STATUS OF DIGITIZATION OF FEDERAL UNIVERSITY LIBRARIES IN SOUTH-EASTERN ZONE OF NIGERIA.

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Uzoamaka Igwesi, a postgraduate student in the Department of Library and Information Science with Registration Number PG/MLS/08/49654, has satisfactorily completed research requirements for the award of Masters Degree (MLS) in Library and Information Science. The work embodied in this thesis is original and has not been submitted in part or in full for another degree of this or any other university.

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DEDICATION

This work is dedicated to the Almighty God who has been the source of my strength and inspiration throughout my study.
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Abstract

This study investigated the status of digitization in federal university libraries in South-Eastern Zone of Nigeria. Seven research questions guided the study. The research design adopted for this study is a descriptive survey. The total population for this study was three hundred and twenty-three (323) library staff, but sixty (60) respondents that were directly involved in digitization were sampled. The major instruments for data collection are questionnaire and observation checklist. A total of sixty questionnaire were distributed to the respondents who comprised of the library staff from the university libraries under study. Fifty-five copies of the questionnaire were correctly filled and used for this study. Data were analyzed using percentage and mean scores. From the analysis, the findings revealed that improved library services, increased access, speedy retrieval of documents and effective preservation are the major purposes for digitization of library resources. The result also shows that librarians have not yet acquired all the skills needed for digitization especially skills on creation and management of library website, database management skill, troubleshooting, metadata creation of library resources, and web publishing. High cost of purchasing equipment, poor internet connectivity, preservation of digital resources, inadequate skilled personnel, lack of standards, and inadequate funding are some of the major problems militating against effective digitization project. Based on the findings, the study recommended alternative power supply, adequate funding, training of librarians to acquire digitization skills and proper selection of software packages as strategies for effective digitization. The study concluded that in order to remain relevant in the present digital environment, libraries especially in developing countries should make every effort to digitize their local content for preservation and easy access.
CHAPTER ONE
INTRODUCTION

Background to the Study

The University library can be seen as the central nervous system of its parent institution as they are primarily established to provide information resources to back up academic programmes. It is the principal instrument of the university in the conservation of knowledge. Proper fulfillment of this role provides a sound basis for the transmission and advancement of knowledge. The University library therefore collects materials, published and unpublished, print and non-print, in some depth and globally in almost all fields of knowledge (Aguolu and Aguolu, 2002). Thus the main purpose of the university library is to support the objective of the university which is to promote teaching, learning and research.

Globally, Libraries are digitizing information resources and making them available and accessible to end users via electronic media such as the World Wide Web (WWW), the Internet, and CD-ROM. The present revolution in Information Communication Technologies (ICTs) and digitization initiatives are now critical issues that libraries, especially in the academic environment can no longer afford to fold their hands if they must continue to remain relevant in this digital age. Nwalo (2003) noted that “Libraries in Africa including Nigeria are gradually but steadily converting from manual process to computer-based library routines.” This is as a result of the changing need of library users.

Obviously, the general library environment is gradually changing from analogue to digital and/or hybrid library, as a result of the present ICT revolution which has been the central driving force for digitization project. Hence, ICT is the gateway for library digitization; although these technologies have been in a very low
supply in Nigerian universities and most African countries. The advent of ICTs and the present digitization projects are key developmental factors in the present day libraries especially in the academic environment. ICT according to Blurton (1999) is a diverse set of technological tools and resources used to communicate and to create, disseminate, store, and manage information. Anaeme (2006) pointed out that the emergence of fast growth of Information Communication Technologies (ICT) and their application in libraries, especially academic libraries, has continued to revolutionize the pattern and scope of library services. In the same vein, Campbell (2006) observed that “numerous creative and useful services have evolved within academic libraries in digital age: providing quality learning spaces, creating metadata, offering virtual reference services, teaching information literacy, choosing resources and managing resources licenses, collecting and digitizing archival materials, and maintaining digital repositories.

Digitization is the process of converting the contents of a document from hardcopy into electronic or machine-readable form. It involves the selection of source materials of intellectual value, scanning them, and saving the scanned document into the computer to be accessed locally and remotely via the internet. According to Witten and Bridge (2003), digitization is “the process of taking traditional library materials that are in the form of books and papers and converting them to the electronic form where they can be stored and manipulated by a computer”. Fatoki (2005) defined digitization as “the conversion of analogue media to digital form”. In the same vein, Library and Archives, Canada in Akintude (2007) defined digitization as “the process of translating a piece of information such as sound recording, picture or video into bits”. Digitization therefore involves more than the conversion of
analogue materials into digital format; it includes the organization of the digital content into a navigable format.

Generally, digitization has a lot of invaluable benefits such as increasing the visibility of libraries globally, improved services to an expanding number of users, enhanced access to current and vast amount of information from remote sites as users can easily access library resources from different parts of the world no matter the distance; flexibility in information search and retrieval; it ensures better preservation of library resources by reduced handling of the original analogue surrogate materials and alleviating the problems normally associated with the traditional library environment such as mutilation of information resources, theft, space constraints, scarcity or limited number of copies, limited hour of operation, and poor storage environment normally associated with manual preservation; it is a veritable information source for e-learning and it offers a platform for collaboration and interoperability of libraries globally.

Digitization has the potentials of making Africa global producers of indigenous information and preservation of our cultural heritage rather than being passive consumers of imported information. Hence, digitization paves way for the globalization of local content and the accessibility of global information resources locally. In Africa, there have been some digitization projects. Chisenga (2004) noted that while digital libraries and archives are being created around the world in order to preserve, store, catalogue, disseminate and share information resources, target scale digitization projects in Africa have not yet taken off, though there are notable efforts being made in some countries, but mainly in a small scale. Digitization enhances the visibility of a library globally as materials digitized can be easily accessed by other libraries and research institutions once there are compatible infrastructures such as
relevant hardware, software, and internet connectivity. The immense importance of
digitization is that it offers opportunities for collaboration among libraries worldwide. It enhances the visibility of a library globally as digitized materials can easily be accessed by other libraries and research institutions locally, nationally and internationally, once there is compatibility of infrastructures such as relevant hardware and software.

Digitization has recently become a very popular term in libraries as there has been a global need for nations to preserve their cultural heritage and make them accessible in order to contribute positively to the global information and knowledge economy. The concept of a library as a physical place where one can visit to access information has dramatically changed to services which provide organized access to the intellectual records, wherever it resides whether in physical places or in scattered digital information spaces paving way to the present model of hybrid libraries (Carr, 2001)

Digital libraries emerged largely in the 1990s because of the revolution in the ICTs and the need for enhanced access and preservation of cultural heritage materials. The term digital library was first made popular by the NSF/DARPA/NASA Digital Libraries Initiative in 1994, (Eyitayo, 2007). Digital libraries according to the Digital Library Federation (DLF, 1998) are “organizations that provide the resource, including the specialized staff, to select, structure, offer intellectual access to interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities”. Digital libraries offer a brighter future for academic, research institutions, and digital information professionals. They offer access to and opportunities for use of online primary resources. The main
The purpose of digital libraries is to organize, distribute, and preserve information resources in a digital form. Digital libraries have the potential of improving and promoting information-related activities (Ojedokun, 2000). Digital libraries therefore are libraries in electronic form, with no physical location and contain digital information that could be accessed from any part of the world via the internet. It solves the problem of time and space.

Digital collections usually comprise of local content and provide unlimited access to information materials that may not be readily accessible manually. Local content refers to what the community creates, owns or adapts in terms of knowledge (Ballantyne, 2002). Digital materials are stored, processed, accessed, and disseminated via digital devices and networks. Digital technologies offer a new preservation paradigm and the opportunity of preserving the original copy by providing access to the digital surrogate. With this new development, it has been universally recognized that digitization of libraries offer the opportunities of effective organization, storage, preservation, collaboration, interoperability, dissemination and greater access to information.

The National Digital Library Programme (NDLP) provides remote access to unique collections of Americana held by the Library of Congress through *American memory*. During the 1990s, the programme digitized materials from a wide variety of original sources, including pictorial and textual materials, audio, video, maps, atlases and sheet music. It was noted that the emphasis of the programme has been on enhancing access (Arms, 2000). Libraries such as the University of Oregon and University of Tennessee in the United States of American have digitized their libraries and allow access to their digital content by other libraries and institutions worldwide. The Image Services Centre of the University of Oregon for instance, was established
in July 2002 to promote preservation and facilitate access to fragile materials. (www.dartmouth.edu/collab/facilities/digitallibrary.html)

Several digitization initiatives have been going on in African countries in order to preserve and provide access to their local content on the Wide Area Network (WAN). It was on this platform that the Association of African Universities (AAU) funded the Database of African Theses and Dissertation (DATAD) project which aims at preserving African theses and dissertation in digital form and then providing electronic access to them. The project also aims at providing a database of citations and abstracts of the theses and dissertations and publishing them on the web; as well as providing CD-Rom services. Other digitization projects in Africa include the South African’s Bibliographic Network (SABINET), Ain Shams University Network (ASUNET) in Egypt, Digital Imaging Project in South Africa (DIPSA), African Virtual University (AVU) Library and so many others.

The digital revolution offers Nigeria and other African countries the unique opportunity of actively participating in the world latest developmental revolution. (Ogunsola, 2005). As noted by Ochai (2007), some of the digital initiatives in Nigeria include: The Nigerian University library consortium which created the capacity for libraries to negotiate for reduced license for EBSCO host. This database contains about 8,000 academic journals in all fields. Also, the Nigerian virtual library initiative by the Nigerian Universities Commission which aims at bringing electronic information to Nigerian universities. Some Nigerian university libraries such as the University of Jos (UNIJOS), University of Nigeria, Nsukka (UNN), University of Ibadan (UI), Obafemi Awolowo University (OAU), Ife, University of Port Harcourt (UNIPORT), Nnamdi Azikiwe University, (UNIZIK), Awka, Federal University of Technology, Owerri (FUTO), etc have started digitization projects. Apparently, most
African University libraries are digitizing their local contents and are at different levels facing various challenges of uploading their local content and cultural heritage on the internet in order to make a positive impact on the Global Information Infrastructure (GII). The United Nations Economic Commission for Africa (UNECA) indicated that surveys have shown that Africa generates only 0.4% of the global content (UNECA, 1999). In Nigeria, digitization project is still in its rudimentary stage and abysmally low; to some libraries, it is still a mirage. The result of the research carried out by Usman (2007) revealed that Nigerian universities are lagging behind in the pace of digitization of their question papers, theses and dissertations, mainly because the average Nigerian university libraries have not yet embraced the idea of electronic library in the digital age. It is against this background that this study is being conducted to assess the status of digitization of library resources in the four federal universities in the South-Eastern Zone of Nigeria.

Statement of the Problem

Over the years, libraries have been faced with the problems of space, accessibility and preservation of information materials. Various efforts are being made by university libraries in Nigeria to digitize their local contents such as projects, theses, dissertations, inaugural lectures, etc. This is as a result of the invaluable importance of library digitization such as speedy access, effective preservation of library resources, collaboration, improved library services, etc. The library materials if not digitized will hinder the library visibility, quick access to information resources and effective preservation of library resources. Unfortunately, most of these digitization initiatives have been at various stages facing different challenges.

However, some Universities such as University of Jos (UNIJOS), Obafemi Awolowo University (OAU), Ife, University of Ibadan (UI), University of Port-
Harcourt (UNIPORT), have embraced this laudable project, but are at various stages facing various challenges. Some studies have been carried out on related areas such as Usman (2007), Ugwu and Ekere (2010), but none of these works have covered the present status of digitization in federal university libraries in south-eastern zone of Nigeria. Notwithstanding all the efforts being made by different Nigerian university libraries towards digitization projects, it appears that very little progress has been made. These perceived problems could be attributed to a number of challenges. Knowledge of these challenges is essential for any university, whether federal, state or private to be aware of in the course of digitizing library resources. This shows that there is still a gap which needs to be filled in order to achieve effective digitization projects in Nigerian university libraries. Hence, the need for this study which is designed to assess the present status of digitization projects among federal university libraries in South-Eastern Zone of Nigeria.

