital images (Fabunmi, Paris, & Fabunmi, 2006). Digitization makes materials available electronically. In the African context, digitization refers to "conversion of non-digital material to digital form" (Tsebe, 2005). According to Wikipedia, digitizing or digitization is representing an *object*, *image*, *document* a signal (usually an *analog signal*) by a discrete set of its points or *samples*. The result is called "digital representation" or, more specifically, a "digital image", for the object, and "digital form", for the signal. Fabunmi, Paris and Fabunmi (2006) refers to digital images as electronic copies of documents. Cornell University Library defines digital images as:

> *electronic snapshots taken of a scene or scanned from documents, such as photographs, manuscripts, printed texts, and artwork. The digital image is sampled and mapped as a grid of dots or picture elements (pixels). Each pixel is assigned a tonal value (black, white, shades of gray or and ones). The binary digits ("bits") for each pixel are stored in a sequence by a computer and often reduced to a mathematical representation (compressed). The bits are then interpreted and read by the computer to produce an analog version for display or printing (p.3).*

The main reasons to digitize are to enhance access and improve preservation. It is a means of creating a database of materials like theses and dissertations and other resources that worth preservation. This tends to be the aim of the project set up by the Association of African Universities (AAU). It is a project for the digitization of Theses and Dissertations in Nigerian Universities which started with the University of Jos and the Obafemi Awolowo University (OAU), Ile-Ife (Okiy, 2008). Several efforts have been made to drive the issue of digitization in Nigeria. This led to the organization of the National Interactive Seminar, as noted by Okiy (2008), on Digitization of Library Material: processes and tools, organized by the National Library of Nigeria from $16^{th} – 20^{th}$ July, 2007 at the University of Jos Library. This came under the AAU-DATAD programme, which also provided a

model for ABU to commence the digitization aimed at providing global access through the Internet for all the theses and dissertations accepted for higher degrees in the university.

Database of African Theses and Dissertations (DATAD)

The goals of DATAD are: to create capacity in African universities for the collection, management and dissemination of theses and dissertations (T&Ds) electronically and providing visibility through improving access to the work of African scholars in and outside the continent. DATAD workshops noted the diverse approach to copyright and intellectual property management in participating institutions and called for greater harmonization in language and terms of intellectual management in participating institutions (AAU, 2004a; 2004b).

The DATAD project is an initiative of the Association of African Universities (AAU) and sponsored by the Carnegie Corporation of New York and AAU. The AAU is an international non-governmental organization which was set up in 1967 by Universities in Africa with a number of objectives which included, "collecting, classifying and disseminating information on higher education and research, particularly in Africa" (Okiy, 2008).

Many university libraries in Nigeria are now in the business of computerizing their operations. University of Nigeria, Nsukka has joined in this trend as it commenced the digitization of its resources in 2008. As part of the methodology for this study, information was gathered on the issues surrounding the commencement of the project, and some challenges faced.

One of the advantages of digitization is the ability to search for an item electronically. Silkroad (2009) noted that rather than scan through table of contents in a book or newspaper, you can do a quick electronic search and find what you are looking for in seconds. It saves the time of researchers, students and corporations. At the very core of the UNN's digitization initiative is digitization as a means of enhancing access. This implies that a large number of users can access a single material at the same time. This also saves time and it goes in line with Ranganathan's fourth law of library science which states: "save the time of the reader". Digitization also helps to reduce handling and use of fragile documents. Old theses such as theses of the university's first graduates of 1964 which have been steadily used for the past forty-five years have brown brittle. As these invaluable resources have become old, they need less handling and an effective back-up is established.

Hirtle (2002), cited in Fabunmi, Paris and Fabunmi (2006) argued that the biggest benefit of digitization is the tremendous increase in the use of digitized material. He used the cases of the Cornell University and the University of Michigan as examples. In Cornell, prior to digitization, a few volumes of the hard copies are circulated each year. However, with digitization, the views per month are above 4,000 web pages. Michigan has over 5,000 web page views per day. Michigan started earlier than Cornell.