**Purpose of the Study**

The general purpose of this study is to assess the status of digitization in federal university libraries in South-Eastern Zone of Nigeria. The specific objectives of this study are to:

1. Ascertain the purpose for digitizing library materials in federal University libraries in South-Eastern Zone of Nigeria.
2. Identify the facilities/resources employed in digitization of library materials.
3. Ascertain the extent of digitization skills possessed by the library staff?
4. Identify the type of resources being digitized in the libraries.
5. Ascertain the extent of digitization in federal University Libraries.
6. Identify the problems affecting the digitization of library resources.
7. Identify the strategies for enhancing digitization in the libraries.
Research Questions

This research is being conducted to find answers to the following research questions:

1. What are the purposes for digitizing library resources?
2. What are the available facilities/resources employed in digitization of library resources?
3. What is the extent of digitization skills possessed by the library staff?
4. What types of resources do libraries digitize?
5. What is the extent of digitization of library resources in federal University Libraries?
6. What are the problems affecting the digitization of library resources?
7. What are the strategies for enhancing effective digitization project in university libraries in Nigeria?

Significance of the Study

The inherent values of digitization are the ability to preserve information resources and quick access to information in a digital format from local to remote areas for teaching, learning and research. In view of this, it is expected that the findings of this research work will be of benefit to the following groups of people: the library administrators, library system analysts and digital library management staff, the general library staff, library users and researchers.

The findings of this study will help the library administration to adopt effective strategies that will help them enhance their digitization practices in libraries. On the other hand, the system analysts and the digital library management staff will also find this work useful. This is because, it is expected that the findings of this work
will be useful in their programming, designs, and their formulation of strategies that could better enhance digitization.

Moreover, the findings of this study will be useful to the entire library staff as it will help to reveal to them the extent of digitization project in their libraries. In addition, the findings of this study will be of benefit to the library users as it will reveal to them the various library materials that are being digitized to enable them carry out effective learning and research.

This work will be a vital source material to researchers especially in the area of digitization of Library resources as it will help in widening their horizon in the knowledge of digitization process in libraries as well as revealing to them the status of digitization in the various universities under study.

**Scope of the Study**

This research covers the following federal university libraries in the South-Eastern Zone of Nigeria: University of Nigeria, Nsukka (UNN), Nnamdi Azikiwe University, Awka (UNIZIK), Michael Okpara University of Agriculture, Umudike (MOUAU), and Federal University of Technology, Owerri (FUTO).

Furthermore, the study will be delimited to: purpose, facilities/resources employed in digitization; types of resources digitized, extent of digitization in libraries under study; problems and strategies for enhancing digitization.
CHAPTER TWO

LITERATURE REVIEW

In this chapter, literature relevant to the research topic has been organized and presented in the following order:

Conceptual Framework:

Purposes for digitization in libraries
Facilities / Resources used for digitization
Types of resources digitized
Skills / Competences Necessary for Digitization
Problems affecting the digitization of library resources
Strategies for effective digitization

Empirical Studies

Summary of Literature Review

Conceptual Framework

The present digital technologies have introduced an epoch of change, revolutionizing the way we acquire, process, access, preserve and disseminate information. This new paradigm has opened up a totally new perspective in the library and information environment; paving way for greater and remote access to information. It has opened the opportunity for increased speed, greater connectivity, collaboration, interoperability, greater storage capacity, improved preservation and overall effectiveness and efficiency in information management.

The advent of Information Communication Technologies (ICTs) has dramatically altered the way people seek and access information. Several users can now have simultaneous access to information in digital format even in their homes. The print media are no longer sufficient to get access to stored information as knowledge and
information are multi-dimensional and are continuously growing at a geometric progression, leading to information-explosion. On this note, Okiy (1998) revealed that “the current trend in information provision in libraries world-wide is through the application of information technologies for the provision and expansion of the scope of information available to patrons irrespective of their location”. This has led to an integrated system called hybrid library which has the added advantage of ensuring effectiveness and efficiency in services provided. A hybrid library is one where electronic information resources and traditional analog materials co-exist in an integrated information service, which can be accessed via electronic gateways available both on-site such as the traditional library and remotely via the internet or local computer networks. The philosophical assumption underlying the hybrid library is that libraries are about organized access, rather than local collections which become just part of the means of delivery, (HiLife, 2000).

The gateway to digitization is ICT and the driving force is the revolution of the internet the world-wide web (www). As has been defined, digitization is the conversion of analog materials to electronic form. In a digital library, resources are stored and services made available electronically. Digital libraries may be conceptualized as the computerization of traditional libraries and the conversion of analog materials into digital or electronic format. Digital collections normally consist of local contents and provide unlimited access to materials that are not readily accessible. Hence, the technological development of the past few years such as the electronic database, online services, CD-Rom and the internet have rapidly transformed the management of information worldwide.

Digitization has recently become a very popular term in library and information centers as a need for greater access to information, preservation and
knowledge creation. The onus of digitization falls on the librarians and other information professionals, to identify, organize and digitize information materials. According to Fabunmi (2006) “Library digitization has become part of the work of librarians, and most libraries are involved in digitization”. A number of university libraries in Nigeria have embraced this laudable project and are at various stages of digitization. Some of these libraries have embarked on digitization of their local contents such as undergraduate projects, post-graduate theses and dissertation, inaugural lectures, archival materials, etc. A working definition of the Digital Library Federation (1998) stated that:

> digital libraries are organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access to interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities ( Digital Library Federation: 3 )

There are currently a few digital library initiatives in Africa. (Mutula and Ojedokun, 2008). Britz and Lor, as cited in Ezeani and Ezema (2009) revealed that most digitization projects in Africa have always originated from outside African continent. However, some of the digital library projects in Africa as identified by Mutula and Ojedokun(2008) include:

- ISAP Online, the Index to South African Periodicals (ISAP), which provides abstracts and bibliographic information to more than 680 periodicals and journals published in South Africa;

- The National Inquiry Services Centre (NISC), South Africa, which provides indexes to South African periodicals and the 135 African published journals listed in the 1997 edition of African periodicals;

- Rhodes University in South Africa which has an on-going project of publishing electronic theses and dissertation (ETD). The project undertakes
the digitization of doctoral dissertations and make them available on the university intranet;

- The African Association of Universities has an on-going project to create database of African theses and dissertation (DATAD) on CD-ROM;

- The South African’s Bibliographic Network (SABINET) which publishes online the union catalogue of theses and dissertations at Masters and Doctoral levels and Ain Shams University Network (ASUNET) in Egypt. These are the two major bibliographic utilities that are involved in electronic publishing on the African continent;

- The African Online Digital Library (AODL). This is one of the pioneer African digital library developments. The project started in 2000/2001 and it was funded by the International Development Research Centre and National Science Foundation (NSF);

- The Digital Imaging Project in South Africa (DIPSA) which is a non-profit making initiative for co-operation among research libraries and archives in South Africa on digital imaging;

- African Virtual University (AVU) Library, which belongs to the African Virtual University, is an innovative educational organization established to serve the countries of Africa.

Also, Database of African Theses and Dissertation (DATAD) is an initiative of the Association of African Universities (AAU) in association with the Nairobi-based project for Information Access and Connectivity (PIAC). The major goals of DATAD are: to create capacity in African universities for collection, management and dissemination of theses and dissertation (T&D) electronically and providing
visibility through improving access to the network of African scholar in and outside the continent (DATAD, 2005).

Purposes for Digitization in Libraries

Digitization arose as a result of the need to contribute the local content to the Global Information Network (GIN), increased access and long-term preservation of information materials in order to avoid the deterioration often associated with paper collections. The three main purposes for digitization are to increase access, preservation of resources and improved library services. Digital technology is increasingly revolutionizing the world of information; changing the way in which information is acquired, stored, preserved and accessed. With the advent of digital technologies, information can now be accessed through myriad of electronic means such as e-mail, web page, digital repositories and internet resources. Digital technologies enable information to be created, manipulated, disseminated, located, and stored with increasing ease. Most importantly, digital technology offers unprecedented opportunities for access and use, since it could facilitate the expansion of scholarship by providing timely, distributed access to a variety of sources from a variety of locations for teaching and learning. Marchionini and Maurer in Anasi (2010) revealed that:

*Digital libraries have obvious roles to play in formal learning settings by providing teachers and learners with knowledge bases in a variety of media. In addition to expanding the format of information (e.g. multimedia, simulations), digital libraries offer more information than most individuals or schools have been able to acquire and maintain. Digital libraries are accessible in classrooms and from homes as well as in central library facilities where specialized access, display, and tools may be shared. Remote access allows possibilities for vicarious field trips, virtual speakers, and access to rare and unique materials in classrooms and at home. The promise is one of better learning through broader, faster, and better information and communication services. (Anasi, 2010: 105)*

The most important qualities of information in digital form according to Abby (1999) are that:

- By its very nature, it is not fixed in the way that text printed on paper are;
• Digital texts are neither final nor finite, and are fixed neither in essence nor in form except when a hard copy is printed out, for they can be changed easily and without trace of erasures or emendations;

• Flexibility is one of the chief assets of digital information and is precisely what we like about text poured into a word processing program;

• It is easy to edit, to reformat, and to commit to print in a variety of iterations without the effort required to produce hard copy from a typewriter. That is why visual designers like computer-assisted design programs;

• It is easy to summon up quickly any number of variations of value, hue, shape, and placement to see, rather than to imagine what different visual options look like;

• Helps to create an endless number of identical copies from a digital file, because the file does not decay by virtue of copying (Abby, 1999)

Ding (2000) has elaborated the work of Getz (1997); Line (1996) and Mckinley (1997) on the advantages of digitization. They submitted that:

• Digital materials can be stored, transmitted and retrieved easily and quickly;

• Access to electronic information is cheaper than its print counterpart when all the files are stored in an electronic warehouse with compatible facilities and equipment;

• Digital texts can be linked, thus made interactive; besides, it enhanced the retrieval of more information.

*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*
Urban (2002) in his work noted that “digitization is an excellent tool for increasing access to resource, preserving the original through reduced handling and providing far superior access”. On the same note, the guidelines for digitization projects UNESCO (2002) stated that the reasons for implementing a digitization project are varied and may well overlap. These reasons include the following:

- Increase access; this is the most obvious and primary reason where there is thought to be a high demand from users and the library or archive has the desire to improves access to a specific collection;
- Improve services to an expanding user’s group by providing enhanced access to the institution’s resources with respect to education, long life learning;
- Reduce the handling and use of fragile or heavy used original material and create a “back-up” for an endangered material such as brittle books or documents;
- Give the institution opportunities for the development of its technical infrastructure and staff skill capacity;
- Establish sharing partnerships with other institutions to create virtual collections and increase worldwide access;
- Seek partnerships with other institutions to capitalize on the economic advantages of a shared approach.

Furthermore, Archimedia (2005) equally identified a number of reasons for digitization which include: reduction or elimination of the volume of the printed materials and reduction of the necessary operational space for its storage; reduction of the maintenance cost for the printed materials, faster search and access to the required information through a terminal, access possibility to the same information for more than one user simultaneously through a terminal, possibility for graded access and
maximization of data security. The digital environment has fostered the expansion of
the access unit through globalization, collaboration and interlinking of resources. In
addition, Fabunmi (2006) identified three major reasons for digitization endeavour
which include: the need to preserve endangered library resources, improvement of the
efficiency of information search mechanism and improving access to library
resources. Dutch Electronic Library Technology Association (DELTA) in Irechukwu
(2007) enumerated some benefits of digital library as follows:

- Integrated access to electronic and paper resources via web browsers on a
  physical location of their choice;
- Using one point of access sometimes called one-stop shopping;
- A range of new functionality such as improved subject access production
  facilities for authors, multi-media support and many others;
- Personalized off-line selection of information, based on profiling; one account
  and billing mechanism for all services and extensive online help and training
  modules;
- It offers platform for cooperation in the area of selection of relevant
  documents;
- It will eliminate duplicate efforts to solve the problems at different locations;
- It brings integration in existing local and national infrastructures;
- It establishes data warehouse with information on end user behaviour.

Digitization has offered a new preservation paradigm and also the opportunity
of preserving the original by providing access to the digital surrogate. The digital
surrogate reduces physical wear and tear by reducing handling of the original analog
resources. Digitization is increasingly impacting on the preservation of our cultural
heritage and global accessibility of our local content. On this note, Ezeani and Ezema
(2009) posit that “digitization encourages globalization of local information content
and localization of global information resources”. Mutula (2008) revealed that
contributing to the information and cultural content of global information could be achieved through the following ways: putting local information on websites, creating subject-based information gateway, digitizing of documents and artifacts, and giving indigenous language orientation. Digital depository is an online, searchable, web-accessible database containing intellectual works by scholars and researchers organized to increase access to scholarship and ensure their long-term preservation. This is a particularly viable option for academic and research libraries as it ensures that grey literature, published materials, and research journal articles undergoing peer review, and electronic versions of theses and dissertations of staff and students as the case may be are harnessed and systematically organized for easy access in the repository. (Longshak, 2010).

Digital preservation is a process by which data is stored in a digital or electronic form in order to ensure accessibility, durability and intellectual integrity of recorded knowledge. The purpose of digital preservation is to ensure adequate protection and longevity of information in an electronic format for enduring value, quick and long-term access by present and future generation. Gbaje (2009) noted that digital preservation ensures that digital materials are available and accessible in the long-term.

Digitization has equally alleviated the problem of poor storage environment normally associated with the manual preservation of information materials especially in developing countries. The traditional libraries are limited by storage space, while digital libraries have the potential to store much more information, simply because digital information requires very little physical space to contain them (Tiwari, 2007). Digital information occupies much less space than the analog materials. However, digital copy should not be seen as a replacement for the original analog material but
should be adequately cared for even after digitization exercise. Hence, no digitization has been made with the intent of replacing the original analog surrogate rather; care should be taken over the handling of the fragile, unique and rare resources. Digitization therefore, offer the opportunity of global access to digital information, ensure the preservation of rare, fragile and cultural heritage materials, alleviate space constraint, encourage collaboration, knowledge creation and interoperability.

**Facilities / Resources Employed in Digitization of Library Resources**

Rapid advances in modern technologies have improved digitization process. In the present digital environment, software and hardware are the hallmark and quite indispensable in digitization process. Computer hardware and software with high quality specifications are required for effective digitization. The nature of the materials to be digitized will guide the choice of equipment for digitization.

One of the first decisions any library management should consider when embarking on digitization project is the selection of appropriate software and hardware suitable for the project. Ndor (2007) noted that “computer hardware and software are constantly changing and currently produced computers are fast enough to handle almost any scanning and other digitization”. Hence, selecting the most recent version of software with good quality and digital library specifications should be given adequate consideration in addition to its compatibility with the available hardware.

Software has been defined by various authors. According to Rowely (1998) and Ekemezie (2003), “Software programmes are instructions that indicate to the computer the task to be performed, such as how information should be stored, formatted and manipulated to meet output requirements”. Software generally comprises a set of programmed instructions that control what data are processed by
the computer, the speed they are processed, how the processed results are monitored and how a user communicates with the CPU, etc. Adogbeji et al (2009) revealed that “most libraries do not hold on the software selection process before its acquisition”. Procuring an effective and efficient software packages should be of a high priority of any academic library for adequate computerization, (Igwesi, 2006). Hence, the issue of adequate planning and selection process for the procurement of standard and current software is of paramount importance.

Obviously, software is an indispensable component of digitization project since it is the software that presents the various templates that relates to various digital operations. Selecting very poor software will adversely jeopardize the digitization project in terms of time waste, extensive modification, stagnation and frustration. Hence, without very good software that is suitable for the application, the system will not perform optimally. Fatoki (2002) and Okoye, (1998) in their submission on the selection of library software agreed that “for software to be adjudged suitable, it should have requirements of memory, disk-storage, search facilities, print formulations, affordable cost and program utilities incorporated”.

Rothenberg (1991) elucidating on the importance of software to digital library said that “digital documents are not only vulnerable to loss via media …, but they become equally inaccessible and unreadable if the software needed to interpreter them or the hardware on which the software runs is lost or become obsolete”. Usman (2007) equally revealed that the digital library software works with the web server in providing various creation, organization, maintenance, indexing, search and retrieval. He posits that in choosing the software for digitization, some of the features that should be put into consideration include: support for customized metadata, collection
administration, support for standards like Dublin core metadata standard, search and retrieval and multi-lingual support.

Some of the required software for digitization as noted by Fotoki (2006) include Digital imaging software (DIS) which is used to crop, rotate, colour, correct, resize, and save images in proper file formats once the images are scanned. Optical Character Recognition (OCR) is used for scanning printed pages as images on a flatbed scanner and recognizing the letters as ASCII text. Digital Image Management Software (DIMS) is used to manage the large number of digital files. It can be created or use an off-the-shelf system. Greenstone Digital Library software (GDLS), is an open-source software, issued under the term of the GUN General public license. The main aim of the software is to empower users, particularly in university libraries, and other public service institutions to build their own digital libraries. GREENSTONE is a suite of software for building digital library collections, provides a new way of organizing information and publishing it on the internet or on CD-ROM. It was produced by the New Zealand Digital Library project at the University of Waikato, developed and distributed in cooperation with UNESCO and the Human Info NGO. It integrates functions such as metadata, full text search and retrieval, multi-lingual support, support for multiple document formats and administration (UNESCO, 2007).

Jagboro (2007) identified some tools and or equipment used in digitization such as computer systems, scanners which could be flat-bed, hand-held, or sophisticated scanning machines like SMA21 and kirats. Digital cameras or camera phones could also be used in some cases, CD or DVD writer, printer and the materials to be digitized. Fotoki (2006) noted some equipment used in digitization such as computers which will require certain capabilities for digitization in order to carry large files. The minimum specification should be dependent on the latest computer
technology as they evolve at a very rapid rate. The following guidelines should be used when considering computer choice for digitization as noted by Fatoki (2005). A computer with a fast processing speed should be selected as it helps to sort through all the information quickly and effectively, hence, the bigger the processor, the better.  

**Ram:** Random Access Memory (RAM) can be thought of as the computer's short-term memory. It helps in making easy access to information contained in the computer. Hence, the more the RAM, the better the computer can keep track of what it is doing at any given time, especially with large images files and complicated software. The RAM module could be upgraded for better performance. **Monitor:** 21” monitors are preferable as it is easier to view information but any other size of monitor could be used for digitization. **Hard drive:** The hard drive is where all the files and programmes on the computer are stored. Hard drive with large capacity is preferable as digital images files can be very large and take up a lot of storage space on your computer. The larger the hard drive, the more files it can store. New or additional hard drive can be installed on the computer.  

**CD-ROM drive:** This is used to read information off computer disc and is standard on nearly all computers. It is an external storage device. **Scanner:** Scanners with very high resolution and scanning speed should be selected such as flatbed scanners. It is very good for unbounded pages and photographs and can be used for transparencies, slides, films and single-sheet batching using additional accessories. Other types of scanner include: film/slide, drum, large-format and planetary scanners.  

**Digital camera (Dig cam):** Digital cameras are really the best way to capture 3-dimensional objects, since scanners cannot focus on times that are two far from the scanner bed. They are a cheaper alternative to planetary scanners for fragile and oversized items.
Types of Resources Digitized

Digitization of library resources is a recent and growing trend in library and information service environment. Most university libraries are making effort to digitize information materials that are of cultural and intellectual value. Fatoki (2005) noted that “selection of materials suitable for a digitization project should be done after determining justification for the project, but before all the other stages”. Items or collections for digitization are identified by assessing the potential value of the resources in relation to user needs and it is critical for defining the feasibility of the project. He went further to enumerate some criteria for selecting materials for digitization which include: intellectual justification, demand, relevance to the institution copyright, relationship to other projects, metadata, condition of originals, sensitive content, and feasibility of image captured.

Selecting the materials to be digitized may be affected by the physical condition of the source material, the need of the parent institution and the type of users served. Materials which are fragile or in poor condition may present the risk of further being damaged caused by handling during scanning if adequate care is not being taken. Ochai (2007) posit that “selection of materials for digitization takes a lot of effort and involves a lot of critical factors which must be fully considered before embracing on digitization”. The National Library of Canada study group suggested that decisions to select materials for digitization should also be based on a business-like approach that:

- Identifies target user populations;
- Understands the needs and expectations of the users;
- Identifies measurable deliverables that will demonstrate benefits;
- Includes a promotion/marketing plan;
- Provides itemized costing; and
- Takes into account the work necessary for obtaining copyright clearance for
  the material to be digitized. [http://www.collectionscanada.ca/8/3r3-409-e.html](http://www.collectionscanada.ca/8/3r3-409-e.html)

Different institutions have different priorities of the types of materials they prefer to
digitize. While some may give rare materials a high priority, others still may give
priority to deteriorating rare materials. Some others may prioritize materials in their
institutional archives, while others prioritize specific special collection of local
history, or of some other significance (Akintunde, 2007).

Jagboro (2007) revealed that the information materials being digitized at
Obafemi Awolowo University (OAU) Ife are newspaper collections, the abstracts of
masters and Doctoral theses and dissertations of the university and a number of
important textbooks. In the same vein, Ezeani and Ezema (2009) noted that the
University of Nigeria, Nsukka is digitizing her local information resources such as
undergraduate research projects, postgraduate theses and dissertations generated over
the years by the university and publications authored by staff of the University.

*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;
aging materials that are on high demand by patrons; useful
materials that are out of publication, and materials that are
difficult to handle (British library website, 2007).*

The reasons for implementing a digitization project or more precisely for
digital conversion of non-digital source material are varied and may well overlap.
Regardless of the purpose for implementing a digitization project, the selection of
source material will always be more or less content driven. In fact, intellectual value
is the basic question in all kind of selection: does the content (the value of the potential reader) of this material justify all the efforts, costs and other resources that will be needed? Therefore, every digitization project or programme ought to have its own deflections of value based on the goals it is trying to achieve (UNESCO, 2007). Some of the source materials for digitization in University libraries may include: rare, unique or fragile documents; archival, artextual and cultural materials; brittle and deteriorating source materials that are of high intellectual value.

**Skills / Competences Necessary for Digitization**

The current digital system of information generation and dissemination proposes a paradigm shift for librarians to acquire new skills in the digital information system management. Digital information system management refers to the overall competencies, knowledge, know-how, skills and attitudes necessary to create, store, organize, retrieve and disseminate digital information in digital libraries (Sreenivasulu, 2000). Due to the changing nature of librarianship resulting from the increasing amount of information available in digital format, educating digital librarians who are competent to work in the dynamic and complex digital environment has become a high priority within library and information science schools. The competency of digital librarian is represented by different set of skills, attitudes and values that will enable him/her to work as digital information professional or digital knowledge worker and communicator (Usman and lyun, 2007). The first skill and competency that a digital librarian is expected to develop is the ability to manage the knowledge and digital library in terms of digital knowledge and digital library management, (Sreenivasulus, 2000). He went further to provide the following as the skills and competencies required for digital librarian:

- Internet
The ability to navigate, browse, filter, retrieve and access digital documents. The skill to provide digital reference, search network databases in number of digital sources and website. The competency to create home pages, content conversion, downloading techniques, web publishing, archiving, electronic messaging, web authoring, preservation and storage.

- Multi-media

The competency in multi-media indexing, image processing, interactive digital communications and visualization. The skills of speech recognition and conference techniques including teleconferencing and video conferencing.