Several equipments have been procured in UNN to facilitate the digitization project. Hence, digitization affords the institution the opportunity of developing a technical infrastructure. Additionally, a good number of staff, including librarians and other para-professionals have received different kinds of training on the digitization process. This offers the university an opportunity to develop technical staff and digitization exerts.

Methodology

Due to the ongoing Nigerian Labor Congress (NLC) strike, which commenced 7th July, 2009, the researcher was unable to neither conduct any interviews nor gather information through questionnaires. Alternatively, a web search was conducted, and information was drawn from a document on the library website which summarized the digitization project and challenges faced. Information was also gathered by observation and work experience from the researcher who had been a part of the digitization exercise as a supervisor.

The Digitization of the University of Nigeria Library: Processes

Digital image processing began with work done through the Jet Propulsion Laboratory in California in the 1960s and consisted of digitizing television images of the moon's surface sent by the spacecraft Ranger 7. Other uses included military intelligence, urban planning, medicine (such as the CAT Scan and the MRI), and of course digital video and photography (Burdick, 1997).

The digitization project in the University of Nigeria, Nsukka started with a set target of digitizing and uploading about a total of 500,000 files in the university's website. In 2008, training of staff involved in the project commenced. These include data entry operators, some youth corps members and some library personnel. The first set of documents selected for digitization was PhD theses. These bound materials were first unraveled by library staff in the bindery section and then shifted down to Innovation (ICT) centre where the digitization exercise is carried out. The digitization of the university's academic heritage as mentioned in the abstract is a collaborative effort of the University library and the Management and Information System (MIS) department of the university. The Innovation Centre is an arm of MIS department. The scanners and computers are housed in the Innovation centre due to lack of space in the library (now the old library) building. Other materials like Masters theses and dissertations, Bachelors degree projects, Inaugural lectures, university newsletters, lecturers' scholarly articles/publications, textbooks, term papers, and many other materials belonging to the university were enlisted in the materials for digitization (see figures 1 and 2 for theses and dissertations awaiting unraveling). These materials (mostly projects, theses/dissertations) are unraveled (see Figure 6), scanned and converted to PDF (Portable Document Format) files. Metadata files are obtained through book marking. For the theses, dissertations and projects, the bookmark structure takes the following structure:

- name of authors and registration number;
- preliminary pages;
- chapters; and
- bibliography and appendix.

After the book marking, paper capture is done to ensure that the document is searchable. This is otherwise known as rasterization. The rasterization process enables the detection of errors in the scanning process. The stated resolution to be set for the scanning process is 200-300 resolution. If set lower, the material cannot be rasterized. Hence, the paper cannot be captured. This may affect the appearance of the material when uploaded on the university website. Sometimes, it cannot be uploaded if not properly scanned.

Following the unraveling, scanning, bookmarking and rasterization processes is the checking of the job by professional librarians who go through the various stages of the digitization process, ensuring that the work has been professionally executed searchable through the metadata files. Typographical errors are also checked, after which each material is digitally signed ensuring quality assurance. Afterwards, the document is uploaded and linked to the university website. As at (8th July, 2009), the total of all materials uploaded in the university website is 14, 553 files. These documents comprise

Founders Day Lectures, UNN People-biodata, Inaugural lectures – UNN, Miscellaneous, theses/dissertations, projects, scholarly articles. The number of files uploaded x-rays vividly that there is yet a long way to go in this journey of digitizing UNN's resources, as the target is 500,000 files.