- Digital information system

The skills of interfacing on-line and off-ramps, twists and turns of digital knowledge. The competency to digitize print collections and manage compact Disc-Read Only Memory (CD-ROM), design and development of database and conversion of print media into digital media. Young (1996) in Cuesta (2005) described the job of the librarian in the revolutionary digital environment:

Although librarians have traditionally engaged in the organization and arrangement of information collections, digital collections and services call for librarians to function as knowledge navigators, or, as some have suggested, as cyberspace organizers. The nature of digital information resources also requires digital librarians to be resource integrators and to offer users customized consultation and interpretation services. The new digital information environment requires that librarians add value to the use of information. Librarians working in digital information structures are creators of information through the assembly, organization, and generation of new knowledge. (Young, 1996: 124)

Igun (2006) emphasized that “the training of the librarian for the 21st Century must be mainly in the mode of a digital librarian”. Zhou (2005) pointed out the responsibilities of digital librarians as the following:

- Select, acquire, preserve, organize and manage digital collection;
- Design the technical architecture of digital library;
- Plan, implement, and support digital services such as information navigation, consultation and transmit services;
- Establish friendly user interface over the network for the digital library;
- Design, maintain and transmit add-valued information products;
- Protect digital intellectual property in network environment; and
- Insure information security.

Ezeani and Ezema (2009) advocated for training of Librarians in the technical know-how of the digitization process to acquire the required competencies such as technical skills in metadata, checking and verifying of digitized resources for quality control and selection of hard and software. Usman and Iyun (2009) posit that the digital librarians are required to acquire skills and sophisticated competencies to:

- Manage the digital libraries;
- Organize digital knowledge and information;
- Disseminate digital information from the computer – held digital information;
- Provide digital reference serviced and electronic information services;
- Providing knowledge mining from the emerging knowledge warehouses;
- Handle the tasks of massive digitization, digital storage process and digital preservation;
- Provide universal access and retrieval of digital knowledge;
- Catalogue and classify digital documents and digital knowledge.

Other skills needed by library staff in digitization include Digital Right Management (DRM). This is defined as a collective name for technologies that prevent you from using a copyrighted digital work beyond the degree to which the copyright owner wishes to allow you to use it, (Litman, 2001). DRM facilitates the
protection of digital work using technological methods such as encryption and digital marking requiring passwords and limits on the number of times database could be copied and used. Digital marking is a simple label that attaches rights to information content; or watermarks that typically hide information that can be used to identify a work. Encryption involves scrambling contents, so that those who have no authorization in the form of a code or password cannot decipher the content. According to Sommerland et al (2004) the core capabilities and skills for the future librarian especially in the digital environment include:

- Advanced skills in information location and retrieval;
- Familiarity with databases of different types;
- Local ICT problem-solving, trouble shooting;
- Keeping up with latest information technology;
- Understanding the scale and structure of the internet;
- Organize, present and authenticate information for users;
- Assessing the utility of information for a particular purpose;
- Tailoring retrieval strategies and information to the needs, interests and preferences of individual users (mass customization);
- Customer service skills and associated questions of interpersonal behaviour;
- Create links between the information service and related delivery and support systems (requiring knowledge of different service providers and social /organizational infrastructure);
- Designing databases for identifying, collecting, organizing and disseminating relevant documents; and
- Training and facilitating, helping people of any age, background, specialism or need to use information resources and transact services.
Problems Affecting Digitization of Library Resources

The advent of digitization is continuously posing a lot of challenges to libraries and information professionals especially in developing countries. Swets and Costers (1998) noted that the challenges facing digital library is that of managing complexity of systems, of resources and of users. Other major challenges facing digitization projects in university libraries in Africa as noted by Salaam (2000) include: poor telecommunication, infrastructure, quantity and quality, absence of a National Information Communication Infrastructure (NICI) policy, plans and strategies, and lack of the university coherent plan for ICT. Stefan (2001) advocated for the allocation of adequate fund for the digital conversion by the appropriate authorities. Guihua (2002), narrating the experience in the development of the China Digital Library states that, to realize the real digital library, there are inhibiting factors that include: a very amount of information to be digitized; the issue of specification and standard; construction of network infrastructure; safety problems of a digital library and copyright question. Creating a digital library is a very expensive venture which requires adequate planning and monitoring as the major problem of most digitization efforts is that of inadequate fund and not that of technology, hence most digitization projects often run into problems, Fabunmi (2006). Financial constraint is therefore, a very crucial issue that has to be put into adequate consideration when embarking on digitization project.

In addition, digitization poses a number of challenges to the library management in formulating policies, drawing plan of actions, budgeting and copyright management. There is equally the need for the library management to visit and consult libraries that have digitized their materials in order to learn from their experience. Fabunmi (2006) further stressed that the task of carrying along all the
staff and guiding library users can equally be challenging as some staff are likely to resist change, particularly those that are not computer literate. Hence, this necessitates the training and retraining of the library staff so as to fit in and actively participate in digitization process to ensure team work. Also, the task of re-orientation of library users who might not be well versed with operating a digital library can be challenging.

There have been some challenges that have continued to jeopardize digitization projects in developing countries. Usman (2007) identified some of these challenges which include: inadequate funds, lack of digitization equipment, inadequate knowledge and skills, lack of institutional policy and lack of electricity supply. On the same note, Mutula and Ojedoku (2008) equally identified some challenges of digital library development in Africa which include: severe financial constraints, inadequate infrastructure (i.e. electricity, telephone lines, buildings, etc), outdated staff training opportunities and facilities, harsh environmental conditions, accelerating equipment degradation, inadequate salaries and difficult working conditions, and inadequate skills in strategic planning and in grant proposals for DL projects. Ochai (2007) stressed that the challenges facing Africa is not just that of access to digital resources but that of adding African content and making the same available on the Wide Area Network. In the same vein, Omekwu (2008) noted that the state of ICT in Nigeria is poor specially when compared with some African countries such as Egypt and South Africa.

Preservation of digital information resources is another challenge facing digitization of Library resources. According to the National Library of Australia (2004), “One of the major crises facing libraries throughout the world is the rate of deterioration of their collection”. Jantz and Giarlo (2005) defined digital preservation as the managed activities necessary for the long term maintenance of a byte stream (including metadata) sufficient to reproduce a suitable facsimile of the original
document and for the continued accessibility of the document contents through time and changing technology. Popoola (2003) submitted that “information professionals in African society today cannot wave aside the obvious fact that the continent stands the imminent risk of losing so much of its valuable documented heritage in consequence of ever increasing deterioration of paper and other media on which they have been stored”. Ensuring long-term access to the digitally stored information poses a significant challenge, and is increasingly recognized as an important part of digital data management. Digital preservation involves the retention of both the information object and its meaning. It is therefore necessary that preservation techniques be able to understand and re-create the original from or function of the object to ensure its authenticity and accessibility. Recently, several approaches for digital preservation have been identified and presented. Conventional methods are mainly technology emulation, information migration, and encapsulation (Lee, Slattery, Lu, Tang, & McCarry, 2002).

A survey carried out by Olatokun (2008) on the preservation and conservation of library materials in Africa revealed that the major factors militating against effective and efficient preservation of information materials in African libraries include: inadequate finance, inadequate equipment/materials, unfavourable government economic policies, tropical climate, manpower and other infrastructure and lack of preservation and conservation policy. He went further to stress that ensuring long-term access to the digitally stored information poses significant challenge and is increasingly recognized as an important part of digital data management.

Another worrisome challenge in digitization is the Intellectual Property Right (IPR) protection. Intellectual Property (IP) is the fifth challenge stated by the Library of Congress as one of the challenges facing an effective digital library. It stated that the key element for digital libraries is appropriate recognition and protection of legal rights of obscenity, defamation intellectual property as well as less legislative but serious concerns associated with ethics of sharing or providing access to fold ethnographic materials http://memory.loc.gov/ammem/dlliz/html/cbed/html (Library of Congress, 2009).
The increased availability of the internet and digital technologies has posed serious challenges to the copyright protection of materials in digital format. It is difficult to enforce appropriate copyright protection with electronic documents as it is too easy to copy or download sections of databases, Rowley (1998). On the same note, Story et al (2006) noted that “the ease of copying and distribution of digital materials through piracy has increased”. Furthermore, Akintunde (2007) in his work emphasized that “ownership rights should always be clearly established and recognized in all digitization projects”. On the same note, Ochai (2007) stressed that another worrisome aspect of legal implications in digitization of theses and dissertation is whom the copyright could be accorded to”. On this note, the University of Jos has recently set up a committee, to determine who, (student or the university) has copyright to theses and dissertations. Warriach (2009) assert that “the major challenge for digital libraries is complying with copyright intellectual project right and related issues like plagiarism”. Kung (2009) in his study equally stressed that:

*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 information producers and information customers. Copyright could become an insurmountable barrier to the development of digital collections (p.8)*

In fact, copyright management is a critical issue in this digital environment which should be adequately addressed. It is therefore indispensable to first consider the legal issues involved in digitization before embarking on the project.

**Strategies for Effective Digitization.**

The need for adequate planning before embarking on a digitization project is quite indispensable. Planning is a critical issue and the roadmap for effective
digitization. Establishing a clear-cut goal, policies and ensuring the availability of the required resources (both material and personnel) for digitization will go a long way to realizing the set objective. Planning is therefore very crucial in every new initiative and digitization is not an exception. The objective of embarking on any digitization project should be made clear as the purpose will determine the process and the cost.

Planning according to Madu (2004) is “the process of preparing a set of decisions for action in the future with the intention of achieving the set goals with the limits of the available resources”. It entails defining the objective, formulating policies, budgeting, forecasting, getting both human and material resources in the right quantity and quality in order to attain organizational goal. Hence, there is need for strategic and long-term planning when embarking on digitization project to effectively fit into the current trend of digital environment.

In practice, proper planning is quite indispensable. Planning for digitization involves defining the desired goal of the digitization project, developing service model, choosing and identifying appropriate technology (static or dynamic web design, instructional repository, cost implication, required IT skills, data storage method and back-up and recovery procedure, (Gbaje, 2009). In the same vein, Usman (2008) noted that in digitization process, “planning involves identifying various tasks related to creating a digital library collection, developing strategies for handling these tasks, identifying required resources and formulating a timeline for accomplishing these tasks”. From the foregoing, it is very imperative to formulate and implement policy on digitization, establishment of goals and objectives, provision of fund, selecting suitable software and hardware, and providing internet connectivity for effective digitization project.

Once an institution decides to digitize its materials, before embarking on any form of digitization, it is important to first
formulate a digitization policy. This policy will define the purpose of the digitization process, what materials to digitize, priorities for digitization, human resources to involve in digitization, users to benefit from the digitization effort, beginning and ending date of the digitization process, hardware considerations, software considerations, access to digitized content, standards, and funding. Clear digitization policies will enhance the digitization process (Akintude, 2007: 3)

Developing an institutional policy for digitization project is very crucial to the success of any digitization project. In order to achieve an effective digitization, it is imperative to set up a committee to draw a plan and draft a policy to establish the goals and objectives, the selection criteria, availability of fund, infrastructure and personnel requirement. Some important factors to consider include digitization policy, copyright management, intellectual nature of the source material, current and potential users, actual and anticipated nature of use, the format of the digital product, describing, delivery, and retaining the digital product, relationship to other digital efforts, and cost and benefits (Hazen, 1998). Therefore, digitization will be effective only when an institution has fundamentally considered all these factors and prepared to support the process from beginning till the end.

Review of Empirical Studies

This subsection is centered on the review of relevant empirical findings on related topics to this research work. A number of studies have been conducted on digitization of libraries in Africa, especially in Nigeria. Among these studies is the work done by Usman (2007) on the digitization of past question papers, dissertation and theses: a case study of 30 Nigerian university libraries. The study was a descriptive survey. A sample was drawn from a population of librarians from the 30 universities, staff working in the reserve unit where past question papers, theses and dissertation were kept, students and researchers making a total of 300 respondents. Data collection was through a self-administered questionnaire, interview and direct
observation. A stratified random sampling technique guided the selection of the universities and respondents. The sampling of the universities took cognizance of geopolitical location in the country, specialization (technology, agriculture, etc.) and generation. The study evaluated the status of digitization with a view to identifying the progress, prospects and challenges. It was found that out of the three digitization services the study evaluated, only two universities have embarked on digitizing their theses, while one university had started digitizing past question papers but none among the 30 universities had attempted digitization of their dissertation. The result revealed that the major obstacles militating against digitization in university libraries include: lack of funds, lack of appropriate facilities, lack of skilled manpower, and lack of constant electricity supply.

The researcher recommended the following strategies in order to have a sustaining digitization in Nigerian university libraries: provision of fund, provision of appropriate knowledge, and skills in order to improve the on-the-job performance, regular training of staff through seminars, workshops, conferences, refresher courses and in-service training should be institutionalized as part of the development plan for digitization project; procurement of facilities, designing and formulating institutional policy and ensuring publicity.

In a related study carried out by Iwhiwhu (2007) on digitization of Nigerian Libraries: a case study of university of Port-Harcourt (UNIPORT) and River State University of Science and Technology, (RUST). The research work was carried out to examine the present digitization project in UNIPORT and RUST libraries as case studies. The study was a survey research. The population was the entire Professional and Para-professional staff of the two university libraries, making a total number of ninety-two (92) respondents. The questionnaire instrument was used for data
collection and frequency tables and simple percentage were used for data analysis. The result from the study revealed some of the challenges of digitization such as: lack of written policy on digitization, inadequate ICT infrastructures and manpower, fund and inadequate government support. The studies equally revealed that users are not given digital education literacy to enable them adequately utilized the available digitized resources and services. The researcher recommended the provision of fund, formulation and implementation of digitization policies, introduction of user education/digital literacy programme and staff training on ICTs for effective digitization of University Libraries in Nigeria.

Ezeani and Ezema (2009) equally carried out a study on the Digital Preservation of the Cultural Heritage of University of Nigeria, Nsukka: Issues and Current Status. The researchers examined the digital preservation of the University of Nigeria’s institutional repository. The study focused on the major issues and current status of the on-going digitization initiative through a first-hand experience of the resources. The questionnaire instrument was used to elicit relevant information from the respondents. Six research questions guided the study and a twenty item questionnaire was distributed to the respondents who comprised of the total population of both librarians and the technical staff mainly from the university’s department of Management Information Systems (MIS) directly involved in the project.

The result of the findings showed that librarians involved in the project are yet to fully possess the whole gamut of skills needed for the job, particularly skills pertaining to book marking, characterization of scanned documents and trouble shooting the equipment for the project. The researchers recommended more training for library staff, procurement of more equipment, inclusion of digitization skills in the
library and information science curriculum, the continued synergy between the library and MIS in terms of resource shearing and technical support. Advocated that since digitization encourages the development of local content and the sharing of digital resources among university libraries within the country and beyond, that Nigerian library should adopt this initiative for the preservation of their institutions’ heritage resources.

A similar study was also carried out by Eke (2009) on the digitization of resources in University of Nigeria: a Step Forward in Creating Digital Library of the Future. The study was aimed at ascertaining the progress that has been made by UNN in creating a digital library, the roles of librarians in digitization project; the reasons behind the digitization project; and to proffer solutions to the problems encountered. Due to the Nigerian Labour Congress (NLC) strike during the period of research, the researcher was unable to neither conduct any interview nor gather information through questionnaire. Relevant information was gathered through the University’s website and the researcher’s personal experiences and observation as part of the digitization exercise as a supervisor. The findings revealed that a lot of challenges are facing the successful digitization of resources in University of Nigeria, Nsukka which include: legal aspect and finance, technical support and security, technophobia, bandwidth, difficulty in digitizing some materials, editing of works digitized and unavailability of needed materials. The researcher suggested that the issue of copyright should be properly addressed, user orientation, adequate funding, constant training of library staff and provision of back-up for digitized materials. The researcher advocated that there is need for the reset of goal towards the establishment of a digital library in University of Nigeria, Nsukka in a bid to creating a digital library for the future.
Ugwu and Ekere (2010) equally carried out a research on the training needs of librarians for digital library projects in University libraries in Nigeria. A case study. The study was designed to identify the specific training needs of different categories of staff from university of Nigeria, Nsukka Library. The Questionnaire was used for data collection from 25 respondents and four research questions guided the research. Descriptive statistics of means and standard deviation were used for data analysis. The result considered training of library staff to acquire skills for presentation of digital information to users as the most important, also collection development and organization skills are equally required by the librarians for digital library project. The results also showed that the librarians considered competency-based training approaches the most important for skills acquisition for digital library projects, as well as formal training. Recommendations for adequate training of librarians for digital library projects were made.

These studies are related to the present study as they all aimed at studying digitization project in academic libraries in Nigeria. There are some aspects of these past studies that could be adopted for the present study such as the research design and the instrument for data collection.

Summary of the Literature Review

In the course of reviewing the literature related to this study, the researcher consulted textbooks, journal articles, seminar papers, conference proceedings, articles from the internet and also other important publications. In the literature reviewed, an attempt was made to look at the concept of digitization as well as it’s potentials for library services.

The literature reviewed focused on the general overview of the concept of digitization, various technologies used in digitization, rationale for digitization in
libraries, types of library resources digitized, preparedness options essential for
digitization project, skills/competences necessary for digitization and factors
challenging digitization efforts in libraries. The literature clearly revealed that digital
technologies are increasingly revolutionizing the world of information; changing the
way in which information is acquired, stored, preserved, accessed and retrieved.
Urban (2002) noted that digitization is an excellent tool for increasing access to
resources, preserving the original through reduced handling and providing far superior
access.

There has been some previous related studies carried out in the area of
digitization of libraries in Nigeria, but none of these studies has x-rayed the current
status of digitization in Federal university libraries in south-east geopolitical zone of
Nigeria. This is the gap which the present study intends to fill.
CHAPTER THREE
RESEARCH METHODS

This chapter describes the method(s) employed in the research which include the research design, the area of the study, the population, sample and sampling technique, instrument for data collection, procedure for data collection and method of data analysis.

Research Design

The design adopted for this study is a descriptive survey. This design was chosen for this study because a descriptive survey research is fact-finding in nature. It focuses on selective dimension of a phenomenon and measures them in a systematic and precise manner, (Eboh, 2009). It is appropriate for this research because this study is set out to identify and describe the status of digitization, the perception and attitude of Library and Information Professionals in university libraries in South-East geopolitical zone of Nigeria.

Area of the Study

The area of study was the South-Eastern Zone of Nigeria. This is one of the six geopolitical zones in Nigeria. It is made up of five states, namely Abia, Imo, Ebonyi, Anambra and Enugu States.

Population of the Study

The population of this study will consist of all the four Federal University Libraries in the South-Eastern Zone of Nigeria. These include: University of Nigeria, Nsukka (UNN), Nnamdi Azikiwe University, Awka (UNIZIK), Michael Okpara University of Agriculture, Umudike (MOUAU) and Federal University of Technology, Owerri (FUTO). The respondents will include all the library staff in the various universities under study. The total number of library staff in these universities
includes 144 staff in UNN library, 42 in UNIZIK, 33 in MOUAU, and 104 in FUTO, making it a total of 323 respondents.

Table 1: Distribution of the Library staff involved in digitization project.

<table>
<thead>
<tr>
<th>Category</th>
<th>UNN Library</th>
<th>UNIZIK</th>
<th>MOUAU</th>
<th>FUTO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Librarian</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Library staff involved in digitization</td>
<td>30</td>
<td>6</td>
<td>-</td>
<td>13</td>
<td>49</td>
</tr>
<tr>
<td>System analysts</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>10</td>
<td>-</td>
<td>16</td>
<td>60</td>
</tr>
</tbody>
</table>

Source: Enquiries (2010)

**Sample and Sampling Technique**

The sample size for the study is 60. The number was selected using a purposive sampling technique. The sample was drawn as follows: UNN, 34; UNIZIK, 10; and FUTO, 16. This is because not all the library staff are involved in the exercise. Those who are involved were purposively sampled for the study.

**Instruments for Data Collection**

Data relevant to this study was collected using the questionnaire and observation checklist. The questionnaire was titled: Library Digitization Project Questionnaire (LDPQ) (Appendix I). The questionnaire was designed basically for this study by the researcher in line with the seven (7) research questions guiding the study.

The questionnaire was divided into two parts. Part one (1) was specifically designed to elicit relevant background information about the respondents. Part two (2) dealt with sections on items raised from the research questions of the study. The
subjects of the study were required to tick [✔] at the appropriate response items applicable to them from the listed options and equally provide relevant information where necessary.

The questionnaire consists of seven clusters. Section A is on the purpose for digitizing library resources and it is made up of 11 items. Section B is composed of 2 clusters, Bi identifies the available facilities used in digitization and contains 12 items while Bii assesses the extent of digitization skills possessed by the library staff involved in digitization and it contains 12 items. Section C is composed of the type of resources being digitized in the libraries with 12 items. Section D assesses the extent of digitization of library resources with 12 items. Section E will elicit responses on the problems militating against digitization projects in libraries with 13 items, while Section F deals on the strategies for effective digitization in libraries and it is made up of 13 items. The number of items on the whole is 85 items.

The researcher additionally used observation check-list to examine the state of digitization projects and resources employed in the different university libraries under study. The check-list contained twelve (12) items intended to find out whether the digitization technologies are available or not available.

Validation of the instrument

The instrument was validated by the researcher’s supervisor and other research experts in the Department of Library and Information Science, University of Nigeria, Nsukka. Face validation was carried out by three research experts. They examined and critically analyzed the research instrument in order to ascertain the relevance of the content to the study, the appropriateness of the language and the clarity of expression. Their comments and corrections made were finally used in the modification of the research instrument.
Method of Data Collection

The relevant data for this study was collected by the researcher with the assistance of research assistants by administering the questionnaire instrument to the respondents. This was done after giving the research assistant detailed instructions on how to carry out the data collection. Observation checklist was also carried out to observe the available technologies used in digitization.

Method of Data Analysis

Data collected was analyzed in line with the research questions. Data gathered was orderly organized in tabular forms to indicate raw scores which will be converted into percentage and frequencies. The result was deduced by compiling the percentage and frequencies. Mean score, percentage and frequency will be used in the data analysis with the following formula:

\[
\text{Mean } X = \frac{\Sigma X}{N}
\]

Where \( \Sigma \) = “sum of’’

\( X \) = Value

\( N \) = Number of respondents

Limits of real numbers was used in arriving at the decisions. The cut-off point will be obtained using the following divisions:

- Not At all: 0.50-1.49
- Low Extent: 1.50-2.49
- Great Extent: 2.50-3.49
- Very Great Extent: 3.50-500
CHAPTER FOUR
DATA PRESENTATION AND ANALYSIS

In this chapter, data collected from the questionnaire and observation checklist are presented and analyzed using frequency table, simple percentage and mean. The presentation and analysis were done sequentially under the six research questions. A total of sixty (60) questionnaires were distributed to the respondents but fifty-five (55) were returned correctly filled. This indicates a percentage of 91.6% which the researcher considered appropriate for use. No data was generated from Michael Okpara University of Agriculture, Umudike, (MOUAU) because they have not started digitization project.

Research Question 1: What are the purposes for digitizing library resources?

To answer Research Question 1, questionnaire item one was used. Respondent’s responses were presented on Table 2 below:

Table 2: Purpose for digitization of library resources

<table>
<thead>
<tr>
<th>S/N</th>
<th>Purpose for digitization</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>Mean</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Improved library services</td>
<td>39</td>
<td>16</td>
<td>-</td>
<td>-</td>
<td>3.91</td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>Increased access</td>
<td>42</td>
<td>13</td>
<td>-</td>
<td>-</td>
<td>3.76</td>
<td>A</td>
</tr>
<tr>
<td>3</td>
<td>Speedy retrieval of documents</td>
<td>38</td>
<td>14</td>
<td>3</td>
<td>-</td>
<td>3.64</td>
<td>A</td>
</tr>
<tr>
<td>4</td>
<td>Effective preservation</td>
<td>32</td>
<td>22</td>
<td>-</td>
<td>1</td>
<td>3.55</td>
<td>A</td>
</tr>
<tr>
<td>5</td>
<td>Simultaneous search</td>
<td>30</td>
<td>25</td>
<td>-</td>
<td>-</td>
<td>3.55</td>
<td>A</td>
</tr>
<tr>
<td>6</td>
<td>Improving Library visibility</td>
<td>31</td>
<td>18</td>
<td>4</td>
<td>1</td>
<td>3.50</td>
<td>A</td>
</tr>
<tr>
<td>7</td>
<td>Collaboration</td>
<td>23</td>
<td>25</td>
<td>5</td>
<td>-</td>
<td>3.40</td>
<td>A</td>
</tr>
<tr>
<td>8</td>
<td>Space conservation</td>
<td>29</td>
<td>21</td>
<td>3</td>
<td>2</td>
<td>3.40</td>
<td>A</td>
</tr>
<tr>
<td>9</td>
<td>Interoperability of library operations</td>
<td>23</td>
<td>26</td>
<td>3</td>
<td>1</td>
<td>3.40</td>
<td>A</td>
</tr>
<tr>
<td>10</td>
<td>Extended access to information geographically</td>
<td>25</td>
<td>23</td>
<td>5</td>
<td>1</td>
<td>3.30</td>
<td>A</td>
</tr>
<tr>
<td>11</td>
<td>Bibliographic control effectiveness</td>
<td>18</td>
<td>29</td>
<td>8</td>
<td>-</td>
<td>3.18</td>
<td>A</td>
</tr>
</tbody>
</table>

Key: A = Accepted
R = Rejected
From table 2 above, the following purposes were strongly agreed by the respondents as reasons for digitization of library resources. They include improved library services, increased access, speedy retrieval of documents, effective preservation and simultaneous search. These had mean weight of 3.91, 3.76, 3.64, 3.55 and 3.55 respectively.