Figure 1. A section of unraveled Masters/PhD theses

Figure 2. Section of Bachelors degree projects

Figure 3. A section of staff scanning the materials signatures

Figure 4. Library staff appending digital

Figure 5. Staff uploading the materials online theses

Figure 6. Library staff in bindery section unraveling

Technical Requirements for Digitization at UNN

A Total of fourteen (14) scanners were procured for the project; five (5) EPSON GT-15,000 fast scanners and nine (9) HP scanners. Due to the epileptic power supply prevalent in most developing countries, a giant APC symmetra LU UPS and a MIKANO generator (5p60) were procured to augment power supply (Ezeani, 2009). See figures.

Figure 7. Giant UPS for Power Back-Up Supply

Figure 8. Giant Generator for Round the Clock Power

Figure 9. EPSON GT-15,000 fast scanner

Figure 10. HP scanner

Library Digitization Initiative: Challenges Faced

Most universities involved in digitization of their resources face similar challenges. Generally, the following factors pose challenges to the digitization initiative in most universities including UNN.

Legal Aspects

This is related to intellectual property rights. A major challenge for digital libraries is complying with copyright, intellectual property rights and related issues like plagiarism (Warraich, 2008). This is an aspect where librarians and researchers need to take precaution. There is an increasing unease among members of the library community that copyright changes will adversely affect the ability of libraries to provide digital collections and services. This was noted by Kuny (2009) who stated that:

> *if libraries do begin to systematically collect digital information on a larger scale, the provision of effective access could be questionable. In fact, copyright could end up preventing libraries from providing open access to the digital information they collect. Questions of copyright must be managed so that digital information can be created and distributed throughout "digital libraries" in a manner that is equitable for both in information producers and information customers. Copyright could become an insurmountable barrier to the development of digital collections (p.8).*

Intellectual property is the fifth challenge stated by Library of Congress as one of the challenges to building an effective digital library. It stated that a key element for digital libraries is appropriate recognition and protection of legal rights such as copyright, publicity, privacy, matter of obscenity, defamation intellectual property as well as less legalistic but serious concerns associated with the ethics of sharing or providing access to fold or ethnographic materials.

Copyright portends that an author's right to an original work is legally protected. It additionally gives the owner the exclusive right over own work. However, when a work is made by an employee as a part of his/her employment responsibilities, the employee is then considered the copyright owner. At the UNN, this singular fact that the employer owns the work of its employee has not gone down well with some academic staff. Many having spent several amount of money to publish their books and other scholarly works are reluctant to bring out these resources to the public domain as this would bring about so much loss of money. This can bring litigations, which sometimes can scuttle the process. However, the principle of fair use allows users to download these items particularly when

they are not subject to commercial use. The way out is through initiating a cost recovery measure, whereby users are expected to pay a small amount of money to be able to access these valuable resources.

Finance

In UNN, a lot of money is required for the purchase of diesel, for the generator; repairs of systems, generators and other equipments demand a lot of attention financially. Sometimes, the work ceases if there is no release of money for the purchase of diesel. Another area where money is required is human resources development. Training needs money and some African universities find it challenging to issue out money for such purposes, especially during economic crises as of present. The TULIP final report remarked that the "harsh economic realities" are that digital collection development entails heavy costs for implementation, licensing, training, promotion, and the development and support of a technical infrastructure. Furthermore, the report suggested that one critical issue which was not resolved was "how to make the transition to digital libraries work economically" (Borghuis et al., 1996).

Technical Support and Security

For librarians, security for digital information is a great challenge that demands attention. Piracy has been a great problem that needs solutions. Virus attack on the files and systems is also a big threat. Such incident occurred sometime mid 2008, when a particular virus named "Raila Odinga" attacked all the scanned files and it went ahead infecting all the computers used for the scanning and uploading of files. Eventually all the files were corrupted and lost, and some of the uploaded files had virus on them, and so could not be properly downloaded by users. To endure, digital libraries need the latest technology and more technical staff or experts to guard against such mishaps.