Research Question 2: What are the available facilities/resources employed in digitization of library resources?

To answer Research Question 2, questionnaire item two was used. Respondent’s responses were presented on the Table 3 below:

Table 3: Available resources used in digitization project in libraries.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Facilities for Digitization</th>
<th>Available F</th>
<th>Available %</th>
<th>Not available F</th>
<th>Not available %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Computers</td>
<td>55</td>
<td>100</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Scanners</td>
<td>55</td>
<td>100</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Digital cameras</td>
<td>55</td>
<td>100</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Generator</td>
<td>55</td>
<td>100</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Servers</td>
<td>55</td>
<td>100</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>Internet facility</td>
<td>55</td>
<td>100</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>CD-ROM</td>
<td>55</td>
<td>100</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>Software</td>
<td>55</td>
<td>100</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>Photocopying machine</td>
<td>55</td>
<td>100</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>Printers</td>
<td>53</td>
<td>96.4</td>
<td>2</td>
<td>3.6</td>
</tr>
<tr>
<td>11</td>
<td>Telephone</td>
<td>25</td>
<td>45.5</td>
<td>30</td>
<td>54.5</td>
</tr>
<tr>
<td>12</td>
<td>Bar code reader</td>
<td>15</td>
<td>27.3</td>
<td>40</td>
<td>72.7</td>
</tr>
</tbody>
</table>

Table 3 above shows that the available facilities used in digitization project in the libraries under study include computers, scanner, digital camera, generator, servers, internet facility, CD-ROM, software, photocopying machine with 100% each. It equally indicated that telephone (45.5%) and bar code (27.3) are not available facilities used in digitization project in libraries.
From observation carried by the researcher the following facilities were confirmed to be available: computers, scanners, digital cameras, printers, generators, servers, internet facilities, CD-ROM, software and photocopying machines. All except telephone and Bar code reader were available.

**Research Question 3:** What is the extent of digitization skills possessed by the library staff?

To answer Research Question 3, questionnaire item three was used. Respondent’s responses were presented on the Table 4 below:

<table>
<thead>
<tr>
<th>S/N</th>
<th>Extent of skills possessed</th>
<th>VGE</th>
<th>GE</th>
<th>LE</th>
<th>NA</th>
<th>Mean</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Internet surfing skill</td>
<td>30</td>
<td>16</td>
<td>7</td>
<td>1</td>
<td>3.38</td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>Scanning skill</td>
<td>23</td>
<td>16</td>
<td>14</td>
<td>-</td>
<td>3.20</td>
<td>A</td>
</tr>
<tr>
<td>3</td>
<td>Book-marking skill</td>
<td>15</td>
<td>13</td>
<td>17</td>
<td>9</td>
<td>2.70</td>
<td>A</td>
</tr>
<tr>
<td>4</td>
<td>Cataloguing of digital resources</td>
<td>12</td>
<td>17</td>
<td>17</td>
<td>7</td>
<td>2.64</td>
<td>A</td>
</tr>
<tr>
<td>5</td>
<td>Signing of digital signature</td>
<td>13</td>
<td>13</td>
<td>14</td>
<td>11</td>
<td>2.60</td>
<td>A</td>
</tr>
<tr>
<td>6</td>
<td>Web-linking</td>
<td>13</td>
<td>12</td>
<td>18</td>
<td>10</td>
<td>2.53</td>
<td>A</td>
</tr>
<tr>
<td>7</td>
<td>Database management skill</td>
<td>4</td>
<td>23</td>
<td>16</td>
<td>10</td>
<td>2.39</td>
<td>R</td>
</tr>
<tr>
<td>8</td>
<td>Creation and management of library websites</td>
<td>8</td>
<td>11</td>
<td>21</td>
<td>11</td>
<td>2.31</td>
<td>R</td>
</tr>
<tr>
<td>9</td>
<td>Web publishing</td>
<td>8</td>
<td>9</td>
<td>23</td>
<td>14</td>
<td>2.20</td>
<td>R</td>
</tr>
<tr>
<td>10</td>
<td>Trouble-shooting</td>
<td>5</td>
<td>13</td>
<td>21</td>
<td>15</td>
<td>2.20</td>
<td>R</td>
</tr>
<tr>
<td>11</td>
<td>Metadata creation of library resources</td>
<td>5</td>
<td>10</td>
<td>18</td>
<td>17</td>
<td>2.06</td>
<td>R</td>
</tr>
</tbody>
</table>

Table 4 above shows the extent of digitization skills possessed by the library staff in the libraries under study. The result shows that the skills possessed include internet surfing skill, scanning skills, book-marking skills, cataloguing of digital resources, signing of digital signature, and web-linking. These had mean weight of 3.38, 3.20, 2.70, 2.64, 2.60, and 2.53 respectively. The result also shows that the library staff lack skills on database management skill (2.39), creation and management of library website (2.31 web publishing (2.20)), trouble-shooting (2.20), and metadata creation of library resources (2.06).
Research Question 4: What types of resources do libraries digitize?

To answer Research Question 4, questionnaire item four was used. Respondent’s responses were presented on the Table 5 below:

Table 5: Type of resources being digitized in the library.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Items</th>
<th>FUTO</th>
<th>%</th>
<th>UNIZIK</th>
<th>%</th>
<th>UNN</th>
<th>%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Thesis</td>
<td>12</td>
<td>100</td>
<td>9</td>
<td>100</td>
<td>34</td>
<td>100</td>
<td>55</td>
</tr>
<tr>
<td>2</td>
<td>Dissertation</td>
<td>12</td>
<td>100</td>
<td>8</td>
<td>88.8</td>
<td>30</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>Project</td>
<td>11</td>
<td>91.2</td>
<td>9</td>
<td>100</td>
<td>14</td>
<td>46.6</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>Conference papers</td>
<td>-</td>
<td>0</td>
<td>2</td>
<td>22.2</td>
<td>28</td>
<td>93.3</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>Staff publications</td>
<td>2</td>
<td>16.65</td>
<td>7</td>
<td>77.7</td>
<td>20</td>
<td>96.6</td>
<td>29</td>
</tr>
<tr>
<td>6</td>
<td>Catalogue</td>
<td>3</td>
<td>25</td>
<td>4</td>
<td>44.4</td>
<td>13</td>
<td>43.3</td>
<td>19</td>
</tr>
<tr>
<td>7</td>
<td>Indexes</td>
<td>2</td>
<td>16.6</td>
<td>4</td>
<td>44.4</td>
<td>13</td>
<td>43.3</td>
<td>19</td>
</tr>
<tr>
<td>8</td>
<td>Journals</td>
<td>-</td>
<td>0</td>
<td>9</td>
<td>100</td>
<td>8</td>
<td>26.6</td>
<td>17</td>
</tr>
<tr>
<td>9</td>
<td>Past examination papers</td>
<td>1</td>
<td>8.3</td>
<td>1</td>
<td>11.1</td>
<td>14</td>
<td>46.6</td>
<td>16</td>
</tr>
<tr>
<td>10</td>
<td>Abstracts</td>
<td>-</td>
<td>0</td>
<td>3</td>
<td>33.3</td>
<td>11</td>
<td>36.6</td>
<td>14</td>
</tr>
<tr>
<td>11</td>
<td>Archival materials</td>
<td>1</td>
<td>8.3</td>
<td>3</td>
<td>33.3</td>
<td>10</td>
<td>33.3</td>
<td>14</td>
</tr>
<tr>
<td>12</td>
<td>Newspapers</td>
<td>-</td>
<td>0</td>
<td>2</td>
<td>22.2</td>
<td>12</td>
<td>40</td>
<td>14</td>
</tr>
</tbody>
</table>

Table 5 above indicated that the various resources being digitized in the libraries under study include thesis, dissertation, projects, conference papers and staff publications. These had a percentage distribution of 100, 90.91, 61.82, 54.55, and 52.73 respectively. The result also revealed that these universities have not embarked on digitization of catalogues, indexes, journals, past examination papers, abstracts, archival materials, and newspapers. The respondents from UNN also indicated that staff curriculum vitae are among the resources being digitized in their library.
Research Question 5: What is the extent of digitization of library resources in federal University Libraries?

To answer Research Question 5, questionnaire item five was used. Respondent’s responses were presented on the Table 6 below:

Table 6: Extent of digitization of library resources.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Extent of Digitization of library Resources.</th>
<th>VGE</th>
<th>GE</th>
<th>LE</th>
<th>NA</th>
<th>Mean</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Thesis</td>
<td>29</td>
<td>22</td>
<td>4</td>
<td>-</td>
<td>3.45</td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>Dissertation</td>
<td>26</td>
<td>22</td>
<td>4</td>
<td>-</td>
<td>3.42</td>
<td>A</td>
</tr>
<tr>
<td>3</td>
<td>Projects</td>
<td>21</td>
<td>19</td>
<td>5</td>
<td>10</td>
<td>2.93</td>
<td>A</td>
</tr>
<tr>
<td>4</td>
<td>Staff Publications</td>
<td>11</td>
<td>19</td>
<td>9</td>
<td>14</td>
<td>2.51</td>
<td>A</td>
</tr>
<tr>
<td>5</td>
<td>Conference papers</td>
<td>11</td>
<td>8</td>
<td>8</td>
<td>24</td>
<td>2.12</td>
<td>R</td>
</tr>
<tr>
<td>6</td>
<td>Journals</td>
<td>9</td>
<td>10</td>
<td>7</td>
<td>24</td>
<td>2.08</td>
<td>R</td>
</tr>
<tr>
<td>7</td>
<td>Abstracts</td>
<td>4</td>
<td>8</td>
<td>11</td>
<td>27</td>
<td>1.74</td>
<td>R</td>
</tr>
<tr>
<td>8</td>
<td>Catalogues</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>31</td>
<td>1.66</td>
<td>R</td>
</tr>
<tr>
<td>9</td>
<td>Indexes</td>
<td>4</td>
<td>5</td>
<td>12</td>
<td>30</td>
<td>1.66</td>
<td>R</td>
</tr>
<tr>
<td>10</td>
<td>Archival materials</td>
<td>3</td>
<td>7</td>
<td>9</td>
<td>31</td>
<td>1.64</td>
<td>R</td>
</tr>
<tr>
<td>11</td>
<td>Newspapers</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>32</td>
<td>1.54</td>
<td>R</td>
</tr>
<tr>
<td>12</td>
<td>Past examination question papers</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>38</td>
<td>1.39</td>
<td>R</td>
</tr>
</tbody>
</table>

Table 6 above shows the extent of digitization of library resources in the universities under study. The result indicated that thesis, dissertation, projects and staff publications are library resources being digitized at a very great. These had mean weight of 3.45, 3.42, 2.93 and 2.51 respectively. The result also shows that conference papers, journals, abstracts, catalogues, indexes, archival materials, newspapers and past examination question papers are resources that are being digitized at a low extent in these universities.
Research Question 6: What are the problems affecting the digitization of library resources?