Technophobia

Many staff involved in the digitization exercise were subjected to series of training and re-training before they were able to pick up on the technology involved. Prior to this training, majority of the staff were not very familiar with the handling of computer. In discussing the challenges and implications for policy and planning of digitization of library resources, Fabunmi, Paris and Fabunmi (2006) noted that the major problem is lack of technical-know-how; hence, most digitization projects often run into problems. On the same plane, Jones (2001) discussed digital projects for libraries, museums and archives and submitted that digital projects require new skills. This boils down to lack of ICT skills, which most library staff lack. As stated by Warraich and Tahira (2009), "local LIS researchers have frequently mentioned the need to improve staff ICT skills and expertise" (Mahmood, 1998; Rehman, 1992; Zakar, 2000; Ameen, 2006; Warraich, 2008). The need for well-trained and qualified staff is reflected by the previous studies.

Bandwidth

Developing countries may have limited bandwidth available. This is a problem that is being experienced in UNN. Poor connectivity has always affected the rate at which files are uploaded. In a study carried out by Warraich and Tahira (2009), it was found that HEC (Higher Education commission) provides shared bandwidth via Pakistan Telecommunication Limited (PTCL). It was noted that poor connectivity has been a big challenge for accessing and downloading information especially large files.

Difficulty in digitizing some materials

Most academic staff supply their biodata and scholarly publications in a CD. At times, the CD-ROM drive of the computers used for the scanning are faulty. Some cases have occurred where the drives could not open, nor read the CDs provided. As a result, a section was created for dumping of such CDs and they were tagged "problem documents".

Editing of works digitized

The scanning requires considerable editing to conform to the standard set for such materials. The library professionals involved in appending digital signatures on the scanned documents must have to edit the work by first checking the spellings, looking out for the bookmarks to ensure it is properly done. This cuts down on the time required to sign the documents. This is done on theses, dissertations, projects and biodatas, which are the only signed documents.

Unavailability of Needed Materials

Sometimes most materials that users consult in the library, especially theses and dissertations are shifted for digitization. Some cases arise whereby a material is not yet uploaded and at the same time not available in the library. This keeps the library users stranded if they are in desperate need of such materials.

Solutions Preferred

In line with the above stated problems and challenges militating against the digitization project in UNN, the following solutions are suggested in order to cut down on the existing problems and to enhance the digitization exercise in the institution.

The issue of copyright should be properly addressed

On this note, researchers, academic staff and every other person involved in submitting their scholarly work for digitization should deliberate with the university management and come out with the solution on how to tackle the issue of copyright. One good way of handling the issue of copyright is to obtain copyright permissions. In other words, copyright permissions have to be obtained to enable digitization of materials. Fabunmi, Paris and Fabunmi (2006) added when the copyright permission is granted, it is essential to enter the date of approval and the name of the person who granted the permission into the database. When this issue of copyright is handled properly, staff would not be afraid to submit their articles for scanning and uploading for public use.

User orientation

On general occasions, staff, students, and researchers have come asking questions on how to access the uploaded materials. This is almost becoming a read-reference question to be developed by the librarians to whom these questions are posed. Therefore, it is crucial that an orientation be given to such users on how to locate the materials online.

The federal government should put more effort with regard to funding of tertiary institutions in Nigeria

Because of its capital intensive nature, digitization projects should be funded by the federal government. This entails provisions in terms of infrastructure like scanners, giant generators and power back-ups. Moreso, there is need for maintenance of the equipments which may be too much for some institutions to handle. It is important for government to lend a helping hand to such institutions. This will go a long way in inculcating technological advancement and preservation of cultural heritage of such institutions. This

boils down to budget. Provisions should be made for digitization of resources in academic establishments by the government. Budgets for digitization projects as listed by Jones (2001) should include the following categories:

- Salaries, wages and benefits (likely to be about 50% of the project cost);
- Staff training;
- Equipment and supplies;
- Services, contracts and legal fees;
- Overhead and indirect costs (including offices and workspace);
- Maintenance, licenses, and communication charges; and
- Contingency (If possible, add 7-10% of the total project budget for unexpected expenses).