To answer Research Question 6, questionnaire item six was used. Respondent’s responses were presented on the Table 7 below:

Table 7: Problems militating against digitization project in libraries.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Problems militating against library digitization</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>Mean</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Erratic power supply</td>
<td>33</td>
<td>17</td>
<td>2</td>
<td>2</td>
<td>3.50</td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>High cost of purchasing equipment</td>
<td>28</td>
<td>17</td>
<td>5</td>
<td>4</td>
<td>3.30</td>
<td>A</td>
</tr>
<tr>
<td>3</td>
<td>Poor internet connectivity</td>
<td>3</td>
<td>8</td>
<td>19</td>
<td>22</td>
<td>2.98</td>
<td>A</td>
</tr>
<tr>
<td>4</td>
<td>Copyright management</td>
<td>17</td>
<td>20</td>
<td>9</td>
<td>5</td>
<td>2.96</td>
<td>A</td>
</tr>
<tr>
<td>5</td>
<td>Preservation of digital resources</td>
<td>19</td>
<td>17</td>
<td>9</td>
<td>7</td>
<td>2.92</td>
<td>A</td>
</tr>
<tr>
<td>6</td>
<td>Inadequate skilled personnel</td>
<td>18</td>
<td>21</td>
<td>6</td>
<td>9</td>
<td>2.90</td>
<td>A</td>
</tr>
<tr>
<td>7</td>
<td>Use of unsuitable software</td>
<td>16</td>
<td>22</td>
<td>8</td>
<td>7</td>
<td>2.89</td>
<td>A</td>
</tr>
<tr>
<td>8</td>
<td>Hardware problem</td>
<td>14</td>
<td>21</td>
<td>13</td>
<td>5</td>
<td>2.83</td>
<td>A</td>
</tr>
<tr>
<td>9</td>
<td>Lack of standards</td>
<td>13</td>
<td>22</td>
<td>8</td>
<td>7</td>
<td>2.82</td>
<td>A</td>
</tr>
<tr>
<td>10</td>
<td>Inadequate funding</td>
<td>27</td>
<td>19</td>
<td>3</td>
<td>4</td>
<td>2.80</td>
<td>A</td>
</tr>
<tr>
<td>11</td>
<td>Inadequate computer technologies</td>
<td>18</td>
<td>17</td>
<td>9</td>
<td>10</td>
<td>2.80</td>
<td>A</td>
</tr>
<tr>
<td>12</td>
<td>Lack of planning for digitization</td>
<td>16</td>
<td>19</td>
<td>8</td>
<td>8</td>
<td>2.74</td>
<td>A</td>
</tr>
<tr>
<td>13</td>
<td>Space constraints</td>
<td>5</td>
<td>15</td>
<td>24</td>
<td>10</td>
<td>2.27</td>
<td>R</td>
</tr>
</tbody>
</table>

Table 7 above shows that the problems militating against digitization projects in libraries under study include: high cost of purchasing equipment, poor internet connectivity, copyright management, preservation of digital resources, inadequate skilled personnel, use of unsuitable software, hardware problems, lack of standards, and inadequate funding. These had mean weight of 3.30, 2.98, 2.96, 2.92, 2.90, 2.89, 2.83, 2.82, and 2.80 respectively. However, the result also revealed that space constraint is not a major problem militating against digitization of library resources in the universities under study.
**Research Question 7**: What are the strategies to be used for effective digitization project in university libraries in Nigeria?

To answer Research Question 7, questionnaire item seven was used. Respondent’s responses were presented on the Table 8 below:

Table 8: Strategies for effective digitization:

<table>
<thead>
<tr>
<th>S/N</th>
<th>Strategies for effective digitization</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>Mean</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Providing constant power supply</td>
<td>48</td>
<td>5</td>
<td>1</td>
<td>-</td>
<td>3.90</td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>Adequate funding</td>
<td>43</td>
<td>10</td>
<td>1</td>
<td>-</td>
<td>3.80</td>
<td>A</td>
</tr>
<tr>
<td>3</td>
<td>Training of librarians to acquire digitization skills</td>
<td>42</td>
<td>11</td>
<td>1</td>
<td>-</td>
<td>3.80</td>
<td>A</td>
</tr>
<tr>
<td>4</td>
<td>Proper selection of software for digitization</td>
<td>43</td>
<td>10</td>
<td>1</td>
<td>-</td>
<td>3.80</td>
<td>A</td>
</tr>
<tr>
<td>5</td>
<td>Provision of required hardware for digitization</td>
<td>42</td>
<td>11</td>
<td>1</td>
<td>-</td>
<td>3.80</td>
<td>A</td>
</tr>
<tr>
<td>6</td>
<td>In-house training programmes on digitization</td>
<td>41</td>
<td>11</td>
<td>1</td>
<td>-</td>
<td>3.80</td>
<td>A</td>
</tr>
<tr>
<td>7</td>
<td>Website design and Internet Connectivity</td>
<td>36</td>
<td>15</td>
<td>2</td>
<td>-</td>
<td>3.64</td>
<td>A</td>
</tr>
<tr>
<td>8</td>
<td>Adequate planning for digitization project</td>
<td>34</td>
<td>18</td>
<td>2</td>
<td>-</td>
<td>3.60</td>
<td>A</td>
</tr>
<tr>
<td>9</td>
<td>Employment of specialists in ICT apart from professional librarians</td>
<td>36</td>
<td>12</td>
<td>6</td>
<td>-</td>
<td>3.60</td>
<td>A</td>
</tr>
<tr>
<td>10</td>
<td>Proper supervision of digitization project</td>
<td>33</td>
<td>20</td>
<td>1</td>
<td>-</td>
<td>3.60</td>
<td>A</td>
</tr>
<tr>
<td>11</td>
<td>Enactment of effective policy on digitization</td>
<td>33</td>
<td>17</td>
<td>3</td>
<td>1</td>
<td>3.52</td>
<td>A</td>
</tr>
<tr>
<td>12</td>
<td>Implementation of available policy on digitization</td>
<td>23</td>
<td>24</td>
<td>6</td>
<td>-</td>
<td>3.32</td>
<td>A</td>
</tr>
<tr>
<td>13</td>
<td>Collaborating/Partnership with other libraries</td>
<td>23</td>
<td>25</td>
<td>5</td>
<td>1</td>
<td>3.30</td>
<td>A</td>
</tr>
</tbody>
</table>

Table 8 above shows the various strategies that could be adopted for the effective digitization of library resources. The respondents accepted that all the strategies listed above could be adopted for the effective digitization of library resources. These strategies include providing constant power supply (3.90), adequate funding (3.80), training of librarians to acquire digitization skills (3.80), proper selection of software for digitization (3.80), provision of required hardware for digitization (3.80), in-house training programme on digitization (3.80), website design and internet connectivity (3.64).
Summary of Major Findings

From the analysis, the findings revealed that the major purposes for digitization of library resources include improved library services, increased access, speedy retrieval of documents, and effective preservation. The result showed that the library staff have not fully possessed the required skills for digitization such as database management skills, creation and management of library websites, web publishing, trouble-shooting and metadata creation of library resources. The result also indicated that thesis, dissertation, projects and staff publications are the resources being digitized at a great extent in the libraries. It also revealed that the major problems militating against digitization projects in libraries include erratic power supply, high cost of purchasing equipments, poor internet connectivity, copyright management, preservation of digital resources and inadequate skilled personnel. The result shows that the various strategies that could be adopted for the effective digitization of library resources include providing constant power supply, adequate funding, training of librarians to acquire digitization skills, and proper selection of software for digitization.
CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This chapter deals with discussion of findings, implication of the study, recommendations, limitations of the study, suggestions for further research and conclusion.

Discussion of Findings

Digitization of library resources has been found to be a crucial development in the present digital age. Globally, libraries are digitizing their local contents in order to make their resources visible and accessible over the Global Information Network (GIN). Chisenga (2004) revealed that while digital libraries and archives are being created around the world in order to preserve, store, catalogue, disseminate and share information resources, target scale digitization projects in Africa have not yet taken off, though there are notable efforts being made in some countries, but mainly in a small scale. The findings of this study have shown that various efforts are being made by Libraries in Nigeria in digitizing their local content for easy access, preservation and improved library services.

Purpose for digitization of library resources

The study revealed that there are a lot of purposes for digitization of library resources which include improved library services, increased access, speedy retrieval of documents, effective preservation, and simultaneous search. This is quite revealing and the finding shows that the digitization of library resources is quite indispensable in the present digital environment. These findings agree with an earlier observation made by Fabunmi (2006) on the major reasons for digitization endeavour which include: the need to preserve endangered library resources, improvement of the efficiency of information search mechanism and improving access to library resources. Owing to the present trend in the library environment, university libraries especially in developing countries should as a matter of fact engage in
digitization of their local contents. This will help in bridging the gap of digital divide and to ensure greater access to information globally.

**Available facilities used in digitization project in libraries**

The findings showed that the available facilities used in digitization project in the libraries under study include scanner, digital camera, printers, generator, servers, internet facility, CD-ROM, software, photocopying machine. Most computer technologies are constantly and rapidly changing. Hence, adequate care should be taken in selecting and updating these technologies for effective digitization. Ndor (2007) noted that “computer hardware and software are constantly changing and currently produced computers are fast enough to handle almost any scanning and other digitization. Therefore, libraries should procure the most recent version of ICT facilities to ensure effective digitization exercise. Hence, enough budgets should be mapped out for the purchase of these facilities.

**The extent of digitization skills possessed by the library staff.**

Findings from the study revealed the extent of digitization skills possessed by the library staff. It was found that scanning skill, book-marking skill, signing of digital signature, internet surfing skill, cataloguing of digital resources, and web-linking are the digitization skills possessed by the library staff. The study also revealed that the library staff do not possess all the required skills necessary for digitization. These skills include database management skill, creation and management of library website, web publishing, trouble-shooting, and metadata creation of library resources. Due to the changing nature of library environment, educating librarians to acquire digitization skills in the dynamic and complex digital environment has become a high priority within library and information science schools. These findings support that of Igun (2006) who emphasized that the training
of the librarian for the 21st Century must be mainly in the mode of a digital librarian. Librarians should be adequately trained in order to acquire all the required skills for digitization.

**Extent of digitization of library resources.**

In finding out the extent of digitization of library resources, the result revealed that thesis, dissertation, projects and staff publications are mainly the resources being digitized in the libraries under study. The result also indicated that the digitization of past examination question papers, conference papers, archival materials, newspapers, journals, abstracts, catalogue and indexes are still in a low extent. This shows that these university libraries embark on the digitization of their local contents. These are comprised of what has been produced within the institutions, e.g. theses and dissertations, research reports, papers presented at conferences and journal articles written by members of the academic staff. The study carried out by Usman (2007) on the status of digitization in 30 Nigerian University libraries revealed that Nigerian universities are lagging behind in the pace of digitization of their question papers, theses and dissertations. On the other hand, the findings of this study revealed that appreciable efforts are being made in digitization of these materials.

**Problems militating against digitization project in libraries.**

Despite the values inherent in digitization of library resources, the result revealed that there are problems militating against the digitization of library resources which include erratic power supply, high cost of purchasing equipment, poor internet connectivity, copyright management, preservation of digital resources and inadequate skilled personnel. These findings are in consonance with the report of Usman (2007) on the challenges of digitization in libraries. This shows that a very serious effort should be made to curb these problems. The study also revealed that space constraint
is not a major problem facing the digitization of library resources in the universities under study.

**Strategies for effective digitization**

On the issue of the strategies for effective digitization of library resources, the respondents agreed that all the strategies suggested ranging from providing constant power supply, adequate funding, training of librarians to acquire digitization skills, and proper selection of software, provision of required hardware, in-house training, website design and internet connectivity, and adequate planning for digitization are appropriate approaches for effective digitization. Usman (2007) noted that in digitization process, “planning involves identifying various tasks related to creating a digital library collection, developing strategies for handling these tasks, identifying required resources and formulating a timeline for accomplishing these tasks”. Hazen (1998) in agreement to this contends that in order to achieve an effective digitization, it is imperative to set up a committee to draw a plan and draft a policy to establish the goals and objectives, the selection criteria, availability of fund, infrastructure and personnel requirement. From the foregoing, it is very imperative to make adequate plan before embarking on any digitization exercise.

**Implications of the study**

The present digital revolution offer Nigeria and other African countries the unique opportunity of actively participating in the latest developmental revolution. The general library environment is gradually changing from analogue to digital and/or hybrid environment. Findings from this study show that some university libraries in Nigeria have started digitization project but there are still some impeding factors militating against the effective digitization of library resources. The implication is that if these identified problems are not curbed, our local content will remain invisible and
inaccessible in the Global Information Network (GIN). It was discovered that librarians still lack skills on digitization. The implication is that if librarians are not well trained in digitization and other ICT skills, they will not be able to face the present challenges in the digital library environment. Lack of planning and funding were among the major problems militating against digitization projects in libraries. The implication is that if the library administrators do not adequately plan for digitization by developing an institutional policy, ensuring adequate budget and funding; and mapping out training strategies, this will lead to abandoned projects and fruitless efforts.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Alternative power supply should be provided such as procuring high capacity generators and the use of solar electricity in order to leverage the problem of epileptic power supply in the country.

2. University libraries should seek for more financial aid from donor organizations, like Mac-Arthur Foundation, Carnegie Co-operation, Rockefeller and Bill and Melinda Gate Foundation. University administrators should request Education Trust Fund to include digitization project in the library intervention fund every year to each library. University administrators should be more committed to implementing the statutory per cent of the university budget as a matter of policy for digitization projects.

3. Emphasis should be made on training of library staff in order to acquire all the digitization skills. There should be provision of on the job training and more refresher courses for the library staff development on digitization processes. In addition, there should be provision for regular training of staff through seminars, workshops,
conferences, refresher courses and in-service training should be institutionalized as part of the development plan for digitization project. Also the introduction of digitization skills in the library and information science curricula should be adopted.

4. There is need for proper selection of software packages that will be most suitable for digitization project. Poor software selection could frustrate the digitization project.

5. Procurement of digitization equipment such as good quality scanning machines; computers, scanners, CD-ROM and digital cameras. This will help to ensure the effective digitization of library resources. More attention should be given to internet connection.

Limitations of the study

The researcher encountered a number of problems in the course of carrying out this study. The attitude of the respondents towards filling the questionnaire was not encouraging. The researcher has to travel severally to the universities for distribution and subsequent collection of the questionnaire. Some of the questionnaire (but very few) were not completed, and as such could not be used by the researcher. This was a limitation. However, the researcher was able to collect enough number of completed questionnaires. The number of questionnaire that was not retrieved was not enough to affect the validity of the study.

Suggestions for further research

No research can be said to be totally comprehensive. For the purpose of further research, the following study could further be undertaken in this area:

1. Preservation of digital resources in academic libraries in Nigeria.
2. Training needs of librarians for building digital library projects in university libraries in Nigeria.
3. Challenges of digitization projects in university libraries in Nigeria.
Conclusion

Digitization of library resources has been found to be a key developmental factor in the present day libraries especially in an academic environment. This present development has continued to revolutionalize the pattern and scope of library services. In order to remain relevant in the present digital environment, libraries especially in developing countries should make every effort to digitize their local content for preservation and easy access. All these efforts are in response to the global need for nations to preserve their local contents and make them available over the Global Information Network (GIN).

This study has attempted to evaluate the status, importance, challenges and strategies for effective digitization projects in federal university libraries in south-east zone of Nigeria. Findings from this study have shown that university libraries in Nigeria are digitizing their local contents for improved library services, increased access, speedy retrieval of documents, and effective preservation. The study revealed that librarians have not fully possessed the required skills for digitization; hence emphasis should be made on the training of librarians to acquire digitization skill in order to face the impending challenges.

Notwithstanding all benefits inherent in digitization of library resources, there are still a lot of problems militating against the effective digitization of library resources in Nigerian university libraries. In order to achieve effective and efficient digitization project in university libraries in Nigeria, adequate attention must be given the strategies and recommendations given in this study.
REFERENCES


Ekemezie, N. (2003.) *Newbies information technology: computer technology, communication technology and computer programming.* Awka: J.Goshen


5th October, 2009.


APPENDIX 1

QUESTIONNAIRE

Department of Library & Information Science,
Faculty of Education,
University of Nigeria,
Nsukka.

6th September, 2010

Sir/Madam,

The researcher is a postgraduate student of Library and Information Science, University of Nigeria, Nsukka. The researcher is currently carrying out a research on “Digitization of Federal University Libraries in the South-Eastern zone of Nigeria”. This work will help in bringing to limelight the status of digitization projects in Federal University Libraries as a means of increasing access to information and preserving our local contents.

Please, kindly answer the following questions to the best of your knowledge as the information obtained will strictly be used for academic purposes.

Thank you for your co-operation.

Uzoamaka Igwesi,

PG/MLS/08/49654
LIBRARY DIGITIZATION PROJECT QUESTIONNAIRE (LDPQ)

Introduction

The questionnaire is divided into part 1 and 2 (7 questions). Please, tick [✔] in the box the appropriate option that applied to you. Key: (SA= Strongly Agree, A= Agree, D= Disagree, SD= Strongly Disagree) (VGE= Very Great extent, GE= Great Extent, LE= Low Extent, NA= Not At all)

PART 1

1. Name of Library: ............................................................................................
2. Designation: .................................................................................................

PART 2. Tick as applicable

Section A. Purpose for digitizing your library resources.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Purpose for digitization</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Increased access</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>ii.</td>
<td>Effective preservation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii.</td>
<td>Collaboration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv.</td>
<td>Simultaneous search</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>v.</td>
<td>Space conservation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vi.</td>
<td>Improved Library Service</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>vii.</td>
<td>Speedy retrieval of documents</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>viii.</td>
<td>Bibliographic control effectiveness</td>
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</tr>
<tr>
<td>x</td>
<td>Interoperability of library operations</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>xi</td>
<td>Improving library visibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>xii</td>
<td>Extended access to information geographically</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

Others, specify ..................................................................................................................
Section B. Available facilities used in digitization project in libraries.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Technologies for Digitization</th>
<th>Available</th>
<th>Not Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Computers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii.</td>
<td>Scanners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii.</td>
<td>Digital cameras</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv.</td>
<td>Printers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>v.</td>
<td>Generator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vi.</td>
<td>Servers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vii</td>
<td>Telephone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>viii</td>
<td>Internet facility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>CD-ROM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xi</td>
<td>Software</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xii</td>
<td>Photocopying machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xiii</td>
<td>Back code reader</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Others, specify ...........................................................................................................

Section C. Indicate the extent of digitization skills possessed by the library staff.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Extent of skills possessed</th>
<th>VGE</th>
<th>GE</th>
<th>LE</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Scanning skill</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>ii.</td>
<td>Book-marking skill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii.</td>
<td>Signing of digital signature</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv.</td>
<td>Internet surfing skill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>v.</td>
<td>Cataloguing of digital resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vi.</td>
<td>Creation and management of library websites</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vii.</td>
<td>Metadata creation of library resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>viii.</td>
<td>Web-linking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x.</td>
<td>Database management skill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>xi.</td>
<td>Trouble-shooting</td>
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<td></td>
</tr>
<tr>
<td>xii.</td>
<td>Metadata creation of library resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>xiii</td>
<td>Web publishing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Others, specify ...........................................................................................................
Section D. What types of resources are being digitized in your Library?

Tick [ ✔ ] as applicable to your library.

i. Theses [ ]
ii. Dissertation [ ]
iii. Project [ ]
iv. Staff Publications [ ]
v. Past examination question papers [ ]
vi. Conference papers [ ]
vii. Archival materials [ ]
viii. Newspapers [ ]
x. Journals [ ]
xi. Abstracts [ ]
xii. Catalogue [ ]
xii. Indexes [ ]

Others, specify …………………………………………………………………
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Section E. Extent of digitization of your library resources.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Technologies for Digitization</th>
<th>VGE</th>
<th>GE</th>
<th>LE</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Theses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii.</td>
<td>Dissertation</td>
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<tr>
<td>iii.</td>
<td>Projects</td>
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<tr>
<td>iv.</td>
<td>Staff Publications</td>
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</tr>
<tr>
<td>v.</td>
<td>Past examination question papers</td>
<td></td>
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</tr>
<tr>
<td>vi.</td>
<td>Conference papers</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>vii</td>
<td>Archival materials</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>viii</td>
<td>Newspapers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Journals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XI</td>
<td>Abstracts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xii</td>
<td>Catalogues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xiii</td>
<td>Indexes</td>
<td></td>
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</table>

Others, specify …………………………………………………………………
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Section F. Problems militating against digitization project in your library.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Problems militating against library digitization</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Lack of planning for digitization</td>
</tr>
<tr>
<td>ii.</td>
<td>Inadequate funding</td>
</tr>
<tr>
<td>iii.</td>
<td>High cost of purchasing equipment</td>
</tr>
<tr>
<td></td>
<td>Inadequate computer technologies</td>
</tr>
<tr>
<td>iv.</td>
<td>Inadequate skilled personnel</td>
</tr>
<tr>
<td>v.</td>
<td>Space constraints</td>
</tr>
<tr>
<td>vi.</td>
<td>Erratic power supply</td>
</tr>
<tr>
<td>vii</td>
<td>Lack of standards</td>
</tr>
<tr>
<td>viii</td>
<td>Use of unsuitable software</td>
</tr>
<tr>
<td>ix</td>
<td>Hardware problem</td>
</tr>
<tr>
<td>x</td>
<td>Poor internet connectivity</td>
</tr>
<tr>
<td>xi</td>
<td>Copyright management</td>
</tr>
<tr>
<td>xii</td>
<td>Preservation of digital resources</td>
</tr>
</tbody>
</table>

Others, specify .................................................................
                                                                                     .................................................................

Section G. Strategies for effective digitization:

<table>
<thead>
<tr>
<th>S/N</th>
<th>Strategies for effective digitization</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Enactment of effective policy on digitization</td>
</tr>
<tr>
<td>ii.</td>
<td>Implementation of available policy on digitization</td>
</tr>
<tr>
<td>iii.</td>
<td>Adequate planning for digitization project</td>
</tr>
<tr>
<td>iv.</td>
<td>Adequate funding</td>
</tr>
<tr>
<td>v.</td>
<td>Training of librarians to acquire digitization skills</td>
</tr>
<tr>
<td>vi.</td>
<td>Providing constant power supply</td>
</tr>
<tr>
<td>vii.</td>
<td>Proper selection of software for digitization</td>
</tr>
<tr>
<td>viii</td>
<td>Provision of required hardware for digitization</td>
</tr>
<tr>
<td>x.</td>
<td>Website design and Internet Connectivity</td>
</tr>
<tr>
<td>xi.</td>
<td>In-house training programmes on digitization</td>
</tr>
<tr>
<td>xii</td>
<td>Employment of specialists in ICT apart from professional librarians</td>
</tr>
<tr>
<td>xiii</td>
<td>Collaborating/Partnership with other libraries</td>
</tr>
<tr>
<td>xiv</td>
<td>Proper supervision of digitization project</td>
</tr>
</tbody>
</table>

Others, specify .................................................................
                                                                                     .................................................................
This is designed to identify the various technologies used in digitization projects in libraries. The following is the observation checklist that will guide the researcher in checking the availability of digitization technologies in the libraries under study.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Digitization Technologies</th>
<th>Availability</th>
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</thead>
<tbody>
<tr>
<td></td>
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</tr>
<tr>
<td>i.</td>
<td>Computers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii.</td>
<td>Scanners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii.</td>
<td>Digital cameras</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv.</td>
<td>Printers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>v.</td>
<td>Generator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vi.</td>
<td>Servers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vii</td>
<td>Telephone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>viii</td>
<td>Internet facility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>CD-ROM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xi</td>
<td>Software</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xii</td>
<td>Photocopying machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xiii</td>
<td>Back code reader</td>
<td></td>
<td></td>
</tr>
</tbody>
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