Constant training of staff is necessary

As new technologies emerge, librarians and other staff involved in the digitization project should be trained. A train-the-trainer exercise should also be encouraged so that when some group of staff retire, other ones can pick up from where they dropped. This is also a way of addressing technophobia. Workshops should be organized at local and national level by associations and interested bodies for the training of library personnel on digitization issues. They may not necessarily wait until the staff handling the project retire. Some efforts have been made in Nigeria to achieve the training of library personnel on digitization issues. An instance is the National Interactive Seminar on Digitization of Library materials: Processes and tools, organized by the National Library of Nigeria from 16th – 20th July, 2007 at the University of Jos Library. Another impressive instance is a workshop being organized by the Information Technology Section of Nigeria Library Association (NLA), to be hosted by Nnamdi Azikiwe Library, University of Nigeria, Nsukka. The workshop which is to be held from 11th to the 16th of October 2009 is tagged: "Managing of digital library resources". Such workshops expose library personnel to all they need to develop a digital library for the benefit of users and the society.

Back-up sources should be provided

In a case where a virus attacks the files and data is lost, there should be a back-up for continuity before then. An external hard drive of large storage capacity could be purchased for this purpose. The stated solutions will go a long way in strengthening the digitization exercise in the University of Nigeria, Nsukka. Amongst all the reasons for the digitization project, preservation is the main goal. Although preservation of materials is the ultimate goal of all digitization efforts, provision of greater access is another noble reason for digitizing library collections (Fabunmi, Paris, & Fabunmi, 2006). In Nigeria, Nnamdi Azikiwe Library, at the University of Nigeria Nsukka has established digital links with the digital collections of the following:

- Access to Global Online Research in Agriculture (AGORA);
- JSTOR;
- Health Inter Network Access to Research Initiative (HINARI);
- EBSCOHOST; and
- E-Grenary Digital Library (linked June 29, 2009).

Despite this effort, there is still need for UNN library to develop a named digital library where all the locally digitized materials could be stored. Presently, the library is making use of Libplus (Lib+) library software, which is an upgrade of X-lib – a software developed at the Raw Materials Research and Development Centre in Abuja, the capital of Nigeria. It is a local library software developed to meet the immediate needs of Nigeria,

and Nnamdi Azikiwe Library adopted if for its operations. Presently, the lib+ is used to create an OPAC where all the library materials are cataloged and made available to students in the intranet for easy location of such materials. This is still at its infancy state.

As earlier stated, there is need to create a named digital library for the institution where all the digitized materials should be stored and some precautions should be taken in order to achieve that aim.

Creating a Digital Library: A Step Forward for UNN

A digital library (DL) is a collection of information that is stored and accessed electronically. Digital libraries emerged in the early 1990's as a result of advances in computer technologies particularly WAIS (Wide Area Information Server) and Gopher (Ballard, 2000). According to Rosenberg (2005), the term digital library is used to refer to a library where some or all of the holdings are available in electronic form, and the services of the library are also made available electronically – frequently over the Internet. A DL contains no conventional printed information resources, but electronic books, journals, and newspapers (Mutula & Ojedokun, 2008).

Creating "effective" digital libraries poses serious challenge for existing and future technologies. Organizations of digital libraries is characterized by the activities carried out, and such activities as outlined by Mutula & Ojedokun (2008) include: electronic publishing, digitization, indexing, classification, cataloguing, information storage and retrieval, updating and annotating documents, searching and browsing, and the whole array of information management operations.

According to Fabunmi, Paris and Fabunmi (2006), a digital library can be made to serve a region. Fabunmi, Paris and Fabunmi further gave an instance of the Southern Oregon Digital Archives, which provides a wealth of research materials on the regional ecology and indigenous peoples of Southwestern Oregon and Northeastern California (McCook, 2004). The project was funded by a grant from the Institute of Museum and Library Services. It contains more than 1,500 fully searchable documents, books and articles (Fabunmi, Paris, & Fabunmi, 2006).

Although UNN has tried to achieve some of these, a major problem they face is proper organization of the materials online. There is need to properly categorize the materials. For instance, undergraduate term papers are mixed with scholarly publications of academic staff. There should be no miscellaneous category; items should be properly placed, each belonging to a unique category.

Developing a Digital Library: Infrastructure and Techniques

For digital libraries to be accessed, there should be provision of networks such as the Internet and Intranets. This will prevent users from always having to physically visit the library to consult electronic documents. As stated by Mutula and Ojedokun (2008), the design and implementation of DLs require a robust and elaborate infrastructure involving PCs/Servers, web authoring languages, browsers, different application programs, Internet Connectivity, Content, information architecture, standards, and others.

In developing DLs, there is need for collation of contents. The contents also need to be organized. Digitization is a way of generating content for DLs. The role of the librarians here is to organize knowledge through the process of subject analysis and cataloguing – creating information about information (data about data), or what is known as "metadata". As noted by Kuny and Clevaland (2009):

metadata standards are still in their infancy. Initiatives and research such as the Dubline Core/Warwick Framework for metadata, Government Information Locator Services (GILS), and Uniform Resource Characteristics (URC) are promising ways forward (p.5).

Digital libraries present several benefits to the users far beyond what conventional libraries can provide. Digital libraries have the potential of improving and promoting information-related activities (Ojedokun, 2000). Added to the benefits of DLs is the provision of easy connectivity and access. Several of the benefits and challenges of digital libraries are synonymous with that of digitization.

Conclusion, Recommendation and Implication

African universities have keyed into the digital library initiative, although the development tends to be slow due to some barriers hindering DL programmes in Africa. The University of Nigeria, Nsukka has been making efforts to digitize the resources of the institution, despite some of the numerous challenges faced. The question now is: "what efforts are needed to ensure that these challenges are surmounted; how best UNN create a named digital library that will aid in preserving the intellectual property of the institution"?

Intellectual property has been identified as one of the challenges to building an effective library by Library of Congress, which hopes that creative and innovative minds can devise solutions to these challenges. Efforts to formulate digital libraries will be seriously delayed in the absence of a common, responsible framework of rights, permissions, and restrictions that acknowledges the mutual needs of rights-holders and users of materials in digital libraries. Intellectual property seems to be the major challenge of building a digital library. In UNN, same subject of intellectual property has caused most academic staff to withhold their publications from being scanned and uploaded to the university website. This situation calls for goal-setting regarding the issue of digitization of the university resources. The materials also deserve some sort of security in terms of restrictions to users. Not every part of the work should be viewed or downloaded by users on the Internet. The university authority, academic staff, digitization personnel need to sit down and brainstorm on the issue of intellectual property rights and ways of preserving the resources already stored on the university database.

In his study on "copyright, Indigenous knowledge and Africa university libraries: the case of Uganda", Kawooya (2006) noted that "a participating institution indicated that intellectual property control was one reason important full-scale digitization initiatives had not taken off yet valuable resources are locked up or access is limited if retained in print format". Insufficient intellectual property control is a major factor that has been eating deep into the fabric of institutions when it comes to digitization of resources. The paper has attempted to drive home, some issues militating against digitization of resources in higher institutions, paying a particular attention to UNN.

Following from this and the challenges raised earlier in the paper, therefore it is recommended that a goal be re-set to suit the proper creation of a digital library in the University of Nigeria, Nsukka. Good goal setting is important for any new initiative, and digitization is an area where goal setting has to be fully considered. The institution and personnel involved need to brainstorm and reach a consensus that will tend to address this, bearing in mind who will access the collection, what materials they may be looking for, how they will use it and how many people will need and, or use the information acquired. This will go a long way in securing the intellectual property of the institution and making them available to users any time they need it.

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